

# From AR5 to AR6 : IPCC perspective on climate observations, climate modelling and climate services

Valérie Masson-Delmotte  
co-chair, WGI

- ❖ **The role of the IPCC and working principles**
- ❖ Special reports
- ❖ Schedule for the main assessment report
- ❖ Key AR6 pre-scoping questions for WGI

# The role of the IPCC

to assess on a comprehensive, objective, open and transparent basis  
the scientific, technical and socio-economic information relevant to

- ❖ understanding the scientific basis of risk of human-induced climate change
- ❖ its potential impacts
- ❖ and options for adaptation and mitigation.

**IPCC reports should be neutral with respect to policy**

# IPCC assessments

- ❖ Rigorous
- ❖ Robust
- ❖ Transparent
- ❖ Comprehensive

## WGI basis : peer-review literature

*Observations, process-based understanding, modelling*

*Global to regional scales*

*Past, present and future*

*Climate information with communication of uncertainty*



tsu@ipcc-wg1.universite-paris-saclay.fr

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ADEME

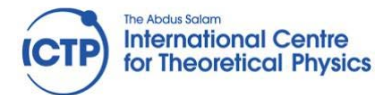


Agence de l'Environnement  
et de la Maîtrise de l'Énergie



Head

Anna Pirani



Science

Wilfran  
Moufouma-Okia

Science officers



Operation

Clotilde Péan

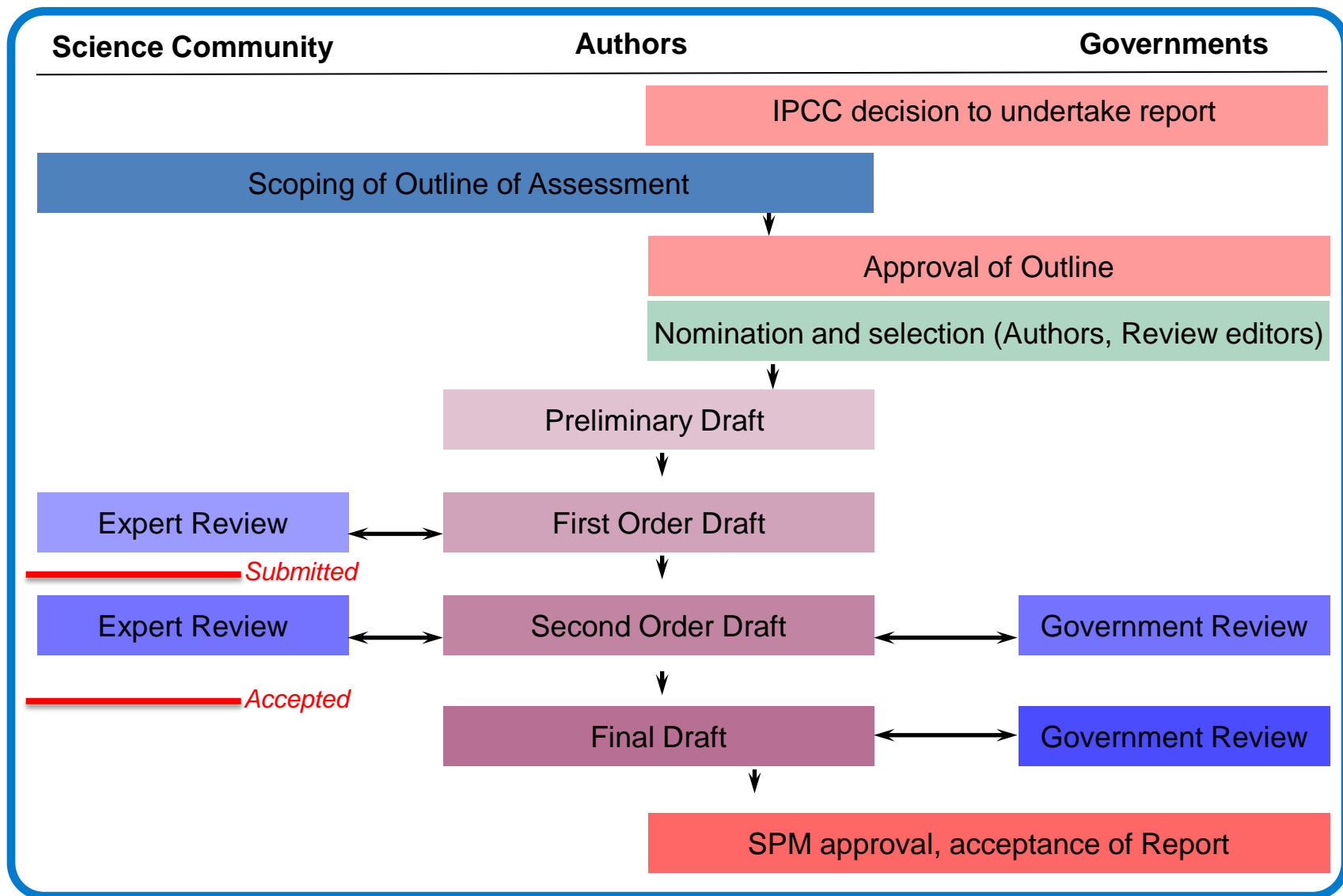
Assistant

Communication  
officer

IT officer



# Process



Literature to be assessed: submitted (Second Order Draft review), and accepted (Final Draft review).

- ❖ The role of the IPCC and working principles
- ❖ **Special reports**
- ❖ Schedule for the main assessment report
- ❖ Key AR6 pre-scoping questions for WGI

