Comments submitted by governments on the Final Draft of *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands* (*Wetland Supplement*)

<Overview Chapter>

Comment #	Country	apter/Secti	Start Line Number	End Line Number	Comment	supplementary documents	Author Actions
GC_O_001	Germany	Overview	40	48	2006 guidelines are wrongly cited. In Chapter 7.1 it reads " Wetlands include ...."and that does not fall into the FL, CL, or GL categories", this has been common practice, which should also be used in the new supplement. It seems that there is an artificial difference created between Wetlands as defined in the 2006 IPCC Guidelines and in the Wetlands supplement. It is still the same situation as in the 2006 Guidelines: namely if a former wetland (drained for agricultural/forestry purposes) was reported under FL, GL, CL or Settlement because of the hierarchical choice of a country, the values of emissions and removals from those lands were taken from the Wetlands chapter. That will not be different now. What has changed in comparison to 2006Guidelines is the number of subcategories under Wetlands as well as inter allia the emissions factors because of improved scientific evidence. Please reformulate the para accordingly. In case the old sentence stays as it is in line 46, "are not" should be deleted and "does not fall into" delete further "and settlements" and add categories.		Accept. The text now includes language consistent with that in the 2006 IPCC Guidelines. An additional text has been included to reinforce that the Supplement does not change the allocation of wetlands for reporting purposes.
GC_O_002	Finland	Overview	42	42	"The term wetlands is taken to refer to lands with wet and drained soils, and…" but in the Glossary as follows: "In this supplement, the term 'wetland' is used to refer to land with a wet soil." (line 205). This definition is also used in Chapter 1 Introduction. We believe that the definition in the Glossary and Chapter 1 is the correct one. Wetlands should apply to only wet soils in order not to cause confusion. The terminology should be checked in this respect and be used consistently in the Supplement.		Accept. The text is now consistent with the definition of wetlands provided in the Glossary and in Chapter 1.
GC_O_003	Canada	Overview	57		Suggest defining or explaining "default emissions factor" here or in a footnote. This term is also not found in the Glossary.		Accept with modification. The text does not make reference to default - it was an unecessary additional
GC_O_004	China	Overview	58	58	For the sake of consistency of chapters 2 and 3, it is suggested to reformulate "inland peatlands" into "inland Organic Soils" here in the report.		Accept. Text changed accordingly.
GC_O_005	Canada	Overview	60		Spelling error: "subsequenlty"		Accept. Editorial
GC_O_006	China	Overview	62	62	"Introduction" consists of only one section, there being no need to have a separate subsection of 1.1. It is suggested to delete "1.1 background" in Line 62.		Accept. Subsection 1.1 converted into section 2.
GC_O_007	Canada	Overview	63		Suggest inserting "IPCC" before "Expert Meeting"		Accept

GC_O_008	China	Overview	63	82	It is suggested to reformulate “12th-21st” in Line 63 into “12th-21st”, “30th” and “1st” in Line 80 into “30th” and “1st”, and “33rd” and “10th-13th” in Line 82 into “33rd” and “10th-13th” respectively. Please check other relevant instances carefully at the same time to make a global modification of similar editorial errors in the report.		Accept
GC_O_009	Canada	Overview	90	90	Suggest this should be "Wetlands, Settlements..." instead of "Settlements, Wetlands..." in order to follow the order of IPCC land-use categories in the 2006 guidelines and reporting tables.		Accept
GC_O_010	Australia	Overview	97		Table 1.1. Introduction coverage text. Suggest delete " Introduction of this report" and revise remaining text as follows "Guidance on the usage of this report and generic information on the application of the managed land proxy in wetlands and the linkages....."		Accept with modification. The text does not make reference to default - it was an unecessary additional
GC_O_011	Canada	Overview	103	106	Suggest also including chapter references (Chp 2 &3) for the Wetlands Supplment in these two sentences to be consistent with the other sections.		Accept
GC_O_012	China	Overview	107	108	For the ease of reading, it is suggested to reformulate “chapter3” and “chapter2” into “chapter3, Wetlands supplement” and “chapter2, Wetlands supplement” respectively. Please check other relevant instances carefully at the same time to make a global similar modification of the report.		Accept
GC_O_013	China	Overview	118	118	For the sake of consistency, it is suggested to reformulate “The 2006 Guideline” into “The 2006 IPCC Guidelines” in the report. Please make a global modification of other similar instances in the report.		Accept
GC_O_014	Canada	Overview	133	133	Suggest that this be revised to state "...concluded that there was not sufficient new information available to produce new and additional guidelines" instead of "concluded that insufficient new information has become available".		Accept with modification. The text has been modified to reflect the language in the report of the IPCC Expert Meeting on HWP, Wetlands and Soil N2O.
GC_O_015	China	Overview	133	133	The elements of Footnote 6 have been described in Line 63 and in Footnote 4. The repetition here is suggested to be deleted.		Accept. Footnote 4 was deleted.
GC_O_016	Australia	Overview	138	157	The approach taken in the Supplement to the managed land proxy and anthropogenic emissions ideas delivers a balanced characterisation of ideas demonstrating a considered approach to these important issues.		Noted
GC_O_017	Canada	Overview	140	140	Remove hyphen in "Land-Use" - should be "Land Use".		Accept, Editorial
GC_O_018	Canada	Overview	146	147	The reference to "authors" and use of verb tense between these two sentences makes it a little confusing to read. Suggest clarifying that the "authors" referred to are the authors of this Wetlands Supplement and not the 2006 Guidelines, and suggest on line 146 to change "noted" to "note".		Accept both comments

GC_O_019	Australia	Overview	156	157	This sentence may be better included in section 2 of the overview where the new methods and EF are referred to.		Reject. The phrase was thought to be better linked to the sentence
GC_O_020	Austria	Overview	204	205	It is strongly recommended to include also in the glossary the explanation of "Wetlands" with capitalized letter as included in chapter 1, lines 76 to 80.		Accept

<Glossary>

Comment #	Country	Chapter/Section	Start Line Number	End Line Number	Comment	supplementary documents	Final Author Actions
GC_Gl_001	Canada	Glossary	150	150	In the "Peat consolidation" definition it appears that the end of the sentence is cut off or there is a punctuation error. Please review.		Accept
GC_Gl_002	China	Glossary	204	205	The definitions here should refer to the Overview in Line 42-48. It is suggested to complement the definition of wetland in line with the Overview.		Accept with modification. The Overview chapter text in these lines was clarified to cover the scope of the Supplement and not to define wetlands.
GC_Gl_003	Finland	Glossary	209	2012	Please change the definition for "wet soil" to read: "A wet soil is a soil that is inundated or saturated by water for all or part of the year to the extent that it affects the annual GHG emissions and removals." Reasoning: The phrase “control net annual GHG emissions and removals” is ambiguous. Decomposition in the moist oxic surface layer of a wet soil is so fast that a majority of C exchange generally takes place in that oxic layer, even if it is relatively thin compared to the anoxic layer that facilitates organic matter accumulation and supports its preservation in organic soils. Thus, control of GHG emissions in wet organic soils is mostly not related to the anaerobic processes.		Accept with modification. Redraft as "A soil that is inundated or saturated by water for all or part of the year to the extent that biota, adapted to anaerobic conditions, particularly soil microbes and rooted plants, adapted to anaerobic conditions control the quality and quantity of the net annual greenhouse gas emissions and removals."

<Chapter 1>

Comment #	Country	Chapter/Section	Start Line Number	End Line Number	Comment	supplementary documents	Author Actions
GC_1_001	Canada	1	0		Chp. 1 frequently uses the expression "recently drained" which is not defined and not used anywhere else ("drained" is defined and used elsewhere, but not "recently drained"). It is also not really relevant terminology since Chp. 2 indicates the time since rewetting does not affect emission factors, and in general guidance is the same regardless of the reporting land category. Suggest the authors consider whether this should be removed from wording in Chp. 1 (including the decision tree).		Accept
GC_1_002	Canada	1	71	72	Suggest replacing "with organic or wet mineral soils" with "with drained or wet soils".		Accepted with modification. In Line 72, "with organic or wet mineral soils" will be replaced with "with organic, wet and drained mineral soils. An additional sentence was also added: " The introductory chapter also addresses the use of the Wetlands Supplement to estimate emissions from constructed wetlands for waste water treatment."
GC_1_003	Germany	1	79	80	Not a very elegant solution, could you please either find another term for "wetlands" that reflects the concept of lands with wet soils, or just not differentiate. Why is it important to differentiate between "Wetlands" and "wetlands"?		Rejected. The authors felt it necessary to acknowledge the different uses of the word "wetland(s)" in the supplement, i.e. to differentiate between Wetlands as a land use category and wetlands as an ecosystem type. Furthermore confusion arises because the KP activity "Wetland drainage and rewetting" refers to organic soils and neither to the land use category nor to the ecosystem types that are normally referred to as "wetlands". A major issue is that IPCC in earlier reports has adopted the name Wettlands for a specific land use category whereas other languages (including conventions like the Ramsar/Wetland Convention) use this term in a different meaning
GC_1_004	Canada	1	82	82	Suggest replacing "this does not affect…. " with "these alternate formulations do not affect the applicability of the methodological guidance".		Accept with modification.in Line 82, "this does not affect…" will be replaced with "...the applicability of the methodological guidance".

GC_1_005	Canada	1	83		Figure 1.1 caption: Suggest that the figure caption make more explicit that the figure and subsequent notes are linked. The text in lines 72-75 could be moved into or repeated in the caption.		accepted. Footnotes clarifying the linkages have been added.
GC_1_006	Finland	1	83	85	The concept "recently drained" should be deleted as it is not used in the methodological guidance elsewhere in the Supplement.		Accepted. "recently drained" has been deleted and text and decision trees have been suitably modified.
GC_1_007	Germany	1	83	85	Delete the decision tree in the introduction, it is sufficient to have decision trees in the methdological parts, this should not be in the introduction. The decision tree - starting with the question is the soild organic and/or wet is also inconsistent with the remaining report and question 10 is also not the key question to separate between chapter 3 and 2 .		Rejected. The decision tree has the task to guide to the various chapters of both the supplement and the 2006GL. Question 10 is indeed necessary with this phrasing to separate between chapter 2 (that covers drained organic soils) and 3 (that covers both rewetted and managed wet organic soils that never have been drained nor rewetted).
GC_1_008	China	1	87	87	In “recently drained mineral soils”, the word “recently” is not clear to indicate a well-defined timeline for drained soils. This ambiguous formulation is also found in Line 171, Line 191 (“several years”), Figure 1.1 and Note 1. For the ease of reading, it is suggested to describe ‘recently’ or to give a timeframe.		Accepted with modification. "recently drained" has been deleted and text and decision trees have been suitably modified.
GC_1_009	Finland	1	87	110	The good practice requirement to subdivide all lands into similar subcategories as given in Figure 1.2 is not consistent with the guidance given in Chapters 2 to 6 and can be confusing. The proposed division may also not be relevant for all land-use categories, or the categories used in reporting may be different (e.g. Chapter 2 gives guidance by land-use categories for drained organic soils with further disaggregation to deep and shallow drained organic soils). Also, we could not find references to "recently drained" elsewhere in the Supplement. Please delete (1) "recently" in line 87, (2)"or recently drained mineral" from lines 95 to 96 and "mineral recently drained" from Figure 1.2 (and other places in Chapter 1 where "recently drained refers to "classification"), and (2) all text in lines 104 to 110.		Accepted modification. The "recently drained" has been deleted from both text and Figure 1.1. With respect to the subcategories given in Figure 1.2.: these are consistent with the guidance in the chapters 2 to 6, but not all chapters address all subcategories. E.g. chapter 2 only addresses drained organic soils, whereas chapter 3 only addresses wet organic soils. Furthermore chapters may make further subdivisions, e.g. chapter 2 separates the "organic drained soils" into "deep" and "shallow" drained soils.
GC_1_010	Sweden	1	99	99	Delete: "...that are being addressed in the Wetlands Supplement". The reference to "this supplement" is not valid for the figure since Mineral soils are not addressed in the report according to line 111-112		Accepted with modification. Figure 1.2 has been changed by replacing the "mineral dry" with "mineral drained".

GC_1_011	Germany	1	104	110	The GPG recommendation is inconsistent with the remaining chapter. We propose not to use this distinction but to work on the current distinction between mineral and organic soils consistent with 2006 IPCC Guidelines. This good practice guidance is not consistent with 2006 IPCC Guidelines.		Accepted with modification. The guidance on stratification is consistent with the methdological guidance provided in the Chapters of the Wetlands Supplement and the 2006 GLs.Some modifications have been made for better consistency. Stratification improves the accuracy. .
GC_1_012	Finland	1	111	111	Please delete "(but not recently drained, see note 4)"		Accepted.
GC_1_013	Finland	1	113	113	Please delete the brackets "(including the case of 'recently drained...)"		Accepted with modification. The text deleted. The term " drained mineral soil" to replace "dry mineral soil" for focusing on the human intervention on wetlands.
GC_1_014	Germany	1	122	122	Delete "countries'" (it's self-evident) and insert "anthropogenic".		Accepted.
GC_1_015	Germany	1	142	146	Since peat soil and peatlands are important and recurring concepts throughout these Guidelines it seems necessary to have a definition. The definition of forest land also varies widely from country to country, yet this has been defined. It is based on a set of ranges (tree height, cover, etc.). Therefore a similar approach would seem logical for peat soil and peatlands.		Accepted modofication. In the glossary general defintion of peat is now included with further explanatory remarks. Peat: "Soft, porous or compressed, sedimentary deposit of plant origin which may include woody material with high water content (up to 90 percent in the raw state). Countries may define peat according to their national circumstances."
GC_1_016	Finland	1	151	153	Please change the definition for "wet soil" to read: "A wet soil is a soil that is inundated or saturated by water for all or part of the year to the extent that it affects the annual GHG emissions and removals." Reasoning: see comment in line 17 above [This refers to the comment #GC_Gl_003 on Glossary.]		Accepted modification. The "wet soil" is now changed as "A wet soil is a soil that is inundated or saturated by water for all or part of the year to the extent that biota, adapted to anaerobic conditions, particularly soil microbes and rooted plants, controlled the quality and quantity of the net annual greenhouse gas emissions and removals."

GC_1_017	Sweden	1	151	153	There are some inconsistencies in the definition of wet soils. The definition (mentioning soil microbes) does not correspond to the text in secition 1.5 on indicators to asses the soils.		Rejected. Anaerobic soil microbes are indispensable for creating the mentioned qualitatively different GHG fluxes. Indeed they can not easily be used as indicator for wet soil conditions, but indication is not relevant for the definition, as other indicators do exist. One should not mix up the indicator with the indicated feature.
GC_1_018	Germany	1	154	159	this description is inconsistent with the following chapters where the key differentiation is not between wet and dry and where EFs are not presented for water level classes, but e.g. for nutrient rich and nutrient poor soils or shallow and deeply drained. This is different from a classification of wet and dry. The remaining definitions are provided in the underlying chapter in a better way and it is confusing to provide slightly different and modified definitions in the introduction compared to the methodological chapters		Accepted. Para deleted.
GC_1_019	Finland	1	160	163	Delete the text starting in line 160 starting "It is good practice…" to the end of line 163. There is no need to define "wetlands" as it is not a reporting category or subcategory. This good practice guidance is very confusing. The methodological chapters are clear in what is covered by the methods and how reporting should be done.		Accepted.text deleted.
GC_1_020	Finland	1	167	178	Please delete the text "recently" in line 167 . Delete also line the sentence starting in line 174 "As long as these differences…) and the sentence starting in line 176 ("Tier 1 does not..."). Reasoning: see comment in line 19 above [This refers to the comment #GC_1_006 above.] and note that we find the text under Note 4 useful and clarifying. However, using "recent drainage" as criteria for classification in reporting is not consistent with the methodological guidance in the Supplement.		Accepted.text deleted.
GC_1_021	Germany	1	167	178	The concept of recently drained soils is not used in the following chaper and it is therefore unnecessary to provide this definition in the introduction.		Accpeted." recently drained" deleted
GC_1_022	Finland	1	203	204	Coastal wetlands is defined in Chapter 4 and in lines 208 to 212 in Chapter 4. The definition/text in lines 203 to 205 here is confusing. The need for a country to define the "concept" of coastal wetlands is not needed as "coastal wetlands" is not a reporting category in the inventory (see Chapter 4). Please delete these lines.		Reject. It is needed for the guidance provided in the Supplement.

GC_1_023	Finland	1	207	207	Delete "recently"		Accepted.Deleted.
GC_1_024	Germany	1	208	212	Any good practice guidance should be removed from chapter 1. The introduction should present to scope and not define the methodological requirements, Good practice advice should only be in the methodological chapters 2, 3, 4 etc.		Reject. The Chapter provides overarching good practice guidance needed for the application of the subsequent chapters.
GC_1_025	Germany	1	214	219	This part is inconsistent with chapter 5 which provides updated Carbon stock change factors for wetland mineral soils, not for wet soils, rewetted soils and recently darined soils.		Accepted with modification.Text deleted.
GC_1_026	Finland	1	216	216	Delete "recently"		Accepted.
GC_1_027	Finland	1	220	224	This text should in conjunction with Note 3 Is the soil wet?		Reject. The note 10 is needed for classifying organic soils.
GC_1_028	Canada	1	243		Suggest changing "removals" to "losses".		Accepted, Change the text accordingly.
GC_1_029	Canada	1	248		We assume what is meant here is that "net **CO2 emissions** are greatly reduced" - suggest clarifying.		Accepted with modification. Replace lines 248-250 by: "Rewetting can also restore wetlands to a state where net CO2 emissions are greatly reduced or even become negative and the wetlands function as a net remover of greenhouse gases from the atmosphere"
GC_1_030	Canada	1	284		To accurately reflect the text, suggest the heading could be changed to "Carbon stock changes **and CO2 emissions and removal**s in mineral and organic soils"		Accept. Revise the heading accordingly and the meaning of the section has been clarified in accoding with the change of heading.
GC_1_031	Germany	1	293	294	delete sentence related to subdivisions of soils as this is not mentioned in remaining methodological guidance.		Accepted.
GC_1_032	Finland	1	294	294	Delete "recently"		Accepted.
GC_1_033	Canada	1	295		Suggest delete "restored" as an organic soil cannot be restored.		Accepted.
GC_1_034	Australia	1	315	316	Is this sentence duplicative of what is stated in following paragraph?		Accepted. The text has been deleted..

GC_1_035	Canada	1	320		New stock change factors are in section 5.2, not 5.3 - suggest changing reference here.		Accepted.
GC_1_036	Australia	1	328		Should 'Industry' read 'Industrial Process and Product Use'?		Accept. Industry deleted.
GC_1_037	Canada	1	344	350	Suggest that this paragraph better describe the overlap with the 2006 Guidelines (e.g., updated emission factors for peat extraction in Ch 2.) instead of just describing what is in them.		Reject. Sufficient guidance on the coverage of the Supplement and the 2006 GLs has been provided.
GC_1_038	Canada	1	351	358	Consider deleting this section, as according to section heading, text on flooded land is not relevant here.		Accept. Section deleted.
GC_1_039	Finland	1	414	414	Delete "recently"		Accepted.
GC_1_040	Canada	1	459	460	The sentence "This risk can be avoided … " is unclear. Suggest reformulating as "Double-accounting can be avoided by considering only those management practices that result in direct N2O emissions."		Accepted. The text will be revised accordingly.
GC_1_041	Austria	1	460	460	wording:.. That originates directly ..		Accept with modification. The sentence has been changed.
GC_1_042	Austria	1	461	462	wording. .. (DOC, DIC and PIC). However, waterborne carbon may already have been included in a ….		Accepted. The text will be revised accordingly.
GC_1_043	Finland	1	474	475	Delete all "recently" in the table as well as the rows/cells for Mineral Recently Drained		Accpeted.
GC_1_044	Germany	1	474	475	N2O emissions during aqua culture use in mangroves is missing in the look up table.		Rejected. N2O emission from the aquaculture use in mangrove has been included in eithor mineral wet or organic wet soil of forest land in coastal within the form.
GC_1_045	Canada	1	476	500	This guidance may be too general for this report : practically none of the specific activity data that are required in this Supplement (e.g., areas of drained wetlands, rewetted organic soils, excavated coastal mangroves) can be obtained from the listed data sets. In addition, it repeats much of the same guidance that is provided in methodological chapters. Suggest reviewing.		Accepted. Line 478-483 shall be deleted.

