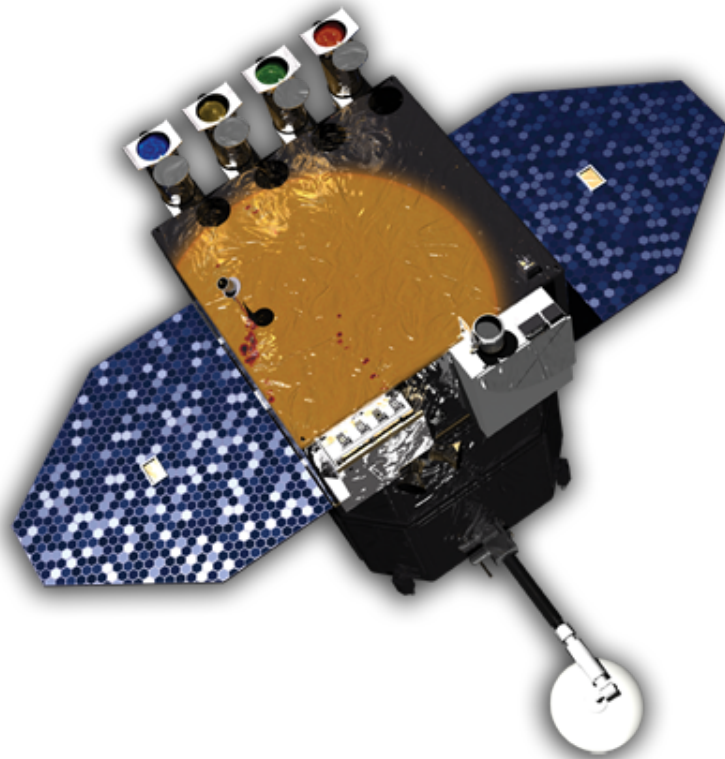


NASA and Solar Cycle Predictions



W. Dean Pesnell

Project Scientist, Solar
Dynamics Observatory

Member, Solar Cycle 24
Prediction Panel



Goddard Space Flight Center

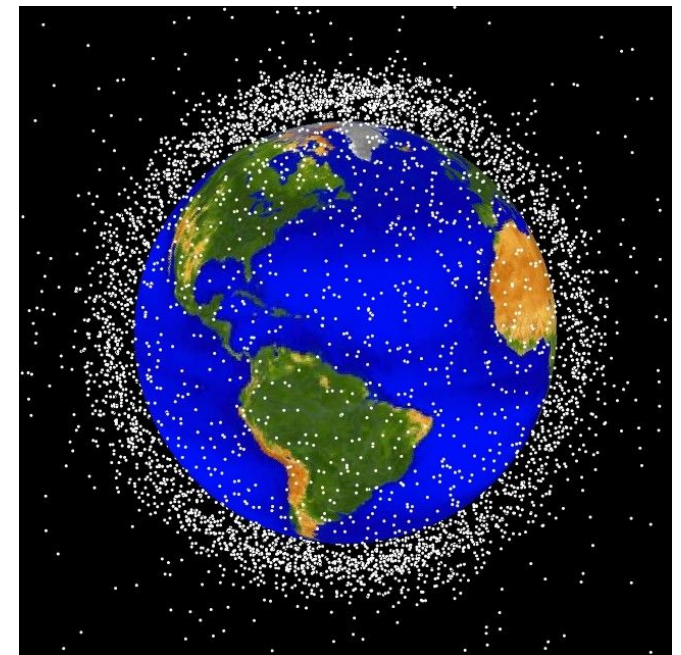
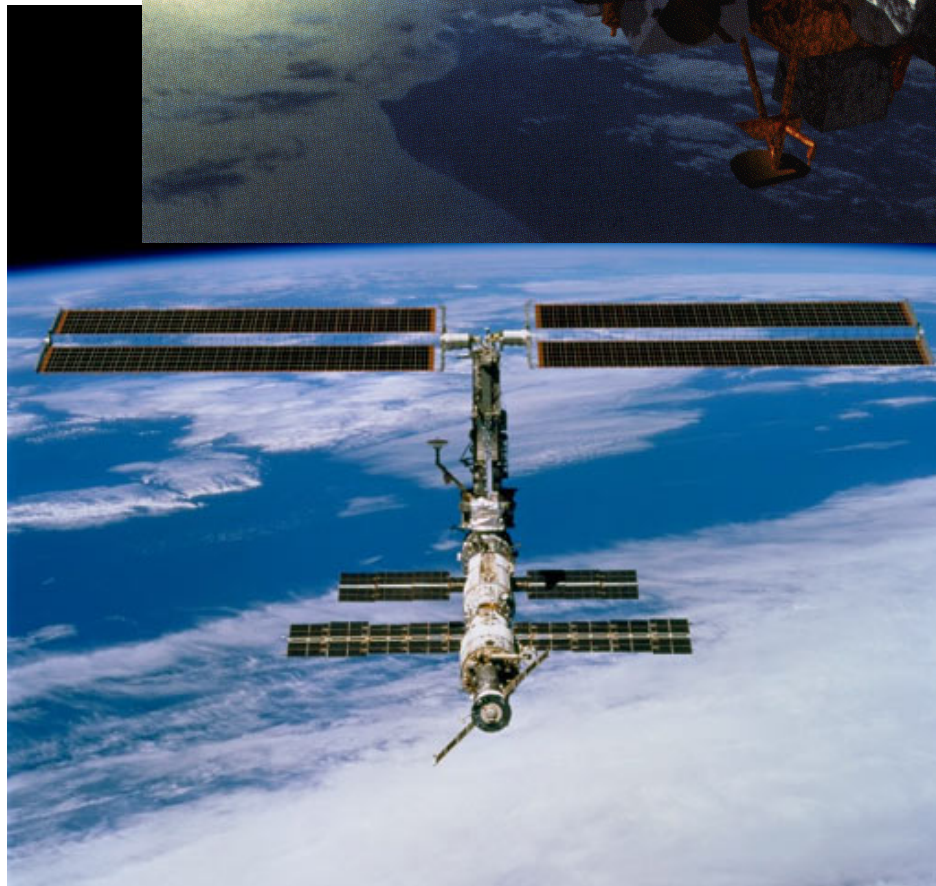
NASA's mandate is to build, fly, and operate spacecraft in the hostile environment of space. Our success comes from trying to understand what *can* go wrong and building and operating appropriate payloads.

