

## Draft Minutes of the joint SG-SWFDP –GIFS-TIGGE WG session

Wednesday, 24 February 2010, a.m.

### Participants:

Bernard Strauss (France; chairperson of the SG-SWFDP), Ian Shepherd (Australia), Reinaldo Silveira (Brazil), James Kongoti (Kenya), Yuki Honda (Japan), Steve Ready (New Zealand), Eugene Poolman (South Africa), Ken Mylne (UK), John Guiney (USA), Erik Andersson (ECMWF), Peter Chen (WMO), Alice Soares (WMO)

Zoltan Toth (USA; Co-chair of the GIFS-TIGGE WG ) Richard Swinbank (UK; Co-chair of the GIFS –TIGGE WG), David Richardson (UK), Jing Chen (China), Beth Ebert (Australia), Young-Youn Park (Korea), Pedro Silva Dias (Brazil), Laurie Wilson (Canada), Kiyo Sato (Japan), Doug Schuster (USA), Laurent Descamps (France), Tiziana Paccagnella (Italy), Olivier Talagrand (France), Tetsuo Nakazawa (Japan), Steve Ready (New Zealand), Aida Diongue-Niang (Senegal), Hui Yu (China), David Parsons (WMO), David Burrige (WMO), Jim Caughey (WMO)

## 1. Opening and Background

1.1 The joint SG-SWFDP – TIGGE-GIFS WG session was opened at 0900 hours on Wednesday, 24 February 2010, in the WMO Headquarters, in Geneva Switzerland. Mr David Burrige welcomed participants to the meeting and recalled that both CBS-XIV (March/April 2009) and CAS-XV (November 2009) had recommended strengthening collaboration between the two groups.

1.2 Following this recommendation, a joint session SG-SWFDP – GIFS-TIGGE WG was held to discuss possible interactions of SWFDP with GIFS-Forecast Demonstration Projects and potential benefits of innovative GIFS products for operational weather forecasting, and their added-value to those SWFDP regional subprojects that are in progress.

## 2. Introduction to Framework Plan and links with SWFDP

2.1 Dr Richard Swinbank (Co-chair) of the GIFS-TIGGE WG presented an overview of the framework plan for a GIFS “forecast development project”. He noted that WWRP FDPs had been instrumental in introducing research advances into operational forecasting practice. The GIFS “FDP” would transit THORPEX research into the operational community. New products would be designed, tested and evaluated in conjunction with the SWFDPs and other WWRP pilot projects. The GIFS “FDP” would support FDPs, not be a (conventional) FDP in its own right. Recent developments and future plans were summarised,

TIGGE (2005 on) - scientific research based on the archive of ensemble forecasts.

GIFS development (2008-2012) - evaluation of prototype products based on ensemble data.

GIFS implementation (after 2012) - implementation of new real-time products and services.

The GIFS products will be designed to complement existing products and training on the use/interpretation will be included.

2.2 It was expected that the GIFS work would bring to the SWPDPs new scientifically based products, including multi-model ensemble products and products based on statistically corrected and downscaled forecast data. Longer range outlooks would also be provided and all products would be *objectively* assessed (in addition to subjective evaluation by forecasters)..

## 3. SG-SWFDP Key Issues for GIFS-TIGGE

3.1 The chairperson of the CBS Steering Group of the Severe Weather Forecasting Demonstration Project (SG-SWFDP), Mr Bernard Strauss, presented the *SWFDP key issues for GIFS-TIGGE* identified by the SG-SWFDP. The meeting noted that a major issue for the SG-SWFDP relates to the lack of knowledge by the group on the ability of combining data from different ensembles, and this has constrained the identification of requirements. Nevertheless, the SG-SWFDP developed a set of short- and long-term requirements.

### **Short-term Requirements**

3.2 Noting that forecasting tropical convection is very important in severe weather prediction in many of the participating countries in the SWFDP, and that the skill of global models at simulating the phenomenon is not yet at the required level, the SG-SWFDP noted that research and development effort is required into better diagnostic methods, including: (a) feature-based diagnostics (e.g. surface convergence zones) (b) more reliable model field indicators (e.g. mid-level moisture fields); and (c) better estimates of peak convective rainfall accumulations from grid-box parameterized mean values.