GC_1_046	Finland	1	general		The introduction provides good practice guidance for (1) classification of soils, (2) how to document national defintions for organic soils, (3) requirements for finer disaggregation of water level data for higher tiers (Tier 2 and 3), (4) countries to define any country-specific concepts for the wetlands concept introduced in the Supplement. (5) separate reporting on rice cultivation on mineral and organic soils, (6) countries to define the concept of coastal wetlands , (7) how to avoid double-counting, and(8) countries to focus data collection efforts on key categories including those categories with largest uncertainties. Although we agree with some of these good practice requirements, some of them are not consistent with the methodological chapters of the Supplement, or are prescriptive, or not consitent with current ways of preparing the inventory, or the 2006 IPCC GLs. The introducton should not provide any independent methdological good practice guidance - only introduce the reader to the Supplement. Therefore, please delete all "It is good practice to" references from Chapter 1.		Accept with modification. text revised to increase the consistency. Good practice guidance is necessry to apply the overarching guidance.
GC_1_047	Germany	1	General		Chapter 1 Introduction is inconsistent in many places with the rest of the report, which should not be the case. In particular the separation of soils into soil based categories mineral dry, mineral recently drained, mineral wet, organic wet and organic drained does not appear in the following chapters 2, 3 and 4 in the way this is defined and proposed in chapter 1. Chapter 5 is dealing with specific soil categories used in soild classification and does not make a dinstinction into three categories wet, dry and drained mineral soils. Chapter 5 also highlights that wet soils as such are usually wet only partly during a year and does not differentiate in water level classes which is not a common practice in soil classification of mineral soils (influences of water are classified, but not a waterlevel). Chapter 5 is also not using the category recently drained mineral soils. It is urgent to revise chapter 1 to achieve consistency with the remaining report and to issue a corrigendum for chapter 1. The good practice guidance provided in the introductory chapter is also inconsistent with the good practice guidance in the following chapters. The current incoherency would result in a failure to adopt this report for the use under the UNFCCC. Therefore it is very important that a corrigendum of chapter 1 is issued.		accept,Decision Tree and text have been revised for better consistency with the Chapters.
GC_1_048	Germany	1	General		It is proposed that in such corrigendum section 1.2 is entirely deleted because note 1, note 2, note 3, note 4, note 8 , note 9 and note 10 all include elements that are inconsistent with the following chapters. Given the short time available it seems impossible to correct section 1.2 and Germany therefore suggests deletion. A shortened introduction is at least less prone to inconsistent guidance		Accept with modification. The decision tree has been revised for consistency.

GC_1_049	Germany	1	General		Any good practice guidance should be removed from chapter 1. The introduction should present to scope and not define the methodological requirements, Good practice advice should only be in the methodological chapters 2, 3, 4 etc.		Reject. The good practice guidance provided in this chapter is appropriate to the overall framework being described.

<Chapter 2>

Comment #	Country	Chapter/Section	Start Line Number	End Line Number	Comment	Supple-mentary Docu-ments	Author Actions
GC_2_001	USA	2	0	0	We recognize that significant progress has been made since the previous draft, but we continue to have concerns about the derivation of emissions factors for drained tropical peat soils. For example, as explained in our more detailed comments below, we do not believe there is scientific justification for the wide divergence between the recommended emissions factor for tropical tree plantations (Acacia) versus tropical oil palm plantations. We appreciate the discussion about the higher emissions during the transition phase following drainage, but we have specific recommendations about how that section could be strengthened. We also have a number of specific concerns about the scientific basis for the process used by the authors to arrive at compromise Tier 1 default emissions factors for tropical organic soils. Thank you for considering our detailed comments on Chapter 2.		ACCEPT WITH MODIFICATION. Specific concerns will be answered below in comments GC_2_15 and 17. Regarding the process to find a convergence on tropical EFs, we used an approach recommended in many books including The Signal and the Noise (Nate Silver). The author team stands by this process and it has been accepted by our reviewer.
GC_2_002	Germany	2	1	2489	a well consolidated chapter. Easy to use in addition to guidance given in the 2006 IPCC Guidelines.		ACCEPT.
GC_2_003	Austria	2	24	25	substitute 2.2.3 by 2.3.1 and 2.2.4 by 2.3.2		ACCEPT.
GC_2_004	Austria	2	62	62	add in the table of contents Table 2.A.1 and Table 2.A.2		ACCEPT.
GC_2_005	China	2	73	73	It is suggested to describe or note how “natural level” is defined.		ACCEPT. Sentence added: Naturally, mean annual water table is near the soil surface but can experience seasonal fluctuations.
GC_2_006	Germany	2	122	122	Please delete doubled 'in'.		ACCEPT.
GC_2_007	China	2	153	168	“Csoil-onsite” in Line 153 is inconsistent with “Con-site” in the formula. It is suggested to reformulate “Csoil-onsite” as “Con-site”. The formula in Line 160 should be renumbered as “EQUATION 2.2”. Please check why the explanations of “CO2-Corganic, drained” in Line 164 and “CO2-Con-site” in Line 165 are exactly the same.		ACCEPT.
GC_2_008	Denmark	2	160	160	Heading for eq. 2.2 should be 2.2 not 2.1		ACCEPT.

GC_2_009	Germany	2	230	231	IPCC guidelines should not use "shall", this is inconsistent with remaining report and other inventory guidance documents. In this sentence it is also not appropriate because it remains unclear what 'compatible with the scientific background for tier 1 EF' really means and a mandatory requirement needs further clarity.		ACCEPT. Sentence rephrased.
GC_2_010	Finland	2	247	274	This comment addresses the derivation of default emission factors for drainage of organic soils in forests in boreal climate regions and applies also to Annex 2A.1 Chapter 2 does not describe nor document transparently how the emission factors for the land-use category forest land, drained organic soils, in the boreal climate zone, have been derived from the literature given as references. In Annex 2A.1 only very broad background information is given. The litterature references given for the CO2 emissions are all of Finnish orgin - but the proposed IPCC defaults derived from these references are very different from our evaluation (for more details see the attached document Boreal_Forest_drainage.pdf). Our conclustion is that the IPCC defaults developed based on the references are in not representing the data properly. Please revaluate and change the EFs taking into account the information in the references properly, giving the correct weight to number of measurements and taking into account that all measurements in the reference Simola et al have not taken place in forests (for detail see the attached pdf-document). We raised this issue already in the governmental comments on SOD of the Supplement.	Boreal_Forest_drainage.pdf	REJECTED The authors of chapter 2 thank the Finnish government for the detailed comments. Find in the following direct responses to the comments. Finnish comment: 1. Currently, it is not transparent nor well documented how the emission factors for land-use category forest land, drained, have been derived from the literature given as references. In Annex 2A.1. only broad background information is given. Based on evaluation of the literature concerning the boreal climate/vegetation zone, that is all of Finnish origin, we suggest that the data and the estimations are re-evaluated based on the following (points 2 and 3). Authors Response: The procedure of the derivation of the EFs is given in annex 2.A.1 . The values enter in the calculation like they are published. Means and 95% CI were calculated over the whole dataset without weighting the published values. Finnish comment: 2. The emission factors for both nutrient-poor and nutrient-rich drained forest land are based on several studies. From most of the studies, several observations based on individual sites that were measured have obviously been used as independent observations. However, from the Minkkinen and Laine 1998 study, which includes the by far largest number of peatlands studied, only regional averages have been used as independent observations. This leads to a situation where the actual quantities of samples are not used as weights in a correct manner. Eg., 102 cores (sampling locations) from Minkkinen and Laine 1998 for central Finland have been treated in the EF estimation as one observation, whereas each site (= 2 cores) of Simola et al. 2012 have been used as individual observations. Please give higher weights for aggregated estimates, e.g., use number of cores from Minkkinen and Laine 1998, divided by 2 if to be used equally to Simola et al. 2012, as weights. (Both Minkkinen and Laine 1998 and Simola et al. 2012 applied similar methodology and can thus be compared in this respect). Authors response: IPCC emission factors rely on published, accessible values. Therefore, only the published values have been used in the way published by the authors. IPCC authors have contacted the authors of the studies so that the original values published in the graphs of the peer-reviewed papers could be used. If a paper provides averages over a broader dataset but does not publish the single values, then these averages are taken as entries in the database. If a paper provides single site values, then these are taken as entries to the database. This procedure has been common practice in IPCC derivation of Tier 1 emission factors. Minkkinen and Laine 1998 published regional averages, Simola et al 2012 published single site values. The two methods are not directly comparable, as Simola re-visited the sites after 30 years and could parallelize the individual profiles by detailed ash content comparison. Minkkinen and Laine 1998 on the other hand visited points which

GC_2_011	Canada	2	268	269	To help clarify for the reader, suggest adding a note to explain the meaning of negative CI values in Table 2.1 column 4. Such as, "Note: Some confidence intervals contain negative values, suggesting that the emission factor could be negative, in which case it would be uptake rather than an emission. Thus, the direction of flux is uncertain."		ACCEPT WITH MODIFICATION. Footnote added, but with the correct meaning.
GC_2_012	Canada	2	268		Part of the first page of Table 2.1 is missing.		NOTED. The PDF version was complete

GC_2_013	China	2	268	269	In Table 2.1, the “No. of sites” for “Tropical” indicates “n/a”, meaning there is no sample. If it is so, how can emission factor data be obtained? Please check and describe.		ACCEPT. This was an omission, the number of sites were included in the table.
GC_2_014	Denmark	2	268	268	EF for sago palm seems unreaslistic low compared to other crops		ACCEPT WITH MODIFICATION. Sago are mostly cultivated under very shallow drained environment. It's in wetter condition compared to paddy rice which is usually relatively drier during the off season. Category has been clarified.

GC_2_015	USA	2	268	269	We are concerned about the wide divergence between the emissions factors recommended for drained tropical forest plantations and tropical oil palm agriculture. The emissions factor recommended for drained tropical tree plantations (derived solely from Acacia plantation data) of 20 tonnes CO2-C ha-1 yr-1 is almost twice the recommended emissions factor for tropical oil palm plantations. Given the relatively small number of studies that have been done on tropical peatlands, there is little scientific evidence that emissions vary substantially between different types of tree plantations (e.g., Acacia and oil palm). Any differences apparent from the few existing studies that compare these plantation types are just as likely to derive from differences in approach and local conditions as to reflect differences due to the vegetation itself. There have been no in-depth studies exploring any systematic differences in peat respiration, and the number of studies supporting an emission factor from any one type of plantation is small. In fact, a study that made the same kind of measurements in both Acacia and oil plantations found no apparent difference between the plantation types (Couwenberg and Hooijer, 2013). Given the small number of total studies and the fact that there is no firm evidence for differences in respiration between plantation types, it does not seem appropriate to recommend separate emission factors for these types of plantations. As we recommended in our comments on a previous draft, it would be more reasonable to give one emission factor for "Tree Plantations" planted on tropical inland organic soils that derives from the emissions from all types of such plantations. Such an		NOTED: The EFs are diagnostic based on the literature. Published studies for Acacia have only high values, while studies for oil palm have high and low values. There are several reasons why this might be the case, but at the moment, the state of the science is insufficient to explain why the ranges of observations differ. Possible reasons for these difference include: Oil palm is managed on a 25 year rotation while Acacia is managed on 6 year rotations. Thus, the soil surface is disturbed by harvesting and replanting operations four times more frequently in Acacia plantations, which may contribute to higher losses. Another possibility for the differences between the observations (yet to be confirmed by experimental data) is that because Acacias fix nitrogen and N is introduced throughout the drained part of the soil profile through the root systems, while oil palm is fertilized for a few years at rates of 100-150 kg N ha-1 y-1 and the fertilizer (urea) is applied around each palm with a 2 meter radius on the soil surface. Since peat has a C to N ratio usually >50, decomposition is N limited and this difference between systems may account for differences in emissions. Many other aspects of management are different between the two systems (e.g. use of fire, land preparation, planting density, etc.). In fact the only thing they have in common is that both are deeply drained. Usually Acacia plantations are more deeply drained (80 cm) than oil palm plantations (60 cm). We also note that Acacias are only planted in Riau and Jambi provinces on the island of Sumatra in Indonesia. Oil palm is grown in a more diverse range of peat conditions across the region and increasingly outside the region. So the dataset from which the EFs were derived represents a wider range of biophysical conditions for OP than it does for Acacia.

GC_2_016	USA	2	268	269	It is unclear why Hooijer et al. (2012) is cited for Acacia plantations but not for oil palm plantations, and Couwenberg and Hooijer (2013) is cited for oil palm plantations but not for Acacia plantations. These studies made the same kind of measurements in both types of plantations, so they should be cited and contribute the estimates for both types of plantations.		ACCEPT WITH MODIFICATION. Not citing Hooijer et al (2012) was an oversight but the data of Hooijer et al (2012) has been used. Couwenberg and Hooijer 2013 presented no new data for acacia plantations, they reinterpreted the 2012 paper with a different set of assumptions. We cited the reference that provided the primary data for our calculation.
GC_2_017	USA	2	268	269	The values and ranges listed for oil palm seem much too low. Published estimates of emissions from oil palm plantations range from 7-30 t C ha-1 yr-1, with the most in-depth studies tending to find the highest emissions. However, the 95% confidence interval listed in Table 2.1 is too low to encompass the findings from many of the strongest studies in this area. We understand that there may be differences between the design of certain studies and the intent of the emissions factors in Table 2.1. (For example, the emissions factors listed in Table 2.1 are intended to represent emissions 20 years or more after conversion while some studies look at emissions 10 years or less after drainage). However, given the relative scarcity of data in this area, the fact that the 95% confidence interval listed in Table 2.1 does not encompass many of the strongest studies raises significant concerns about the scientific basis for the values provided in the current draft.		ACCEPT WITH MODIFICATION. We know of no studies that suggest that 30t C is a reasonable average emission rate for a site. The studies that we considered to be of sufficient quality for this analysis ranged between 7 and 20. The confidence interval was calculated as mean +/- 2 * the standard error, which is a mathematically sound procecure. It s true that the confidence interval does not cover the emissions calculated from the subsidence observations from Jambi sites, and this is not unusual when there is a large dispersion in the data. Howerver the confidence intervals of the Jambi sites (which were never calculated in the papers) most probably overlap the confidence intervals of the EF. Among the sites analyzed in Couwenberg and Hooijer (2013) the studies by Othman et al and by Maswar were rejected by the team because they provided insufficient informaiton for us to track the calculation. With respect to the timeframe, these EFs are not limited to use after 20 years and many of the data used to derive them were from sites drained <20 years. We have added text to clarify this.

GC_2_018	Denmark	2	268	268	Does the EF for peat excavation include excavated peat or is it only surface degradation? Please clarify. If it is only surface degradation, please include that the amount of excavated peat should be reported under energy, cropland (for soil improvements and horticulture) or under wetlands. Please include that it is good practice that the inventory compiler include a mass balance for peat extraction - how much is surface degradated, how much is reported under energy, cropland and other sectors to provide a full picture of the amount of peat loss.		ACCEPT. Footnote added for clarification.
GC_2_019	Germany	2	268	269	Why is the number of sites for drained Forest Land, drained Forest Plantations in the tropics as well as various tropical CL and Agriculture Lands not applicable when various studies have been referenced? Also "Agriculture - oil palm" is not listed as being drained, while all others are listed as drained. Please add "drained", if this is the case, to avoid confusion. If it is not referring to drained soils, then it should be clarified what is meant.		ACCEPT. The numbers of studies were omitted, they have been added. The chapter deals with drained systems hence the emission factors all refer to drained ecosystems.
GC_2_020	Canada	2	325	326	According to equation 2.3, what is needed is the area data of "drained, inland organic soils", which is not the same as "managed land with organic soils". Suggest rephrasing as "the tier 1 approach requires area data of drained, inland organic soils for each land-use category, disaggregated by appropriate climate domain."		ACCEPT.

GC_2_021	Canada	2	374		Suggest moving this item to chapter 3, which covers rewetted organic soils.		ACCEPT WITH MODIFICATION. Text clarified.
GC_2_022	Germany	2	426	427	The good practice guidance to estimate DOC only applies to flux-based carbon estimation methods. It is essential that a reference is added here to the Annex 2.A.1 explaining what flux-based methods are as well as references to the respective guidance in 2006 IPCC GL where flux based methods are presented next to other methods.		ACCEPT WITH MODIFICATION. Text of on-site CO2 has been clarified to avoid double counting.
GC_2_023	Canada	2	480	483	Suggest inclusion of the default FracDOC-CO2 value of 0.9 in Table 2.2 with an additional parameter column to enable inventories compilers to look to one table for all the necessary Tier 1 parameters for equation 2.5.		ACCEPT.
GC_2_024	China	2	482	483	It is suggested to give references to the data sources of Table 2.2.		REJECT. Data sources are indicated as follows: "For data sources and supporting references see Tables 2A.2 and 2A.3."

GC_2_025	Russian Fede	2	567	569	In the chapter 1, p. 1.8, section 1.3, lines 265-266 it is stated that "all emissions and removals from managed land are to be reported regardless of whether they are anthropogenic or non-anthropogenic". However in Chapter 2, p. 2.18, section 2.2.2.1, lines 567-569, there is a controversial statement "As natural CH4 emissions are not included in the inventory, this emission reduction is not considered when natural un-drained organic soils are being drained. However, for completeness any remaining CH4 emission from the land surface of drained organic soils needs to be included in inventories". Russian Federation requests to avoid that contradiction. As drained organic soils considered as "managed land", all emissions and removals should be reported. Therefore, CH4 emission reduction or even CH4 removals on that land should be reported and related methodologies should be developed and included in the section 2.2.2.1.		ACCEPT. The methodologies for reporting CH4 from managed inland organic soils are indeed provided in chapter 2.2.2.1. The sentence is not needed and therefore deleted.

GC_2_026	Denmark	2	603	603	Ditch width. It is mentioned that Frac_ditch is from bank to bank. Please include a more precise definition. Is it the open water surface or top of the banks. Furthermore there is a need for a description of which ditches which should be included in the inventory. A small ditch yes, but when a ditch turns into a small stream where water from other areas are included, how much should then be included. Is a river 10 meter wide, where both sides are organic soils, included in the area of a ditch? Please specifiy.		ACCEPT. Text has been clarified.
GC_2_027	Canada	2	667	668	To help clarify for the reader, suggest adding a note to explain the meaning of negative CI values in Table 2.3 column 4. Such as, "Note: Some confidence intervals contain negative values, suggesting that the emission factor could be negative, in which case it would be uptake rather than an emission. Thus, the direction of flux is uncertain."		ACCEPT WITH MODIFICATION. Footnote added, but with the correct meaning.

GC_2_028	Canada	2	667		The provision of default CH4 emission factors for drained organic soils contrasts with the simplifying assumption in the 2006 IPCC GLs that CH4 emissions from drained organic soils are negligible. Yet, section 2.2.2.1 does not provide any summary of the new knowledge that rebuts this assumption (indeed, on line 566 it is stated that drained organic soils can become CH4 sinks), nor is there an annex to explain the derivation of these emission factors (unlike all other EFs provided in this chapter). Further explanations are warranted also because pdf of CH4 emissions are often very skewed, and the derivation of a representative EF is not straightforward. Suggest explaining further.		ACCEPT WITH MODIFICATION. Data aggregation method and references with the new knowledge have been included in the main text and table. The mean emission factors show that drained inland organic soils are CH4 neutral or CH4 sources.
GC_2_029	Germany	2	667	667	Several confidence intervals are listed with an "*". There is no explanation for this and at the bottom of the table there is no footnote. The foootnotes start with "**" and end with "******", but there is no "*". Also some confidence intervals are listed as a range, while others are only a single value. This should be made consistent.		ACCEPT. The standard error for the Tropics were changed into a CI interval and the * updated.

