

# Historical Background

## IPCC Expert Meeting on SLCF

WMO, Geneva

28 May 2018

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# Overview

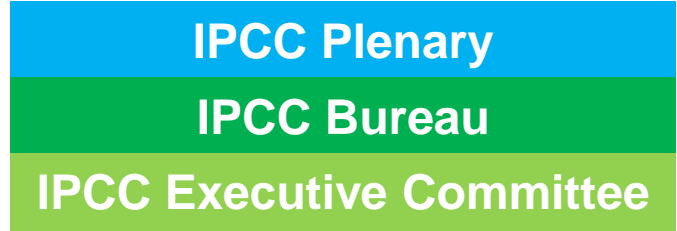
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# Introduction

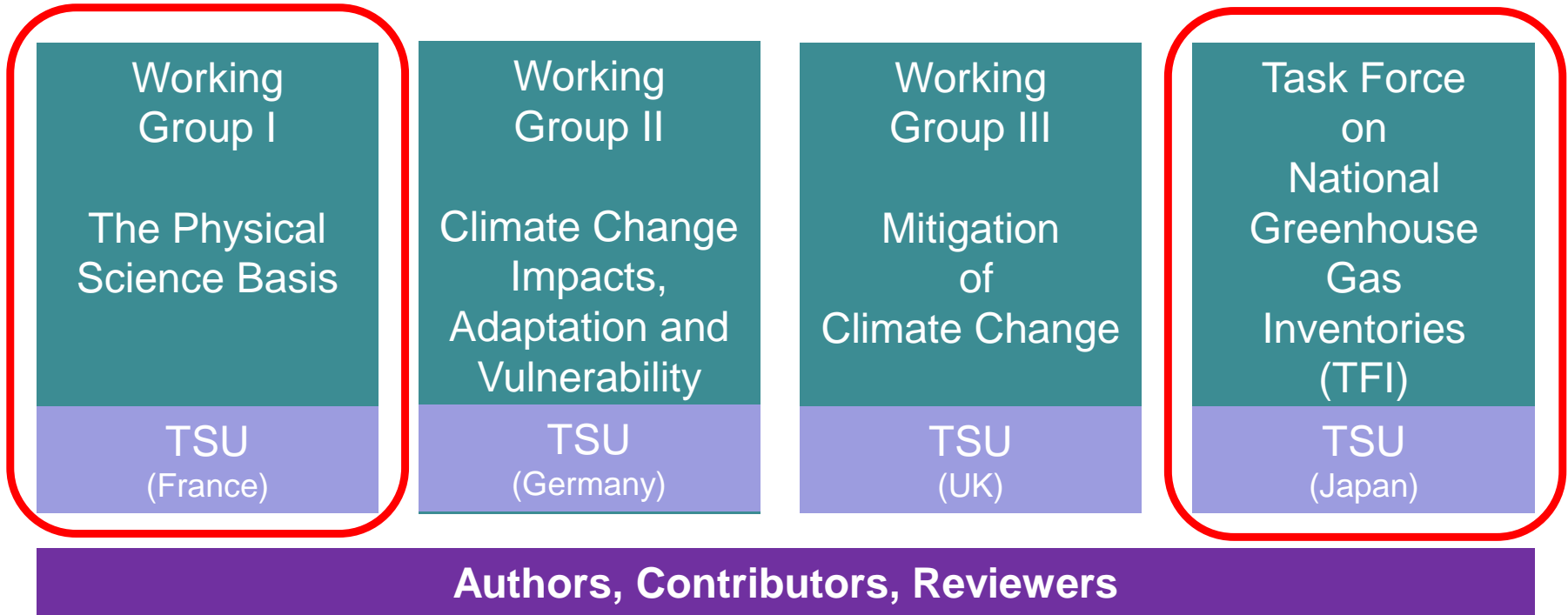
At its 46<sup>th</sup> Session in Montreal, on 6-10 September 2017, IPCC adopted Decision IPCC/XLVI-6. Short-lived Climate Forcers:

- The *Intergovernmental Panel on Climate Change* decides, to approve the proposal for an expert meeting on Short-lived Climate Forcers to discuss issues on estimation of emissions and estimations of climate effects.
- The meeting, organised jointly by TFI and WGI, will take place on 28-31 May 2018 in Geneva, Switzerland.

# Structure of the IPCC (2015 -)



IPCC Secretariat  
(in Geneva,  
Switzerland)



# TFI and WGI

## ➤ Task Force on National Greenhouse Gas Inventories (TFI)

- develops and refines an internationally-agreed methodology and software for estimation and reporting of national GHG emissions and removals; and
- encourages its use by countries participating in the IPCC and by Parties to the UNFCCC.