### **Long-term Requirements**

3.3 The SG-SWFDP asked the GIFS-TIGGE WG to consider providing scientific guidance on how to combine fields from the various ensembles composing the GIFS-TIGGE data base in a meaningful and useful manner. The SG-SWFDP was aware that further research work was needed in that respect, and that a significant period of time would certainly be required until the appropriate guidance would be fully available.

3.4 The SG-SWFDP identified the following required information for tropical cyclone forecasting:

- (a) Position and intensity prediction (probabilistic);
- (b) Probabilities relative to user defined thresholds (e.g. cyclone following and gridded probabilities) for wind strength, quantitative precipitation, and storm surge;
- (c) Strike probabilities at user defined points; and
- (d) Probability of time of arrival of maximum rainfall and wind thresholds at user defined points.

3.5 The SG-SWFDP stated that on the long term an ultimate requirement from the GIFS would be the availability of an interactive tool which would permit centres, especially regional centres, to generate user driven products, depending on the nature of events and situations (e.g. products using local SWFDP thresholds; interactive EPSgrams (locations, parameters), varying combinations of ensembles, etc.).

### **Verification**

3.6 The SG-SWFDP considers evaluation of forecasts a crucial part of the introduction of new GIFS-TIGGE products into the SWFDP. A combination of objective verification techniques and feedback obtained from forecasters and users is desirable. This would require getting access to consistent observational data, and SERA impact data. A close liaison with the Joint WWRP-WGNE WG on Forecast Verification Research will be required on defining methods for verification of warnings which may be probabilistic or “low confidence over a large area”.

## **4. Summary of the Discussions**

4.0.1 The meeting agreed on an agenda for the joint session, which covers the following aspects: (1) Collaborating arrangements; (2) Tropical Cyclones; (3) Rainfall; (4) Timescales; (5) Training / Users; and (6) SERA – societal applications.

## 4.1 Collaborating Arrangements

4.1.1 The meeting agreed to take advantage of existing and planned activities, infrastructure and experience, and wherever possible, GIFS developments be trialled in conjunction with CBS regional SWFDPs. The meeting also agreed on collaborating arrangements to formally establish liaison between the SWFDP and GIFS developments.

4.1.2 The SG-SWFDP agreed to better reflect this collaboration in the *SWFDP Guidebook on Developing Regional Subprojects*, by incorporating the following statement:

*The SWFDP will provide an opportunity to demonstrate and realise the benefits of new forecasting research through collaboration with the THORPEX GIFS-TIGGE project. THORPEX (The Observing System Research and Predictability Experiment) is a 10-year programme to accelerate improvements in the accuracy of 1-day to 2-week high-impact weather forecasts for the benefit of humanity. GIFS-TIGGE is developing new products, particularly from multi-model ensembles, and aims to develop the new GIFS (Global Interactive Forecast System) by developing cascading products in support of the SWFDP and involving the SERA (Societal and Economic Research & Applications) project to support effective propagation of benefits to society.*

4.1.3 The meeting discussed effective ways to interact and collaborate. Noting that Mr Ken Mylne has been representing CBS as an observer at the GIFS-TIGGE WG, and that some members of the two respective groups are from the same home organization, the meeting agreed that, in addition, the liaison between the SWFDP and GIFS-TIGGE should be at two levels:

(a) At the Steering Group of the SWFDP (SG-SWFDP): a representative of the GIFS-TIGGE Working Group participates at meeting(s) and in discussions by e-mail;

(b) At Regional Subprojects Management Teams and training events: inviting a representative from the GIFS-TIGGE WG to participate, when suitable.

4.1.4 The meeting noted that this approach would not require additional resources. Additional representation, if required, will be decided by the chairperson of the SG-SWFDP in consultation with the co-chairpersons of the GIFS-TIGGE WG. The meeting agreed that any communications should be through the WMO Secretariat.

4.1.5 The meeting noted that joint SG-SWFDP – GIFS-TIGGE WG sessions are desirable however these might only be practicable every so often.

## 4.2 Tropical Cyclones

4.2.1 Dr Nakazawa briefed the meeting on the NW Pacific Tropical Cyclone Project. He described the real time flow of information and gave an outline of the data archive. Some of the products being generated and evaluated could be of interest to the SWFDPs – these included TC best track, strike probability histograms and TC genesis probability.

