Some recent activities relevant to preparations for the IPCC AR5

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Three activities

1. **Joint IPCC-WCRP-IGBP Workshop: *New Science Directions and Activities Relevant to the IPCC AR5*, 3.-6.3.2009, University of Hawaii, Honolulu, Hawaii, USA**

2. **WCRP Workshop on Evaluating and Improving Regional Climate Projections, 11.-13.2.2009, Toulouse, France**

3. **Co-ordination of the climate change impacts, adaptation and vulnerability (IAV) research community**

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IPCC-WCRP-IGBP Workshop: *New Science Directions and Activities Relevant to the IPCC AR5*

- **Host: International Pacific Research Institute (IPRC), Univ. Hawaii**
- **Participants: ~120 Lead Authors from IPCC Working Group I during the FAR, SAR, TAR & AR4**
- **Objectives (ahead of meeting):**
  1. **To discuss new science results and research directions relevant for AR5, including topics such as: ice sheet instability, land use parameterizations, aerosols and their effects on clouds and climate, new attribution results beyond temperature, and improved ENSO projections**
  2. **To examine and discuss the plans for undertaking a new coordinated set of climate model experiments with AOGCMs and ESMs using a set of representative Concentration Pathways (RCPs)**
  3. **To report the latest planning for coordinated experiments to address science problems associated with decadal prediction**
- **Format: Seven half day sessions with 1 plenary presentation and a panel of up to 20 speakers, 3 mins per speaker, then 1½ hr posters**

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Representative concentration pathways (RCPs)

RCP	Publication – IAM
RCP8.5:	Riahi et al. (2007) – MESSAGE
RCP6:	Fujino et al. (2006) – AIM[9]
RCP4.5:	Clarke et al. (2007) – MiniCAM[10]
RCP3-PD:	van Vuuren et al. (2006, 2007) – IMAGE

[9] The AIM modeling team revised this scenario slightly to comply with the 6 W/m^2 stabilization criterion before 2200, and the scenario just below 6 W/m2 in 2100. The revised stabilization scenario is published in Hijioka et al. (2008).

[10] The ERI IPAC team is collaborating with the PNNL MiniCAM team on data finalization as it relates to Asia.

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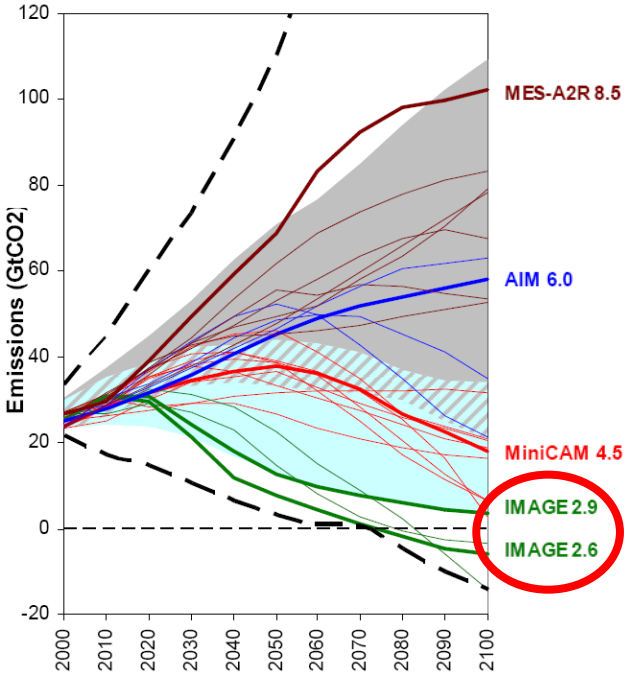
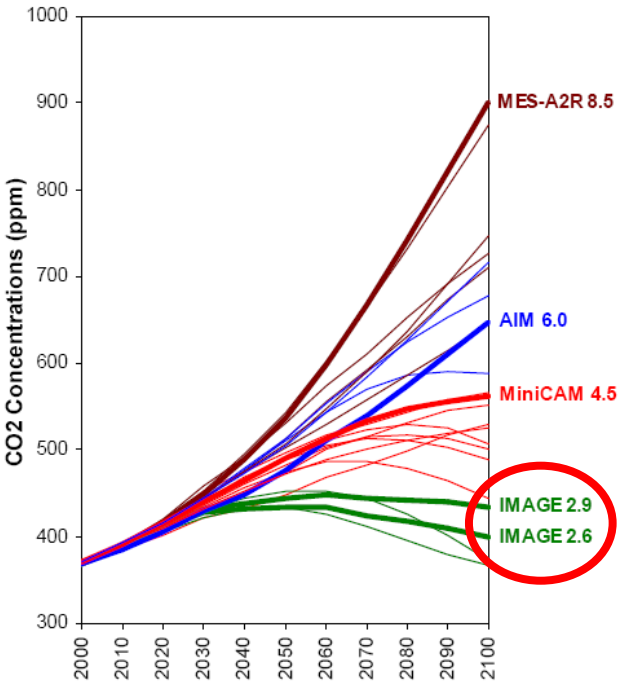
Some features of the Representative Concentration Pathways (RCPs)

