

Design Reference Space Radiation Environments for Spacecraft Design and Mission Planning

Z. Robinson, University of Alabama in Huntsville

Overview

What is a solar energetic particle event?

- An outburst of subatomic particles (mostly protons) accelerated by the Sun
- The accelerated particles flow out into space following the interplanetary magnetic field

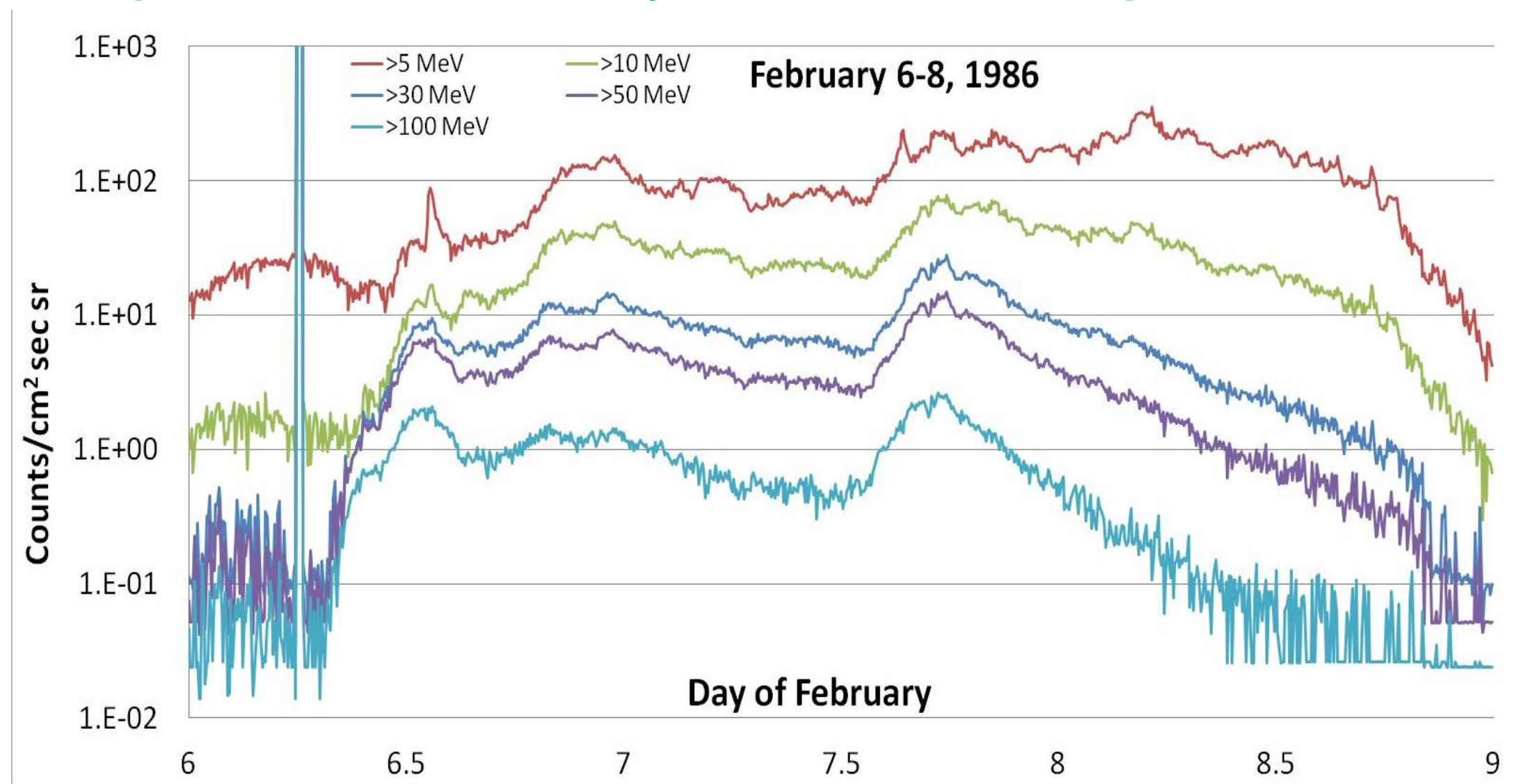
What is a Design Reference Environment?

