TIGGE Outlook

TIGGE is considered by THORPEX as paving the way towards a Global Interactive Forecasting System (GIFS). A GIFS would seek to produce internationally an advanced system to warn of the likelihood of high impact weather thereby reducing the loss of lifes and property. The primary need for further development is to accelerate data exchange between the partners. In the upcoming Phase 2 of TIGGE, which is still subject to funding, requirements for massive data transfers will be alleviated by a distributed data access concept.

It is anticipated that limited-area ensemble prediction systems will also form an important component of the GIFS. The priority requirement here is to develop standard formats which will enhance the interoperability of the existing systems. One key objective is to facilitate the use of lateral boundary conditions from various global systems by various limited-area systems.

There is no doubt that there are immense benefits in optimizing the use of the output from ensemble prediction systems. Having scientists make full use of the data in the TIGGE archive will help realize those benefits. Scientists are encouraged to engage in using the TIGGE archive to fully assess the merits of multi-model forecasting.

WWRP - THORPEX

TIGGE

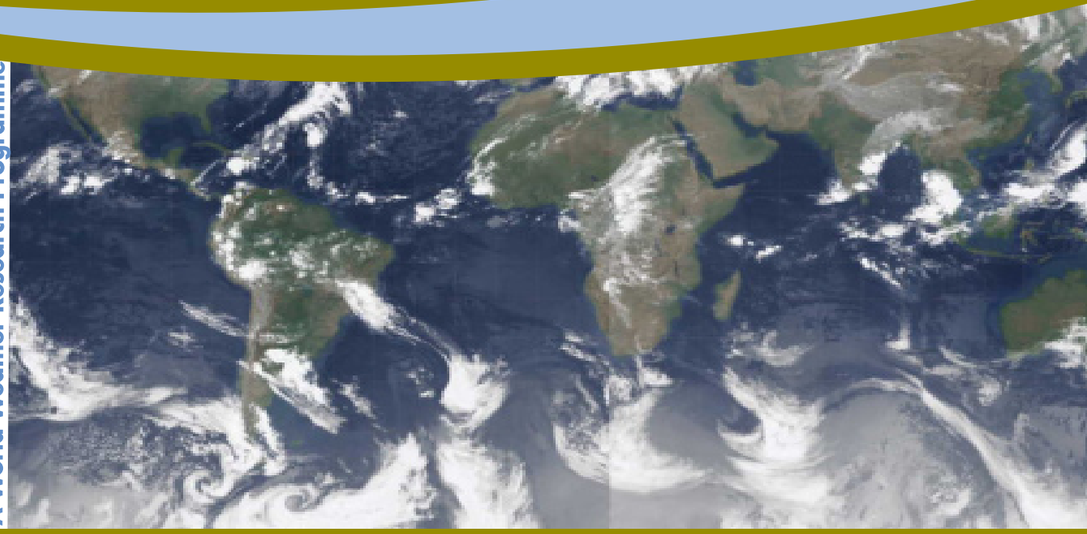
The THORPEX Interactive Grand Global Ensemble

THORPEX

THORPEX – THe Observing system Research and Predictability EXperiment – was established in 2003 by the Fourteenth World Meteorological Congress under the auspices of the WMO Commission for Atmospheric Sciences (CAS) as part of the WMO World Weather Research Programme (WWRP).

THORPEX is a key research component of the WMO Disaster Risk Reduction Programme and is already contributing to this programme by focussing on extending the range of skilful forecasts of high impact weather up to 14 days ahead, developing user-specific products ready for use in decision-making support tools.

THORPEX
A World Weather Research Programme



Probabilistic Forecasts

Many weather situations may be characterised as low probability/high risk – the event may be unlikely but the consequences may be catastrophic in terms of loss of life, property damage, loss of revenue etc. Decision making in these situations is most difficult stretching both the tools available and decision makers. The shift towards probabilistic forecasts offers a solution – by characterising the probability of a particular event, we can now provide more appropriate information on the likely outcomes.

The THORPEX Interactive Grand Global Ensemble (TIGGE), a major element of THORPEX, is now providing the data bases necessary to support research on and development of global probabilistic weather forecasting.

TIGGE Objectives

- Enhancing collaboration on ensemble prediction, internationally and between operational centres and universities.
- Developing new methods to combine ensembles from different sources and to correct for systematic errors.
- Achieving a deeper understanding of the contribution of observation, initial and model uncertainties to forecast error.
- Exploring the feasibility and the benefit of interactive ensemble systems responding dynamically to changing uncertainty.
- Enabling the development of an operational system, a "Global Interactive Forecast System (GIFS)".

The TIGGE objectives will be reached by a two-phase implementation. In the current Phase 1, ensemble forecasts are collected in near-real time at three central data archives using existing network and storage capabilities. The data are then made accessible to scientists for research and education through specific data portals.