GC_2_030	Finland	2	668	671	The text says plantations can be defined as Forest land or Cropland according to national definition, and also that it is good practice to do so. Therefore it seems unnecessary to give guidance to classify plantation for food production as cropland and plantations for wood production as forest land. E.g. IPCC 2006 GLs Vol 4, Chapter 5 says: "Perennial crops include trees and shrubs, in combination with herbaceous crops (e.g., agroforestry) or as orchards, vineyards and plantations such as cocoa, coffee, tea, oil palm, coconut, rubber trees, and bananas, except where these lands meet the criteria for categorisation as Forest Land."		ACCEPT. Text has been modified in accordance with IPCC 2006 GL.
GC_2_031	Canada	2	697	697	Extra period after "to nutrient status of the organic soil if relevant"		ACCEPT.
GC_2_032	Germany	2	697	697	Please delete double '.'		ACCEPT.
GC_2_033	Canada	2	728	729	Footnote in Table 2.4 indicates "Values shown in parentheses represent 95% confidence intervals…" but there are no values in parentheses. Suggest clarifying this for the reader. Perhaps, "The range of values in Column 4 are the 95% confidence intervals".		ACCEPT.
GC_2_034	Germany	2	728	729	The numbers for EF changed quite a lot even only for two land use categories new studies are included.		ACCEPT. For consistency reasons, the units have been changed from t CH4-C ha-1 yr 1 to kg CH4 ha-1 yr-1.
GC_2_035	Canada	2	757	759	Since emissions of nitrous oxide from biological nitrogen fixation have been dropped out of the 2006 IPCC guidelines the reference of "use of N fixing species" should be removed.		ACCEPT. " of N fixing species" has been deleted.

GC_2_036	Canada	2	783	785	This equation has a lot of detail which may not be relevant to every country and could increase the potential for errors or double counting. Suggest the equation could be more concise by using subscripts (e.g. c- climate zone and n-nutrient status) as is seen in many other equations (e.g. equation 2.4).		REJECT. The equation is a direct reference back to equation 11.1 of chapter 11, vol 4 of the IPCC 2006 GL and uses the same explicit terms and abbreviations, for consistency with the IPCC 2006 GL..
GC_2_037	China	2	783	795	For the sake of consistency of codes in the report, it is suggested that the acreage in the formula be expressed with “A”, that is, “F” be changed to “A”.		REJECT. The equation is a direct reference back to equation 11.1 of chapter 11, vol 4 of the IPCC 2006 GL and uses the same explicit terms and abbreviations, for consistency with the IPCC 2006 GL..
GC_2_038	Canada	2	823	826	The overall paragraph discusses the nutrient status of managed organic soils for different land uses. The sentence “In all cases the residual bottom organic layers …” near the end of the paragraph implies a concluding sentence to the overall paragraph. However, it seems that this sentence is specific comment in reference to peat extraction sites. In some areas of Canada, depending on the climate zone, the bottom layers of ombrotrophic peatlands managed for peat extraction can be minerotrophic, however this is not always the case. For example, some maritime domed bogs can have ombrotrophic peat down to the mineral soil. In addition, peat extraction companies intending to restore the peatland to a bog will not harvest down to the minerotrophic layers. The guidance of the Canadian restoration technique recommends retaining a minimum peat layer of 50 cm to support bog restoration on ombrotrophic peat layers. The following edit is recommended: “Peat extraction occurs both on nutrient poor		ACCEPT.

GC_2_039	Germany	2	828	828	Several confidence intervals are listed with an "*". There is no explanation for this and at the bottom of the table is no footnote. Footnotes start with "**" and end with "******", but there is no "*". Also some confidence intervals are listed as a range, while others are only a single value. This should be made consistent.		ACCEPT. CI changed for the Tropics and number of sites added.
GC_2_040	Germany	2	828	829	The number for wetland in Peat Production dropped by factor 5 because two studies were deleted, what is the reason?		ACCEPT. Drösler et al. (2013), the study with the two high-emitting sites, had erroneously been allocated to the land-use category under peat extraction and was removed.

GC_2_041	Canada	2	894	1165	It is not clear if this section covers emissions from fires on just drained organic soils or also for managed (undrained) lands with organic soils. For example, would the guidance be applicable to wildfires in areas of managed Forest land or Grassland on un-drained organic soil? The text seems to talk about both cases throughout section 2.2.2.3 (e.g. lines 917/918, 937 and the title of Figure 2.2) but the section titles and corresponding Annex title states methodology applies to CO2 and non-CO2 emissions from fires on drained organic soils. It is particularly confusing if this guidance only applies to drained organic soils given that the majority of studies on which the emission factors are based are from fires on undrained peatland organic soils (Table 2.6). Recommend including a sentence that states that “Although the focus of guidance in this chapter is for drained organic soils, guidance on emissions from fires contained in this section (section 2.2.2.3) could also be used to calculate emissions from fires on managed land with un-drained organic soils.”		ACCEPT - To be concise, the emissions from fires on both undrained and drained organic soils are included here. This will be specified in text and an additional sentence added, as suggested
GC_2_042	China	2	894	895	The subsection “2.2.2.3” describes the calculation of CO2 emissions from fire. It is suggested that this subsection be removed from Section 2.2.2 (Non-CO2 emissions and removals from drained inland organic soils) to Section 2.2.1 (CO2 emissions and removals from drained inland organic soils).		REJECT - The current structure is in line with the structure of the rest of the chapter
GC_2_043	China	2	899	899	Please check whether “ground fire” means “underground fire” here.		REJECT - this is a ground fire, and the sentence does well to describe it as a surface fire that consumes into and below the surface (not underground in the more common use of the term). However, as the sense may not be entirely clear, the text has been modified by adding a full stop after surface on line 900, then commencing a new sentence : Ground fires consume soil organic matter .....
GC_2_044	Canada	2	913	913	A period is missing after "organic soils"		ACCEPT - added to text

GC_2_045	Canada	2	914	914	A space is missing after "human-induced cause"		ACCEPT - added to text
GC_2_046	China	2	925	925	To facilitate the understanding of the direct measurement method, it is suggested to add a box here to describe this method.		REJECT - a box explanation is not required. This is simply a difference in methods - either directly measure in the field to determine consumption or model consumption. Methods are referred to later in this section and are supported by reference citations.
GC_2_047	Indonesia	2	952	959	You suggested (in the appendix) to use satellite imagery data for determining the burnt area, however, there is high uncertainty of the relationship of hotspots to the area under fire. Moreover, we have not found literature that relate hotspots to the depth or volume of peat burned. So there is no strong basis to quantify the volume and therefore the mass of fuel. Is not it premature to include this Equation 2.8 in this Guidelines? Or at least you may consider introducing relationships of hotspots – area burned – volume of peat burned. This is certainly controlled by the climate that should be included in this relationship. Without this, the calculation will suffer from a high overestimate.		REJECT - The use of the equation 2.8 here is separate from the use of remote sensing for determining area burnt (A). Area burned can be deterimined in many ways, and then equation 2.8 applied. This is the common way emissions are determined, so should not be confused with burn mapping methods.In addition, it was not our intention to suggest that remote sensing could be used for anything beyond the mapping of burnt area (i.e. it is certainly not sufficiently advanced to provide estimates of depth or volume of peat burned). The text on the use of hotspot data for burned area estimation already contains the necessary caveats. Hotspot data can be used to provide context to focus the use of other satellite data to veryify burned area, e.g. from MODIS or Landsat. Papers such as Tansey et al., doi:10.1029/2008JD010717, demonstrate that there is a relationship between burned area and hotspot data in Indonesia.

GC_2_048	Canada	2	974	976	Referring to the decision tree: Are country specific activity and emission factors available? Arrow down - should be "No", instead of "Yes"		ACCEPT - change to be made to decision tree
GC_2_049	China	2	975	976	“Yes” under the box [Are country specific activity and emission factors available?] in Figure 2.2 should be changed to “No”.		ACCEPT - change to be made to decision tree
GC_2_050	Canada	2	1023	1024	Table 2.6: In the footnote identified by "*" , the average of 1.12 and 0.09 is 0.60, not 0.1 as indicated in the "Note". Suggest reviewing and clarifying.		ACCEPT - this is a typing error. The value provided by Gorham is 0.112 g/cm3.

GC_2_051	Canada	2	1023		In the previous round of comments, Canada submitted that Table 2.6 Mean value of 66.4 t/ha fuel consumption for boreal/temperate wildfire on undrained peat seems too high for Canada. An acceptable value for Canada is 39 t/ha (de Groot et al. 2009. Can. J. For. Res. 39:367-382). Perhaps this discrepancy could be reconciled by showing a range of 39-66 t/ha, or recommend countries to go to the Tier 2 method? We are not aware of the lead authors response to our previous comment, and so are submitting it again for consideration. *Further commentary to help explain the discrepancy:* This 66.4 looks like a value that is heavily weighted to Alaska. Canada has not documented peat fuel consumption values this high (on average); Canadian average is 39 t/ha fuel consumption in C-2 black spruce [values from de Groot et al. 2009 [Can. J. For. Res. 39:367-382]; and 23 t/ha on a permafrost peat site [unpublished experimental burn data]. Alaskan researchers have always documented higher fuel consumption rates. This could be due to a focus on severe burning fires in Alaska and a very large dataset. Canadian fire data are from more normal burning conditions, and the dataset is much smaller. Another possible reason for discrepancy is that the Alaska dataset has many more deeper organic soil sites (much deeper), so there is more organic soil that could potentially burn. Another problem will be Russia, which is known to have low forest organic soil fuel load estimates and no data for peatlands.		REJECT - The comments made by this reviewer are noted but we have no other data for peat fires to include in our analysis. The author team feel that they have been clear enough about the limitations. A high value for organic soil consumption is expected in peatlands because of the high amount of organic material at these sites. The deGroot work is for non-peat organic soil types (uplands). The number cited may have some uncertainty due to a lack of data for peat sites, but it would be expected to be higher than upland sites.
GC_2_052	China	2	1023	1024	In Table 2.6, the Confidence Interval (CI) should be a range instead of a value. Please check the appropriateness of giving a numeric value based expression here.		ACCEPT - Layout and values in table amended

GC_2_053	Germany	2	1023	1024	The number for wildfire (drained peat) decreased why?		NOTED - in consultation with author team members, we decided to move the Usop study into the wildfire category (out of the prescribed fire category), since this is more appropriate. With so few data, this has a large effect on the mean value.
GC_2_054	Germany	2	1026	1027	The CO2-C numbers dropped by factor 4, reason unclear.		NOTED - in consultation with author team members, we decided to move the Usop study into the wildfire category (out of the prescribed fire category), since this is more appropriate. With so few data, this has a large effect on the mean value.
GC_2_055	Canada	2	1137		Step 2 of the procedure seems to include the wrong variable. Table 2.6 values are Fuel Consumption and not Mass Loading. Suggest replacing entire sentence with: "Step 2: Assign the appropriate fuel consumption value (replacing M and C in Equation 2.8) from Table 2.6 and emission factor (G) from Table 2.7 for the gas."		REJECT - mass of fuel available for combustion Mb is defined in equation 2.8.

GC_2_056	Canada	2	1139		Suggest reviewing for correctness. Should "fuel load (M)" be replaced with "fuel consumption value"?		ACCEPT - The reviewer is correct - Mb is not given in table 2.6. What is in the table is consumption in a mass per unit area form (as the caption says: the product of Mb and Cf). We have therefore revised lines 1137 to 1140 to be more clear. The Step 2 in Tier 1 guidance now reads: "Assign the appropriate fuel consumption value from table 2.6 (Mb*Cf with Cf=1) and emission factor (Gef) from Table 2.6 and 2.7 respectively for the gas."
GC_2_057	Canada	2	1166	1286	The guidance for drained inland organic soils in “Land Converted to a New Land-Use Category” seems redundant as much of the guidance is the same as for “Land Remaining in a Land-Use Category”. The need for a separation between “land converted to” and “land remaining in” and land-use category is justified in the 2006 IPCC guidelines for example, when the increase in biomass growth rates and soil decomposition occurs primarily during the first 20 years following changes in management. After 20 years it is assumed that a new equilibrium will occur. However, in the case of drainage of organic soils the parameters and emission factors, at least for Tier 1 guidance, are constant through time. Given that drainage of organic soils can occur in any of the land-use or “land converted to” and “land remaining in” categories it is suggested to present general guidance and propose that countries apply the land-use transition as appropriate. This would also improve the consistency within the whole document as Chapter 3 and 4 provide overall guidance.		REJECT. The chapter structure is maintained because additional guidance for higher Tier methods is provided, and for consistency with the 2006 IPCC GL.
GC_2_058	Germany	2	1166	1166	Why is "New" used? "another" or "different" would be better as we have still the old categories GL,CL, FL, WL, Settlements, OL.		ACCEPT.

GC_2_059	Germany	2	1166	1286	Please check the numbering of the chapters it is all under 2.3 and not 2.2 The numbers in the contents as well as in the main text seem to be a bit mixed up.		ACCEPT.
GC_2_060	China	2	1168	1277	The subtitle of Section 2.3 is wrong. It is suggested to renumber “2.2.3” as “2.3.1” in Line 1168, renumber “2.2.3.1” as “2.3.1.1” in Line 1184, renumber “2.2.3.2” as “2.3.1.2” in Line 1214, renumber “2.2.4” as “2.3.2” in Line 1247, renumber “2.2.4.1” as “2.3.2.1” in Line 1249, renumber “2.2.4.2” as “2.3.2.2” in Line 1263, renumber “2.2.4.3” as “2.3.2.3” in Line 1277. Furthermore, the table of contents of this chapter (Line 23 – Line 25) should be updated at the same time.		ACCEPT.
GC_2_061	Germany	2	1170	1170	Why is "New" used? "another" or "different" would be better as we have still the old categories GL,CL, FL, WL, Settlements, OL, what does "in the inventory time period" mean? Furthermore if a land is converted to another land-use, then the emissions and removals have to be reported properly to reflect the emissions or removals that were caused by the conversion and not as if there had been no conversion.		ACCEPT.
GC_2_062	Germany	2	1170	1174	Please, clarify the term inventory time period with a footnote. Does this mean if a wet organic soil is freshly drained, the emissions are the same as for drained organic soil remaining drained organic soil? That does not seem correct.		ACCEPTED - The duraiton and magnitude of an initial high emission has been suggested, but not quantified in only a few studies. Typically, Tier 1 assumes all changes occur in the year that LU changes and temporal dynamics are left to higher tiers,. Thus, we have inegrated this into Tier 2 guidance.

GC_2_063	USA	2	1184	1213	We strongly support the inclusion of the new language in this section which explains that the default Tier 1 emissions factors in Table 2.1 do not consider the high emissions in the transition phase after conversion of drained inland organic soils. Studies in the published literature demonstrate higher carbon loss in the transition phase. Therefore, we strongly support the inclusion of this language in the final report. We also support the inclusion of the new language specifying that it is good practice to develop country specific Tier 2 emissions factors that include the additional carbon emissions in the 20 year transition phase. Furthermore, while we appreciate the recommendation that Tier 3 methodologies could further consider the emissions in the transition phase, which may be highest in the first years after transition, we believe this language should be strengthened to state that it is good practice for Tier 3 methodologies to consider such emissions. Hooijer et al. (2012), the only study to integrate carbon losses from the entire period of time following peat drainage, found that carbon losses were highest in the first year following drainage and remained at considerably elevated levels 5 years after drainage. (The emissions rate in the first 5 years was found to be more than double the rate in subsequent years). Based on this evidence, we believe it should be good practice for Tier 3 methodologies to consider these important dynamics; only considering elevated levels during the first 20 years should not be considered good practice for Tier 3.		ACCEPT. The duraiton and magnitude of an initial high emission has been suggested, but not quantified in only a few studies. Typically, Tier 1 assumes all changes occur in the year that LU changes and temporal dynamics are left to higher tiers,. Thus, we have inegrated this into Tier 2 guidance. Text has been clarified by adding a Tier structure and some further text.
GC_2_064	China	2	1249	1255	2.2.4.1 is entitled “CH4 EMISSIONS….”, while the text reads “CH4 emissions/removals …” (eg Line 1251 and Line 1255), indicating inconsistency between the title and the text, a flaw that is also found in 2.2.2.2, 2.2.2.3, 2.2.3 and 2.2.4. Please check and modify.		ACCEPT WITH MODIFICATION. Headings were changed where appropriate, but not for N2O and fire, where no anthropogenic removals occur.

GC_2_065	USA	2	1287	1370	We appreciate the explanation regarding the process used by the authors to arrive at compromise Tier 1 default emissions factors for drained tropical organic soils, however we have serious concerns about the lack of scientific justification for this approach. For example, one of the steps taken was to exclude data from certain studies, aggregated by site. Typically, it is not good practice to exclude data from consideration without strong scientific justification for doing so, especially in this case where there is a relatively small amount of data available. We recommend that without adequate scientific justification the authors should abandon this approach and revise the recommended emissions factors accordingly.		ACCEPT. The justification for discarding some studies is a lack of replication in time or space. Details on criteria for accepting a study are provided in the annex and have been further specified.
GC_2_066	USA	2	1287	1370	We have concerns about the approach described in Annex 2A.1, which averaged results from two different methodologies to arrive at compromise Tier 1 default emissions factors for drained tropical organic soils. We agree that study methodology is an important factor, but we are concerned that not enough consideration was given to the quality of the various studies in the literature, such as the number of locations and time period over which measurements were taken. Studies that considered hundreds of measurements at multiple locations over numerous years should not be judged as equivalent to studies that took only a few measures at one location over a short period of time. The authors should consider giving greater weight to more extensive studies that are able to show stable estimates over multiple locations and time periods, and adjust the values in Table 2.1 accordingly.		REJECT. Weighting studies according to the quality of their experimental design was considered and discussed within the author team. However an appropriate weighting method that wouldn't have discarded too many studies and would have given an equal regional weight couldn't be developped. Given the paucity of studies, it was decided to consider all studies, except those not providing time or space replications which were excluded, with a same weight. This allowed to get the best regional coverage of sites, which was also the approach taken for all other emission factors. In essence, averaging the values from subsidence and flux methodologies was applied to Acacia and oil palm only. In these cases, each of the subsidence studies had a somewhat higher weight than each of the flux studies, due to different numbers of studies published.
GC_2_067	Indonesia	2	1303	1303	“Plat root” should be “plant root”		ACCEPT.

GC_2_068	Canada	2	1340	1361	These three paragraphs lack clarity and may be only understandable to those who took part on these discussions mentioned where there was a 'divergence of opinions'. What is the 'standardized approach' referred to in line 1345 - is it a standardized subsidence approach? What is the "one subsidence site" referred to in line 1351? Is the mean of the two approaches referred to in lines 1359 and 1360 the mean of the estimates between the flux and subsidence approach? If so, suggest including the following text: "the final EF was determined to be the mean of the two approaches (i.e. the mean of estimates between the flux and subsidence approach)", and if this is not the correct explanation then suggest providing another explanation.		ACCEPT. Text has been edited for clarity
GC_2_069	Canada	2	1537	1538	Suggest that the sentence starting with "At Tier 1, it is assumed…" should be provided in the Chapter, rather than the Annex, as it provides details on Tier 1 guidance		ACCEPT. Sentence has been copied to main text.
GC_2_070	Indonesia	2	1023 (Table 2.6)	1024	Organic soil fuel consumption is, perhaps, one of the most uncertain value as it is largely depend on the season and how severe the drought is. Page et al. (2002), for instance, does not provide a good explanation to help us understand how the value 336 t dm ha^{-1} was generated. We suggest that the original paper, which explain this number, is included here.		NOTED - Methods for assessing burn depth are covered in Annex 2A.4. The methods used by Page et al. (2002) (which depended on field assessment of burn depth against fixed points of reference) are comparable to those used by others (e.g. Turetsky et al) in boreal peatlands.

