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## THE NATIONAL SPACE WEATHER PROGRAM: AN EXAMPLE OF SUCCESSFUL FEDERAL INTERAGENCY COORDINATION TO MEET THE NATION'S SPACE WEATHER FORECAST AND WARNING REQUIREMENTS

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### 1. INTRODUCTION

The Office of the Federal Coordinator for Meteorological Services and Supporting Research, more briefly known as the Office of the Federal Coordinator for Meteorology (OFCM), is an interdepartmental office responsible for ensuring the effective use of federal meteorological resources by leading the systematic coordination of operational weather requirements and services, and supporting research among the federal agencies. There are 15 Federal departments and agencies engaged in meteorological activities that participate in the OFCM coordinating infrastructure, providing representatives who lead and serve on program councils, committees, working groups, and joint action groups. These interagency groups coordinate activities and needs across a set of 10 key focus areas...one of these key focus areas is space weather.

### 2. NATIONAL SPACE WEATHER PROGRAM

The Federal space weather community used the OFCM coordinating infrastructure to develop a well-defined space weather vision and strategy, with a common set of space weather operational and R&D requirements, goals, and objectives, with the National Space Weather Strategic Plan and the two National Space Weather Program (NSWP) Implementation Plans encapsulated these ideas. The interagency coordination process has been essential to the continuing successes enjoyed by the space weather community as it moves forward to minimize or eliminate the economic and societal impacts of space weather on the Nation.

### 3. IMPACTS AND BENEFITS

Examples of space weather impacts are energetic particles' and geomagnetic storms' impact on satellite and communication system operations; geomagnetically induced currents (GICs) in electric power systems due to geomagnetic field fluctuations during a geomagnetic storm; and space weather hazards to astronauts on space missions. The potential economic benefits to the Nation of a successful NSWP are substantial. Benefits such as, each correct forecast of not having "significant" space weather communications or radiation impacts while an aircraft is flying a route over the pole, saves the

airlines somewhere in the neighborhood of \$100,000 per flight; accurate forecasts of geomagnetically induced currents in power transmission lines with protective actions by affected power networks could save millions of dollars based on past experiences; accurate prediction of space weather impacts during space launch activities could save an estimated \$2.5 million a year; and accurate forecasts of space weather effects on orbiting spacecraft coupled with protective actions could save the DoD a portion of the \$500 million a year they now spend on efforts to mitigate those effects.

### 4. NSWP SUCCESS

The Federal space weather community has been able to maintain and improve a viable space weather R&D program and has instituted several new organizations to quickly capture the R&D results and transition them into operations to meet the Nation's needs. Additionally, the actions of the Federal space weather community have created several opportunities for agencies to leverage the work of others to speed up improvements in space weather capabilities. Agencies involved in achieving the NSWP objectives have been very successful in creating and disseminating information on the space weather environment. The success of the NSWP shows the value of the interagency coordinating infrastructure as an effective way to gather and define user requirements, identify ways to leverage already existing programs, avoid duplication of effort among Federal agencies, and build consensus on overarching roadmaps in various areas to obtain and enhance meteorological capabilities required by the Nation.

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