The Moon to Mars Space Weather Analysis Office; Mission, Goals and Concept of Operations

*Yaireska M Collado-Vega[1]

1. NASA Goddard Space Flight Center

As NASA plans for human missions beyond Low-Earth Orbit (LEO), the need for improvements in space weather environment modeling capabilities, communication of radiation risks, and real-time space weather analysis support is essential for mission success. These future missions will be flying in deep space and no longer have the Earth's protective magnetic field shielding them from radiation in space. The Space Radiation Analysis Group (SRAG) at Johnson Space Center and the Community Coordinated Modeling Center (CCMC) at Goddard Space Flight Center have worked on the Integrated Solar Energetic Particle (ISEP) Warning System project which is a collaboration that expands SRAG's current space weather monitoring capabilities beyond LEO. Last year, NASA established an interface of communications with SRAG to improve science and prediction capabilities both for lunar and Mars missions in support of crewed missions beyond LEO. The Moon to Mars (M2M) Space Weather Analysis Office located at Goddard Space Flight Center will provide SRAG with additional expert-based analysis of the space radiation environment in support of human exploration activities. The M2M Office will analyze state-of the-art space weather model output tailored to SRAG’ s needs as part of the ISEP project and the collaboration with CCMC. The M2M Office will also support NASA robotic missions with space weather assessments and anomaly analysis. The goal between CCMC and M2M is to create an effective NASA in-house R2O2R pipeline for space radiation environment predictive capabilities in support of human missions beyond LEO. One key element of the partnership is the transition of ISEP models/software from CCMC to M2M. We will present the M2M Office's goals, infrastructure, and activities to support SRAG and NASA missions in collaboration with CCMC.

Keywords: Space Exploration, Space Weather, Radiation Risks, Mission Support