GC_2_071	Indonesia	2	267 (Table 2.1)	269	Under drained Forest plantation in the tropics, we do not understand how you generate emission factor from Warren et al. (2012). This research was about the prediction of C density based on bulk density data. We did not find in this paper any analysis, such as the change in BD and organic C, that may lead to estimate of emission rate, because the data of in this research were based on one time measurement only. Moreover, to our knowledge, none of the sites (Sebangau, Danau Sentarum and Berbak) were under forest plantation. They all were forests.		ACCEPT. The equation from Warren et al. (2012) was used to calculate carbon density from bulk density for studies not providing the carbon content of the peat. This is explained in Annex 2A.1
GC_2_072	Indonesia	2	267 (Table 2.1)	269	Dariah et al. (2013) should appear only under oil palm plantation in the tropics where their research were actually conducted. It should not appear on Paddy rice and Sago palm.		REJECT. The contribution of heterotrophic respiration to total soil respiration from Dariah et al. (2013) was used in the assessment of that in paddy fields and Sago palm plantations.
GC_2_073	Indonesia	2	269 (Table 2.1)	269	We are wondering why the Number of sites for tropical zone is not available, whereas for boreal and temperate areas it's available. This number is very important to enable us to evaluate whether or not the default values were based on high enough number of sites to represent the national/tropical emissions. This will also suggest the data gaps for which area future research should be prioritized. For example, the much higher emission factor for Timber plantation compared to oil palm plantation may have been caused by the lack of representativeness of research on the former. So appreciate if these numbers could be included.		ACCEPT. This was an omission, the number of sites for the Tropics were added.

GC_2_074	Indonesia	2	728 (Table 2.4)	729	We observed 1:2 comparison in the emission factor from drainage ditch in the boreal/temperate climate zone : tropical zone. However, there are two factors that lead to the opposite trend; 1. Soil pH and hence water pH in the drainage, on the average, is higher in the boreal/temperate than in the tropics, 2. The ditch fraction in the boreal (0.05) is way higher than in the tropics (0.02). How do you explain the contrasting difference? You may also want to compare the trend in this table with the opposite one in rewetted organic soils (Table 3.3, Chapter 3).		ACCEPT WITH MODIFICATION. The higher ditch CH4 EF resulted from high rates of measured CH4 emission in drainage channels at drained tropical peatland sites studied by Jauhiainen et al (2013), which outweighed the lower ditch fraction for tropical peatlands. Since the data for tropical sites are very limited we applied a high uncertainty range, and this EF may be refined in future if more measurements are made. We cannot speculate from the data we currently have about the possible influence of factors such as pH. Note that Table 3.3 refers to CH4 emissions from the land surface of re-wetted peatlands, hence it is not comparable to the ditch emissions in Table 2.4

<Chapter 3>

Comment #	Country	Chapter/ Section	Start Line Number	End Line Number	Comment	supplementary documents	Author Actions
GC_3_001	Germany	3	1	1576	a well consolidated chapter. Easy to use in addition to guidance given in the 2006 IPCC Guidelines		Noted, thank you.
GC_3_002	Germany	3	84	88	This statement is incorrect - the terms peat and peatlands are not defined elsewhere, but they should be.		Accepted with modifications, detele peatlands from line 84
GC_3_003	Germany	3	84	88	The definition of the terms 'peat' and 'peatlands' is not described as it is mentioned in brackets (e.g. chapter 1 and glossary) in the line and it is missing.		Accepted, delete peatlands from line 84
GC_3_004	Indonesia	3	227	227	Why emission/removal from non-tree vegetation is included here. Isn't it part of the biomass which is covered in IPCC 2006?		Noted, the text in lines 142-147 explains why non-tree biomass is included in the Efs.
GC_3_005	Denmark	3	286	286	Eq. 3.4 is there a defined number of years when carbon sequestration takes place - until a new equlibrium state is reached, as for mineral soils - or will the sequestration takes place for ever?		Noted, carbon sequestration can continue for millennia. Organic soils differ from mineral soils in that respect.
GC_3_006	Germany	3	350	365	The question in the diamond box on the left at the bottom is wrong. 'are rewetted organic soils a key category of a significant component of a KC?' This is inconsistent with the footnote. According to the footnote it should read. 'Are rewetted organic soils subcategories to a key category and account for 25-30% of emissions of this key category?		GC_3_006 and GC_3_007 identify the same issue but propose different changes. GC_3_007 proposal includes the possibility that rewetted organic soils can be in themselves a key category, while GC_3_006 does not. Accept GC_3_006 with modifications, and Accept GC_3_007 + reformulate question as suggested in GC_3_007
GC_3_007	Canada	3	352	353	Suggest rewording text of decision box "Are Rewetted organic soils a key category of a significant component of a KC" to "Are Rewetted organic soils a key category OR a significant component of a KC"		GC_3_006 and GC_3_007 identify the same issue but propose different changes. GC_3_007 proposal includes the possibility that rewetted organic soils can be in themselves a key category, while GC_3_006 does not. Accept GC_3_006 with modifications, and Accept GC_3_007 + reformulate question as suggested in GC_3_007
GC_3_008	Denmark	3	376	376	I think the stratification should not be by "climate zone" but by "nutrient rich"		Accepted with modifications; stratification by climate zone is recommended when it cannot be done by nutrient status. "Stratification by nutrient-rich" has unclear meaning. Sentence will be edited to improve clarity.

GC_3_009	Canada	3	389	390	Petrone et al., 2003 ("Ecosystem-scale flux of CO2 from a restored vacuum harvested peatland") is cited in the introduction indicating that during the first years after rewetting a site can remain a large CO2 source. This is due to the lack of a substantial surface vegetation layer. However, the Petrone et al., 2003 research wasn't included in the studies (indicated in Table 3.1) used to derive rewetting emission factors. It's one of the few studies using micrometeorological methods to examine CO2 flux from a rewetted and restored peatland over multiple years. Given that the approach to derive EFs (lines 393/394) indicated that both results from studies soon after rewetting and over the longer term were combined to avoid bias, recommend inclusion of the Petrone et al., 2003 results in the derivation of the CO2 EF for the temperate climate zone.		Accepted - results of Petrone et al., are included in the calculation but averaged with Waddington data as taken from same site, same years
GC_3_010	Canada	3	389	390	The following comments pertain to this section and to Annex 3A.1: The main criteria for inclusion of studies in the CO2 flux database used to estimate the default emission factors for CO2-C in rewetted organic soils was that the study should report CO2 fluxes from either rewetted, natural or undrained organic soils (lines 1368-1369). In addition all natural sites that had a water table deeper than 30 cm were not included as they were not deemed as being 'wet' (i.e. reflecting rewetted conditions) (1369-1373). However, it appears that a few research studies from drained and abandoned peatland sites may have been included in the analysis, as indicated in the references in Table 3.1: - Waddington et al.,2002 is a study examining total ecosystem respiration of cutover non-restored sites. In addition the mean water table position at the 2 and 3 year (young) and 7 and 8 year (old) postcutover peatland sites were 30.6 and 35.1 cm, respectively. The measured value from a reference natural site is also reported but the value is total respiration not net ecosystem exchange as CO2 uptake rates were not investigated. - Bortoluzzi et al., 2006 Yli-Petäys et al. 2007 refer to abandoned cut-away peatland sites that are naturally regenerating with no active rewetting. The drainage systems of both study sites were not maintained on the abandoned sites and therefore the water table was measured at depths less than 30 cm. If naturally regenerating abandoned cutover sites with no active rewetting conditions were also used as a proxy for rewetting it is recommend stating this assumption in the methodological annex.		Accepted iwith modifications - Waddington 2002 was not included in the calculation of EF. The reference should have been deleted. Accept clarification about naturally renegerating used as proxy but whether rewetting was 'active' or 'passive' is not relevant to the purpose of this chapter. Ìt will be clarified that abandoned, naturally rewetted sites were included in the development of default EFs.
GC_3_011	UK	3	389	390	Chapter 3, in table 3.1, we strongly suggest replacing the entries under the Temperate column with the corresponding entries in Table 3A1 (lines 1429-1430) which provide separate emission factors for nutrient rich and nutrient poor soils, to make them consistent with the annex. The annex states (1446-1148) that for nutrient poor soils the associated EFs suggest that both Boreal and Temperate zones nutrient poor soils are net long term sinks for atmospheric CO2, which we consider to be relevant for UK conditions.		Accepted. Values for nutrient-poor and nutrient-rich temperate peatlands are provided in main text.
GC_3_012	Germany	3	389	390	In Table 3.1, CO2-C EF: the direct reference to the respective source material should be given and not a huge sample of studies.		Rejected. References pertaining to each actual EF is given (under each star footnote), as per other chapters.
GC_3_013	Indonesia	3	389	390 (Table 3.1)	You did not indicate the literature for the tropics. How did you derive the value "zero". If this is zero, it that fair to assume zero CO_2 emissions from deforested, but undrained organic soils.		Noted, see Annex 3A.1 for an explanation as indicated in line 389, and 397-401.
GC_3_014	Canada	3	420	423	Suggest splitting the long sentences into two sentences, e.g. "A Tier 3 approach could also include the development of flux based monitoring systems and the use of advanced models which require a higher level of information of processes than required in Tier 2. It is good practice to ensure that models are calibrated and validated against field measurements (Chapter 2, Volume 4, 2006 IPCC Guidelines)."		Accepted. Sentence was split.
GC_3_015	Indonesia	3	437	441	There is a mismatch in the definition between FracDOC_CO2 on line 441 and *FracDOC-C* in line 437.		Accepted

GC_3_016	Germany	3	456	457	In Table 3.2, EFDOC: the direct reference (e.g. Table 3A.3) to the respective source material should be given in the Annex 3A.2 and not a huge sample of studies. The method to estimate the EF is not evident.		Noted. References pertaining to each actual EF is given (under each star footnote), as per other chapters.
GC_3_017	Germany	3	456	457	The table is about rewetted organic soils, but emission factors are given for undrained soils. Only in the temperate climate zone do the sample sites inlcude 3 rewetted sites (and 12 undrained), whilst boreal and tropical only include undrained sites. What is the rationale for including undrained sites rather than rewetted? The numbers of sites are very small. Are the factors reliable?		Noted, the rationale of the Chapter is that rates of DOC losses in undrained and rewetted do not differ significantly
GC_3_018	Germany	3	456	457	Units are unclear: Heading says tonnes CO2-C/ha, yr, DOC is provided in tonnes C, not CO2, which is inconsistent with the heading. If Doc is provided in C and EF in tonnes CO2-C, then it is unclear why for broeal both values are the same and why there are differences for the other climate zones.		Accepted. Title and equation were modified to be consistent.
GC_3_019	Finland	3	510	511	"Care should be taken to account for fire emissions under only one land-use category to avoid double-counting fire emissions." Replace 'account for' with 'report'.		Accepted, word was replaced.
GC_3_020	China	3	527	529	The unit of C in Line 527 is tons while that in Line 529 is kg. It is suggested to use ‘ton’ as a single unit. Moreover, please check and modify other relevant instances of this chapter to ensure the consistency in unit.		Noted, total CH4-C emissions/removals are reported in tonnes, but the EF is expressed in kg; this is why left-hand side of equation 3.8 is divided by 1000
GC_3_021	Canada	3	591	591	Reference "Marnier et al., 2004" is missing from the reference list or else it has a typo and should say "Marinier et al., 2004", referring to "Marinier, M., Glatzel, S. & Moore, T.R. 2004" (see line 1133)		Noted, should be Marinier
GC_3_022	Indonesia	3	623	624 (Table 3.3)	We observe inconsistency in the unit for CH4 emissions of kg CH4-C ha-1 yr-1 in this chapter with kg CH4 ha-1 yr-1 in Chapter 2,		Noted. This chapter uses CH4-C to prevent double-counting of C stock changes when both CO2 and CH4 emissions/removals are likely to occur, as on rewetted organic soils. Equation 3.2 gives the relationship between CH4 and CH4-C.
GC_3_023	China	3	651	653	It is suggested to reformulate “Lfire” into “Lfire” in the formula.		Accepted
GC_3_024	China	3	789	789	Please check whether “activity” should be “activity data” in the sentence.		Accepted, word "data" was added
GC_3_025	Germany	3	798	839	The heading promises " time series, consistency" isn't it time series consistency (without a comma)? But anyhow the section doesn't include anything about this item. Add or refer to chapter 7		Accepted, comma will be deleted.
GC_3_026	USA	3	1341	1576	The annex sections greatly improved the understanding of how default emission factors were determined. This context is essential and should be retained.		Noted
GC_3_027	USA	3	1402	1404	The presentation quality of the figures (top and bottom) could be improved. For instance, the x-axis should be moved to the bottom of the figure. Also, it would make sense to separate undrained and rewetted data in Figure 3A.1 to learn if there are differences in the distribution of fluxes. This could be done on the same graph or in separate panels		Figures will be improved as much as possible.
GC_3_028	USA	3	1422	1422	The axes should be on the left and bottom.		Figures will be improved as much as possible.
GC_3_029	Indonesia	3	1429	1439F11(Table 3.A.1)	Is not it better to merge this Table 3.A.1 with Table 3.1?		Accepted. Values for nutrient-poor and nutrient-rich temperate peatlands were moved to Table 3.1.

GC_3_030	Indonesia	3	1457	1458	You mentioned “tropical organic soils subsidence is near zero when the water table approaches the surface (Figure 3A.3; Hooijer et al. 2012, see also Couwenberg et al. 2010)”, but none of the observation points in this figure represent rewetted organic soil. You seem to assume that the rewetting will reverse the equation, how do you justify that. Moreover, only one datum represent zero water table and it was from drained forest with relatively dense vegetation.		Noted, the value of 0 is consistent with boreal and temperate data. There is no reason to assume biochemical processes are qualitatively different in the tropics.
GC_3_031	Canada	3	1460	1462	The Tier 1 EF of 0 for Tropical sites is only consistent with the temperate EF, because the boreal EF in Table 3.1 (-0.47 tonnes CO2-C ha-1 yr-1) indicates removals (i.e. a carbon sink function).		Noted. It was not possible to develop a default EF for tropical regions as for temperate and boreal ones. The EF value in itself shouldn't necessarily be the same.
GC_3_032	Indonesia	3	1462	1462	Should not the cooler temperature under natural forest compared to the more exposed (to sunlight) rewetted organic soils lead to different emission rate among the two. If so, rewetting should not reverse peat CO2 emissions to zero. After all, there is no literature to support this and so it may be premature to include it here.		Noted. Rewetting definitely reduces the rate of soil organic matter decay and of carbon oxidation to CO2. There is no reason to assume biochemical processes are qualitatively different in the tropics from other climate zones. In absence of actual measurements, authors used the simplifying assumption that soil organic matter decay solely results in CH4 emissions.
GC_3_033	Indonesia	3	1574	1575	Is the Reference for S6 and S7 the same as that for S1? The codes S1, S7. …. and A1 may not be relevant for most readers.		Accepted
GC_3_034	Denmark	3	General		This chapter is regarding rewettet organic soils. The term "rewettet" exclude "wetting" of organic soils. It is clear that SOC levels abouve mineral soils are caused by wet conditions, but will there be cases where countries are "wetting" soils (not flooding of land). Should the term be changed to "wettet organic soils"? so that all antropogenic changes are included regardsless of the perception of how the previous stage of that land were defined.		Noted, rewetting is defined as returning to water saturated conditions. A raise in the water table while not achieving water saturated conditions (partial rewetting) is covered by Ch. 2

<Chapter 4>

Comment #	Country	Chapter/Section	Start Line Number	End Line Number	Comment	supplementary documents	Final Authors Actions
GC_4_001	Germany	4	1	1966	This is almost a completely new chapter. It is much better now but hard to follow the changes and old comments made. The number of tables decreased significantly from 26 to 15. it is hard to judge if this is okay.		Accept. In direct response to SOD comments, and as a consequence of chapter restructuring the following tables were removed 3 Tier 1 summary tables, 2 seagrass biomass tables,2 non-CO2 activity tables and 5 tables associated with extraction were amalgamated into a single table.
GC_4_002	Canada	4	134	136	The word "boundaries" is unclear. Suggest rephrasing as "it is good practice … determine a country-specific definition of coastal wetlands…. Having applied the country-specific definition of coastal wetlands, the occurrence of the specific management activities of table 4.1 need to be identified...."		Accept
GC_4_003	Australia	4	144	145	Land use categories are defined in 2006 Guidelines, Volume 4, Chapter 3. As a Supplement to the 2006 guidelines the Wetlands Supplement should refer to the relevant chapter of the 2006 Guidelines not the 2003 Good Practice Guidance.		Accept
GC_4_004	Japan	4	146	148	We suggest adding words “in line with the boundary of coastal wetlands determined by each country ”at the end of the sentence of ”Regardless of whether…resulting from management activities on coastal wetlands.” in order to keep consistency with the explanation in line 134-137 and make compiler’s work clearly.		Accept
GC_4_005	Australia	4	148	153	To improve the clarity of para suggest it is redraft as follows "To cover all potential reporting options, include the new Wetland subcategories Other Wetlands Remaining Other Wetlands and Land Converted to Other Wetlands. Coastal wetlands can also occur on areas which are not part of the total land area of the country. Emissions/removals from these areas should be reported separately under the relevant land-use category, however the associated land areas should be excluded from the total area of the land-use category (refer to Chapter 7, this supplement). "		Accept
GC_4_006	Canada	4	148	150	The sentence starting with “When occurring within...” is unclear. Suggest the following revision: “When occurring within the total area of a country, GHG emissions and removals can be reported under any relevant land-use category including the new Wetlands subcategories Other Wetlands Remaining Other Wetlands or Land Converted to Other Wetlands.”		Accept
GC_4_007	Australia	4	185	186	What is the change here that is being referred to here? Perhaps clarity could be improved if sentence was revised as follows "Seagrass meadows or tidal marshes classified as Wetlands, remains reported as Wetlands following introduction of aquaculture activity.		Accept
GC_4_008	Australia	4	187	188	Does this duplicate lines 185-186 which referred to seagrass meadow or tidal marshes?		Accept
GC_4_009	Australia	4	191	192	Is this intended to refer to the situation where mangroves do not meet a country's definition of forest, and are therefore reported as wetlands, and remain reported as wetlands?		Accept
GC_4_010	Australia	4	196	197	What is the change that is occuring here? Perhaps clarity could be improved if sentence was revised as follows "Seagrass meadows initially classified as Wetlands, but considered a Settlement following introduction of aquaculture activity.		Accept
GC_4_011	Germany	4	198	199	Delete in line 198/199 " a new Land-use category" be explicit and insert instead " Cropland or Grassland".		Accept
GC_4_012	Germany	4	200	201	Delete "new" insert "another"		Accept
GC_4_013	Canada	4	220	221	The sentence starting with "All management activities…" is very unclear. Suggest deleting or rephrasing.		Accept

