

SPACE WEATHER INITIATIVES FROM THE OFFICE OF NAVAL RESEARCH

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Abstract. The Oce of Naval Research (ONR) supports space weather research focused on improved specication and forecast of the ionosphere and upper atmosphere. In keeping with the theme "Space Weather - Learn from the Meteorologists", ONR leverages concepts and approaches developed by the meteorology community over the past 50 years that have lead to the current widespread successes with tropospheric weather forecasting. ONR has supported the development of a data assimilation model for the ionosphere called the Global Assimilation of Ionospheric Measurements (GAIM) that is now operational at the Air Force Weather Agency (AFWA). To feed the GAIM model ONR has funded new techniques for space-based ionospheric and thermospheric remote sensing including RF (UHF/GPS) and ultraviolet remote sensing sensors. Recently ONR partnered with the Naval Research Lab and the Air Force Space Test Program to install the Remote Atmospheric and Ionospheric Detection System (RAIDS) aboard the International Space Station. RAIDS uses a comprehensive suite of ultraviolet limb sensors to measure the composition, temperature and density of the upper atmosphere and ionosphere. ONR is funding the development of a geosynchronous remote sensing platform to make real-time, high-resolution observations of thermospheric neutral density and ionospheric electron density from GEO. This geosynchronous space platform will allow monitoring of geomagnetic storm development and storm tracking to provide advanced warning of impending communication and navigation outages and degradations from space weather disturbances.