



Towards a global interactive forecasting system: The TIGGE project of THORPEX

P. Bougeault

ECMWF (PHILIPPE.BOUGEAULT@METEO.FR)

TIGGE, the THORPEX Interactive Grand Global Ensemble, is a key component of THORPEX: a World Weather Research Programme to accelerate the improvements in the accuracy of 1-day to 2-week high-impact weather forecasts for the benefit of humanity. Its mission is to accumulate evidence of the benefits of combining software and forecasts from various forecasting centres to create optimal probabilistic forecasts, and thereby pave the way towards a truly Global Interactive Forecast System.

The agreed objectives of TIGGE are: (i) enhancing collaboration on ensemble prediction, internationally and between operational centres and universities; (ii) developing new methods to combine ensembles from different sources and to correct for systematic errors (biases, spread over-/under-estimation); (iii) achieving a deeper understanding of the contribution of observation, initial and model uncertainties to forecast error; (iv) exploring the feasibility and the benefit of interactive ensemble systems responding dynamically to changing uncertainty; (v) future transition towards an operational system.

The concept of TIGGE is to accumulate ensemble forecasts in a database and to experiment new products and verification methods. The data to accumulate in priority were agreed to be: (i) Ensemble forecasts generated routinely at different centres around the world: This is the core data of the TIGGE archive. The total daily data volume is around 300GB. (ii) Other existing datasets including re-analyses and re-forecasts. (iii) Additional special datasets generated by the THORPEX community for specific research and applications.

CMA, ECMWF, and NCAR are the TIGGE Archive and Distribution Centres. BMRC, CMA, CPTEC, ECMWF, JMA, KMA, Meteo-France, MS Canada, NCEP,

and UKMO have agreed to provide daily forecasts to the above Archive Centres. In addition, the TIGGE Web site is maintained by ECMWF, the meta-data centre is maintained by NCAR, and the verification Web site is maintained by JMA.

The initial access to TIGGE database was opened in the spring of 2007 at NCAR and ECMWF. Currently data from five forecasting centres are available in near-real-time (48 hours delay), and can be downloaded by interested scientists. The first evaluation results are becoming available in several organizations.

Work has started towards the definition of the limited-area component of TIGGE, named TIGGE-LAM. This is aiming towards interoperability of the limited-area ensemble prediction systems available in various parts of the world.

Finally the technical evolution of the TIGGE database towards a more distributed concept, avoiding the need to exchange daily vast amounts of data is under study.