# Special Reports

- ❖ Focused on cross-cutting topics across Working Groups
- ❖ 31 initial proposals (including invitation from UNFCCC Paris Agreement)
- ❖ Key aspect of scoping : SR versus AR6



# Three Special Reports



09/2018

Impacts of **global warming of 1.5 °C** above pre-industrial levels and related global greenhouse gas emission pathways, *in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty.*



09/2019

Climate change, desertification, **land** degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems



09/2019

Climate change and **oceans and the cryosphere**

ipcc

INTERGOVERNMENTAL PANEL ON climate change





# SR1.5 : outline submitted for consideration to IPCC-44

## 17-20 October 2016

|  |               |
|--|---------------|
| Front Matter   | (2 pages)     |
| Summary for Policy Makers  | (15-20 pages) |
| 1. Framing and context   | (15 pages)    |
| 2. Mitigation pathways compatible with 1.5°C in the context of sustainable development       | (40 pages)    |
| 3. Impacts of 1.5 °C global warming on natural and human systems                             | (60 pages)    |
| 4. Strengthening the global response to the threat of climate change                         | (40 pages)    |
| 5. Approaches to implementing a strengthened global response to the threat of climate change | (20 pages)    |
| 6. Sustainable development, poverty eradication and reducing inequalities                    | (40 pages)    |
| Up to 10 boxes integrated case studies/regional and cross-cutting themes                     | (20 pages)    |
| FAQs   | (10 pages)    |
| <b>TOTAL: (247/267 pages)</b>  |               |