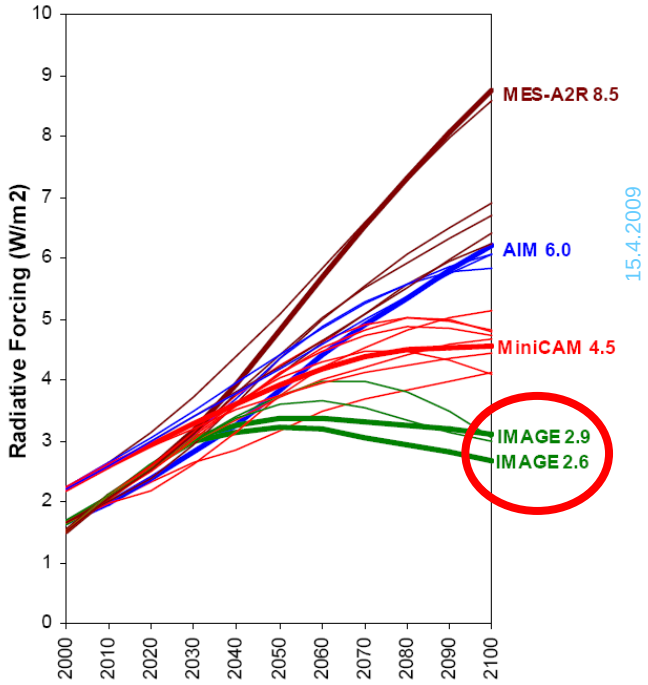
CO_2 Emissions



CO_2 Concentrations



Radiative forcing



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2.6 or 2.9? Evaluation panel to judge two general criteria concerning the IMAGE 2.6 scenario: technical soundness and replicability

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IPCC-WCRP-IGBP Workshop: *New Science Directions and Activities Relevant to the IPCC AR5*

Topics:

- Observations
- Detection/attribution
- Physical & biogeochemical feedbacks, forcing & climate sensitivity
- Cryosphere, sea level and hydrological cycle
- Extreme events and regional climate change
- Decadal prediction and climate variability
- Model evaluation and ensembles

Plenary talks:

Solomon, Stocker, MacFarland, Houghton, Stouffer, Gregory, Field, Hoskins

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IPCC-WCRP-IGBP Workshop: *New Science Directions and Activities Relevant to the IPCC AR5*

Outputs:

- **Report at:** http://www.ipcc.ch/meetings/session30/inf3.pdf
- **AR5 thoughts (Stocker):**
  - Maintain scientific rigour
  - New ways of communicating results (e.g. web-based)
  - Expert meetings and IPCC workshops (two under consideration)
    1. Joint WGI-WGII IPCC Expert Meeting on "*The Methodology of Detection and Attribution on Decreasing Space Scales and Extremes*"
    2. WGI Expert Meeting on "*The Methodology Multi-Model Ensembles and Model Metrics*"
  - More and shorter FAQs
  - Consistent Detection and Attribution framework
  - Big challenges for data storage, handling and analysis
- **New WG I web site at:** wg1@ipcc.unibe.ch