- A description of a radiation environment so severe that it will not occur during the user-chosen confidence level.
- Missions designed for this environment will be reliable to the chosen confidence level.

Explanation

This tool provides a mission-specific differential energy spectrum of the proton fluence integrated over an episode of solar activity more severe than any expected during the mission at the chosen confidence level.

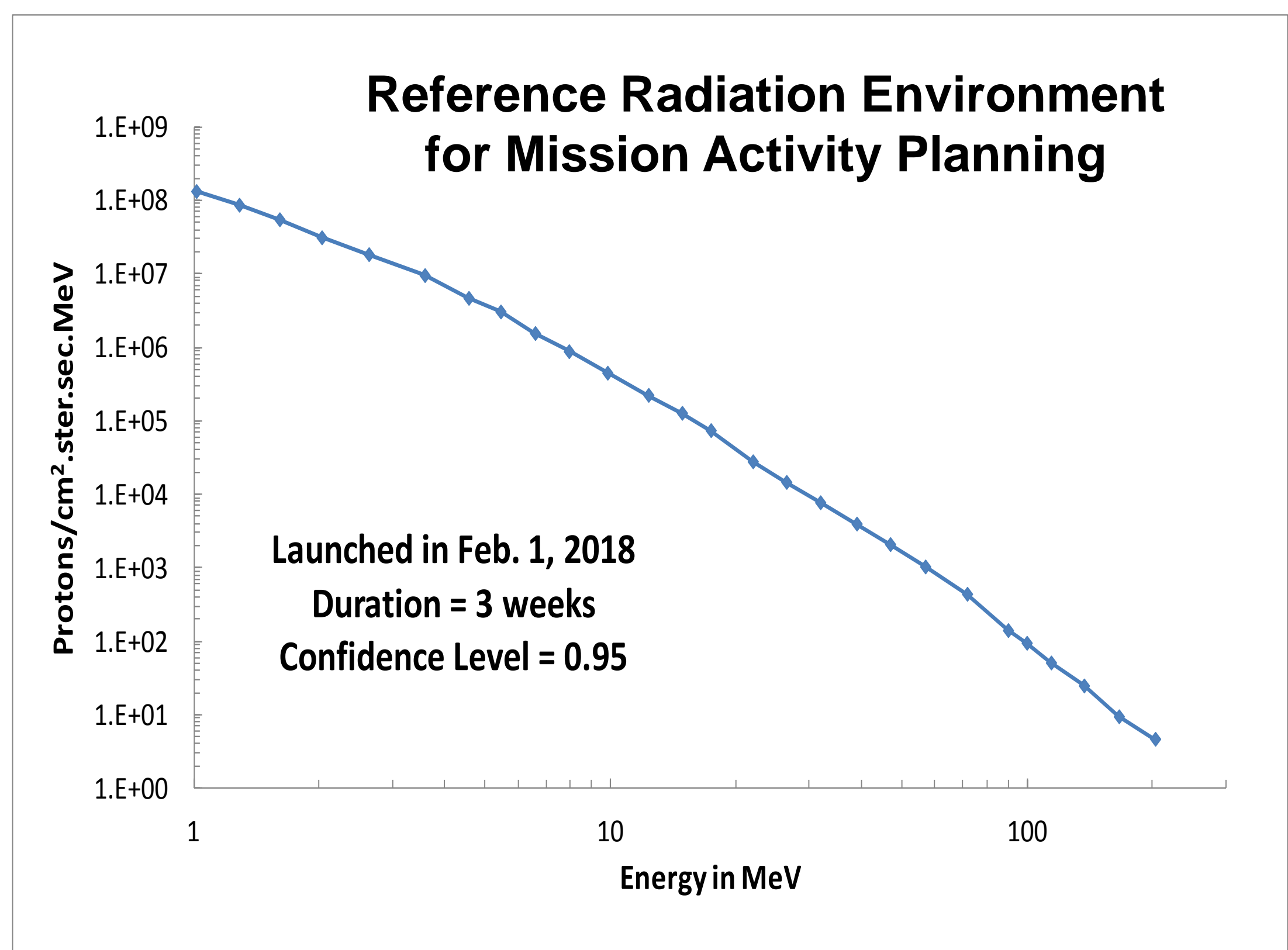