GC_4_014	Germany	4	227	229	Add in the third box at the right site "refer to section 4.2.2 for CO2"		Accept with modification. Aquaculture use is only considered for N2O. Additionally was deleted and replaced with Aquaculture use.
GC_4_015	Australia	4	228		Figure 4.1: 1st decision point . Change to "Does this coastal wetland retain saturated soils and are mangrove forests managed for wood harvesting or other activities"		Accept
GC_4_016	Australia	4	228		Figure 4.1 - 3rd shaded box - suggest change title from "Additionally" to "Aquaculture Use"		Accept
GC_4_017	Australia	4	228		Figure 4.1 - last decision point. Does a change in land use necessarily follow drainage? For example, could a coastal wetland used for grazing and classified as grassland remain classified as grassland following drainage? Suggest change text to read "Has this coastal wetland been drained?"		Accept
GC_4_018	Canada	4	228	229	The 5th box has a typo and repeats Rewetting as the title. Suggest this box should have the "Revegetation" title (i.e., how can an un-drained coastal wetland be rewetted?).		Accept
GC_4_019	Australia	4	238		Reference to afforestation could be replaced with UNFCCC terminology		Accept
GC_4_020	China	4	238	238	It is suggested to reformulate “afforestation” into “afforestation or revegetation”.		Accept with modification. Deleted reference to deforestation and afforestation and replaced with UNFCCC terminology.
GC_4_021	Germany	4	242	243	Dead organic matter is missing in the glossary, the term DOM should be avoided for dead organic matter, because DOM is used as the abbreviation of dissolved organic matter, DOM, in particular in combination with DOC.		Accept
GC_4_022	China	4	380	384	It is suggested to change the unit of “BCEF” in Line 380 and “D” in Line 384 to “tonnes d.m. m-3”		Accept
GC_4_023	Australia	4	394	395	Can a Tier 3 approach allow Tier 1 and Tier 2 methods?		Accept
GC_4_024	Australia	4	401	403	Should this say tier 3?		Accept
GC_4_025	China	4	408	408	It is suggested to reformulate “And a tier 1 approach” into “as a tier 1 approach”.		Accept
GC_4_026	Germany	4	424	428	In general, the estimation of all additional information is not comprehensible, an appendix as found in chapter 3 should be provided		Accept

GC_4_027	China	4	438	439	The mangrove described in “Tam et al., 1995” should be a subtropical one. It is suggested to relocate it to after “3reference”, and to recalculate emission factors in the table sequentially. In addition, “Lin an Lu 1990” should be reformulated into “Lin et al., 1990”.		Accept with modification. Tam was put in wrong list by Alongi. No change to data values. Lin et al. corrected
GC_4_028	Germany	4	438	439	Units are missing, why was "wet" after "Tropical" changed to humid? Table 4.3 (line 426) and Table 4.4 (428) still have "Tropical wet". It should be consistent or explained how this is different (perhaps humid is the preferred term to avoid confusion with wet soils)		Accept. Units were also provided on table 4.9 and 4.10.
GC_4_029	Canada	4	443	448	Suggest starting the paragraph with the sentence "All tiers require information on areas of forest management activities in mangroves." Then proceed with guidance on where to find information on mangrove areas; alternatively, provide practical guidance on how to extract information on mangrove areas from maps of general wetland distribution or soil maps.		Accept
GC_4_030	China	4	523	523	This sentence should read “if the land 1] satisfies a country’s definition of forest or 2] is a mangrove wetland with trees…”		Accept
GC_4_031	China	4	529	529	This sentence should read “if the land 1] satisfies a country’s definition of forest or 2] is a mangrove wetland with trees…”		Accept
GC_4_032	Canada	4	576	581	Should this paragraph be in sections 4.2.3 Rewetting or 4.2.4 Drainage? Suggest reviewing.		Accept with modification. Move line 578 to start of paragraph. Clarified that it should also be considered at Tier 1 rewetting (Section 4.2.3) and drainage activities (Section 4.2.4) can occur as a result of forest management practices.
GC_4_033	China	4	624	637	There is no (v) in Formula 4.3. It is suggested to delete the note in Line 624: “where (v) denotes mangrove, tidal marsh and seagrass meadow,” and to delete “Construction of aquaculture and salt production ponds is considered for the vegetation types (v) of mangroves and tidal marsh only.” in Line 636-637 as well.		Accept.
GC_4_034	Canada	4	643	644	The footnotes of Table 4.8 are out of order in the table (i.e. Footnote 2 occurs after footnote 3 lower in the column).		Accept
GC_4_035	Canada	4	665	667	Suggest that "B after" and "B before" should be defined as ABOVEGROUND biomass, not biomass since these two variables are multiplied with (1+R).		Accept
GC_4_036	Australia	4	671		Extraction activity may not result in a change in land-use category. For consistency with previous definitions this could be "Area of conversion by veg type (v) and climate (c): ha" or "Area of extraction activities by....."		Accept. Replaced with "Area of conversion…"
GC_4_037	Germany	4	711	712	In the SOD absolute numbers were given instead of ratios and accordingly equations were changed, what is the rationale?		Noted. This was table 4.8 in SOD. It was removed to be consistent with 2006GLs.
GC_4_038	Canada	4	724	726	End quotes are missing in the sentence starting on line 724. It would appear that the end quote should be placed after Extraction (i.e. The "Agreement on Sand and Gravel Extraction").		Accept
GC_4_039	Australia	4	802		Extraction activity may not result in a change in land-use category. For consistency with previous definitions this could be "Area of conversion by veg type (v) and climate (c): ha" or "Area of extraction activities by....."		Accept
GC_4_040	Australia	4	856		Extraction activity may not result in a change in land-use category. For consistency with previous definitions this could be "Area of conversion by veg type (v) and climate (c): ha" or "Area of extraction activities by....."		Accept

GC_4_041	USA	4	885	886	The text refers to "emission factors" in Table 4.11, yet these factors do not appear in the table. Table 4.11 is insufficient for computing default changes in soil carbon.		Accept. Text should read "Default Tier 1 carbon stocks to be used in calculation of CO2 emission using the majore vegetation types in coastal wetlands."
GC_4_042	Indonesia	4	889	890	What's the depth of the soil with such C stock?		Accept
GC_4_043	Canada	4	914	1066	The entire focus of this section and the proposed methodological approach is based on the establishment or re-establishment of vegetation, with rewetting, soil raising or lowering being necessary steps under some circumstances. Accordingly, suggest the entire section could be re-named "Revegetation or creation of mangroves, tidal marshes and seagrass meadows". Indeed, available activity data (line 1042 and following) are closely associated to wetlands restoration or revegetation. Line 948 misleadingly refers to "revegetation as part of rewetting" - whereas in reality rewetting is part of revegetation; sentence on 590-951 "This is consistent ... " is incorrect: an EF of 0 is only used for rewetted organic soils in tropical regions. Non-zero EFs are only applicable upon vegetation establishment; it should therefore be more accurately be EFreveg, as opposed to EFrewet. Finally, there does not seem to be a time limit to the application of this EF (line 987), although the text on lines 967-969 indicates there should be such a time limit.		Accept with modification. The EF parameter is changed to EF-re. The time limit was clarified by reference to the soil C stock table 4.11. Other comments comtained in this comment # are accepted.
GC_4_044	Canada	4	947	951	The CO2 emission factor of 0 for rewetted coastal wetlands is consistent with the rewetted organic soils EFs for temperate and tropical regions, but is not consistent with the boreal EF presented in Table 3.1 which indicates removals (-0.47 tonnes CO2-C ha-1 yr-1) even if original vegetation is not re-established . Suggest clarifying the text to state "The CO2 emission factor is approximated as zero when resaturated soils are devoid of vegetation. This is consistent with the default EFs for rewetted soils for temperate and tropical regions (but not the boreal region) presented in Chapter 3 of this supplement."		Accept
GC_4_045	Canada	4	953	953	The end of the sentence has text cut or is missing a period.		Accept
GC_4_046	USA	4	977	979	Regarding Equation 4.7, the definition for the emission factor is a bit confusing. The EF has units of flux (tonnes C ha-1 yr-1) and is not really a "factor" or ratio of rates between two different states. After reading chapter 5, it is now apparent that the term "emission factors" has multiple definitions and units. Including this term in the glossary (with its multiple uses) would be helpful.		Reject. The authors of the Wetlands Supplement decided to not repeat defintions from the 2006 GLs.
GC_4_047	Australia	4	978	985	Replace "emissions" with "removals". This activity results in the accumulation of C not the loss of C.		Accept with modification. To be consistent with other chapters, the use of "emissions" is retained but this is clarified in the table as a footnote.
GC_4_048	Denmark	4	989	989	The referece to Table 4.14 is wrong. Should be Table 4.12		Accept
GC_4_049	Canada	4	989	989	The wrong table is cited. Table 4.12 should be cited instead.		Accept
GC_4_050	Canada	4	1003	1003	Does "BD" mean bulk density? Suggest this be clearly defined.		Accept
GC_4_051	Australia	4	1033	1041	Replace "emissions" with "removals". This activity results in the accumulation of C not the loss of C.		Accept with modification. To be consistent with other chapters, the use of "emissions" is retained but this is clarified in the table as a footnote. (repeated from above)
GC_4_052	Canada	4	1068	1068	Fix the CO2 subscript		Accept
GC_4_053	Australia	4	1073	1074	A change in land-use category does not necessarily follow a drainage event. Suggest redraft along lines of " It is important to retain information about drained coastal wetlands so that guidance in this...."		Accept
GC_4_054	Canada	4	1079	1079	Fix the CO2 subscript		Accept
GC_4_055	Canada	4	1119	1119	Does "BD" mean bulk density? Suggest this be clearly defined.		Accept

GC_4_056	Denmark	4	1127	1127	There is no time limit for EF_DR in table 4.13. It is unclear how the SOC stock in table 4.11 is derived. In the case of seagrass meadow the default is 108 ton. If the loss rate is 7.9 ton/ha/yr, then the soil will be fully depleated within 14 years. Please include further text on that depletion cannot take beyound the SOC stock unless.... or that the degradation rate is reduced over time. This is important for the mineral soils. It is important to stretch that if the drained soils are converted to e.g grassland and are mineral, then in fact there is happening a land use conversion and then the default method from wetlands to Cropland, Forst or Grassland should be used with the SOC changes factors in 2006 IPCC guidelines and for mineral soils the factors in chapter 5 IWMS - as far as possible.		Accept with modification. The drainage EF does not apply to seagrass meadows. The time limit was clarified by reference to the soil C stock table 4.11 and when the 2006 IPCC Guidelines apply.
GC_4_057	USA	4	1127	1128	In determining the emission factors, was consideration given to changes in the DIC flux resulting from draining tidal marshes and mangroves? One possibility is that the net export of DIC declines after the soil is drained and some of the observed increase in CO2 flux is attributed to this reduced tidal flushing of DIC.		Accept with modification. DIC is covered in the section on Future Methodological Development.
GC_4_058	Canada	4	1198	1204	Suggest explaining why CH4 emissions do not seem to be linked to vegetation establishment, but CO2 is. Aren't vegetation productivity and salinity of equal importance in controlling CH4 emissions?		Accept with modification. For Tier 1 estimation, salinity, as a proxy for sulfate concentration is much more important. Productivity is only important in terms of DOC released by living plants. Could add "regardless of organic matter content." after CH4 on line 1202.
GC_4_059	China	4	1242	1243	The recommended default value for the coastal wetlands of low salinity (ppt=0.5-5) used here is rather high. It stands at 1120 kg CH4 ha-1 yr-1, higher than the emission factor of tropical inland freshwater mineral soils. In the guidelines, with no regard to the high CH4 emission factor of ditch draining organic soils, this default value for emissions is highest, which, in theory, is not reasonable. It is suggested to check the robustness of data.		Accept. Error has been corrected.
GC_4_060	Japan	4	1276	1288	We suggest adding an explanation in Section 4.3.2 as follows; “A country can exclude N2O emissions from estimation which occur during aquaculture conducted in non-mangroves, non-tidal marsh or off-shore where no seagrass meadows exist”. The aim of this adding is keeping a consistency with the coastal wetlands boundary suggested in this wetlands guideline.		Accept
GC_4_061	Denmark	4	1311	1311	Hu et al. 2012 has not estimated that 1.8% of nitrogen fed to aquaculture systesm is emitted as N2O. The figure is based on N2O emission from waste water treatment and not to aquaculture. Please be precise or make the same assumption as Hu et al. 2012, that the same EF is assumed for N entering the aquatic enviroment.		Accept.
GC_4_062	Denmark	4	1317	1317	It is suggested to include shrimps also as production.		Accept
GC_4_063	USA	4	1934	1965	Including this section is important since it outlines the methodological challenges ahead in determining surface flux normalized rates of dissolved carbon export. The authors should be sure to retain this section.		Noted

GC_4_064	Australia	4	Box 4.1		Reference to deforestation in the final sentence in Box 4.1 should be re-worded as: When mangroves are classified as Forest Land and undergo clearing, or drainage and converted to a new land-use category.		Accept
GC_4_065	Australia	4	General		The coastal wetlands chapter is seeking to deal with a complex and difficult topic. The authors have achieved an important balance between the desirability of providing additional information and the need to take into account practical limitations, including inventory capacity and the current state of scientific knowledge. This balance is essential if this document is likely to form the basis for further commitments and reporting in relation, in particular, to seagrass meadows. Without this balance, it may be more appropriate to include information on seagrass in an annex to the Supplement, consistent with the existing treatment of a number of different topics within the wetlands context, for example, flooded lands remaining flooded lands.		Noted.
GC_4_066	Finland	4	General		Finland acknowledges the importance of seagrasses in the global carbon balance, and related concerns on the decline of seagrass meadows especially in tropical or warm temperate climate zones. However, our evaluaton of the methodological guidance is that it is not yet mature for use in national greenhouse gas inventories. Previous IPCC methodological reports have established the practice to include guidance for which the underlying science for methodological guidance is this still preliminary in appendices to indicate that countries do not have to prepare estimates for these categories. We propose to move all guidance addressing seagrass meadows to an appendix. Reasoning: The activity data for seagrass meadows is very scarce in most countries, general and rough maps or databases with data on areas where seagrass meadows may occur are not sufficient for the development of annual changes in carbon stocks for these ecosystems, especially as the data would need to be combined with data on extraction - also not available directly from statistics in most countries. Also, the availability of data do not cover the whole times series for inventory preparation. In addition, default values for soils carbon stock values for seagrass meadows are provided as a global values with a huge range (9 to 829 tonnes C per ha). Guidance for develeping country-specific carbon stocks for national seagrasses or how to develop estimates for the areas with seagrass is not provided. Overall, Chapter 4 does not provide sufficiently guidance for countries to develop an inventory for carbon stock changes in seagrass meadows. The estimates provided using the guidance would increase uncertainties in inventories significantly. More time is need for further development. We raised concerns about this issue already in our governmental comments on the SOD of the Supplement.		Noted. In relation to the reasoning for removing seagrass meadows to an appendix, we would like to elucidate the following points. 1] Distribution maps of seagrass are not required as it is not necessary to overlay maps of seagrass abundance by those of an activity. It is only where the activity (extraction, aquaculture, revegetation)occurs that the occurrence of seagrass is relevant. For these aforementioned activities a licence or permission is generally required and is associated with an environmental impact assessment , which will include a record of whether a seagrass meadow is affected. 2] Where data is not available for time series development we have added potential sources of relevant statistics to be used as surrogate data in section 4.2.2.1 “Choice of Activity Data”. 3] with regard to the comment on the range of C stocks that contribute to the global mean seagrass soil stock, we would like to point out that the distribution is extremely skewed. There is an asymmetry towards rare, but high, stocks. This results in only a slightly higher mean, than median, value and indicates that the few high values (contributing to the wide range) do not greatly change the geometric mean value.
GC_4_067	Australia	4	Table 4.1		footnote 1: References to Afforestation and Deforestation could be changed to ensure applicability to all UNFCCC Parties. Suggest change to "including conversion to Forest land or conversion from Forest land to other land uses		Accept

<Chapter 5>

Comment #	Country	Chapter/Section	Start Line Number	End Line Number	Comment	Supplementary Documents	Author Actions
GC_5_001	Germany	5	1	1112	a well consolidated chapter. Easy to use in addition to guidance given in the 2006 IPCC Guidelines.		Noted
GC_5_002	Germany	5	35	35	Add subchapter 5.4.2 Reporting and Documentation		Accept - Subchapter 5.4.2. Added
GC_5_003	Japan	5	122		Delete the superscript “b” on the word “IWMS” at the row of Wetlands in Table 5.1. There is no correspondent explanation as footnote.		Accept - superscript removed
GC_5_004	Canada	5	229	287	Section 5.2.1.1 is quite long for a section on guidance that remains unchanged. Is this re-description of the guidance in the 2006 GLs really needed? Suggest reviewing.		Accept with modification. Lines 243-249 and lines 252-254 were deleted. Lines 235-238 were moved to line 243. The Choice of Activity Data section was left unchanged as this is updated from the 2006GL.
GC_5_005	Canada	5	292	297	Suggest also including paludification from forestry, and thawing of permafrost, especially discontinuous permafrost. References could include: Lavoie, M., Pare, D., and Bergeron, Y. 2005. Impact of global change and forest management on carbon sequestration in northern forested peatlands. Env. Rev. 13(4): 199−240. Fenton, N., Bergeron, Y., and Paré, D. 2010. Decomposition rates of bryophytes in managed boreal forests: influence of bryophyte species and forest harvesting. Plant Soil, 336(1): 499−508. Schuur, E. A. G. and B. Abbott (2011). "Climate change: High risk of permafrost thaw." Nature 480(7375): 32-33.		Accept with modification. This sentence was edited to include reference to paludification (Lavoie et al., 2005). We are not considering permafrost thaw, so it is not mentioned.
GC_5_006	Canada	5	365	366	In Table 5.2, n=6 for Boreal seems very low. In Canada there are several publications and data sources for soil C estimates in wetlands as defined here. Restricting the estimation depth to 30 cm may not be appropriate for forested areas where rooting depths, and pedological processes relevant to soil C occur much deeper than 30 cm. Soil C stocks can double if C at depth is included. References could include: Tarnocai, C. (2000). Carbon pools in soils of the Arctic, Subarctic, and Boreal regions of Canada. Global climate change and cold regions ecosystems. R. Lai, J. M. Kimble and B. A. Stewart. Boca Raton, CRC Press LLC, 2000 N.W. Corporate Blvd., Boca Raton, Florida 33431: 91-103. Tarnocai, C. (1997). The amount or organic carbon in various soil orders and ecological provinces in Canada. Soil processes and the carbon cycle. R. Lal, J. M. Kimble, R. F. Follett and B. A. Stewart. Boca Raton, Florida, CRC Press: 81-92. Shaw, C., E. Banfield, et al. (2008). "Stratifying soils into pedogenically similar categories for modeling forest soil carbon." Can.J. Soil Sci 88: 501-516.		Reject. We would like to add more data to Table 5.2 but it needs to be in the correct format to be merged with the current data set from Batjes (2011) and the assumptions set forth in the 2006 guidelines. For example, the Tarnocai reference does not indicate if soils are "wet" (i.e. IWMS) and the Shaw et al. paper doesn't have soil depths that match 0-30 cm. Furthermore, the values presented by Tarnocai (1997, 117 tonnes C ha-1; 2000, 142 tonnes C ha-1) fall within the range presented in Table 5.2 for Boreal soils, and thus would not likely significantly change the value currently presented. We agree that deeper soil pools can be used at higher tiers if data is available.
GC_5_007	Canada	5	365	366	Footnote E is missing in the description box.		Accept with modification. Superscript "E" was removed.
GC_5_008	Japan	5	365		Delete the superscript “E” on the word “n/a” at the row of “Cold temperate, dry” in Table 5.2. There is no correspondent explanation as footnote.		Accept

GC_5_009	Canada	5	378	400	It is unclear whether this text (with no heading to indicate a change in topic) simply updates existing EFs in the 2006 GLs, or introduces completely new sources "Long-term cultivated cropland on IWMS" and "Rewetting of Cropland on IWMS". If it is an EF update, then suggest indicating the exact equations in the 2006 GLs with which the EFs should be used. If these are new source categories, develop a full section (with a heading) with a rationale, choice of methods, and proper equations. As the chapter stands now, the reader does not know how to use the information in table 5.3. This part of chapter 5 may still need substantive work - with no opportunity for review, suggest considering moving this section to an annex.		Accept with modification. This section simply updates the 2006 GLs by providing 1) updated values of FLU for long-term cultivated Cropland with IWMS and 2) new values for FLU for rewetted Cropland with IWMS. Although the new values introduce a land-use subcategory within Cropland with IWMS, they do not - strictly speaking - constitute a completely new source. The overall treatment is consistent with the approach of the 2006 GL. Furthermore, the exact same equation from the 2006 GL is utilized (Eq. 2.25, which is refererred to in the text already). Therefore, we do not see a need to develop a separate section. In response to the suggestion that this be moved to an annex, we are firmly opposed to this. It has already gone through Government and Expert review during the SOD review. To clarify the application of these updated and new FLU values, we have added a Box with an example (Box 5.3).
GC_5_010	USA	5	488	512	The step by step recipe for Tier 1 change in SOC is helpful for unifying the entire chapter. The authors should be sure to retain this section.		Accept
GC_5_011	Canada	5	650	787	Guidance for Inland Wetland Mineral Soils in “Land Converted to a New Land-Use Category” seems redundant as much of the guidance is the same as for “Land Remaining in a Land-Use Category”. The need for a separation between “land converted to” and “land remaining in” and land-use category is justified in the 2006 IPCC guidelines for example, when the increase in biomass growth rates and soil decomposition occurs primarily during the first 20 years following changes in management. After 20 years it is assumed that a new equilibrium will occur. However, the assumption of these equilibrium conditions after 20 years is not utilized in the case of Inland Wetland Mineral Soils, at least for Tier 1 guidance, except for rewetting from 21–40 years. Given that Inland Wetland Mineral Soils can occur in any of the land-use or “land converted to” and “land remaining in” categories suggest presenting general guidance and propose that countries apply the land-use transition as appropriate. This would also improve the consistency within the whole document as Chapter 3 and 4 provide overall guidance.		Reject. We assert that the application of the FLUs are most clearly explained when there are separate sections for "Land Remaining in…" and "Land Converted…". Inventory compliers are very familiar with this format in the 2006 GL for Croplands, and we have decided it is more appropropriate to be consistent with the 2006 GL than with Chapters 3 and 4 of the Supplement which don't cover Croplands.
GC_5_012	Germany	5	845	846	Table 5A.2.2: Please describe in more detail which figures are considered for obtaining the mean CH4 emission under created/rewetted or natural.		Accept. Footnotes were added to Table 5A.2.1 listing the studies that are provided in Table 5A.2.1 which were used to determine the mean CH4 emission for created/rewettted and natrual wetlands.

