

THORPEX GIFS-TIGGE Working Group

Twelfth Meeting

WMO, Geneva
18 March 2014

Meeting Report
Original: ENGLISH

Report of the meeting

1. ORGANIZATION OF THE MEETING

1.1 Aims of the meeting

Richard Swinbank welcomed participants to the meeting and conducted a *tour de table* for introductions. He noted that the main aims of the meeting were to draw together various threads, including finishing off the work of the group, preparing the way for the new merged group, reviewing outstanding actions etc., It will also be important to hear about the intentions of the data providers and archive centres beyond the end of the THORPEX programme. The joint meeting with the PDP WG in the following two days will consider future arrangements post –THORPEX including the terms of reference for the new WWRP WG on Predictability, Dynamics and Ensemble Forecasting.

1.2 Adoption of the agenda

The draft agenda was discussed and agreed.

1.3 Working arrangements

The working arrangements for the meeting were agreed.

2. REPORT AND ACTIONS FROM PREVIOUS MEETINGS

2.1 Status of actions from the eleventh GIFS-TIGGE meeting.

The status of the permanent and the actions from previous meetings were reviewed.

P1 - implementation is proceeding. Updates of data usage have been provided. It seems that most users access data from ECMWF. The data sets are well used by the research community.

P2 - the TIGGE reference list has been reviewed. In total there are 114 papers in the literature definitely related to TIGGE and another 21 that need further assessment and are possibly related to TIGGE.

P3 - some model documentation has been updated in the last year e.g. CMC, JMA, KMA and the Met Office. The others are probably now out of date.

P4 – more attention to this action is needed in the future

P5 - it is recognised that more work needs to be done on this item.

Action 10.6.3 - carried over

Action 10.7.1 - done

Action 11.3.1 - done

Action 11.3.2 - partially done

Action 11.3.3 – done

Action 11.3.4 - some progress (carried over)

Action 11.3.5 – carried over

Action 11.3.6 - done

Action 11.3.7 - done

Action 11.3.8 - done

Action 11.3.9 – discussed at Item 5.3 of the joint meeting

Action 11.4.1 and 4.2 – done

Action 11.4.3 – discussed at Item 3.2 of the joint meeting

3. TIGGE ARCHIVE

3.1 Brief updates from the archive centres and future plans.

ECMWF: archiving is proceeding as normal. The JMA data are now being provided twice each day. TIGGE-LAM archiving is also being implemented through the GEOWOW project.

CMA: The resolution of the global model has been doubled. The letter from WMO concerning the future of the archive function after the end of THORPEX has been received and is currently being discussed. It is the intention of CMA to archive S2S data.

Action 12.3.1: *CMA is requested to confirm whether they will continue to host a TIGGE archive centre after the conclusion of THORPEX, by the time of the WWOSC.*

NCAR: it was again confirmed that NCAR will cease archiving TIGGE data at the end of the THORPEX programme. The system is now 'frozen' so no further changes to the archive can be made.

3.2 Brief news items from the data providers.

Met Office: the MOGREPS system was outlined. The UK ensemble is directly nested in the global ensemble (MOGREPS-G) and the European regional ensemble is no longer run. The focus will now be on the first week using the Unified model with ECMWF providing the primary forecast information for weeks 2-4. MOGREPS-15, currently used to supply 15-day forecasts for TIGGE, will be retired in about one years' time. From June 2014 both MOGREPS-G and 15 will use the Endgame dynamical core and MOGREPS G will be run out to 7 days. MOGREPS-G is run four times /day, to drive the UK ensemble. It is intended that MOGREPS G will supply the TIGGE archive, so data will only be available out to seven days. It may not be possible to produce the full set of current fields. The practicalities will be discussed with ECMWF.

JMA: there are two global medium-range EPSs, One week EPS and Typhoon EPS. The One-week EPS's upgrade took place in February 2014. Runs take place at 00 and 12z. The resolution has been increased to about 40km and the total ensemble size is similar. "Single Level Parameter" data will be revised soon and new TIGGE data sets provided. The Typhoon EPS's upgrade took place in March 2014. The resolution also has been increased to about 40km and the ensemble size has been increased to 25.

CXML data are provided by CMA, CMC, ECMWF, JMA, KMA, MF, NCEP and the Met Office. Checks showed some syntax errors in the JMA data. Other CXML data should be checked. Also, it is not clear who looks after the schema versions 0.2, 1.0, 1.1 and 1.2 or which version is recommended for use.

Action 12.3.2: Co-chairs to check with CAWCR over the version(s) of CXML schema that should be used for TC data exchange

[Post meeting note – it is recommended to use the latest version, 1.3, since the CXML schema are backwards compatible]

CMA: as noted in the report from the archive centre.

KMA: There have not been any major upgrades since the last meeting so KMA is using the same global ensemble as in 2013. There are benefits from the hybrid system – it shows positive impacts at 850 and 500hPa. The HPC system is being improved which should ultimately lead to better data from the global ensemble for TIGGE.

The domain of the local ensemble was illustrated. It includes the Korean peninsula, ocean areas and parts of China and Japan. Sensitivity to resolution and the number of members has been tested and it has been found that an 8 to 12 member ensemble at 3km resolution performs best. It is not clear why results at higher resolution are worse. This needs further investigation using different verification techniques. The Endgame dynamical core will be implemented on the new HPC in 2015. A convective scale EPS at 2-3km resolution running out to short range is under consideration.

CPTEC: It is the case that in the past CPTEC has been ‘out of the pack’ in terms of performance so a lot of effort has been expended to fix the many system problems. There has been considerable work on the physics, dynamics and resolution of the global model. Efforts are also being made to improve the EPS. Significant improvements have now been made and implemented in Feb. 2014. Results from previous model comparisons have been revisited. The improvements have brought CPTEC performance much closer to the other centres. The TIGGE archive will now include data from the new system, probably by August 2014. Updates to the model description are now needed.