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WCRP Workshop on *Evaluating and Improving Regional Climate Projections*

- **Host: Météo-France, Toulouse, France**
- **Participants: 50 representatives primarily drawn from the regional climate modelling community but also including statistical downscalers and impact/adaptation analysts**
- **WCRP Task Force on Regional Climate Downscaling (TFRCD), co-chairs: Filippo Giorgi (Italy) & Colin Jones (Sweden)**
- **Objectives of meeting:**
  1. **Develop a framework to evaluate and improve RCD techniques for use in downscaling global climate projections**
  2. **Design an international coordinated effort to produce a new generation of RCD-based high resolution climate change projections over regions worldwide for input into the AR5 and use in impact/adaptation studies.**
  3. **Promote greater interactions between climate modellers, downscalers and end-users to better support impact/adaptation activities, fostering in particular a greater involvement of developing country scientists**

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WCRP Workshop on *Evaluating and Improving Regional Climate Projections*

Outcomes:

- Agreement to develop an experimental protocol for RCD global coverage (to populate with RCM and SD information)
- Research plan takes a long-term view, not constrained by IPCC, ...
- However, agreement to organise a contribution from this Task Group to IPCC AR5
- Proposal to prioritise 1 region (Africa) for downscaling:
  - Heavily populate RCP4.5 (cf. decadal predictions to 2035)
  - Partially populate RCP8.5 and/or RCP 2.6 by mid-2011
  - BUT, also offer major support to other developing countries for focus on their regions
- Longer-term plans:
  - Intercomparing downscaling techniques
  - Undertaking ERA (reanalysis) forced integrations at 50km or higher for evaluation purposes over all global domains
  - Slowly populate matrices for science activities leading to AR6

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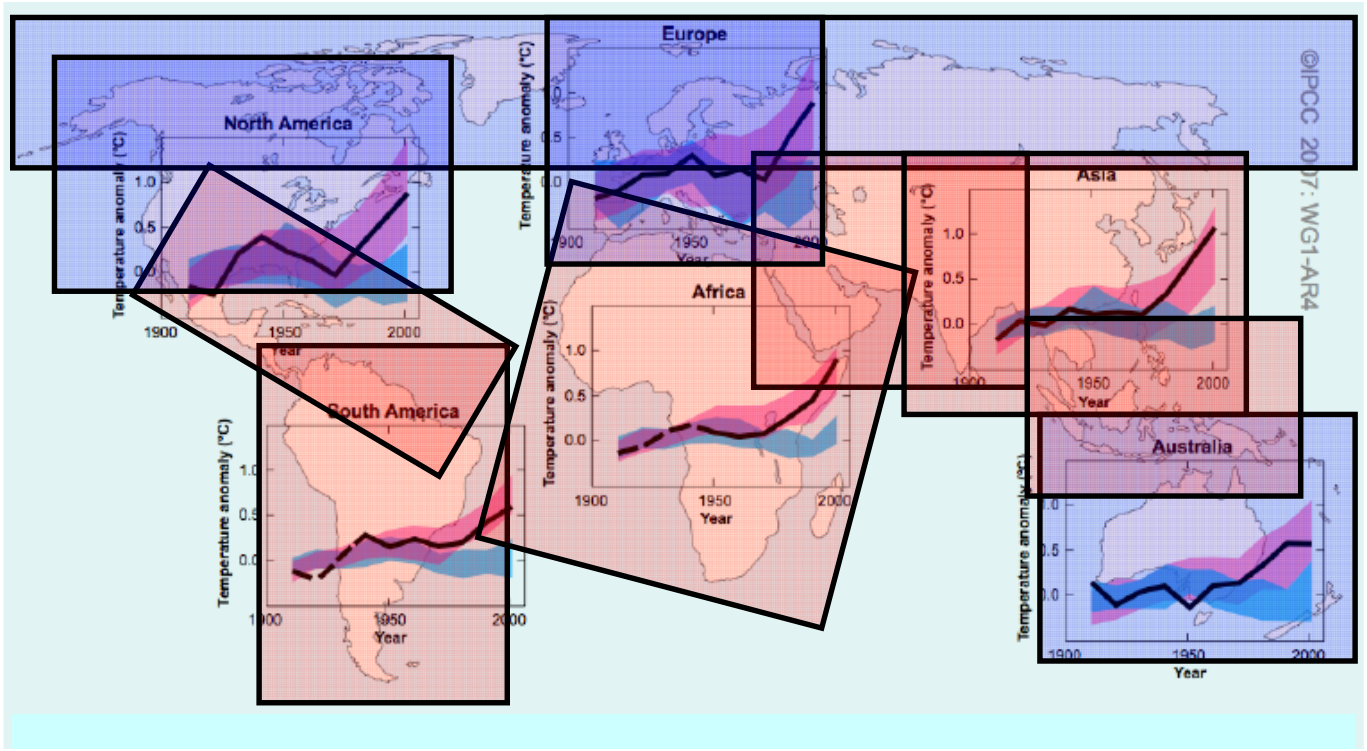
WCRP Workshop on *Evaluating and Improving Regional Climate Projections*

