

Working Group on Numerical Experimentation (WGNE) Report

1. Highlights for JSC

- **5th WGNE Systematic Errors (WSE) Workshop** (Montreal, Canada, June 2017): Hosted by Environment and Climate Change Canada (ECCC), jointly sponsored by CAS/WMO and WCRP. This event welcomed over 200 scientists from the weather and climate communities. The workshop's primary goal was to increase understanding of the nature and cause of systematic errors in numerical models across time scales. Out of 240 abstracts submitted to the workshop, 48 talks and 132 posters were presented. [Early publication online in BAMS](https://doi.org/10.1175/BAMS-D-17-0287.1). doi:10.1175/BAMS-D-17-0287.1
- **WGNE-32** (Met Office, Exeter, UK, October 2017): Taking forward recommendations from WSE with concrete actions on new surface fluxes group, evolution of drag project, model uncertainty to be explored with PDEF, strengthened collaboration with GASS/GLASS, modelling challenges related to exascale capabilities. [Link to final report](#).
- **2nd Pan-GASS meeting** (Lorne, Australia, March 2018) – WGNE fed in outcomes from the WSE workshop. Amongst others, new GASS projects have been proposed on drag processes, fog modelling, grey-zone modelling and modelling the precipitation diurnal cycle which were all key systematic errors identified at the WSE workshop. [Link to meeting site](#).

2. Early success and/or planned activities in 2018/2019

- Joint meeting with PDEF to be held at JMA, Tokyo, October 2018. [Link to PDEF site](#).
- WGNE started new project on a project on modeling issues related to **surface fluxes**, jointly with GASS, GLASS and in discussion with CLIVAR and DAOS. Initial focus will be over oceans.
- WGNE is also planning a new project on **exascale** computing issues.
- Due to its success, WGNE's MJO-TF project was renewed/extended, and includes collaborations with S2S and GASS. [Link to MJO-TF site](#).
- Extension of WGNE's Drag project is being planned in collaboration with GASS/GLASS and SPARC. [Link to WGNE Drag project site](#).
- WGNE's Aerosols project to be taken forward jointly with S2S. [Link to S2S site](#).

- WGNE's inter-comparison of tropical cyclone forecasts: results from this project, which started in 1991 and was led by the JMA, have recently been published. [Link to publication](#).
- WGNE's efforts regarding improved verification methods and applications (hydrology, complex terrain, process-based methods, high-resolution, tropical cyclones, QPF) will continue, in collaboration with the JWGFVR. [Link to the JWGFVR site](#).
- See also [new WGNE website](#).

3. Issues and challenges:

- Main issue is there appears to be limited discussion between WCRP and CAS with WGNE tending to receive conflicting messages from the two. For example, the WCRP sponsors review has proposed a new modelling group to work across timescales with WGNE focussing on the atmosphere. In contrast, WWRP has indicated that WGNE should be that central modelling group and be pulling through coupled model development and earth system complexity to shorter timescales.
 - Until the proposed changes are clarified, and depending on when they become effective, it is hard for WGNE members and collaborators to plan and engage new activities.
 - Our view is that regardless of how many there are, all model development groups (incl. WGNE/GASS/GLASS/ocean/etc.) need to cut across timescales and sit under WMO research with equal responsibility to WCRP and WWRP.
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