Establishment of two new Working Groups on; Predictability Dynamics and Ensemble Forecasting (PDEF) Data Assimilation and Observing Systems (DAOS) under WWRP

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New Structure Early 2015?

WWRP

WWRP JSC

Working Group
- Nowcasting/Mesoscale
- SERA
- PDEF

Project
- SDS-WAS
- Regional Committees
- FDPs/RDPs
- S2S
- PPP
- HIW

Regular Budget
The THORPEX GIFS-TIGGE and PDP (Predictability & Dynamical Processes) working groups have had an increasingly overlapping interest in research related to the theory & practice of ensemble prediction.

Approaching the completion of the THORPEX at the end of 2014, the logical evolution of the THORPEX working groups would be the creation of a Predictability Dynamics & Ensemble Forecasting (PDEF) working group, combining elements of the current GIFS-TIGGE and PDP groups.

This has been agreed by THORPEX ICSC, WWRP JSC and CAS-16.

This new group would provide a centre of scientific expertise on dynamics, predictability and ensemble forecasting that is currently lacking in the core WWRP programme.
Role of the PDEF WG

- Foster scientific research on dynamics, predictability and ensemble forecasting
- Bridge between academic & operational communities
- Support for WWRP projects PPP, S2S, HIW, FDPs, RDPs
- Steering development of ensemble prediction databases (TIGGE and TIGGE-LAM) to support scientific research
- Promote use of EPS datasets by the research community
Scientific Scope of the PDEF WG

- Centre of expertise on dynamical processes, predictability and ensemble forecasting.
- Understanding & improving probabilistic predictive skill, and its links with dynamical phenomena
- Scientific issues include
  - Growth & evolution of prediction errors
  - Stochastic representation of unresolved processes
- Covering short- to medium-range forecast timescales (potentially longer)
TIGGE-Limited Area Model (LAM)

- As a counterpart to the global TIGGE project, the GIFS-TIGGE working group established the TIGGE-LAM panel, to focus on research & development of limited area ensembles.
- It was envisaged that 3 regional TIGGE-LAM archive centres would be established.
- However, funding has so far only enabled a European TIGGE-LAM archive, which is hosted by ECMWF and built using funding from the European GEOWOW project.
- There is increasing emphasis on convective scale ensembles for local areas (with little overlap).
- Ideally, we would like to establish a TIGGE-LAM archive to collect data from co-located LAM EPS systems (in conjunction with projects like FROST 2014). This would support convective scale EPS research, e.g., for the High-impact Weather project.
TIGGE-LAM improves regional ensemble forecasts

The World Weather Research Programme has launched a new tool to improve regional ensemble forecasts of high-impact weather and so strengthen early warning and disaster prevention.

The TIGGE archive after THORPEX

- For continued viability, TIGGE will need at least one archive centre, plus continuing ensemble predictions from most data providers.
- Current indications are that
  - ECMWF is willing to continue to host the TIGGE archive & ingest new data. They will also host archives for European TIGGE-LAM and S2S project.
  - NCAR will not continue to host the archive data but will support TIGGE project via their model validation portal.
  - CMA is still considering their future contribution.
- A suggested new name is "The International Grand Global Ensemble".
Joint GIFS-TIGGE/PDP Meeting
19-20 March 2014

- Prepare for new Working Group on Predictability, Dynamics & Ensemble Forecasting.
  - Agree Terms of Reference
  - Scientific foci
  - Links with other WGs
  - How best PDEF, TIGGE & TIGGE-LAM can support WWRP projects (particularly high-impact weather, polar prediction).
  - Membership

- Related research.
  - TIGGE paper
  - T-NAWDEX
  - Predictability
Scope of new Projects focused on key “hot spots”

...while working groups should cover the entire domain
There are strong links between the three elements of the proposed group.
Predictability Dynamics and Ensemble Forecasting WG
Proposed new terms of reference

- Advance the science of dynamical meteorology and predictability research, and their application to ensemble forecasting
- Encourage scientific investigations to improve ensemble predictions by better accounting for analysis, model and forecast uncertainties
- Promote research on the evaluation of ensembles
- Foster collaboration between the academic community and operational centres
- Promote the development of ensemble applications and the transition into operations
- Support WWRP projects and field experiments, including Forecast Demonstration Projects and Research and Development Projects
- Promote the use of TIGGE, TIGGE-LAM and other ensemble datasets
- Facilitate and encourage training in the science of predictability, dynamics and ensemble forecasting
- Provide the scientific direction to the development of the TIGGE and TIGGE-LAM archives
Data Assimilation and Observing Systems Working Group
Proposed new terms of reference

The Data Assimilation and Observing Systems (DAOS) working group (WG) will provide guidance to the WWRP on international efforts to optimise the use of the current WMO Global Observing System (GOS) and to advise on the strategy for its evolution. It will also provide guidance on which data assimilation methods may provide the highest-quality analysis products possible from the GOS. Through these activities, the DAOS-WG will facilitate the development of advanced numerical weather prediction (NWP) capabilities, especially to improve high-impact weather forecasts. **DAOS-WG will be primarily concerned with data assimilation and observing system issues from the convective scale to planetary scales and for forecasts with time ranges of hours to weeks.**

To achieve its mission, the DAOS WG will:

- Provide community consensus guidance on data assimilation issues, including the development of advanced methods for data assimilation.
- Promote research activities that will lead to a better use of existing observations and that will objectively quantify the impact of current and future observations for NWP.
- Assist WWRP projects and other WMO working groups in achieving their scientific objectives by providing expert advice on the use of observations and data assimilation techniques (e.g. WGNE, IPET-OSDE, MWFR)
- To organize and provide the scientific steering committee for the WMO Data Assimilation Symposium, which is to be held approximately every 4 years.
Conclusions

- The new two WWRP working groups will be established at the beginning of 2015 and help continue to engage with academic experts to contribute to operational forecasting.
- The Terms of References of the WGs are now under discussion to cover the new role under WWRP.
- TIGGE has been invaluable to support a range of scientific research.
- Provided there is support from TIGGE partners, TIGGE database will continue for several more years after THORPEX – with a new name “The International Grand Global Ensemble”