# SR1.5 schedule



2016

Science Community

Authors of SR1.5

Governments

April

IPCC 43 - Decision to undertake SR1.5

Aug

Scoping of Outline of Assessment

Oct

IPCC 44 - Approval of Outline

2017

Nomination and Selection of Experts

July

Preliminary Draft

Expert Review

First Order Draft

→ Oct

*Submitted*

2018

Jan

Expert Review

Second Order Draft

Government Review

→ April

*Accepted*

June

Final Draft

Government Review

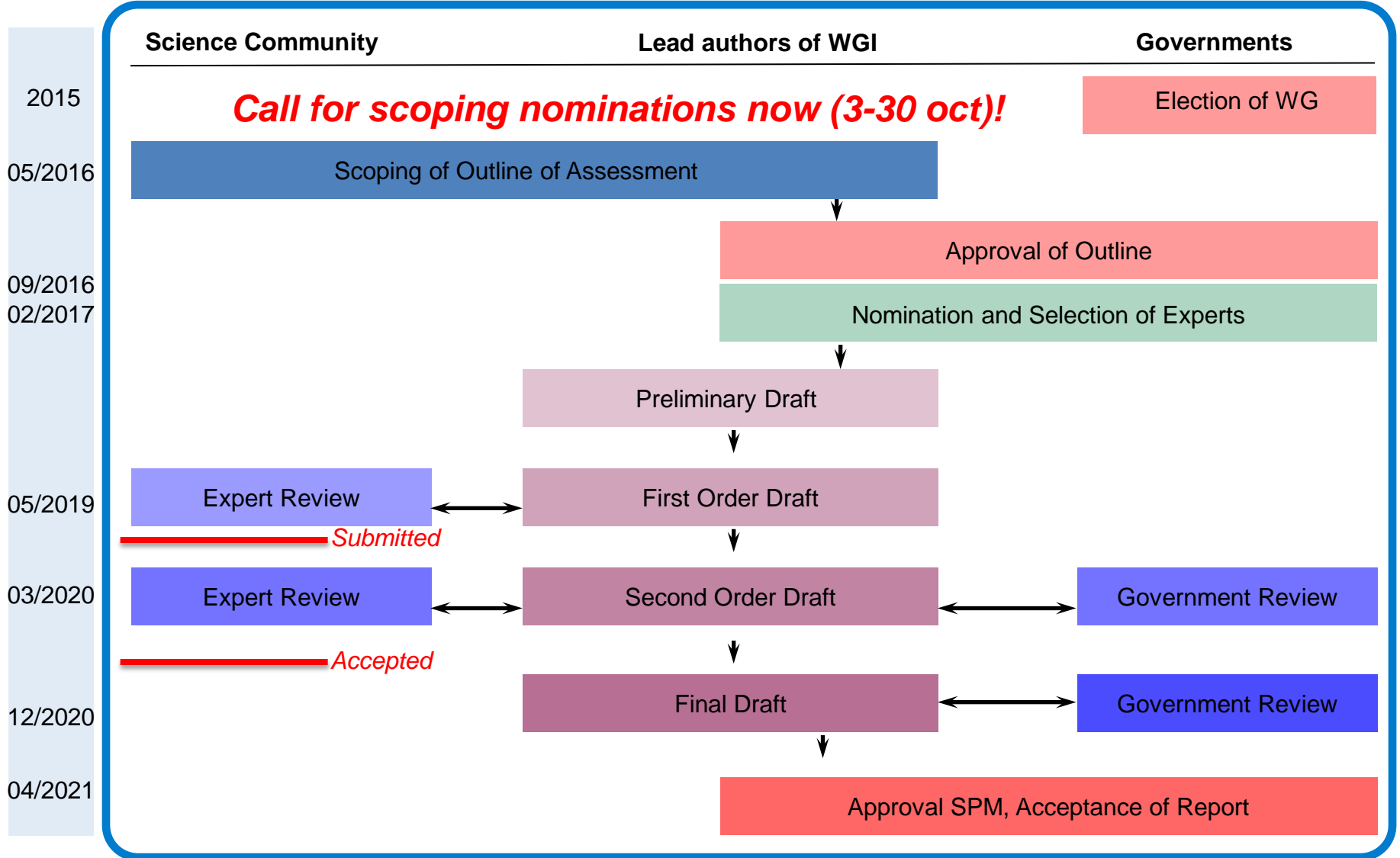
Sept

IPCC 48 - Approval SPM, Acceptance of Report

- ❖ The role of the IPCC and working principles
- ❖ Special reports
- ❖ **Schedule for the main assessment report**
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# WGI AR6 schedule



# Expertise areas for AR6 scoping

## WGI

- ❖ Climate system (atmosphere, ocean, land surface, cryosphere): **observations** (past and present), **processes**, and interactions
- ❖ Natural and anthropogenic **drivers** of climate change (land use, well-mixed greenhouse gases, short-lived forcers including aerosols), carbon and other biogeochemical cycles
- ❖ Climate **modelling**, model evaluation, **predictions**, scenarios and **projections**, detection and attribution, on **global and regional** scales
- ❖ Earth system **feedbacks and dynamical** responses, including abrupt change
- ❖ Climate **variability**, climate phenomena and teleconnections, **extremes** and implications for **regional** climate

# Expertise areas for AR6 scoping

## Cross-cutting

- ❖ Co-benefits, risks and co-costs of mitigation and adaptation, including interactions and trade-offs, technological and financial challenges and options
- ❖ Ethics and equity: climate change, sustainable development, gender, poverty eradication, livelihoods, and food security
- ❖ **Perception** of risks and benefits of climate change, adaptation and mitigation options, and societal responses, including psychological and sociological aspects
- ❖ Climate **engineering**, greenhouse gas **removal**, and associated **feedbacks** and impacts
- ❖ **Regional and sectorial climate information**
- ❖ Epistemology and different forms of **climate related knowledge and data**, including indigenous and practice-based knowledge

# From AR5 to AR6 : recent expert meetings and workshops

- ❖ 2014 : Joint WCRP/IPCC Workshop on IPCC AR5: Lessons Learnt for **Climate Change Research** and WCRP
- ❖ 2015 : Expert Meeting on Climate Change, **Food, and Agriculture**
- ❖ 2015 : Expert Meeting on **Regional Climate** Projections and their Use in **Impacts and Risk** Analysis Studies
- ❖ 2016 : Expert Meeting on **Communication**
- ❖ 2016 : Future Earth/PROVIA/IPCC **Risks and Solutions** Workshop