GC_5_013	Germany	5	851	852	Emission factors change from SOD to FD to lower values, some studies were excluded, why?		Accept with modification. The studies used to calculate mean CH4 emission from Continuously and Intermittently Inundated wetlands in the SOD (table 5A.2.2 in SOD), a total of 19 studies (8+11), are the exact same studies used in the Final Order Draft (table 5A.2.3 in FOD; 5+14 = 19 studies). However, three of the studies that were categorized as "continuous" in the SOD were re-classified as "intermittent" for the Final Order Draft as a result of expert comments during the SOD review (Song et al., 2003 value for Deyeuxia marshes; Huang et al., 2010) or by the authors after re-examination of the publication (Pulliam, 1993). The means were re-calculated, resulting in values different from those in the SOD. Footnotes have been added to Table 5A.2.3 listing which studies from Table 5A.2.1 are used in the calculations.
GC_5_014	Canada	5	856	856	Suggest changing "are important carbon stock compartments" to "are large carbon sinks"		Reject - We want to stress that IWMS areas can contain large amounts of carbon. We don't consider if these areas are sinks or sources of carbon, that is why we reject this change

<Chapter 6>

Comment #	Country	Chapter /Section	Start Line Number	End Line Number	Comment	Supplementary documents	Author Actions
GC_6_001	Indonesia	6	188	188	Please include the definition of acronyms included in Column 1		Noted: The acronymes have been refered in the above paragraphs (116-145). Those are also listed in glossary.
GC_6_002	Germany	6	188	189	Remarkable changes of values, why?		Noted: We have introduced more related references and analyzed the value again to ensure the reliability of the guideline.
GC_6_003	Germany	6	188	189	Not all of the literature sources quoted in table 6.2 apply for wastewater treatment systems. Wild 2006 is about constructed wetlands for peatland restoration. This should not be applicable here and EFs are not applicable in the same way for constructed wetlands for wastewater management. Liikanen et al 2006 is about constructed wetlands pruifying peat mining runoff water. This is also a completely different purpose than regular wastewater treatment and should not be quoted for this purpose.		Noted: Both literature sources can be used in EF analysis. Wild et al 2006 is considering agricultural non-point polluted water treatment in restored wetlands of Donaumoos, Germany, thus being relevant for the calculation of CH4 and N2O emission ratio for free water surface wetlands. The quality of runoff water from the Kompsasuo peat extraction area (Liikanen et al., 2006) is sometimes comparable with domestic wastewater (especially, when considering N & P values). Thus, again, for the calculation of emission ratios it is suitable. Basically, all the created riverine and free water surface constructed wetlands, even someshallow ponds, are similar in their pattern and processes, thus serving well to compare relevant performance parameters: the N and P forms are basically the same, the C can differ in terms of quality of organic compounds. This is, however, not significant or relevant when comparing a wide range of loadings and emission ratios.
GC_6_004	Germany	6	188	189	Johannsson et al 2004 is quoted for the CH4 emissions from SF whereas the source only deals with N2O emissions. The source is not quoted for N2O emissions. This creates considerable doubts of the literature review conducted.		Noted: There are two papers of Johansson et al: one, Johansson et al 2003 Tellus is considering N2O emission, and the second one, Johansson et al 2004 Water Research is considering CH4 fluxes. Thus, they are both adequate and can be used for the calculation of emission ratios.
GC_6_005	Germany	6	188	189	The source Stadmark and Leonardson 2005 is a laboratory experiment and does not deal with any on-site measurements from constructed wetlands.		Noted: Stadmark and Leonardson 2005 Ecological Engineering conducted their study in the field in three ponds (i.e., free water surface constructed wetlands) of Scania, Sweden. In the field, CH4 emission was measured with a static chamber technique at the central parts of the ponds.

GC_6_006	Germany	6	188	189	Fey at el 1999: Measurements were only conducted over winter and in one season and cannot be extrapolated for the entire year or be generalized. The authors themselves state that 'Highly varying amounts of N2O were emitted at all measuring dates during the winter.'. This does not indicate usefulness to derive global default parameters.		Noted: This liturature source is useful for analysis of EF. The winter emissions of N2O are sometimes higher, and in many cases at the same level with emission values measured in summer (warmer) period. Variability is a large problem of all the N2O and CH4 measurements, therefore the confident limits are so large. Specifically, in terms of Fey et al 1999 study: the winter period (from November to April) values were used for the whole year while the performance of the HSSF CW (regarding the BOD value) was at the level of summer performances. Based on the statistic analysis of many collected literatures, we found that there is no good correlation between N2O and temperature. Therefore, we extrapolated the winter data for entire year.
GC_6_007	Germany	6	188	189	Garcia et al 2007 is about a laboratory test in reactors and does not provide parameters for in-situ constructed wetlands.		Noted: As the authors (Garcia et al 2007 Bioresource Technology) point out in their paper, this was a in situ measurement of CO2 and CH4 emissions from the gravel of a HSSF CW. Direct citation from the paper: “Field gas emissions were measured in two SSF (named A1 and A2) of a pilot plant located in Les Franqueses del Valle`s, Barcelona (Spain). This pilot plant treats the urban wastewater of a housing scheme named Can Suquet and is made up by an Imhoff tank for primary treatment followed by eight parallel SSF. All the SSF have approximately the same surface area (55 m2).” The gravel used in HSSFs originated from a former HSSF.
GC_6_008	Germany	6	188	189	Tanner et al. 1997 only measured CH4 emissions during mid-summer, thus should not be quoted for emissions during the entire year.		Noted: Tanner et al. 1997 studied the measurement in the North Island of New Zealand, the variation of temperature in summer and winter are not large. Daily maximum temperatures range from about 22 to 26C (72–79F) in January and February to 10 to 15C (50–59F) in July and August. LAs considered according to scientific rationale and the quality of published journal to include this paper in the estimation.

GC_6_009	Germany	6	188	189	Chiemchaisri et al 2009 is dealing with HSF wetlands for the treatment of leachate from solid waste disposal sites. This is also an entirely different application than for domestic wastewater and the results should not be used to derive EF for wastewater.		Noted: The types of wastewater covered in this chapter include leachate from landfill (see table 6.2). In addition, although, the domestic/municipal wastewater and landfill leachate differ in quality of wastewater parameters, the loading is comparable wilth municipal and farming wastewaters. Again, for the calculations of emission ratios (in this particular case only for CH4), the use of these data is suitable.
GC_6_010	Germany	6	188	189	Ström et al. 2006 also only conducted measurements druing part of the year and extrapolated emissions over a year, whereas Sovik et al 2006 clearly showed the seasonal effects of emissions.		Noted: Ström et al 2006 was published in WEM the high quality peer reviewed journal. Their study was on flux measurements were carried out between 21 April and 20 May. The annual emission was estimates with an assumption that there are 7-months season with condition similar to the study period. LAs considered according to scientific rationale and the quality of published journal to include this paper in the estimation. Soevik et al 2006 brings several examples of CWs for both CH4 and N2O ratios but not for the Hässleholm-Magle wetland studied by Ström et al. Certainly, some seasonal fluctuation of data, especially for CH4 fluxes, is highlighted in this paper. LAs has taken this issues into our discussion during LA 2 and LA3 and considered that the season effect can be reflected in the uncertainty. For country that have specific EF with precise seasonal condition EF can use Tier 2 for estimation of methane and nitrous oxide emission.
GC_6_011	Germany	6	191	192	In this sentence CW are mentioned as uncollected wastewater which is incosnsitent with Figure 6.2 where they are shown under collected.		Accepted with modification: Because this sentence made confusion, it was removed and "CH4" was added to the next sentence as follows. "This Wetlands Supplement includes guidance on estimation of CH4 and N2O emissions from CWs and SNTWs." To ensure that chapter 6 covers CWs/SNTWs treating industrial wastewater on site, figure 6.2 was corrected and CWs/SNTWs are under both collected/uncollected and treated pathway. Relevant sentences were also corrected in the text: line number 201,206,364,387,417,500-501

GC_6_012	Germany	6	210	211	collected runoff from agricultural lands is not wastewater and should be deleted from this chapter, leachate from landfills also do not belong here		Rejected: In order to have the full coverage of wastewater from sources treated by CWs, leachate from LF and collected run off from agricultural land are included in this chapter and considered as wastewater. There are many liteature classified these sources as wastewater.
GC_6_013	Germany	6	215	216	The sentence on double counting and leachate that must be subtracted from solid waste is entirly incomprehensible. This is a chapter on wastewater, not solid waste disposal. N2O from leachate are not part of this chapter.		Rejected: This sentence was added according to previous comments from expert and government review in order to make clear explanation of the total C in solid waste and the C in leachate. Although this chapter is not on solid waste, as the estimation of emission from solid waste disposal on land has already taken into account DOC in waste, therefore, the DOC in leachate which is converted to CH4 during leachate treatment has to be substracted from DOC in waste to avoid double counting.
GC_6_014	Germany	6	220	221	The wastewater types (agricultural runoff and leachate from landfills) are inconsistent with 2006 IPCC Guidelines.		Rejected: CWs is generally used for wastewater treatment. According to latest scientific literatures, we've got EFs for CWs/SNTWs treating these wastewater. So in this supplement, collected agricaltural runoff and leachate from landfill are classified as wastewater treatment. Indirect N2O emissions from N leaching and runoff from agricultural land are considered in Chapter 11, Volume 4 of the 2006 IPCC Guidelines.
GC_6_015	Germany	6	232	234	The description of the Tier 3 method is inapproriate as it does not mention key influencing parameters such as climate or water temparture and seasonal effects		Accepted: key influencing parameters such as climate, temperature and seasonal effects were added in this sentence.

GC_6_016	Germany	6	245	247	Equation 6.1 is based on AD that is unavailable at national level in most countries outside of reseach contexts. Data on total organics entering CWs is not collected as these systems are usually outside centralized collection systems and they are usually very small, btu may be numerous. It would be an undue burden for the owners of these small CWs to measure and report organics entering their small CW to the national level and it is very costly to design surveys to collect such data. Taken into account the general recommendation from IPCC 2006 GPG that data collection activities should be resource-efficient and that countries should take into account key categories and impact on emission levels and trends in data collection activities, it would be an undue burden for most countries to collect the required AD taking into account that the emissions are already incldued in the current wastewater methodology.		Accept with modification: CW is one of the wastewater treatment technology and not covered in 2006 GL. This supplement provides methodology for estimation of methane and nitroudsoxide emission from wastewater treated by CWs. The following sentences are added in line 95 of the final draft : It is good practice that reporting of emissions from wastewater treatment be complete, covering all domestic and industrial wastewater. CW is a wastewater treatment pathway not described specifically in 2006 IPCC Guidelines. It is good practice that countries apply the guidance in this chapter on 'constructed wetlands', if emissions from CWs represent a key wastewater treatment pathway. In accordance with Chapter 4 of Volume 1, those subcategories that together contribute more than 60 percent to a key category should be treated as significant. When wastewater treatment is identified as a key category, key pathways are identified in the same way as significant subcategories. In case countries have access to data and information on wastewater treatment by CWs, it is a good practice to use this guidance to estimate emissions from CWs.
GC_6_017	Germany	6	258	259	Decision tree neglects the potential double counting. From the box stating that emissions should be estimated, it is necessary to add a link to the box on other wastewater emissions and request the subtraction from the population used.		Rejected: Dicision tree identifies avialability of AD and EF and guide inventory complier to the Tier used. Specific information of population used in the AD is indicated in the choice of AD which is the second step (worksheets) that the guideline lead the complier to follow.
GC_6_018	Germany	6	258	259	In the box "Is CW a key pathway of key category" : this is not sufficiently clear and nowhere is it defined what a key pathway is.		Rejected: This term is being used in IPCC 2006 GL
GC_6_019	Germany	6	258	259	Difference between measurement data and measured data is unclear.		Accepted: 'or measured data' is deleted.
GC_6_020	Denmark	6	263		The term MCF is incorrect written as Methane Correction Factor. MCF is the fraction of the organic matter converted to methane and thus more correctly a conversion factor. It is not a correction factor. A correction is something you are doing when you have a bias in your measurements.		Rejected: Volume 5 Waste in IPCC 2006 GL used MCF as the Methane Correction Factor not Methane Conversion Factor. Because it is indicated as degree in which the system is anaerobic. This chapter is supplement for Chapter 6 WASTEWATER TREATMENT AND DISCHARGE, Volume 5 in the 2006 IPCC Guidelines, and follows this manner.
GC_6_021	Indonesia	6	284	285	Please include "(CW)" and "(MCF)" in the table's title.		Accepted: We added the abbreviations in the title of Table 6.4.

GC_6_022	Germany	6	353	354	Explain changes in relation to SOD for the uncertainty range for Methane correction factor.		Noted: The changes are due to the new information and more references during the SOD. These references were taken into account in the estimation of MCF
GC_6_023	Germany	6	383	396	This is general guidance on wastewater which does not belong in this supplement.		Noted: Following an invitation from the UNFCCC to "undertake further methodological work on wetlands, focusing on the rewetting and restoration of peatland, with a view to filling in the gaps in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories" (FCCC/SBSTA/2010/13, paragraph 72), an IPCC Expert Meeting on Scoping Additional Guidance on Wetlands was held on 30 March-1 April 2011 in Geneva, Switzerland. The meeting concluded that "Since the 2006 IPCC Guidelines were completed much new scientific information is now available about various wetlands that enable emissions and removals to be estimated from wetland restoration and rewetting especially for peat lands. The meeting recommended that the IPCC provide additional methodological guidelines for the rewetting and restoration of peat land; emissions from fires, ditches and waterborne carbon; and constructed wetlands for waste water disposal, to fill gaps in the existing guidelines" and its proposal was presented to the 33rd session of the IPCC (IPCC 33) held on 10-13 May 2011, in Abu Dhabi, United Arab Emirates. The Chapter Outline which was approved by the IPCC 33 includes the chapter on Constructed Wetlands for Wastewater Treatment.
GC_6_024	Denmark	6	485	485	Waste water generation W (m3/ton) in table 6.6 is recommended to be clarified in the text. E.g. for meat and poultry: What is 13 m3/ton. Is it 13 m3 per ton processed meat or per ton what?		Accepted: The wastewater generation in Table 6.6 is directly obtained from Table 6.9 of 2006 IPCC GL which is m3/ton product. We revised the unit of wastewater generation W as "m3/ton-product" in the text and Table 6.6.
GC_6_025	Germany	6	493	496	The default uncertainties provided for CH4-C and N2O-N seem unreasonably low taking into account the huge range of emissions presented in the chapter and literature quoted.		Noted: The wide range was found in influent of TOC and TN loadings as well as in CH4-C and N2O-N emissions. Uncertainty is estimated from the MCF that derived from TOC and TN loadings and emissions (see table 6.2 column CH4-C/TOC and N2O-N/TN).
GC_6_026	Indonesia	6	682	683	Please add heading of column 1 of Table 6A1.1 and define the acronyms in the table footnote.		Accepted: The column one heading "Types of Wetlands" was added.

GC_6_027	Denmark	6	General		Please use the same notation as in the other chapters,		Noted: Unfortunately that specific notation did not addressed in this comments, nevertheless, authors will check the consistency of the notation in chapter 6 to ensure the consistency across the supplement.
GC_6_028	Finland	6	General		The guidance on CH4 and N2O emissions from constructed wetlands for wastewater treatment (WWT) is related to the Waste sector and means further disaggregation of the treatment technologies addressed in this sector. Hence these emissions are already covered in the inventory, even if they may not be categorised as emissions from "constructed wetlands" in current reporting. Overall, global and country-specific emissions from WWT are of small importance (especially in developed countries where these emissions are often negligible). The EFs provided are of the same order or even lower as those given for the wastewater treatment types in the 2006 IPCC GLs. Constructed wetlands or the types of treatment (SF, HSSF abd VSSF) are not found in WWT statistics. The implementation of the guidance in Chapter 6 would require the establishment of new data collection but increase the accuracy of reporting very little, especially as the MCF default values provided are global and do not take into account differences in e.g. climate. Climate influences the emissions significantly, as constructed wetlands are "out in the free" and the emissions are affected especially by rainfall and temperature. Based on this evaluation we suggest including this chapter in an appendix - further justification would be needed to require implementation of new resource consuming methodologies for very insignificant emissions with very large uncertainties (as indicated in Table 6.2). Significance was a criteria for development in new methodologies in the terms of references for 2006 IPCC Gls.		Accepted with modification: The following sentences are added in line 95 of the final draft: It is good practice that reporting of emissions from wastewater treatment be complete, covering all domestic and industrial wastewater. CW is a wastewater treatment pathway not described specifically in 2006 IPCC Guidelines. It is good practice that countries apply the guidance in this chapter on 'constructed wetlands', if emissions from CWs represent a key wastewater treatment pathway. In accordance with Chapter 4 of Volume 1, those subcategories that together contribute more than 60 percent to a key category should be treated as significant. When wastewater treatment is identified as a key category, key pathways are identified in the same way as significant subcategories. In case countries have access to data and information on wastewater treatment by CWs, it is a good practice to use this guidance to estimate emissions from CWs.
GC_6_029	Germany	6	General		Germany proposes to move chapter 6 on 'constructed wetlands for wastewater treatment' into an appendix of the wetlands supplement for the following reasons and does not wish to keep this chapter in the main report:		Noted: Please see answers below.