Météo-France: A new high resolution EPS suite is being implemented on a new computer. In future this will be run four times each day. It is hoped to increase the resolution from 15 to 10km. There are plans to improve ways to account for initial uncertainties. A LAM EPS at the convective scale is also under development. It is hoped it will be operational by 2016. The resolution is expected to be 2.5km and the model will run to 48h ahead. The focus will be on small scale phenomena e.g. heavy rain, thunderstorms etc., Coupling with the boundary will be carried out hourly – so is being constantly being updated.

NCEP: the 6th NCEP users' workshop has been held. It is suggested that there are too many ensembles – hourly, regional, global, international multi-model, national multi-model hurricane ensembles etc., Some rationalisation is needed. The future development of the global GFS system was outlined. It is expected that GFS V 11 running at the end of 2018 will include a resolution of 14-17km out to 168h ahead, 33-35 km out to 336h ahead and 52-55km out to 720h ahead for 64 levels. The model top will be at 0.2hPa. It will include surface perturbations and coupling with the ocean. It is also intended to make further improvements to NAEFS.

In the future **NCDC** will support the provision of NCEP data to the ECMWF TIGGE archive. Arrangements are expected to be in place by the end of 2014

Action 12.3.3: NCDC, ECMWF, NCEP and NCAR to make arrangements for processed NCEP TIGGE data to be sent to ECMWF instead of NCAR, to complete the transition by the end of 2014

Problems have been found with the irradiance and flux data currently being provided. After investigation NCDC will implement a correct conversion process and write up some documentation. Another problem is PV level data e.g. the u-velocity and v-velocity. These issues have been taking quite a long time to sort out. In any case any changes introduced cannot be implemented at NCAR since the system is frozen.

BOM: The Access Global and Regional EPS (AGREPS) is not currently providing TIGGE data. Research versions have been running for some time. The aim is to contribute data to TIGGE as part of the transition of AGREPS to an operational system, but at present there is no specific timescale. Convective scale ensembles for various cities at 2.2km resolution are being developed.

ECMWF: as the report from the archive centre

CMC: no report.

3.3 Changes to TIGGE partnership

Only a few replies have been received to the WMO letter asking data providers if they are willing to continue to support TIGGE in the post THORPEX era. It is hoped that the remaining centres will reply soon.

Action 12.3.4: Data providers to reply to the WMO letter to confirm their future participation in TIGGE as soon as possible.

4. APPLICATIONS OF TIGGE DATA

4.1. Progress in SWFDP/GIFS-TIGGE collaboration

JMA operates a website showing EPS products as well as the TIGGE museum and multi-centre TC tracks. JMA intends to provide gridded data to the Met Office to enable creation of multi-centre EPS products for testing and trialling by the SWFDPs. The Met Office will create the products based on JMA, UKMO, ECMWF and NCEP data and forward to the SWFDP websites for evaluation.

Recent progress on the NWP-TCEFP (managed by the WMO TCP and WWRP) was reviewed. The TC track predictions from both individual centres and multi centres are available for Typhoon Committee Members and SWFDP-SeA participants. Most Typhoon Committee members make use of the TIGGE ensemble products for their operational forecasts.

CAS-16 encouraged further work by the Typhoon Committee – RSMC Tokyo will produce EPS products for possible operational use. Each global EPS centre will be approached to see if they are willing to supply gridded data within the NW Pacific.

4.2 GEOWOW project

The GEOWOW project was outlined by Richard Swinbank. This three year project ends in August 2014. The objectives are to develop improved EPS products, begin archiving TIGGE-LAM data, generate time series of TIGGE data etc., The LAM data are now being archived and other topics are being implemented. A paper will appear in Tellus covering TIGGE data quality, calibration and the combination of ensembles.

Action 12.4.1: Richard Swinbank and Tiziana Paccagnella to liaise with ECMWF about the inclusion of additional information about TIGGE-LAM and the transition of the TIGGE website to a new web/wiki framework.

5. ANY OTHER BUSINESS

There was no other business

6. REVIEW OF MEETING OUTCOMES, DECISIONS AND ACTIONS

The meeting reviewed the actions arising.

ACTIONS FROM THE TWELFTH MEETING OF THE GIFS-TIGGE WORKING GROUP

Action P.1: All **archive centres** to update statistics on TIGGE data users on an annual basis (end of each year), using similar statistics for users, active users, etc. Doug Schuster to coordinate.

Action P.2: **Yuejian Zhu** to carry out literature search for papers based on TIGGE data on an annual basis (end of each year), and summarise results. Archive centres to ask users to inform them when TIGGE papers are written, to enable the list of TIGGE publications to be kept up to date.

Action P.3: All **data providers** to provide model descriptions in agreed Excel format and to update the files after significant changes and send to ECMWF.

Action P.4: **Cochairs** to request reports before each WG meeting on all actions, plus relevant progress reports.

Action P.5: **WG members** to consider adding to training material on the TIGGE data portals, including data access and manipulation examples, to help potential users of the TIGGE archive.

Action 10.6.3 The WG encourages **providing centres** to include information on forming storms in CXML messages (initially using location / time as identification and subsequently discuss a naming convention).

Action 11.3.4: **JMA** and **CMA** are requested to consider extending CXML tropical cyclone forecast data to all ocean basins.

Action 11.3.5: **WMO secretariat** to send a formal letter to NCDC to convey appreciation of their work and to request continuation of the provision of NCEP data to the TIGGE archive.

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