You 

You 



# Reminder of AR5 outline

- ❖ Introduction **Chapter 1**
- ❖ Observations and Paleoclimate Information **Chapters 2, 3, 4, 5**
- ❖ Process Understanding **Chapters 6, 7**
- ❖ From Forcing to Attribution of Climate Change **Chapters 8, 9, 10**
- ❖ Future Climate Change and Predictability **Chapters 11, 12**
- ❖ Integration **Chapters 13, 14**

**WGI Annex I: Atlas of Global and Regional Climate Projections**

**WGII Part B : Regional Aspects (continents, polar regions, small islands, ocean)**

# AR5 outline

- ❖ Introduction **Chapter 1**
- ❖ Observations and Paleoclimate Information **Chapters 2, 3, 4, 5**
- ❖ Process Understanding **Chapters 6, 7**
  - Clouds and aerosols*
- ❖ From Forcing to Attribution of Climate Change **Chapters 8, 9, 10**
  - Model evaluation*
  - Detection and attribution of climate change : from global to regional*
- ❖ Future Climate Change and Predictability **Chapters 11, 12**
  - Near-term climate change : projections and predictions*
  - Long-term climate change : projections, commitments and irreversibility*
- ❖ Integration **Chapters 13, 14**
  - Sea level change*
  - Climate phenomena and their relevance for future regional change*

# A few sensitive issues from AR5 WGI

## ❖ Links with global targets

It is *more likely than not* that the mean global mean surface air temperature for the period 2016–2035 will be more than 1°C above the mean for 1850–1900, and *very unlikely* that it will be more than 1.5°C above the 1850–1900 mean (*medium confidence*).

## ❖ Arctic sea ice

A nearly ice-free Arctic Ocean (sea ice extent less than  $1 \times 10^6$  km<sup>2</sup>) in September before mid-century is *likely* under RCP8.5 (*medium confidence*), based on an assessment of a subset of models that most closely reproduce the climatological mean state and 1979–2012 trend of the Arctic sea ice cover.

## ❖ Rate of global warming

The observed recent warming hiatus, defined as the reduction in GMST trend during 1998–2012 as compared to the trend during 1951–2012, is attributable in roughly equal measure to a cooling contribution from internal variability and a reduced trend in external forcing (expert judgement, *medium confidence*).

## ❖ Hydrological cycle

*Confidence is low* for a global-scale observed trend in drought or dryness (lack of rainfall) since the middle of the 20th century, owing to lack of direct observations, methodological uncertainties and geographical inconsistencies in the trends.

# Pre-scoping considerations

## ❖ From global to regional aspects

*Strengthen regional assessment (incl. extreme events)*

*Strengthen process-based understanding (e.g. clouds-circulation)*

## ❖ Observations :

*Skills of reanalysis products (atmosphere, land, ocean)*

*for assessments of regional trends, extreme events...*

## ❖ Integration between WGI and WGII :

*Regional aspects at the interface between climate response and impacts  
(incl. mountains, cities, small islands)*

*End-user / sectorial needs*

*Near-term (including volcanic eruption) / long term*

*Attribution*

## ❖ Model evaluation :

*Regional aspects, processes*

*Lessons learnt from forecast and hindcast*

*Role of ocean surface state on regional climate*

*From evaluation to model selection?*

# AR6 expert meetings and workshops

## ❖ Co-sponsored conferences

- FAO symposium on Climate Change, Land Use and Food Security (01/2017)
- 10<sup>th</sup> International Carbon Dioxide Conference (08/2017)
- *International Conference on Climate Change and Cities (01/2018)*

## ❖ *Potential topics for future expert meetings (under discussion)*

- *WGI-WCRP : Climate model evaluation and reliability*
- *WGIII : Mitigation, sustainability and climate stabilization*
- *WGI-II-III : Scenarios in the AR6*
- *WGI-II : Regional climate downscaling*
- *WGI-II : Attribution of extreme events*

**WGI contact : [tsu@ipcc-wg1.universite-paris-saclay.fr](mailto:tsu@ipcc-wg1.universite-paris-saclay.fr)**

**IPCC web site : [www.ipcc.ch](http://www.ipcc.ch)**  
*(Information for Focal Point contacts)*



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