

[3-4]

## NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION SPACE PHYSICS AND GEOMAGNETISM ACTIVITIES: HISTORICAL PERSPECTIVE AND FUTURE DIRECTIONS

*R J Redmon<sup>1\*</sup>, W F Denig<sup>1</sup>, E A Kihn<sup>1</sup>, A Chulliat<sup>1,2</sup> and S McLean<sup>1</sup>*

*<sup>1</sup>NOAA National Centers for Environmental Information, 325 Broadway St. E/GC2, Boulder, CO 80305 USA*

*Email: rob.redmon@noaa.gov*

*Email: william.denig@noaa.gov*

*Email: eric.a.kihn@noaa.gov*

*Email: arnaud.chulliat@noaa.gov*

*Email: susan.mclean@noaa.gov*

*<sup>2</sup>Cooperative Institute for Research In Environmental Science, 216 UCB, University of Colorado, Boulder, CO 80309 USA.*

The NOAA Solar Geophysics Branch and Earth and Space Magnetism Team within the Center for Coasts, Oceans and Geophysics of the US National Centers for Environmental Information (NCEI) are dedicated to the observation and characterization of the natural environment from Sun to Earth. NCEI's environmental data sets from ground to orbital platforms are vast in both space and time, with worldwide contributions of solar imagery, geomagnetic and ionospheric measurements and interpretations dating long before the 1957/1958 International Geophysical Year (IGY). With technological advancements, continuous operational measurements of the near earth space environment have trended towards the use of fully instrumented space based assets. Space platform measurements in NOAA's current archive provide (non-inclusively) irradiance measurements of the solar disk and plasma and magnetic properties of the equatorial radiation belt charged particle environment sensed by the Geosynchronous Operational Environmental Satellites (GOES), similar plasma properties and upper atmosphere energy inputs sensed by the low earth Polar Orbiting Environmental Satellites (POES) and European Meteorological Operational (MetOp) and Defense Meteorological Satellite Program (DMSP; multi-institution collaboration) satellites. NOAA's strong observational continuity continues with two flagship programs: the Deep Space Climate Observatory (DSCOVR) (launched February 2015) which will provide NOAA with a new operational solar wind monitoring capability and GOES-R (first launch 2016) which will advance our GEO radiation environment monitoring. The aggregated expertise within NCEI provides a powerful arsenal supporting many key, internationally valuable activities. These include leadership roles in the development of the standard International Geomagnetic Reference Field (IGRF), the World Magnetic Model and its Extension (WMM and EMM), the new Satellite Anomaly Initiative, NOAA's foray into the Big Data arena, and numerous contributions to the operations and research communities. We present on NOAA's past, present and future space physics and geomagnetism activities.