

LA-UR-18-23223

Approved for public release; distribution is unlimited.

Title: Space Weather Data Products and Modeling Capabilities at Los Alamos
National Laboratory

Author(s): Friedel, Reinhard Hans Walter
Henderson, Michael Gerard
Jordanova, Vania Koleva
Morley, Steven Karl
Cunningham, Gregory Scott
Reeves, Geoffrey D.
Cowee, Misa
Carver, Matthew Robert
Kippen, Richard Marc
Sullivan, John P.

Intended for: PSTEP-3/JpGu, 2018-05-11/2018-05-20 (Tokyo, Japan)

Issued: 2018-04-16

Disclaimer:

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the Los Alamos National Security, LLC for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

Abstract Submission

Title1:

Space Weather Data Products and Modeling Capabilities at Los Alamos National Laboratory

Author(s)1:

R. H. W. Friedel, M. G. Henderson, V. K. Jordanova, S. K. Morley, G. S. Cunningham, G. D. Reeves, M. M. Cowee, M. R. Carver, R. M. Kippen, J. P. Sullivan (LANL)

Preferred Type1:Invited

Short Abstract1:

We present an overview of space weather data products (e.g., GPS, GEO) acquired by Los Alamos National Laboratory which has been involved in measuring and monitoring the space environment for over 50 years. In addition, Los Alamos has developed a number of space weather modeling capabilities over the years. These include: DREAM (a data-assimilative code) and DREAM3D (a basic physic diffusion code), which are designed to model the evolution of the Earth's hazardous natural and artificial radiation belts; SHIELDS/RAM-SCB, which is a state-of-the-art set of coupled codes to model the ring current/surface-charging environment in the near-Earth region; and the on-going Carrington/GIC project which will extend this modeling capability down to the ground in order to understand impacts on power grid infrastructure during extreme geomagnetic storm events.