GC_6_030	Germany	6	General		1. The mandate provided for the work by the UNFCCC was to fill the gaps in the reporting of focusing on the rewetting and restoration of peatland, with a view to filling in the gaps in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories in these areas. Germany does not see a similar gap related to the emissions from constructed wetlands.		Noted: Following an invitation from the UNFCCC to "undertake further methodological work on wetlands, focusing on the rewetting and restoration of peatland, with a view to filling in the gaps in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories" (FCCC/SBSTA/2010/13, paragraph 72), an IPCC Expert Meeting on Scoping Additional Guidance on Wetlands was held on 30 March-1 April 2011 in Geneva, Switzerland. The meeting concluded that "Since the 2006 IPCC Guidelines were completed much new scientific information is now available about various wetlands that enable emissions and removals to be estimated from wetland restoration and rewetting especially for peat lands. The meeting recommended that the IPCC provide additional methodological guidelines for the rewetting and restoration of peat land; emissions from fires, ditches and waterborne carbon; and constructed wetlands for waste water disposal, to fill gaps in the existing guidelines" and its proposal was presented to the 33rd session of the IPCC (IPCC 33) held on 10-13 May 2011, in Abu Dhabi, United Arab Emirates. The Chapter Outline which was approved by the IPCC 33 includes the chapter on Constructed Wetlands for Wastewater Treatment. Please also see 1.1 Background in chapter 1 of this wetland Supplement.
GC_6_031	Germany	6	General		2. The chapter does not provide any data, that globally or for specific countries, 'constructed wetlands' result in substantial emissions that are not yet quantified in national GHG inventories. The 2006 IPCC Guidelines provide guidance for inventories at national level, not guidance to estimate emissions for specific singular treatment facilities. As such discussion on the relevance of these emissions is entirely lacking in chapter 6 and has not been proven, that these emissions are relevant at national level, the chapter should not be adopted and integrated in the inventory guidance. Some of the quoted sources for EFs (e.g. Tanner et al. 1997) also show similar CH4 emissions compared to natural wetlands or rice paddies. From this perspective it is unclear why spearate guidance is necessary when emissions are the same as for other wetlands. The source Teiter S., Mander Ü (2005) mention that the global influence of CWs is not significant. Even if all global domestic wastewater were treated by wetlands, their share of the trace gas emission budget would be less than 1%.		Accepted with modification: The following sentences are added in line 95 of the final draft: It is good practice that reporting of emissions from wastewater treatment be complete, covering all domestic and industrial wastewater. CW is a wastewater treatment pathway not described specifically in 2006 IPCC Guidelines. It is good practice that countries apply the guidance in this chapter on 'constructed wetlands', if emissions from CWs represent a key wastewater treatment pathway. In accordance with Chapter 4 of Volume 1, those subcategories that together contribute more than 60 percent to a key category should be treated as significant. When wastewater treatment is identified as a key category, key pathways are identified in the same way as significant subcategories. In case countries have access to data and information on wastewater treatment by CWs, it is a good practice to use this guidance to estimate emissions from CWs.

GC_6_032	Germany	6	General		3.The methodology proposed is likely to result in double-counting of wastewater emissions when chapter 6 "Wastewater Treatment and Discharge" is implemented. Double-counting is only mentioned in a footnote and not sufficiently explained and not captured in a good practice recommendation which would be essential for such an important aspect. General equation 6.3 for wastewater emissions on p.6.13 of 2006 IPCC Guidelines as a first step calculates TOW for domestic wastewater based on total population of the country. This TOW is in a 2nd step attributed to different wastewater treatment / discharge pathway or systems. Thus equation 6.3 of 2006 IPCC Guidelines already accounts for total TOW. The general steps of the wastewater chapter are no longer followed in the supplement. Thus inventories already account for total domestic wastewater. The extremly small portions of this total amount that may go to constructed wetlands are currently assigned to treatment systems outside centralized collection such as latrines or anaerobic lagoons which have higher MCFs than those suggested for constructed wetlands. Thus from a global perspective an insignificant share of wastewater emissions may currently be slightly overestimated, but this does not represent a gap in current emissions. WIthout a clearer warning, it is likely that the proposed method will result in double counting in national inventories.		Accepted with modification: Double counting issue is clearly explained in line 327-329 in relation to equation 6.3. Nevertheless, to be clearer, sentence elaborate on the substraction will be moved to line 319 after the deffinition of Pj (population)

GC_6_033	Germany	6	General, equation 6.1		4. The methodology provided is incomplete in several ways: a. the CH4 and N2O emissions from wastewater will clearly depend on climate conditions, both temperature and rainfall. In some of the references quoted in the chapter, water temperature was seen as a key parameter that predicts emissions. (e.g. Stadmark and Leonardson 2005), however no such relationship taken into account in the methodology and the default paramters will be applicable to all climate zones.Constructed wetlands may dry out over summer in temperate climates resulting in no emissions in these periods and may be diluted by strong rainfalls in other periods of the year. It does not seem scientifically appropriate refrain from taking climate conditions into in the equation. The sources quoted also report a clear relationship between emissions and plant types used which is not reflected in the methodology. Instead the 'industrial sector' is taken into account in equation 6.1, but it is not explained in the methodology why this is important and how this should be done. MCFs are only provided for CW types and no differentiation is made how those would depend on the 'industrial sector'. Industries mentioned in the wetlands chapter such as 'runoff from agriculture lands' or' restaurants' are not industries. b. The second methodological shortcoming is that it is neglected that these constructed wetlands are just 'planted wetlands' that result in carbon stock changes similar to what is described in 'rewetting of organic and mineral soils' and can accumulate substantial amounts of carbon. But in chapter 6 the real 'wetland' aspects of these planted wetlands are not considered at all. Complete balances for constructed wetlands (e.g. from sources from China) show that a complete balance of emissions and removals is likely to result in net removals from constructed wetlands.		Accepted with modification: a) The parameters such as operating and environment conditions including vegetation types and temperature effect have been considered and explanation has been provided in line 286-290 in the final draft of chapter 6. However, we modified text to make it clearer. Please see line 286-288. b) We have serious discussion on this issue. Although there are some information on the C stock of the CW, this knowledge is not matured enough to lay down the methodology or emission factor.

GC_6_034	Germany	6	General, table 6.4		5. The sources for the default parameters (MCF) and default uncertainties are not clearly provided in chapter 6 (table 6.4). It is just mentioned that they come from literture review, but sources without providing any literature source that was used for this purpose. This is not good scientific practice and connot be accepted as a basis for national GHG inventories. The MCFs provided will depend on the types of plants used, on the climate zones from which they are derived and from the way these systems are managed. In the equation it is stated that the EFs depend on the industrial sector. No country is able to verifiy whether the default MCFs are applicable to the national circumstances. No ranges of the default parameters are provided in a situation where it is highly unlikely that the one value provided matches globally (and different to the related table in the 2006 IPCC Guidelines). This approach does not meet the standards of the 2006 IPCC Guidelines and should therefore not be accepted. Additional comments were used for the corresponing table 6.3 on MCFs in the 2006 IPCC Guidelines to allow countries to assess the applicability of the default parameters. No such information is provided in chapter 6.		Accepted with modification: The sources of MCF have been mentioned in line 283 and well clarified in Table 6.2 . Additional explanation on sources of literature are added in line number 445. Range of MCF are also added in the table 6.4.
GC_6_035	Germany	6	General,Figure 6A1.1		6. Figure 6.A.1.1 on p. 6.25 of the wetlands supplement shows that very few data sources were available to derive the CH4-EF for VSSF-type plants (four sources). For HSSF plants the figure shows that there is no correlation between the inflow TOC and the CH4 emissions. The constructed curve seems rather arbitrary and is unlikely to meet scientific standards for correlations. Therefore it seems inappropriate that EFs are derived from these sources only for HSSF and VSSF. For SF systems there are some more sources, but also these show a high spread which shows that a single MCF without additional information such as climate, temperature, humidity is not sufficient here. As indicated below, several literature sources quoted for the EFs are not applicable and should not have been used for different reasons. Thus scientifically valid measurements are much fewer than those indicated in figure 6.A.1.1. From this perspective Germany concludes that there is not sufficient scientific evidence for the EFs provided in chapter 6.		Accepted with modification: Figure 6.A.1.1 showed the relation of TOC load and CH4-C emission as well as TN load and N2O emission. MCF were estimate from the average of values from literature but not derived from the correlation curve and it is sufficient scientific evidence for the EFs provided in chapter 6. We have modified the figure 6A1.1

<Chapter 7>

Comment #	Country	Chapter /Section	Start Line Number	End Line Number	Comment	supplementary documents	Author Actions
GC_7_001	Germany	7	73	80	Some of the issues are dealt with in the land use chapters. However not comprehensively and systematically. Does this chapter seek to deal with all issues here? Then text in the other chapters could then be deleted.		Noted - the aim has been that the guidance in Chapter 7 is complementary to that given in the other chapters
GC_7_002	Canada	7	95	98	Section 7.2 and Annex 7A.2 refer to AFOLU and Waste sector reporting tables as provided in Volume 1, Annex 8A2 of the 2006 IPCC guidelines. However, the reporting tables for AFOLU are currently being revised through negotiations. While this fact is mentioned in footnote 1 of this chapter, suggest it could also be noted that changes are being applied including the split of AFOLU sector back into Agriculture and LULUCF sectors.		Accepted with modification - following text will be included at the end of the footnote: "The UNFCCC CRF tables are currently being revised. A major difference in the UNFCCC CRF tables compared to the IPCC reporting tables is that the IPCC AFOLU sector will continue to be divided into the Agriculture sector and LULUCF sector in the reporting under the UNFCCC:."
GC_7_003	Canada	7	117	117	Edit to include "the" between "from" and "soil pool"		Accepted
GC_7_004	Australia	7	175	184	Suggest redrafting as follows "These wetlands can occur in any of the six IPCC land-use categories but also in coastal areas which are not part of the total land area of the country. For example, a mangrove wetland with trees may be classified as Forest land, a tidal marsh used for grazing may be classified as Grassland, while a seagrass meadow used for aquaculture may be classified as Settlements. Emissions/removals from coastal wetlands which are not part of the total land area (e.g seagrass meadows) should be reported separately and the associated land areas excluded from the total area of the land-use category and from the land-use matrix3. For example, forest management activities in mangroves classified as Forest Land may need to be split between areas included and not included in the total land area. In reporting the emissions/removals from mangrove forest management activities emissions/removals from both areas would be reported under Forest Land but only the land areas of the mangroves included in the total land area would be included in the total Forest land areas and reported in the land area matrix."		Accepted
GC_7_005	Germany	7	177	179	This is confusing. Areas which are not part of the total land area should not be reported. If the exclusion does not reflect the reality they should first be included in the total land area and then emissions and removals should be reported. See also footnote 3		Noted/rejected - the guidance in Chapter 4 addresses emissions from activities at sea, these cannot be included in the total land area, as they are not land, and would not be covered by the official total land area.
GC_7_006	Canada	7	181	181	Remove the extra space after land-use matrix.		Accepted

GC_7_007	Australia	7	184	186	Suggest sentence is deleted and discussion on inclusion of new Other Wetland remaining Other Wetland and Land Converted to Other Wetland subcategories to allow for complete reporting is included in the second sentence in the para below (line 191)		Accepted - new text in line 191 after the "...Table 3." would read: "Two new categories 3B4aiii Other Wetlands remaining Other Wetlands and 3B4biii Land Converted to Other Wetlands have been added to this table to allow for complete reporting."
GC_7_008	Australia	7	186	189	Suggest redrafting as follows "The classifications of coastal wetlands are country specific, but in all cases appropriate subcategories should be used in the reporting, to reflect the specific land use and management as well as an indication whether the emissions come from areas included or excluded from the total land area of the country."		Accepted
GC_7_009	Canada	7	199		FOOTNOTE 3: There is a typo with an extra 't' after 'the" in the following sentence: "The sum of the areas should match the total land area." In addition this footnote could be further revised after the new CRF tables become final as the structure of the referred land-use change matrix may change as a result of ongoing improvement and negotiations. Chapter 3 of 2006 IPPCC guidelines recommends use of estimates of unmanaged land only as QC approach, there are no requirements for the tracking of unmanaged lands for consistent representation of lands.		Accepted to correct typo The second suggestion is not possible as the Wetlands Supplement will be finalised before the UNFCCC CRFs.
GC_7_010	Germany	7	229	241	Is there difference between "Constructed Wetlands for Waste Water Treatment" and "constructed wetlands". For the latter there is no definition in the glossary or elsewhere. It would be helpful (if there is a difference) to add this definition. If there is no difference, then please use the same term in both of these paragraphs. If "constructed wetlands" are referring to waste water treatment then they are not allowed to be reported under Settlements, Wetlands or other LU categories, but must be reported under Waste (Annex A KP). Please adjust text to reflect this or clarify.		Accept with modification. "in the constructed wetlands" would be deleted at the end of line 232. In lines 233 to 241 the category name "Constructed Wetlands for Wastewater Treatment" would be used. The text in lines 233 to 241 related to the areas, and to reporting of C stock changes due to land conversions is valid. However not that, as these "Constructed Wetlands for Wastewater Treatment" encompass very small areas, specific reporting under LU categories may not be needed in most cases.
GC_7_011	Germany	7	233	233	The chapter is about wetlands for wastewater treatment. Therefore it is unclear if such constructions are meant here, if so then they must reported under category 4D!		See response to previous comment - the reporting of possible impacts on C stock changes would be part of reporting under the land use

GC_7_012	Canada	7	254		Suggest that the Inland Wetland Mineral Soils section of Table 7.1 requires further review and editing. The following sentence is missing the first C of Cropland: “New stock change factors for land-use for long-term cultivation and rewetting of Cropland with IWMS”		Accepted
GC_7_013	Canada	7	254		Suggest that the Coastal Wetlands section of Table 7.1 requires further review and editing. The following words in parentheses need to be included: From (the) following activities: rewetting (and revegetation) in mangroves, tidal marshes and sea grass meadows. A new subcategory under Wetlands would need to (be) created to cover all potential reporting options.		Accepted
GC_7_014	China	7	351	357	Xi in Formula 7.1 could be negative, such as the value of forest carbon sinks. For the sake of a rigorous calculation, it is suggested to reformulate the denominator “|X1+X2+…Xn|” into “|X1|+|X2|+…+|Xn|” in the formula. In addition, Utotal and Ui are interpreted differently in this chapter from the General Volume of the 2006 Guidelines for Inventories. Please check and modify accordingly.		Accepted with modification - the equation is not changed to maintain consistency with the 2006 IPCC Guilelines (see eq. 3.3 in Volume 1, Chapter 3) but a sentence is added to take into consideration the impacts negative values may have and to state that in some cases the absolute values of removals in the denominator could be preferable - Utotal and Ui are not intepreted differently, the describtion is only made shorter.
GC_7_015	Canada	7	371	371	Suggest the reference should be to "Chapter 3" instead of "Chapter 4".		Accepted
GC_7_016	Canada	7	420	420	The expression: "Emissions are a function of time under management" in this context seems to be not completely accurate, since emissions are a function mainly of area under management. Consider revising the wording.		Accept with modification - text will be revised "Some emissions are a...
GC_7_017	Canada	7	464	476	It is unclear whether and how inventory agencies are to use this information. Suggest the authors consider deleting.		Noted - Authors consider the text to complement the corresponding text in the 2006 IPCC Gls. It is common to use Microsoft Excel for Monte Carlo analysis - this material provides information for inventory agencies to do that.
GC_7_018	Australia	7	560		Replace deforestation with use of a collective term such as ‘Forest land converted to other land-use categories’		Accepted - "deforestation" replaced with "conversion of forest to other land uses"
GC_7_019	Canada	7	590		Suggest that "Changes in wetland management technologies" could remove it from this list of artefacts that introduce inconsistencies in time series, as it is a real phenomena rather than a methodological one.		Accepted

GC_7_020	Germany	7	639	639	Delete "technical" - it makes no sense		Accepted
GC_7_021	Germany	7	640	640	Delete "and", insert ", improve or"		Accepted
GC_7_022	Germany	7	641	641	Add "which takes place after compilation" after the last word of the sentence		Accepted with modification - text added at the end "and performed on a completed inventory".
GC_7_023	Germany	7	654	654	Delete "Tier 1 - Double check that correct default values are used." Add new sentence to the upper passage: "Where default values are used it should be ensured that they reflect the country's conditions - inappropriate default values lead to an increase of the associated uncertainty." „Neither the Good Practice Guidance (2000 ; Chap. 8) nor the 2006 Guidelines (V1, Chap. 6) have established a rule for differentiation of QA/QC procedures for different Tier-Methodologies. The differentiation solely refers to key or non key sources. This procedure should be maintained, for it is the best for all countries. Therefore we ask for deletion of the references to the Tiers."		Accepted - for consisntecy also the last sentence in lines 643 - 644 and "All tiers" in line 665 were deleted.
GC_7_024	Germany	7	655	655	Delete "Tier 2 - Double-check data sheets" and insert "Where higher Tiers are used, estimations can be checked ..." „Neither the Good Practice Guidance (2000 ; Chap. 8) nor the 2006 Guidelines (V1, Chap. 6) have established a rule for differentiation of QA/QC procedures for different Tier-Methodologies. The differentiation solely refers to key or non key sources. This procedure should be maintained, for it is the best for all countries. Therefore we ask for deletion of the references to the Tiers."		Accepted
GC_7_025	Germany	7	657	658	Delete "Tier 3 - Validate computer models against field measurements and include the error in the calculation of uncertainty (Section 7.2.1)" and insert "Computer models can be validated against field measurements. The resulting difference should be included in the calculation of uncertainty (Section 7.2.1)" „Neither the Good Practice Guidance (2000 ; Chap. 8) nor the 2006 Guidelines (V1, Chap. 6) have established a rule for differentiation of QA/QC procedures for different Tier-Methodologies. The differentiation solely refers to key or non key sources. This procedure should be maintained, for it is the best for all countries. Therefore we ask for deletion of the references to the Tiers."		Accepted
GC_7_026	Germany	7	661	662	The whole sentence and especially the term "good practice" MUST be deleted. To establish such a time and resource consuming procedure as "good practice" for all countries is indeed a completely inacceptable proceeding.		Accepted

GC_7_027	Germany	7	920	923	Table 3 AFOLU Sectoral Table: It is absolutely unclear why all the categories 3C8 up to 3C11, 3C13) should be reported as a specific sub category. These categories could be reported under previous 3 B Land. The methodology seems inconsistent if table 1.1 of chapter 1 is considered		Rejected - the non-CO2 emissions from sources related to the land categories can be reported either as part of the emissions/removals under the lands or as non-CO2 emissions from specific activities which can take place under any land-use category. The latter option has been chosen here to improve the transparency of the reporting. There is no conflict with Table 1.1 as it is about where to find guidance in this Supplement, not about reporting.
GC_7_028	Germany	7	930	931	Why is AFOLU the title and not FOLU as in the other IPCC tables		Noted - AFOLU is used as also agricultural emissions are addressed
GC_7_029	Germany	7	930	931	Table 3.2: It seems that the concept of emissions / removals (carbon stock calculation) does not fit with the reporting of emissions for this category, the row 'wetlands' in table 3.2 should be shaded, the table differs to the discussed CRF table from May/June.		Noted but not acted upon - the CRF tables are developed as part of the UNFCCC process, The tables included here are based on the tables in the 2006 IPCC Gls
GC_7_030	Germany	7	941	942	change category 3B4ai according to table 7.1 to peat extraction land remaining peat extraction land		Noted but not acted upon - the CRF tables are developed as part of the UNFCCC process, The tables included here are based on the tables in the 2006 IPCC Gls
GC_7_031	Germany	7	941	944	Table 3.3: the table structure differs now to the discussed CRF table 4(I) D from May/June why?		Noted but not acted upon - the CRF tables are developed as part of the UNFCCC process, The tables included here are based on the tables in the 2006 IPCC Gls
GC_7_032	Germany	7	947	948	Tables differ from the CRF version from May/June.		Noted but not acted upon - the CRF tables are developed as part of the UNFCCC process, The tables included here are based on the tables in the 2006 IPCC Gls
GC_7_033	Germany	7	961	971	So far the IEFs have been presented in the CRF tables, why is this now omitted?		Noted but not acted upon - the CRF tables are developed as part of the UNFCCC process, The tables included here are based on the tables in the 2006 IPCC Gls
GC_7_034	Canada	7 (Annex 7	813	910	All worksheets provided in this annex refer to "reporting year" but no place is provided to enter the referred "reporting year"		Noted -the tables are applicable for a specific inventory year, however, the reporting year is not included in these tables for consistency with the 2006 IPCC GLs