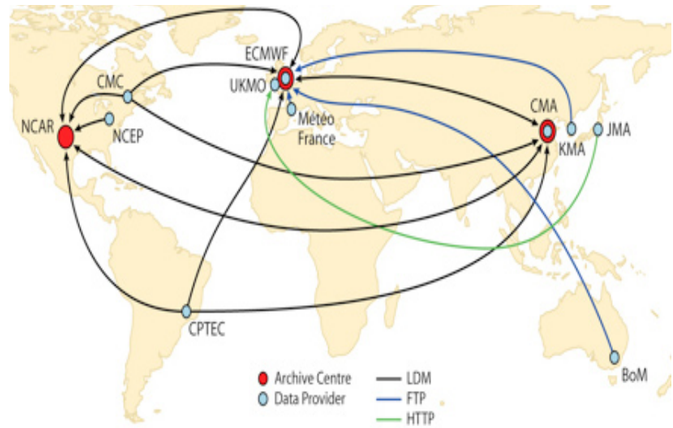
The highest priority data accumulated in the TIGGE archive are the ensemble forecasts generated routinely (operationally) at ten major forecast centres around the world. This core data is accumulating at a daily rate of approximately 240 GB. Additional special datasets will be added in the future for specific research and applications.

In Phase 2, to be developed in the near future subject to the success of Phase 1, the real-time preparation and distribution of multi-model products will be the main focus. This will require substantial software development, specific funding and coordination with the evolving WMO Information System (WIS).

TIGGE Archive Centres and Data Providers

The databases and data portals of Phase 1 have been developed by three archive and distribution centres: China Meteorological Agency (CMA), ECMWF, US National Centre for Atmospheric Research (NCAR).
The operational forecasting centres supplying daily forecasts are to the TIGGE archive are:

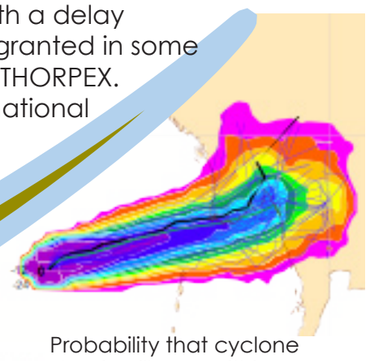
- Météo-France (MF)
- UK Met Office (UKMO)
- Australian Bureau of Meteorology (BoM)
- Brazilian Centra de Previsao de Tempo e Estudos Climatico (CPTEC)
- China Meteorological Administration (CMA)
- The European Centre for Medium-Range Weather Forecasts (ECMWF)
- Japan Meteorological Administration (JMA)
- Korea Meteorological Administration (KMA)
- Meteorological Service of Canada (MSC)
- US National Centers for Environmental Prediction (NCEP).



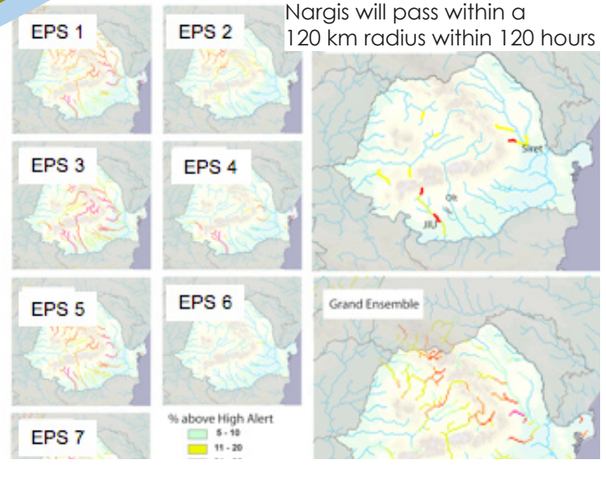
TIGGE Data Access

Data providers supply their products to the TIGGE archive centres in common format under an agreed set of rules, which include re-distribution rights. Access is provided through a simple electronic registration process, with valid e-mail address and acknowledgment of conditions of supply. Under the simple registration process, access is given with a delay (48 hours) after the initial time of the forecast. Real-time access is granted in some cases, e.g. for field experiments and projects of special interest to THORPEX. Registration for real-time access is handled via the THORPEX International Programme Office.

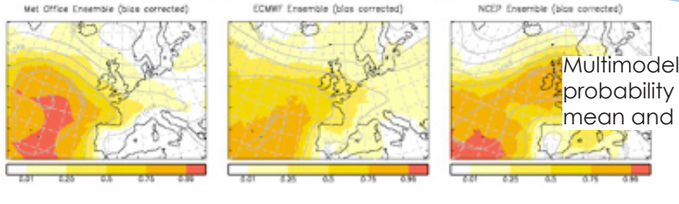
Data access is available via the TIGGE data portals at NCAR, ECMWF and CMA.
CMA portal: http://wisportal.cma.gov.cn/tigge
ECMWF portal: http://tigge-portal.ecmwf.int
NCAR portal: http://tigge.ucar.edu.



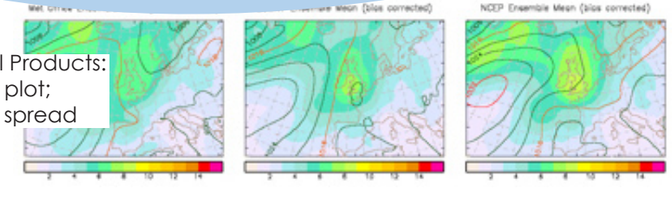
Probability that cyclone Nargis will pass within a 120 km radius within 120 hours



TIGGE Products



Multimodel Products: probability plot; mean and spread



Flood Alerts