

# Management response to Review of the Bureau of Meteorology's Space Weather Service

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## Introduction

The independent Space Weather Review provides a comprehensive consideration of the government's response to the challenge posed by Option 20 of the Munro Review. The reviewers, Professor Paul Cannon and Dr Terry Onsager, have consulted widely within the Bureau of Meteorology (Bureau) and across the Space Weather Service's (SWS) national and international stakeholder community. They have also drawn on their own international connections and expertise, and have provided a well-targeted report that addresses all of the specified terms of reference.

In summary, the review:

- reflects the importance of space weather services to a diverse stakeholder community, against a background of the periodic and extreme threats posed by the space weather environment;
- draws attention to the need for national recognition of space weather as a natural hazard and to provide a secure policy mandate for the service;
- identifies the breadth of applications of the Bureau's space weather information and prediction services and the associated productivity, safety and security implications;
- confirms the quality, performance and international standing of the Bureau's SWS;
- emphasises the need for a long-term research plan and improved performance/impact assessment process;
- reflects on the value of changing the focus and operational model of the service somewhat to respond more effectively to new technology and stakeholder vulnerabilities; and
- advocates more realistic and effective cost-recovery and cost-sharing options, nationally and regionally.

Taken together, the review answers the challenge posed by Option 20 of the Munro Review ("cease or reduce the Ionospheric Prediction Service or offer it as a commercial service") with a convincing case for continuation of the service as a core function of the Bureau.

This Management Response has been prepared following consultation with the Stakeholder Working Group and, through them, with key industry representatives. It also takes into account consideration of processes and priorities within the Bureau, especially in light of the integration of the Space Weather Service within the Hazards, Forecasts and Warnings Division.

## Management response

Overall, the Bureau supports the findings and recommendations of the review and is of the view that their implementation will:

- considerably strengthen the efficiency, effectiveness and productivity of the SWS;
- ensure improved awareness and preparedness by government in relation to the hazard potential and risks posed by space weather events and steps to assist in mitigating their impact; and

- deliver improved economic, security and safety outcomes to users of SWS products and services.

The overall flavour of the response can be conveyed best by highlighting the four clear themes that emerge through the recommendations and their responses, as enunciated below.

### *Positioning and collaboration*

The review recognises the risks posed by space weather as a routinely occurring natural hazard (and severe space weather events as low likelihood but potentially extreme consequence events) that affects the efficiency, effectiveness and security of government and industry, and the close alignment of space weather services with the suite of natural hazard-related services provided by the Bureau.

The response addresses the need to reinforce the positioning of the SWS within the Bureau and within government, and the need for a high-level of collaboration with stakeholder agencies in the development and sustainment of information and prediction services and risk mitigation strategies to optimise preparedness, planning and response to space weather events, including:

- Raising National Security Committee of Cabinet (NSC) level awareness, in collaboration with the Attorney-General's Department (AGD), of the threats posed by space weather events to national security and related risks;
- Recognition through the AGD's Natural Disaster Resilience Strategy of the need for multi-sector and multi-jurisdictional mitigation strategies, including through the Trusted Information Sharing Network (TISN);
- Recognition of the Bureau as the national and international lead agency for space weather research, consultancy, warnings and technical services, supported by a capability statement and communications strategy, and with appropriate performance measures and annual reporting processes;
- Reinforcing the positioning of the SWS as a core function delivered through the Bureau's Hazards, Warning and Forecasts Division;
- Establishment of a Stakeholder Engagement Forum, comprising key government stakeholders, and through them engaging client industry bodies and jurisdictional representatives; and
- Conduct of an annual or biennial Space Weather Workshop to engage with national and international stakeholders and highlight local and international achievements in space weather.

## *Customer relationship management*

The review emphasises the need for the Bureau to have a more comprehensive and consolidated understanding of the SWS clients: that is, who they are and what their requirements are for space weather advice, information and services; the decisions they take and the specific characteristics of the information they need (when, what, how, where etc); and how to monitor and assess the effectiveness of the service provided. Such information will improve the Bureau's ability to respond with effective products and services, and hence contribute to improved productivity, safety and security, and also to define future development directions and to set priorities, both for core public services and for investment in cost recoverable opportunities.

The response identifies processes to manage the Bureau's relationship with its SWS clients, including:

- Routine communication with clients to understand their current and future needs for space weather services, to monitor service use and performance, to advise them of changes in services and/or charges, and to assist clients in accessing the service as effectively as possible;
- Improved verification and benchmarking processes;
- Development of strategic relationships with key government and industry stakeholders, such as the Australian Broadcasting Commission (ABC) and Australian Energy Market Operator (AEMO);
- A special focus on consolidating and integrating the relationship between the Bureau's SWS and the Department of Defence as a Meteorology Service Agreement within the overarching Bureau-Defence governance framework, and ensuring SWS managers have the requisite security levels and appropriate access to relevant classified documentation.

## *Products and pricing*

The review pointed to the need for the Bureau to consider if the suite of products that it offers and/or are planning to develop represents the best return on investment, in terms of meeting needs for publically-funded and cost-recovered services, and whether its cost-recovered and commercial services are appropriately priced.

The response lays out a structured approach to delivering, planning and pricing the Bureau's SWS product and service offerings, including:

- A detailed review of the SWS product and service suite, spectrum of users and charges in the context of the Bureau's overall mandate and its costing/pricing policies;
- Development, publication and implementation of a catalogue of charges, including for products, services, advice and courses;
- Consider the relative priorities and returned value through investment by the SWS in the maintenance and/or development of various products and services, such as high frequency radio (HF), Global Navigation Satellite System (GNSS), Geomagnetically Induced Currents (GIC), data assimilation;
- Explore opportunities to collaborate to expand development in high-value areas as well as areas of strategic national importance, such as with Geoscience Australia on GNSS; and

- Development of a business development strategy and plan to guide the strategic and tactical priorities for engagement, partnerships and investment in new SWS products and services to meet public, cost-recovery and commercially funded requirements.

### *Organisational efficiency and effectiveness*

The review identified a number of opportunities for improved efficiency and effectiveness in the utilisation of resources, deployment of capabilities, and definition of roles and responsibilities.

The response highlighted the need for improved processes and practices to support the day to day operation and administration of the SWS, including:

- Consider the extent to which operational support for the SWS monitoring and forecasting functions can be better integrated within the routine 24/7 operations of the NSW Regional Forecasting Centre and the Bureau's National Operations Centre, with appropriate training and escalation processes;
- Develop a workforce plan for the SWS function that defines roles, responsibilities and capabilities required for the key management and operational roles, and set priorities and timelines for its implementation;
- Review the operational practices and staff deployment behind delivery of SWS services, such as the HF service, to identify opportunities to deliver the services more efficiently and effectively; and
- Provide requirements and performance specifications to the Bureau's Observations and Infrastructure Division to ensure that the design and procurement of the ionosonde network is fit-for-purpose and that it is delivered and operated efficiently as part of the Bureau's overall composite observing network.