4.2.2 The meeting agreed that developed products and tools from the GIFS-TIGGE Tropical Cyclone Ensemble Track Information should feed into the SWFDP subprojects in Southern Africa and in the South-west Pacific, however it expressed caution that these products should be evaluated at the regional level before transitioning into full operations and for wide use among all participating centres in the SWFDP subprojects. The meeting therefore decided that at this stage, these tools should only be made available (via a password protected web site) to RSMCs, including those with specialization in Tropical Cyclone Forecasting, and TCWCs, which would evaluate the utility of such data sets in a forecasting environment, including for their regional guidance production.

4.2.3 The meeting noted that tropical cyclone forecasters from participating countries in the SWFDP – Southern Africa and SWFDDP – South-west Pacific largely participate in their respective Tropical Cyclone regional body sessions and in the International Workshop on Tropical Cyclones. In this context, the meeting recommended coordination with the Tropical Cyclone Programme (TCP). Recognizing that these events are the appropriate fora for exchange of information on tropical cyclone ensemble forecast developments, and sharing expertise, the meeting agreed that there was no need to nominate a focal point from the SWFDP regional subprojects to deal with tropical cyclone matters. However, the meeting expressed the importance of nominating a focal point from GIFS-TIGGE WG (Mr Nakazawa (?)) to deal with the transition of TC developments into operation and to liaise with TCP and SWFDP.

4.2.4 The meeting recognized that training will be needed on how to introduce the new products into the forecasting process, along with their expected and demonstrated benefits. The meeting agreed to address this issue in a broader context under item 4.5.

### **4.3 Rainfall**

4.3.1 The discussion was focussed on verification aspects. The meeting noted that there had been very limited verification done on any of the global centre products contributing to the SWFDP. The meeting noted that the SG-SWFDP strongly recommended that the global centres contributing to the SWFDP take responsibility for verification of the products they supply to the subprojects, including the new GIFS-TIGGE products that might become available, as far as the GTS surface observations and possibly other observations they already have in their possession allow it. NMHSs participating in the SWFDP subprojects are encouraged to participate with the global centres in verification activities, and to contribute additional surface observation data, both in real-time and delayed mode (via ftp).

### **4.4 Timescales**

4.4.1 Based on discussions under the previous agenda items, the meeting agreed on a possible timeframe for introducing the GIFS-TIGGE products into the SWFDP, as follows:

- (a) For Tropical Cyclone data sets – 1 year;
- (b) For rainfall and wind – 2 to 3 years, depending on the availability of observational data sets.

4.4.2 The meeting stressed the need to engage forecasters in the overall process of transitioning the new GIFS-TIGGE products in to operations, particularly to ensure that the new products meet the forecast needs and to prepare the forecasters for their use.

### **4.5 Training / Users**

4.5.1 The meeting agreed that training is necessary to ensure that forecasters from RSMCs and NMHSs are able to correctly interpret the various GIFS-TIGGE products that will be made available for the SWFDP regional subproject.

4.5.2 The meeting was informed of the SWFDP training practices, including (1) the yearly 2-week training events, encompassing one week training on NWP, EPS and Meteosat satellite nowcasting applications and a second week focussed on PWS activities; and (2) in-country visits, especially to centres with limited human resources (forecasters) and limited capability to pass on the training locally. The meeting was also informed of the on-going ECMWF forecaster training for WMO Members on the use of ECMWF products, and of the new training material, entitled: “On the operational use of products from the ECMWF Ensemble Prediction System (EPS)” by Anders Persson (consultant) and Tim Hewson (ECMWF).

4.5.3 The meeting recommended that sessions on the use of the new GIFS-TIGGE products be incorporated into SWFDP training events, and agreed that experts from the GIFS-TIGGE WG contribute to the training by developing appropriate material and/or participating in the events as a lecturer.

#### **4.6 SERA – Societal Applications**

4.6.1 The meeting noted that the second week of the SWFDP 2-week training events is focussed on PWS activities, including building new and strengthening existing relationships between forecasters and disaster managers, and with the media. The meeting agreed that these events could provide an appropriate mechanism for addressing SERA and recommended that WWRP SERA WG experts be invited to these events.

#### **5. Closing**

5.1 The joint session closed at 12:30 hours on Wednesday, 24 February 2010.