<General Comments>

Comment #	Country	Chapter/Section	Start Line Number	End Line Number	Comment	supplementary documents	Final Authors Actions
GC_Ge_001	China	General	0	0	Comments by the Chinese Government on the 2013 Supplement to the IPCC National Greenhouse Gas Inventories: Wetlands The Chinese government appreciates the Bureau members of the Task Force on National Greenhouse Gas Inventories (TFI) of the Intergovernmental Panel on Climate Change (IPCC) and the lead authors and Technical Support Unit of the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (Wetlands Supplement) for their contribution made to the preparation of this report. It wishes to take this opportunity to make comments on the Wetlands Supplement (Final Draft) and the Overview. Based on the first government review (11 February – 7 April 2013), the report has been modified in quite a few instances, supplementing the 2006 IPCC for National Greenhouse Gas Inventories (2006 Guidelines for Inventories) where needed, hence of greater guidance and ease. However, the review process still reveals a lot of room to be desired with regard to the linguistic logic, consistency and editorial wording. In order to further improve the Wetlands Supplement, we have brought out the following comments in a hope that they can be adopted in the modification process.		Noted
GC_Ge_002	China	General	0	0	For the sake of rigorousness, it is suggested to use a single unit (eg Tonnes C yr-1) for the calculation of carbon emissions in the report.		Accept with modification. Usage is consistent with 2006GL and is harmonized to ensure this is consistent within the document.
GC_Ge_003	USA	General	0	0	There is some variability in the definition of "emission factors" between the various chapters. The authors should consider adding the term "emission factors" to the glossary, which would include its various uses and units.		Reject. The definition of emission factors is provided in the 2006GLs. Authors decided to not repeat defintions provided in the 2006GLs.
GC_Ge_004	New Zealand	General			This is a major technical advance in the development of good practice guidelines for monitoring greenhouse gases in wetlands compared with the content of previous guidelines, and each chapter is informed by an impressive reference base.		Noted
GC_Ge_005	New Zealand	General			The supplement appears to have exceeded its mandate. The Expert Meeting on HWP, Wetlands and Soil N2O held on 19-21 October, 2010 in Geneva, made the recommendation that: "... the IPCC provide additional methodological guidelines for the rewetting and restoration of peat land; emissions from fires, ditches and waterborne carbon; and constructed wetlands for waste water disposal, to fill gaps in the existing guidelines."		Reject. An expert meeting does not give a mandate

GC_Ge_006	New Zealand	General			We are concerned that the material in Chapters 5 and 6 (i.e. the guidance provided for estimating emissions from coastal wetlands and inland wetland mineral soils) does not advance progress towards straight-forward reporting and accounting approaches for a future climate change agreement. This highlights the need for tight terms of reference from the UNFCCC to the IPCC, and raises the issue of whether or not UNFCCC Parties will endorse use of the supplement (in part or in full).		Noted
GC_Ge_007	Australia	General			Kyoto Protocol activity nomenclature should be avoided in the Wetlands Supplement to the extent possible in order to achieve consistency with the UNFCCC Guidelines and applicability to all Parties. Where it is necessary to use terminology used in the Kyoto Protocol, an explanation should be included in the Introduction Chapter to make clear how the term is being used in the document so that there is no confusion with Kyoto Protocol activities.		Accept with modification. These were deleted unless no alternative term could be applied. In these cases, a footnote clarifies that these are not intended to be KP activities.
GC_Ge_008	Denmark	General			Very good job done		Noted
GC_Ge_009	Denmark	General			There is a need to go through all chaptes for a uniform descriptions of units, notations, italic forms etc.		Accept
GC_Ge_010	Denmark	General			year is defined as YR, yr, y, Chapter 6 are not using the more usual notation with "t yr-1" but "tonnes/yr"		Accept
GC_Ge_011	Denmark	General			In some chapters are used CO2-C in other chapters are used only "C"		Accept
GC_Ge_012	Denmark	General			For the whole document please when there is referred to"country" then justify if it is meant "country" or the "inventory compiler"		Accept.
GC_Ge_013	Finland	General			Finland wishes to convey its appreciation to the IPCC TFI and the authors for preparing the draft 2013 Wetland Supplement, which addresses estimation and reporting of emissions/removals from very complex ecosystems.		Noted. These are addressed in the specific chapter comments.
GC_Ge_014	Sweden	General			There are several inconsistencies in the use of variable names. For instance equation 2.4 use "EFDOC" but in the corresponding table 2.2 the variable name is "EFDOC_DRAINED". Another example is Annual CH4 emission from drained organic soil which is notated "CH4_organic" while the N2O is not specified as annual but instead refers to managed organic soils. We see a need to read through the entire report and find a common terminology that works for all chapters.		Accept with modification. Usage is consistent with 2006GL and is harmonized to ensure this is consistent within the document.

GC_Ge_015	Germany	General			In general, the supplement has been improved a lot. Outline and use of terms are more consistent and logical. However, the decision on how to use the term Wetlands, wetland/wetlands is still not really satisfying. On top there is the term Wetland (singular) stemming from the new KP activity. Why is it important to differentiate between these? The current form is highly confusing, especially when these terms arise in titles, where everything is written in capital letters anyway. Another problem are the new numbers for emission factors etc., which differ partly a lot from those of the SOD. That gives the impression that science is still not mature enough for including wetlands in the accounting system. Chapters 3,5,6 contain a last subchapter about some crosscutting issues in quite an inconsistent manner. Chapter 3 (Completeness, time series, consistency, and QA/QC), Chapter5 (Completeness, reporting, and documentation) and Chapter 6 (two subchapters on time series consistency, uncertainties, QA/QC, completeness and Reporting). Chapters 2 and 4 do not contain such considerations. This should be streamlined. Our suggestion is to deal with these issues in chapter 7 only.		Accept with modification. The meaning of wetlands is defined; wetland may be used as an adjective and definitional distinctions should not be made in whether or not the word is capitalized, so the usage of wetlands is minimized or clarified as appropriate. Also, Wetlands is included as term in the Glossary. How the emission factors are justified scientifically are addressed in regard to specific chpater comments/responses. Cross-cutting advice in chapters should be specific to the chapter and cross referenced to CH 7. The chapter structure is harmonized to present a QA/QC section in each chapter, and cross-referencing to Chpater 7 as appropriate.
GC_Ge_016	Germany	General			Throughout the chapters, tables have various units of measuring emissions factors (e.g., kg/ha/yr or tonnes/ha/yr). For the sake of consistency units should be the same. Also confidence intervals are expressed in at least three various ways ("+-x", x - y , or simply x). It is unclear why, and it would seem logical to be consistent here as well.		Accept with modification. There is a presumption in favoru of consistency, though there may be reasons for exception; e.g. to make cross-referencing to underlying material easier. We should use the same conventons as are used in the 2006 GL wherever possible.
GC_Ge_017	Sweden	General			Overall, the final draft has improved a lot and will serve a good basis for governments inventories.		Noted

Annex 1

Comments for the Chapter 2 wetlands supplement

DRAINED INLAND ORGANIC SOILS

Table 2.1 TIER 1 CO2 EMISSION/REMOVAL FACTORS FOR DRAINED ORGANIC SOILS IN ALL LAND-USE CATEGORIES

1. Currently, it is not transparent nor well documented how the emission factors for land-use category forest land, drained, have been derived from the literature given as references. In Annex 2A.1. only broad background information is given. Based on evaluation of the literature concerning the boreal climate/vegetation zone, that is all of Finnish origin, we suggest that the data and the estimations are re-evaluated based on the following (points 2 and 3).
2. The emission factors for both nutrient-poor and nutrient-rich drained forest land are based on several studies. From most of the studies, several observations based on individual sites that were measured have obviously been used as independent observations. However, from the Minkkinen and Laine 1998 study, which includes the by far largest number of peatlands studied, only regional averages have been used as independent observations. This leads to a situation where the actual quantities of samples are not used as weights in a correct manner. Eg., 102 cores (sampling locations) from Minkkinen and Laine 1998 for central Finland have been treated in the EF estimation as one observation, whereas each site (= 2 cores) of Simola et al. 2012 have been used as individual observations. Please give higher weights for aggregated estimates, e.g., use number of cores from Minkkinen and Laine 1998, divided by 2 if to be used equally to Simola et al. 2012, as weights. (Both Minkkinen and Laine 1998 and Simola et al. 2012 applied similar methodology and can thus be compared in this respect.)
3. Simola et al 2012 have studied sites inventoried by Geological Survey of Finland (GSF). The GSF inventories are designed for estimating peat reserves and locating sites suitable for peat extraction. The prerequisites of peatlands well suitable for peat extraction (large homogeneous area, thick peat deposit, preferably open, originally treeless peatland type), differ from those of forestry use (nutrient regime favoring tree growth, originally treed peatland type). Based on site type information given by Simola et al. 2012, their material includes sites that do not fulfill forest land definition by FAO (canopy coverage 10%). Observations from such sites should not be used when emission factors (EFs) for forest land are derived. They may, of course, be included when deriving EFs for other land use categories. Also, some mire types that are “rich” (clearly minerogenic) may have erroneously been included as “poor”. The sites that were classified by Simola et al. as “peatland forest” may not be classified as rich or poor with confidence, since no information on the nutrient regime is given. It is likely that they are rich, however, since rich sites are more likely to support such tree growth that the site could be classified as peatland forest. Mire types are broad classes and in some cases forest land may develop following drainage of sites presumably having unsuitable nutrient regimes. Thus, to assist evaluation of which of the sites are actually forest land, we did a check-up of the sites of Simola et al. based on the multisource NFI (national forest inventory) of Finland, using the site coordinates provided by Simola et al. We have compiled information in the following table (Table 1) that we hope will be helpful for considering which sites can be treated as forest land, and may be included in estimation of EFs for that category. The selection may be based on either the site type information provided by Simola et al. or the information based on the coordinates provided by Simola et al. Site numbers for sites that are not forest land based on either option are in underlined bold. The mire types marked with bold do not, as a rule, provide a nutrient regime that supports tree growth, and the mire types marked with italics are suspect in that respect. Such sites have been drained for other purposes (e.g., preparations for peat

extraction), or as parts of more extensive forestry drainage operations.

4. Estimating the EFs from the data in the references addressed as described under paragraph 3 above is illustrated in Figure 1, which shows a significant difference to the derived default values and ranges in the 2013 Wetlands Supplement.

Table 1. Site type information and NFI classification of the coordinates of individual sites provided in the Simola et al. 2012 paper. Classification into rich and poor is based on mire type information (vegetation types reflecting site nutrient regime). Sites classified as "peatland forest" cannot be classified into rich/poor because of lacking information. "Class" refers to NFI information: 1. drained organic forest land, 2. drained organic FAO land, 3. drained organic poorly productive forest land, 4. drained organic unproductive land, 5. drained organic other land. Note that the national forest definition (Class 1) is more restricting that the FAO forest definition.

Nr.	Name	Mire type	rich/poor	Class	FAO forest	Notes	X kkj	Y kkj
1	Papinlammensuo	**low-sedge fen (undrained)**	transitional-poor		**0**	**not forest land**	3702749	6961610
2	Rahesuo	**ridge-hollow pine bog**	poor	**3**	**0**	**not forest land**	3713410	6980523
3	Niirasenvaaransuo	cottograss pine bog	poor	1	1		3694198	6936075
4	Välisuo	peatland forest	not defined	1	1		3599438	6970759
5	Teerineva1	**flark fen**	rich	**5**	**0**	**not forest land**	3416242	7112501
6	Teerineva2	**flark fen**	rich	**5**	**0**	**not forest land**	3416242	7112501
7	Teerineva3	**flark fen**	rich	1	1		3409039	7106233
8	Iso Rimpineva	**flark fen**	rich	**4**	**0**	**not forest land**	3399082	7118016
9	Laitaneva1	**flark fen**	rich	2	1		3395542	7119384
10	Laitaneva2	**flark fen**	rich	2	1		3395542	7119384
11	Raumanmajansuo	*herb-rich sedge fen*	rich	2	1		3415285	7104937
12	Akanmaanneva	*herb-rich sedge fen*	rich	1	1		3425012	7126503
13	Valkeissuo	herb-rich birch-pine fen	rich	**3**	**0**		3583142	7175527
14	Isosuo1	herb-rich birch-pine fen	rich	**4**	**0**		3577407	7174873
15	Isosuo2	herb-rich birch-pine fen	rich	**4**	**0**		4454773	7168235
16	Haarasuo	herb-rich birch-pine fen	rich	1	1		3605119	7163824
17	Kurkisuo	herb-rich birch-pine fen	rich	**3**	**0**		3580529	7171677
18	Haaposuo	*eutrophic fen*	rich	**4**	**0**	**not forest land**	3603729	7156692

19	Laajansuo	*herb-rich sedge fen*	rich	2	1		3574440	7148702
20	Miilukankaansuot	*Sph. fuscum pine bog*	poor	1	1		3521300	6903702
21	Turvesuo	*Sph. fuscum pine bog*	poor	2	1		3493600	6912302
22	Ruokolahdensuo	cottongrass pine bog	poor	1	1		3507800	6918802
23	Isosuo	**ridge-hollow pine bog**	poor	1	1		3498000	6910602
24	Vertinrajansuo	cottongrass pine bog	poor	2	1		3491300	6913101
25	Korninsuo	cottongrass pine bog	poor	1	1		3511600	6922702
26	Hoikansuo	cottongrass pine bog	poor	1	1		3508400	6903002
27	Kittisuo	**low-sedge pine fen**	transitional-poor	2	1		3486000	6900502
28	Rajasuo	peatland forest	not defined	1	1		3517188	6947021
29	Soidinsuo	**ridge-hollow pine bog**	poor	1	1		3497000	6893802
30	Aumakankaansuo	**ridge-hollow pine bog**	poor	**5**	**0**	**not forest land**	3500500	6928202
31	Kapeasuo	spruce swamp		1	1		3494800	6918402
32	Sulunsuo	cottongrass pine bog	poor	**3**	**0**		3496100	7033200
33	Pirttisuo	tall-sedge pine fen	rich	1	1		3486000	7032801
34	Luttisuo	peatland forest	not defined	1	1		3479500	7034501
35	Palosuo	herb-rich birch-pine fen	rich	1	1		3474700	7033901
36	Niinisuo	herb-rich birch-pine fen	rich	2	1		3494600	7039200
37	Ruostesuo	peatland forest	not defined	1	1		3484800	7034101
38	Koskenalussuo	herb-rich hardwood-spruce swamp	rich	2	1		3490700	6998201

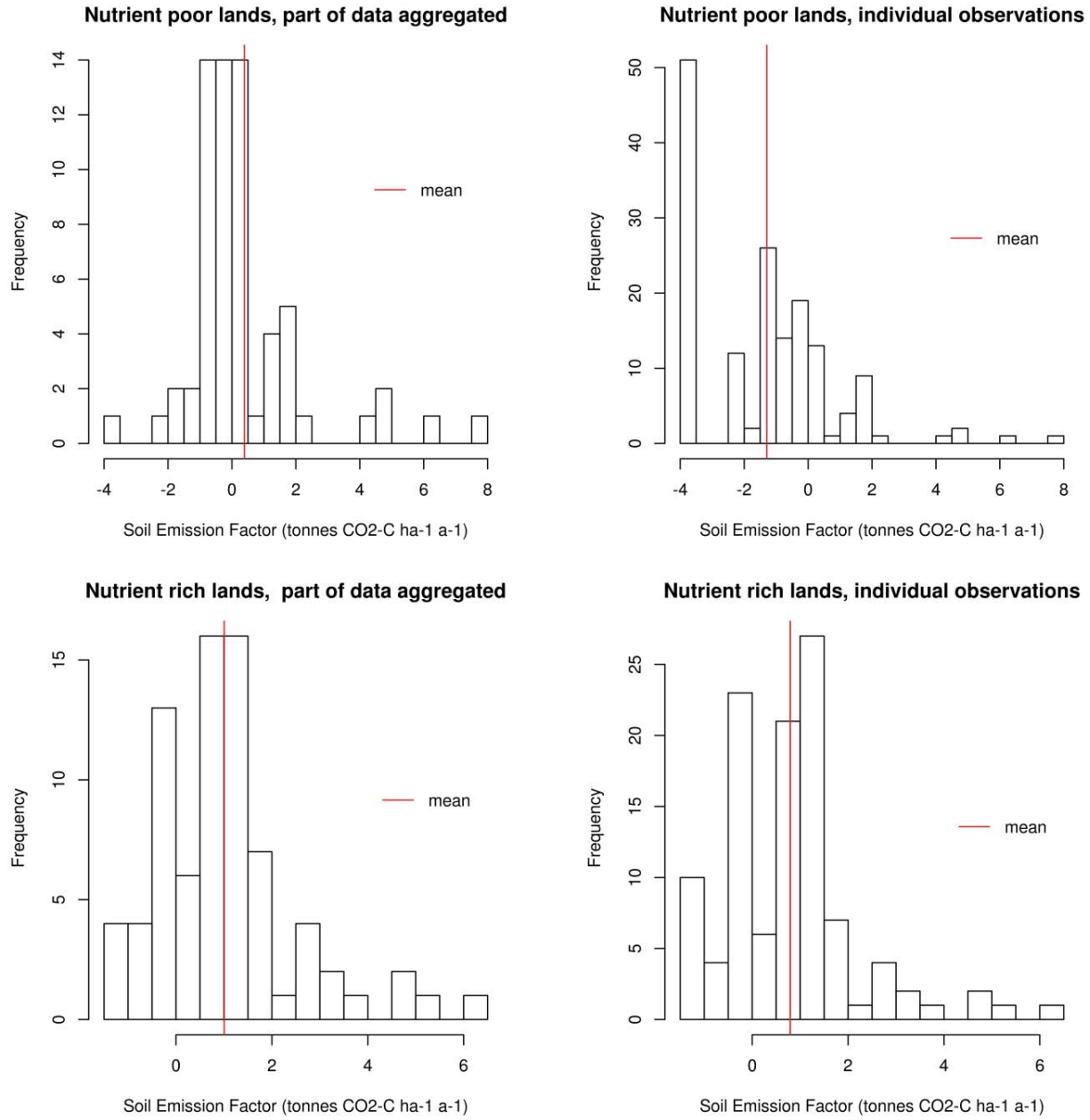

Figure 1. Histograms for the emission factors (EF) for drained peatland forests. On the left panel data is as it has been treated for the current version of the 2013 Wetlands Supplement (data has been partially aggregated, e.g. 102 peat cores by Minkkinen and Laine 1998 for central Finland have been treated as a single observation). On the right panel these aggregated data points have been given more weight by assuming that 2 peat cores originate from same site on average (sample size has been estimated by dividing the number of peat cores with two). The top row of the panel illustrates the situation with less fertile lands, while bottom row indicates the situation on fertile soils. Red line indicates the mean of each distribution.