Key Issues for an IPCC Assessment Report

Gian-Kasper Plattner
Science Director
WGI Technical Support Unit
& WGI Co-Chairs and TSU
University of Bern, Switzerland
Outline

- Treatment of uncertainties
- Use of literature sources
- Handling of errors
- Some challenges
Treatment of uncertainties

- How to determine uncertainty?
- How to display uncertainty?
- How to formulate uncertainty?
- How to communicate uncertainty?

Revised IPCC Guidance Note on the Consistent Treatment of Uncertainties for AR5

(the result of an IPCC cross-WG meeting, July 2010)
Treatment of uncertainties

Information under uncertainty

How to determine uncertainty?

Synthesis statement with uncertainty range

- Range across different models
  - CMIP5
- Range from parameter choice
  - Physics Ensemble
- Range across model complexity
  - EMICs comparison
- Range due to processes added
  - Carbon cycle models

(Expert judgement, Formal calculation, Model simulations)

(Mastrandrea et al., 2011)
Treatment of uncertainties

Information under uncertainty

How to display uncertainty?

(IPCC, 2007, Fig. SPM-5)
Treatment of uncertainties

Information under uncertainty

How to display uncertainty?

**White** to indicate regions where models disagree about the sign of change

**Stippling** to indicate regions with robust changes

**Hatching** to indicate regions where changes are non-significant

(Knutti and Sedlacek, NatCC, 2012)
Treatment of uncertainties

Information under uncertainty

How to formulate uncertainty?

Qualitative:
level of agreement
amount and quality of evidence

confidence
Treatment of uncertainties

Information under uncertainty

How to formulate uncertainty?

(Mastrandrea et al., 2011)
Treatment of uncertainties

Information under uncertainty

How to formulate uncertainty?

Qualitative:
level of agreement
amount and quality of evidence

Quantitative:
quantified likelihood

virtually certain \( \geq 99\% \)
very likely \( \geq 90\% \)
likely \( \geq 66\% \)
unlikely \( < 33\% \)

Statements of fact: «Warming of the climate system is unequivocal» (SPM, WGI AR4)
Use of literature sources

- IPCC assesses all available scientific-technical literature
- priority is given to peer-reviewed literature
- emphasis is placed on the assurance of the quality of all literature cited
- other sources may provide essential information, esp. for adaptation and mitigation (WG II & III)
- extra responsibility for author teams to ensure quality and validity of such sources
Handling of errors

IPCC has clear procedures for investigating, and if necessary, correcting alleged errors in published reports

- “Error Protocol” used to correct errors of fact or accuracy that could have been avoided with information available at the time
- not to make changes that reflect new knowledge or information that became available later
- not to add new literature or assessments
- errata are published on the IPCC web site
Some challenges

- IPCC authors and review editors volunteer their time and expertise
- IPCC assessments must be comprehensive but scientific information is growing at a great rate
- reviews of IPCC drafts are open to all self-declared experts but comments number in the many thousands
- IPCC does not perform research but needs research results
- IPCC does not develop its own scenarios for model runs
Climate Change 2013: The Physical Science Basis
Working Group I contribution to the IPCC Fifth Assessment Report

Further Information
www.climatechange2013.org

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