IPCC Expert Meeting on Short-Lived Climate Forcers

Overview and outcomes

IPCC TFI Side-event at the COP-24

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Outline

❑ Expert Meeting on SLCF

- Background
- Scope
- Objectives
- Conclusions and recommendations

Background

- An Expert Meeting on Emission Estimation of Aerosols Relevant to Climate Change took place in 2005
- The IPCC was of the view that the science had progressed enough since then so that another expert meeting with this topic would be reasonable
- **At its 46th Session in Montreal, on 6-10 September 2017, IPCC adopted Decision IPCC/XLVI-6. Short-lived Climate Forcers:** The *IPCC 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
- TFI and WGI held joint Expert Meeting on SLCF on 28-31 May 2018 in Geneva, Switzerland
- Meeting Report was published on TFI website: (http://www.ipcc-nggip.iges.or.jp/)

Scope

The following SLCF species were considered during the meeting:

- ❑ Aerosols:
  - Black carbon (BC)
  - Organic Carbon (OC)
  - $PM_{2.5}$
- ❑ Precursors (ozone and aerosol precursors):
  - NOx
  - CO
  - NMVOC (including BVOC)
  - SO_2
  - NH_3

Objectives

The expert meeting had the following objectives:

- To review existing methodological work to estimate emissions of SLCF with a view to considering feasibility 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
- To consider how the inventory methodology on SLCF would relate to the existing inventory methodology on GHGs
- To identify gaps in scientific understanding on estimates of SLCF emissions and direct and indirect climate effects of SLCF on radiative forcing 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 AR5

Conclusions and recommendations (1)

- Since AR5, progress has been made in improved definitions of OC and BC, increased understanding of non-combustion aerosol sources, more measurements on aerosol particle sizes, and better model parametrisations of aerosol processes
- Internationally-agreed, globally applicable methodologies and emission factors for SLCF emission inventories are necessary, although there may be data gaps that limit their application

Conclusions and recommendations (2)

- The IPCC can play an important role because of its unique position, therefore considered to be the right organisation to fill gaps in existing methodologies and to develop and disseminate an internationally-agreed, globally applicable methodological guidance based on existing methodologies
- This could be achieved in close cooperation and collaboration with other relevant international bodies such as EMEP/EEA, CCAC, Arctic Council, ICAO, IMO
- If the IPCC Plenary decides to engage into further work on SLCF inventories, careful consideration needs to be given to possible issues in consolidating existing inventory methodologies on GHGs and SLCFs

Conclusions and recommendations (3)

- Generally, much of the existing guidance on good practice methodologies/approaches on GHG inventory is applicable to, or can be a good basis for, SLCF inventories at a national level, if a more detailed air pollutant inventory does not exist
- It is recognised that OC is not covered in existing guidance due to methodology and data gaps
- The current approach to derive BC emissions might need assessment, improvement or new elaboration due to significant challenges in deriving BC from $PM_{2.5}$ and variability in observations
- In order to take into account trends and developments, all SLCFs should be considered with more focus on species and sources that are not well covered in existing guidance

Conclusions and recommendations (4)

- Reporting of SLCF inventories should be in mass units for each individual emitted compound
- SLCF emissions should not be converted to CO_2 equivalent units in the same way as done based on GWP100 in the inventory reporting under the UNFCCC
- The understanding of emission metrics and how they can be used, particularly in the context of SLCF emissions, has advanced but there is currently no agreed recommendation
- Issue of metrics and how they can be used may be further considered based on new scientific literature for coordination across WG reports, particularly those of WGI and WGIII

Key aspects of future work

- The outcomes of the SLCF expert meeting are also expected to feed into the WGI AR6 report, primarily in Chapter 6 (Short-lived climate forcers) but also in chapter 7 (The Earth's energy budget, climate feedbacks, and climate sensitivity)
- Key aspects of future TFI work in this area, including the timing, scope, nature, format, and sequencing will be decided at IPCC 49th session in Kyoto in May 2019
- More details about SLCFs will be presented at another event on 13 Dec at the WMO/IPCC Pavilion

Thank you

http://www.ipcc-nggip.iges.or.jp/index.html

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