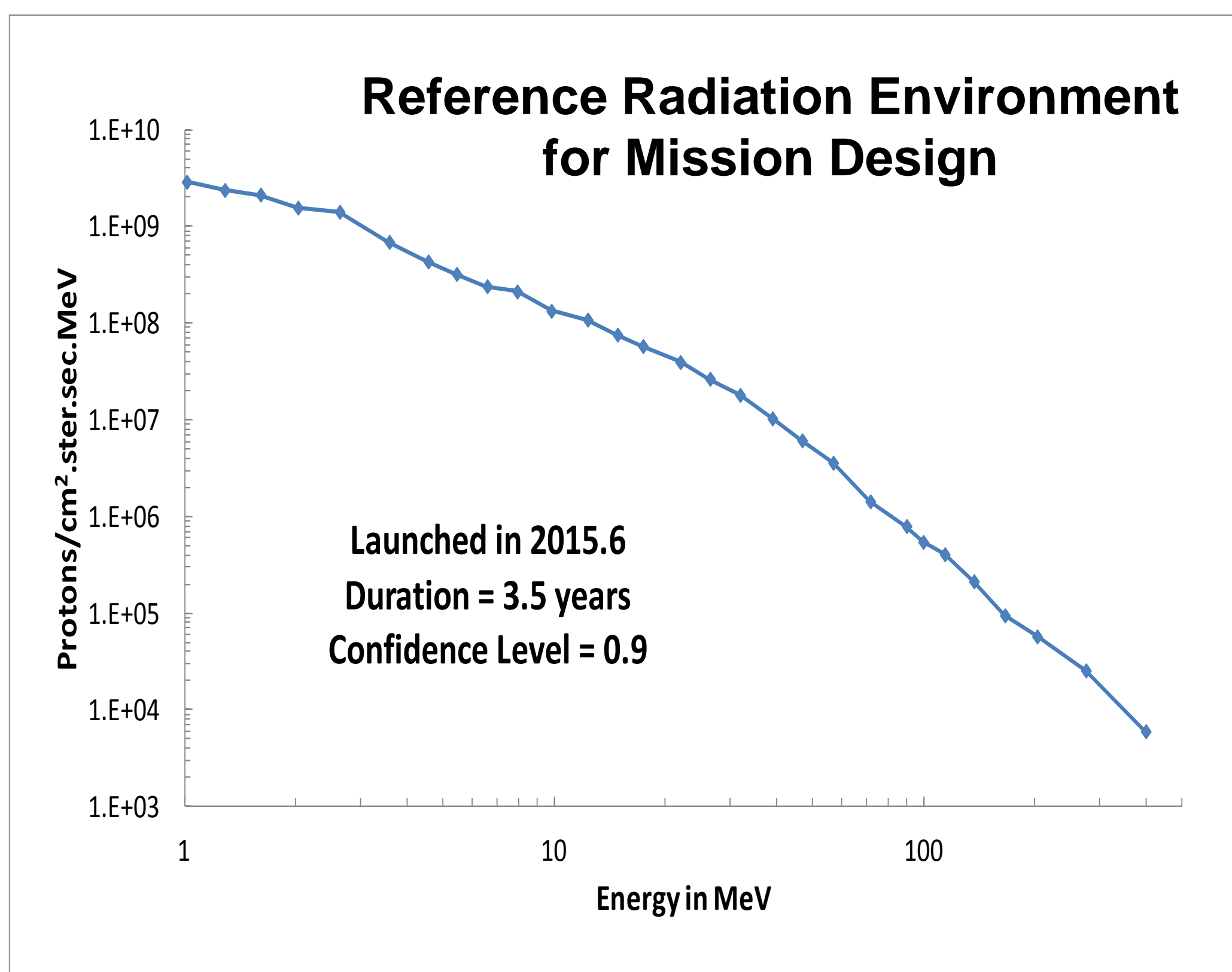
An episode of solar activity with several solar particle events



Impact

- Prevents expensive over-design while insuring reliable spacecraft designs.
- Allows mission planners to accurately evaluate the risk of proposed mission activities.
- Guides planning for credible worst-case scenarios.

Results



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¹University of Alabama in Huntsville; ²NASA Goddard Space Flight Center

