

WMO ACTIVITIES ON SPACE WEATHER

In response to a request from some WMO Members, who are also CGMS satellite operators, WMO has taken steps to develop a framework for increased Space Weather coordination. WMO Executive Council (EC-LXI) recognized the importance of Space Weather and welcomed the establishment of an Inter-programme Coordination Team on Space Weather involving representatives from both the Commission on Basic Systems (CBS) and the Commission on Aeronautical Meteorology (CAeM). In addition to nominations for the Inter-programme Coordination Team, WMO Members have been asked to provide the name of a point of contact for Space Weather activities.

Action/Recommendation proposed:

Recommendation 1: CGMS Members are invited to support greater collaboration on Space Weather activities.

Recommendation 2: CGMS Members to consider providing a secondment and/or contribution to a WMO Space Weather Trust Fund so that Space Weather can be addressed in a more coordinated fashion among interested parties.

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1 INTRODUCTION

Space Weather is relevant to CGMS because meteorological satellites are both subject to damages and disturbances caused by Space Weather events, and are well-positioned to contribute to Space Weather observations. While Space Weather is still an area of active scientific research, the community has reached a stage of overall knowledge and modelling capability that provides firm ground for the development of operational services in response to these emerging needs. Three general types of Space Weather events include radio blackouts, radiation storms and geomagnetic storms. A number of countries are not only providing reports of recorded Space Weather phenomena, but have also initiated the issuance of regular Space Weather forecast bulletins and of specific warnings for acute events.

2 CURRENT COORDINATION MECHANISMS

The International Space Environment Service (ISES) has taken a leading role in ensuring international coordination of Space Weather warnings among its member Organizations through a network of regional warning centres. ISES has sought the support of WMO to help this activity to become more operationally oriented. The maturity of Space Weather forecasts and warnings, combined with the needs of professional user communities, such as airlines, spacecraft operators, power grids, GPS/GNSS has already led several countries to place their Space Weather services under the remit of the NMHSs; to date, Australia, China, Finland, the Russian Federation and the United States of America have done so.

In parallel, the Committee on Peaceful Uses of Outer Space (COPUOS) has now agreed to consider Space Weather issues on its agenda, in the context of long-term space sustainability issues.

At the European level, ESA has initiated a programme on Space Situational Awareness that includes a Space Weather component. Regardless of the specific mechanism, each of these approaches calls for more international cooperation and coordination on Space Weather.

3 ACTIONS INITIATED BY WMO

In 2008, in preparation for the sixtieth session of the WMO Executive Council (EC-LX), a report was prepared on the potential scope, cost and benefit of a WMO activity in support of international coordination of Space Weather services. This report was published as WMO Technical Document TD-No. 1482, and is also available online at: (ftp://ftp.wmo.int/Documents/PublicWeb/sat/SP-5_TD-1482_2008_SpaceWeather.pdf). EC-LX acknowledged the impact of Space Weather on meteorological infrastructure and the potential synergy between meteorological and Space Weather services, and suggested the Commission on Basic Systems (CBS) and the Commission on Aeronautical Meteorology (CAeM) develop plans for WMO activities in Space

Weather, identifying objectives, activities, resources, deliverables, and expected benefits. In June 2009, following a CBS recommendation, the sixty-first session of the WMO Executive Council (EC-LXI) welcomed the establishment of an Inter-Programme Coordination Team on Space Weather (ICTSW) involving representatives from both CBS and CAeM. Terms of Reference for the ICTSW are as follows:

- (a) Standardization and enhancement of Space Weather data exchange and delivery through the WMO Information System (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;
- (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;
- (d) Encouraging the dialogue between the research and operational Space Weather communities;

Letters were sent to WMO Members dated 7 October 2009 requesting a point of contact for Space Weather and, if interested, nominations for the subject Inter-programme Coordination Team. In addition to these nominations from WMO Members, the following organizations were informed of this activity, and if interested, asked to provide an advisor and/or ex officio member to the ICTSW – the International Space Environment Service (ISES), the UN Office of Outer Space Affairs (UNOOSA) and its Committee on the Peaceful Uses of Outer Space (COPUOS), the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), and the International Telecommunication Union (ITU).

Lastly, during this past year, representatives from the WMO Space Programme Office have participated in the 2008 European Space Weather Week, Brussels, Belgium, and the 2009 Space Weather Enterprise Forum, Washington, DC. Bilateral consultations have been held with CMA, ESA, ISES and NOAA regarding additional support for this activity largely in terms of providing a secondment and/or contribution to a WMO Space Weather Trust Fund.

3 CONCLUSIONS

CGMS Members are invited to note the progress on Space Weather activities and support greater collaboration on this emerging topic. Given the previous guidance that these activities be pursued by WMO with extra-budgetary resources, CGMS Members are requested to consider providing a secondment and/or contribution to a WMO Space Weather Trust Fund so that this important topic can be addressed in a more coordinated fashion among interested parties.