

Capability

Radiation Belt Specification and Forecast

Applications

- **Aerospace industry:**
 - spacecraft design
 - forecasting of potentially adverse conditions
- **Insurance industry:** risk management
- **Aviation:** assuring safe airline operations on transpolar flights

Benefits

- Flexible platform with user-friendly interface
- Improved radiation belt model containing the full dynamic response of radiation belts
- Verified, validated model that can calculate forecast efficiencies globally.
- Calculations up to 3 million times faster than other currently used magnetic field models

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Summary

National security operations and the national economy rely increasingly on space and ground systems that are susceptible to failure or degraded performance caused by extreme space weather conditions. The U.S. alone is operating several hundred spacecraft today. Space weather can adversely affect satellite operations, communications, space-based and ground-based radar, navigation, high-altitude manned flight, and electrical power distribution grids.

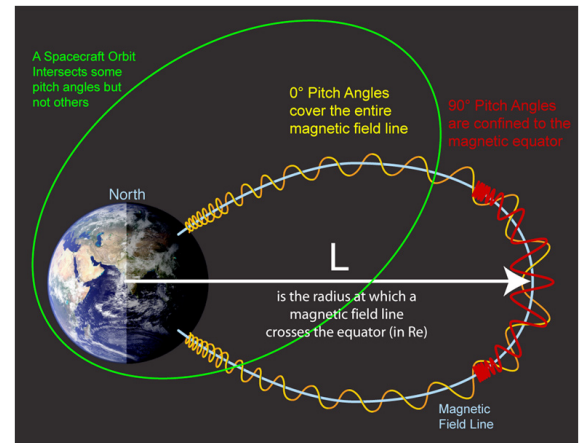
Los Alamos National Laboratory (LANL) has developed a capability to model the dynamic radiation environment in space to better predict dangerous conditions that can damage satellites and other space assets or impede aerospace operations. DREAM (Dynamic Radiation Environment Assimilation Model) can mitigate adverse space weather effects for the aerospace industry, government agencies, insurers of satellites, airlines with polar routes and other industry clients.

DREAM will provide detailed assessment of satellite environments along arbitrary orbits at different phases of the solar cycle for historical space phenomena. The Space Environmental Awareness (SEA-DREAM) tool provides near real-time data assimilation and radiation belt forecasts.

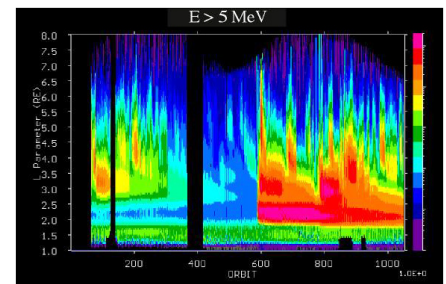
Status:

The Laboratory is seeking government and commercial partners with whom to implement and further develop this technology solution and to apply space environment specification and forecasting to aerospace applications such as design, reliability, anomaly assessment, and operations.

For more information, please visit the DREAM website:
www.lanl.gov/projects/dream



DREAM can provide an assessment of the radiation belt environment for a number of satellite orbits.



A graphical user interface provides radiation belt specification and forecast in near real-time.