## ➤ Working Group I (WGI)

- assesses the physical scientific aspects of the climate system and climate change.
- The main topics assessed by WGI include: changes in GHGs and aerosols in the atmosphere; observed changes in air, land and ocean temperatures, rainfall, glaciers and ice sheets, oceans and sea level; climate projections, causes and attribution of climate change; etc.

# Background (1): Expert Meeting in 2005

- Recognizing the potentially significant influence of aerosols on climate change as identified in the IPCC Third Assessment Report (TAR) published in 2001, an IPCC Expert Meeting on Emission Estimation of Aerosols Relevant to Climate Change was held in May 2005.
- The objectives of this meeting were:
  - i. to conduct a preliminary assessment of issues related to developing estimates for anthropogenic emissions of aerosols identified in the TAR as having an impact on climate change; and
  - ii. to discuss the methodological approaches and related issues for estimating emissions of aerosols. While the whole range of aerosols was considered, the primary focus was on carbonaceous aerosols such as black carbon.

# Background (2): Expert Meeting in 2005

- The expert meeting in 2005 concluded, among others:
  - Global inventories of emissions of aerosols relevant to climate change contained significant sources of uncertainty.
  - It was not yet possible to reliably produce internationally comparable national emission estimates and estimate real differences in emission characteristics between countries.
  - Most current global and regional emission inventories were based on a very limited and non-representative set of emission and speciation factors and often lack the required differentiation of activity data.
  - Work was needed to reduce some of the uncertainties (for which, e.g., less ambiguous measurement methods would be needed).
  - Further similar meetings participated by WGI, TFI and other aerosol inventory experts should be held.

**However, no follow-up expert meeting has been held by the IPCC so far since 2005.**

# Background (3): IPCC Assessment Reports

- Understanding of aerosol radiative forcing advanced through AR4 (2007) and AR5 (2013).
- AR4 concluded that aerosol forcings were better understood than before due to improved in situ, satellite and ground-based measurements and more comprehensive modelling while the dominant uncertainty in radiative forcing remained, and that aerosols also influence cloud lifetime and precipitation.
- AR5 again concluded that aerosols contributed the largest uncertainty to the total radiative forcing estimate, and revised the estimated direct aerosol effect at  $-0.27$  [ $-0.77$  to  $+0.23$ ]  $\text{W m}^{-2}$  and the cloud indirect effect at  $-0.55$  [ $-1.33$  to  $-0.66$ ]  $\text{W m}^{-2}$ .



# Background (4): 6th Assessment Report

- IPCC has started producing the AR6. WGI Contribution will be produced for approval/acceptance by the IPCC Plenary in 2021.
- WGI Chapter 6: Short-lived climate forcers (approved outline)

## Executive Summary

- Key emissions: global overview, natural, anthropogenic, historical and scenarios
- Observed and reconstructed concentrations and radiative forcing
- Direct and indirect-aerosol forcing
- Implications for greenhouse gas lifetimes
- Implications of different socio-economic and emission pathways, including urbanisation, for radiative forcing
- Connections to air quality and atmospheric composition

## Frequently Asked Questions

# Objectives of this Expert Meeting

- To review existing methodological work to estimate emissions of SLCF with a view to considering suitability for the IPCC to develop methodological guidance;
- To consider which species of SLCF should be prioritized in the possible future work to develop inventory methodology, taking account of uncertainties in emission estimates and possible applicable common metrics as well as the extent to which it will contribute to inform decision making in mitigation policies and measures;
- To consider how the inventory methodology on SLCF would relate to the existing inventory methodology on greenhouse gases;

# Objectives of this Expert Meeting

- To identify gaps in scientific understanding on estimates of SLCF emissions that need to be filled in by scientific research community;
- To review existing methodological work to quantify the global radiative direct and indirect effects of SLCF, with a focus on new developments since the 5th Assessment Report of the IPCC;
- To identify gaps in scientific understanding on estimates of direct and indirect climate effects of SLCF on radiative forcing and climate response, including implications on clouds, that need to be filled in by scientific research community.

# Substances of Interest

- It should be noted that inventory methodologies on methane and HFC are already well covered by the 2006 IPCC Guidelines for National Greenhouse Gas Inventories produced by TFI as well as the on-going work by TFI to refine the 2006 IPCC Guidelines.
- Therefore, the substances of interest at this meeting are:
  - Black Carbon
  - Organic Carbon
  - PM2.5
  - NO<sub>x</sub>
  - CO
  - NMVOC (including BVOC)
  - SO<sub>2</sub>
  - NH<sub>3</sub>

# Thank you for your attention!

<http://www.ipcc.ch/>

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