

## Terms of Reference

### WG on Predictability, Dynamics and Ensemble Forecasting

- a. To advance the science of dynamical meteorology and predictability research, and their application to ensemble forecasting;
- b. To initiate scientific investigations to diagnose analysis, model and forecast errors in order to improve ensemble predictions and to address forecast failings;
- c. To support the application of ensemble predictions, including post processing, multi-model ensemble techniques and the development of probabilistic forecast products;
- d. To review and provide expertise in predictability, dynamics and ensemble forecasting to support the WWRP projects, including the implementation of FDPs and RDPs;
- e. To promote the use of ensemble forecasts from the TIGGE and TIGGE-LAM datasets to support scientific research;
- f. To provide the scientific direction to the development of the TIGGE archive and TIGGE-LAM archives, whilst taking account of both technical and research issues;
- g. To foster research to improve ensemble based methods for configuring adaptive and non-adaptive observational networks;
- h. To encourage research on the construction and interpretation of coupled model ensembles.

### WG on Nowcasting Research

- a. To advance the science of nowcasting, including meteorology processes and predictability;
- b. To promote, and aid the implementation of nowcasting in the WWRP framework and within National Meteorological Services and their end users;
- c. To organize international workshops and conferences on nowcasting;
- d. To develop and implement RDPs and FDPs to advance the underlying science as well as to develop, compare, validate and exchange various nowcasting techniques, and to involve the operational evaluation outcomes.

### WG on Mesoscale Forecasting Research

- a. To advance the science of the social and economic application of weather-related information and services;
- b. To promote, organize and/or endorse end-to-end weather research and development projects (RDP) including understanding of weather processes, improving forecasting techniques and improving the utility of forecast information with an emphasis on high impact weather;
- c. To review and widely advertise guidelines and process of submission/acceptance of project proposals;
- d. To establish project committees, working groups, test beds and expert teams as required for the implementation of projects to meet the objectives of CAS;
- e. To actively promote the applications of improvements in weather forecasting capability through forecast demonstration projects (FDP) and the sponsoring of technical workshops and conferences;
- f. To supervise the process of individual evaluation and quality assessment of each "pre-operational" type project (in particular of each demonstration project), and to validate its conclusions, in light of the state-of-the-art.

### WG on Forecast Verification Research

- a. To plan and implement the verification component of WWRP projects;

- b. To serve as a focal point for the development and dissemination of new verification methods;
- c. (c) To facilitate and encourage training and dissemination of information about verification methodologies;
- d. (d) To encourage greater cooperation between users and verifiers of forecasts, to ensure the relevance and integrity of the practice of forecast verification;
- e. (e) To facilitate the development and application of improved diagnostic verification methods to assess and enable improvement of the quality of weather forecasts including forecasts from numerical weather and climate models;
- f. (f) To encourage the sharing of observational data for verification purposes;
- g. (g) To encourage greater awareness in the research community of the importance of verification as a vital part of numerical and field experiments, rather than an “afterthought”;
- h. (h) To promote collaboration among scientists conducting research on various aspects of forecast verification, and with model developers and forecast providers.

#### **WG on Tropical Meteorology Research**

- a. To monitor the implementation of existing priority projects within the Working Group and to further develop other appropriate research projects as the need arises, under the main programme components: Tropical Cyclones and Monsoons;
- b. To identify and support the research initiatives of NMHSs in tropical countries generally including collaboration with groups in universities or research institutes, which are likely to lead to societal and economic benefits; and
- c. To keep developments in research aspects of the Tropical Cyclone Programme (TCP) under continuous review and facilitate the coordination of research at regional levels by maintaining close liaison with tropical cyclone regional bodies.

#### **WG on SERA**

- a. To advance the science of the social and economic application of weather-related information and services;
- b. To promote and aid the implementation of social science research within OPAG-WWRP, OPAG-EPAC and through WMO, as may be required;
- c. To review and assist in the development and promotion of societal and economic-related demonstration projects.