WGNE activities and WMAC

Andy Brown and Christian Jakob
WGNE co-chairs
Role of WGNE

- Working Group on Numerical Experimentation
  - Jointly established by the WCRP and the WMO Commission for Atmospheric Sciences (CAS)
  - Responsibility of fostering the development of atmospheric circulation models for use in weather prediction and climate studies on all time scales and diagnosing and resolving shortcomings.

- A distillation of the Terms of Reference…..
  - Advice, liaison
  - Co-ordinated experiments
  - Workshops, publications, meetings
Co-ordinated experiments and projects
Project overview

- Transpose-AMIP  GOOD PROGRESS
- SURFA  SLOW PROGRESS
- Cloudy-radiance  DONE
- Grey-zone  GOOD PROGRESS

Verification
- NWP performance (eg TCs, precipitation)  ONGOING
- Polar (CBS-style; ConcordIASI intercomparsion)  NEW
- Climate metrics  GOOD PROGRESS
- Issues with verification against own analysis  NEW
Transpose-AMIP:

testing climate models in NWP mode
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  - VOCALS (SE Pacific stratocumulus)
  - AMY (Asian monsoon)
  - T-PARC (mid-latitude Pacific)
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- 9 centres committed to submit data
- MIROC5, HADGEM2, CNRM-CM5 now available to download
Grey zone
Cold air outbreak case

- WGNE and GASS supported project
- Model intercomparison (9+ participating groups)
  - GCM
  - LAM
  - Idealized LAM / CRM.
- How well do models represent convection and the evolution of the boundary layer in a cold air outbreak?
- Use of high resolution ‘truth’ to investigate parametrization issues for coarser resolution models

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<th>Country/Institution</th>
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Workshops and meetings
WGNE-THORPEX PDP

- Joint expert meeting on “Diagnosis of Forecast Errors” held in Zurich, July 2010
- WGNE/PDP/ECMWF Workshop on Representing Model Uncertainty and Error in Numerical Weather and Climate Prediction Models, ECMWF, June 2011
  - Brought together data assimilation, model physics and ensemble/stochastic physics communities
  - Stochastic parametrisation paradigm needs further development at the process level and to be incorporated as part of general parametrization development ⇒ WGNE/GASS efforts
  - http://www.ecmwf.int/publications/library/do/references/list/201106
Workshop: The Physics of Weather and Climate Models
March 20-23, 2012

Beckman Institute, California Institute of Technology
Pasadena, California

Organized by: J. Teixeira (JPL), C. Jakob (Monash), P. Siebesma (KNMI)

Co-organized by:
Working Group on Numerical Experimentation (WGNE)
Keck Institute for Space Studies (KISS), Caltech

Workshop Goal
To focus on key problems in the representation of physical processes in weather and climate models, and to develop scientific and programmatic strategies for their solution.

Workshop Format
Three multidisciplinary thematic sessions, one per day

Day 1-3: Mornings: Three invited one-hour presentations
         Afternoons: Break-out and Poster Sessions

Day 4: Break-out Presentations, Plenary Session, Recommendations

March 20, Tuesday: High-Latitude Physics
March 21, Wednesday: Tropical Weather and Climate
March 22, Thursday: Clouds and Climate Physics
March 23, Friday: Plenary Session and Recommendations

GOV/WGNE Ocean coupling workshop

- Washington, USA. 19th-22nd March 2013
- Follow on to ECMWF (2008) and Met Office (2009) workshops
- Focus on coupled modelling for short and medium range
- Use of short-range coupled to understand issues for longer range (e.g. subseasonal-seasonal)

https://www.godae-oceanview.org/outreach/meetings-workshops/coupled-prediction-workshop-gov-wgne/
4th WGNE Workshop on Systematic Errors in Weather and Climate Models

The JSC/CAS Working Group on Numerical Experimentation (WGNE) is organizing a workshop on systematic errors in weather and climate models to be hosted at the Met Office, Exeter, UK, during 15-19 April 2013.

The principal goal will be to increase understanding of the nature and cause of errors in models used for weather and climate prediction (including intra-seasonal to inter-annual). It is anticipated that, the focus will be on General Circulation Models (GCMs) such as those used in CMIP5, TIGGE, etc., including atmosphere-only, coupled atmosphere-ocean and earth system models. Issues in the atmosphere, land surface, ocean and cryosphere are all of interest. A wide variety of diagnostic techniques will be discussed, including traditional analysis methods applied to global models, process studies, the use of diagnostic and process models (e.g., single-column, cloud-resolving), and simplified experiments (e.g., aqua-planet). Of special interest will be studies that consider errors found in multiple models and errors which are present across timescales. Diagnostics and metrics that utilize novel or multi-variate observational resources and constraints are identified and characterized systematic errors are welcomed, together with studies which inter the amount of systematic error in predicted extremes from systematic errors in non-extreme situations.

Alongside WGNE, the following groups will contribute to the coordination of the workshop: The Working Group on Coupled Models (WGCM), the Working Group on Seasonal to Inter-Annual Prediction (WGSP), the Working Group on Ocean Model Development (WGOMD), Atmospheric Processes And Their Role In Climate (APARC), Global Energy and Water Cycle Experiment (GEWGCE), and the Year Of Tropical Convection (YOTC) project.

More details will appear here as planning progresses.

Systematic errors workshop scientific steering committee:

- Keith Williams (chair and local organizer)
- Christian Jakob and Andy Brown (WGNE co-chairs)
- Sandrine Gery (representing WGCM)
- Adam Scaife (representing WGCM and APARC)
- Gokhan Danabasoglu (representing WGOMD)
- Peter Bickel (representing Climate Metrics Panel)
- Beth Ebert (representing Joint Working Group on Verification)
- Jon Petch (representing GERPES)
- Diana Walker (representing the observational community and YOTC)

Questions can be addressed to Keith Williams.

http://www.metoffice.gov.uk/conference/wgne2013

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WGNE and WMAC

- WGNE supportive in principle of the formation of WMAC
- WGNE is a micro-WMAC for the atmosphere already
  - Ex-officio membership of GASS, GLASS, SPARC and WWRP
  - this does cause some tension that needs resolving
- WGNE keen on a light-touch, bottom-up, communication-oriented WMAC
WGNE and WMAC

• WMAC must promote modelling and help grow the community
• WMAC must gain ground for the basic science of modelling
• WMAC must facilitate first and GENTLY steer second
• WMAC must include representation from the weather community, e.g., WWRP
Questions?