Ongoing:

- CORDEX (Coordinated Regional Downscaling Experiment)
- Selection of regional domains (under discussion – example only)



10 regions

AFR
ARC
AUS
CAM
EAS
EUR
NAM
SAM
SEA
WAS

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Co-ordination of the climate change impacts, adaptation and vulnerability (IAV) research community

- **Idea: Raised at the IPCC Expert Meeting on *New Scenarios for analysis of emissions, climate change, impacts and response strategies*, 19–21 September, 2007, Noordwijkerhout, The Netherlands**
- **Problem: The IAV community is a loose collection of individual researchers or small research centres, lacking coherence and structure, hence:**
  1. **it is difficult to harmonize or compare assumptions, tools and research practices within and across different groups, constraining effective communication and evaluation of results**
  2. **it is difficult to deliver clear, consensus messages to the climate and integrated assessment modeling communities, and similarly, for these groups to communicate effectively with IAV communities**

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Co-ordination of the climate change impacts, adaptation and vulnerability (IAV) research community

- **Workshop**: ***Climate Change Impacts, Adaptation and Vulnerability Community Coordination***, **National Center for Atmospheric Research (NCAR), Boulder, CO, USA, 8-9 January 2009**
- **Participants: 35 international researchers**
- **Three objectives:**
  1. **To discuss appropriate strategies and avenues for communicating and coordinating research efforts within the IAV community and between IAV and climate modelling (CM) and integrated assessment modelling (IAM) groups;**
  2. **To develop a small set of agreed potential questions and issues which will distinguish a global strategic contribution of the IAV community from those of the other communities, during and beyond the development of IPCC AR5**
  3. **To provide feedback to the CM and IAM scenarios groups on how to better develop, provide and interpret socio-economic scenarios and narrative story lines to better support the deployment of both impact and adaptation assessments as well as regionally grounded assessments of the feasibility and effectiveness of mitigation options**

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Co-ordination of the climate change impacts, adaptation and vulnerability (IAV) research community

Outcomes:

- **Workshop report: submitted to *EOS*. Also reported to January 2009 Amsterdam IPCC AR5 research planning meeting co-ordinated by ESSP (Earth System Science Partnership**
- **Four overarching research questions:**
  1. **How much adaptation do we need between now and 2030 to cope with 'inevitable' climate change?**
  2. **What are the likely and unavoidable impacts climate impacts over the 21st century taking into account adaptation and considering a range of scenarios?**
  3. **What are the processes and interactions in human and natural systems that result in vulnerability to climate change?**
  4. **What are the interactions between mitigation and adaptation? Where do they generate feedbacks?**
- **Major conference: *Climate adaptation futures: preparing for the unavoidable impacts of climate change*, Australia: 29.6.-1.7.2010**

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Notice

Colleagues are welcome to incorporate these slides into their own presentations, assuming they are correctly acknowledged. However, the author would also appreciate being informed prior to the extensive use of this material in public meetings.

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