(November 2010)

ICTSW Terms of Reference and Initial Objectives

Background:

Space Weather affects meteorological satellites and radio-communications, two key components of meteorological operations. It also affects important economic activities such as aviation, spacecraft operations, electric power transmission, radio communication, and satellite-based navigation. These activities involve major users of meteorological services, therefore there is a potential for synergy between the emerging operational activities in the area of Space Weather and current WMO activities regarding meteorological service delivery to these user communities.

The main international coordination mechanism for Space Weather is currently the International Space Environment Service (ISES). As Space Weather is evolving from research to operational services the ISES, in 2007, has expressed interest for cooperating with WMO, considering that the WMO framework would be appropriate to enhance international cooperation on operational aspects of Space Weather, and that several WMO Members have placed Space Weather activities under the authority of their National Meteorological or Hydrological Services. The WMO has responded favourably to ISES and agreed, in 2008, to engage in this field, in partnership with relevant international organizations.

The Inter-Programme Coordination Team for Space Weather (ICTSW) has been established to carry out the activities described below, in accordance with the Terms of Reference defined by the WMO Commission for Basic Systems (CBS) and Commission for Aeronautical Meteorology (CAeM). The overarching goal of the ICTSW is to facilitate, in partnership with ISES and other organizations, the international coordination of space weather observations, data, products, and services, building on the respective assets of ISES and of WMO.

Terms of Reference and Initial Objectives:

A near-term (one to two years) objective of the ICTSW is to demonstrate value to WMO Members by identifying and documenting one or more specific example of the coordination of key space weather information that leads to improved services. Following the activities outlined within each of the Terms of Reference, an initial Work Plan will be developed and implemented.

(a) Standardization and enhancement of Space Weather data exchange and delivery through the WMO Information System (WIS);

1. Review the current status of data formats, exchange procedures, and delivery mechanisms, and identify the feasibility and benefits of using WIS.
2. Identify and prioritize space weather observations and products for which there would be a benefit from their inclusion in WIS.
3. Review the possible implementation of WIS interoperability standards and conventions (file naming, metadata, catalogue search).
4. Develop a work plan with a timeline for the incorporation of some initial space weather observations in WIS.

(b) Harmonized definition of end products and services, including e.g. quality assurance guidelines and emergency warning procedures, in interaction with aviation and other major application sectors;

1. Include the products and services and assessments of quality from all International Space Environment Service (ISES) Regional Warning Centers. Each ICTSW member can contribute a description of the end products and services they currently provide and/or their interests and priorities for future services.
2. Coordinate with the International Civil Aviation Organization (ICAO) International Airways Volcano Watch Operations Study Group (IAVWOPSG) on supporting operational requirements for airline navigation, communication, and radiation issues.
3. Identify opportunities to coordinate existing services and high priority service needs, with an emphasis on the aviation and other major application sectors.
4. Develop a work plan to initiate the harmonization of end products and services and document high priority service needs.

(c) Integration of Space Weather observations, through review of space- and surface-based observation requirements, harmonization of sensor specifications, monitoring plans for Space Weather observation;

1. Obtain space weather requirements from the ISES Regional Warning Centers and other applicable organizations.
2. Catalog the space weather data currently available in near real time and the data services planned for future deployment. Utilize the ISES Regional Warning Centers for this information.
3. Develop an initial draft of space weather observing requirements. Focus on the highest priority observations and those for which global coordination is critical and WMO can provide a valuable augmentation to the efforts of ISES.
4. Coordinate these requirements with the CBS Expert Team on the Evolution of the Global Observing System (ET-EGOS) to have Space Weather recognized as a new Application Area within the "Rolling Requirements Review" of the WMO Integrated Global Observing System
5. Review the categories of instruments used for Space Weather observations, their characteristics and implementation status and plans and the possibility of organizing sensor intercalibration procedures.
6. Develop a work plan for documenting space weather observing requirements, harmonizing sensor specification and intercalibration, and monitoring future plans.

(d) Encouraging the dialogue between the research and operational Space Weather communities.

1. Identify opportunities to advocate for operational needs among researchers (e.g., COSPAR Panel on Space Weather, IAA Study Group on International Cooperation on Space Weather, International Space Weather Initiative)
2. Review and seek harmonization of the requirements for the operational use of global numerical models in Space Weather forecasts

3. Identify best practices for operational models developed within the Numerical Weather Prediction community and their integration into operational meteorological services with the intention that these best practices could be applied to Space Weather operational models.
4. Review the possibility of organizing a set of formalized models and forecast methods of particular phenomena of space weather (CME arrival, maximum of SPE, magnetic storms, etc.) and assessing their quality.
5. Develop a work plan to define best practices and to provide models with an adequate level of accuracy and reliability, through interaction between the research and operations communities.