Things go right, things go wrong, but the mandate is still there.





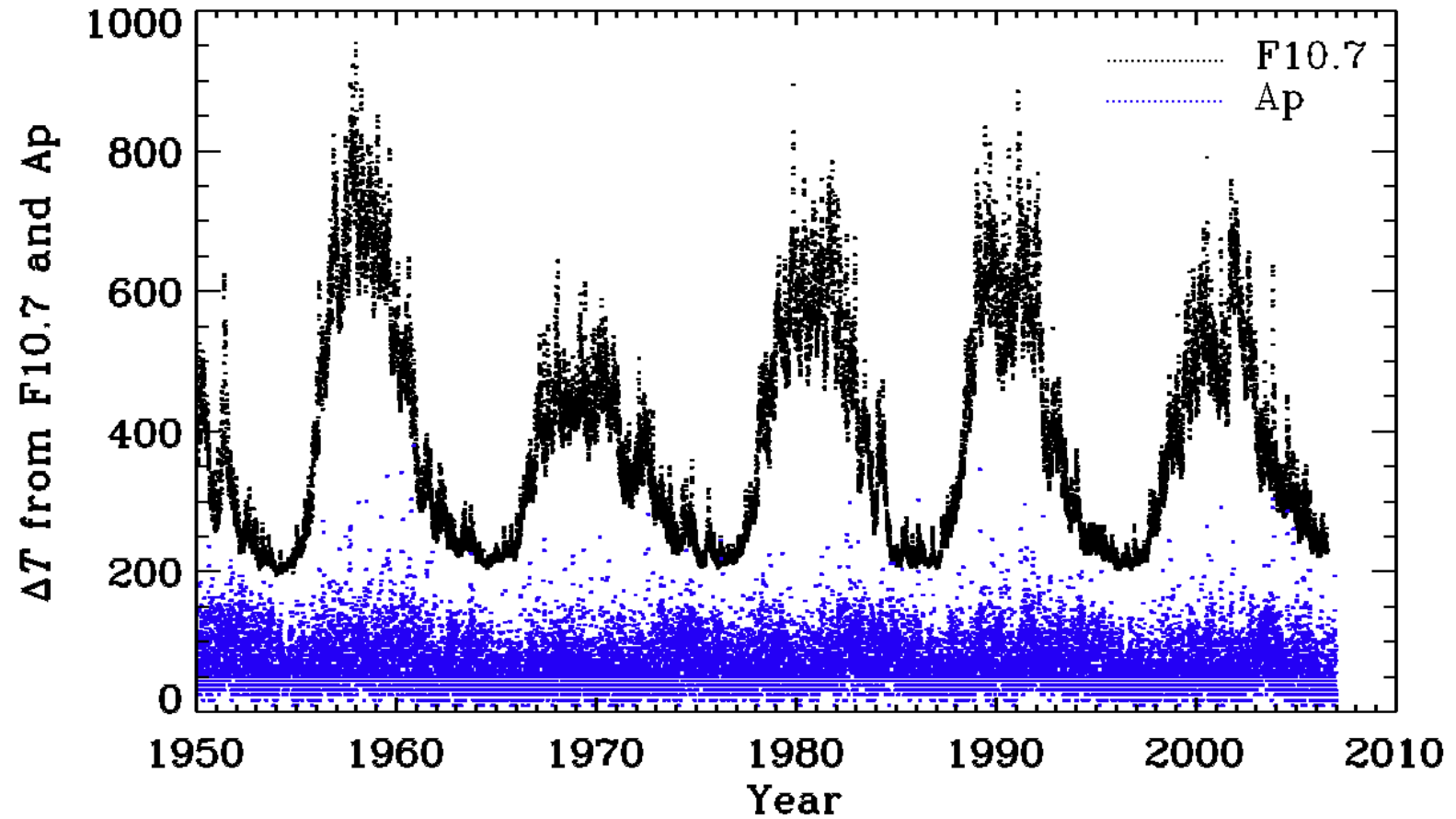
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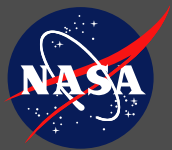


Space Weather Workshop, April 2007, W. Dean Pesnell, GSFC



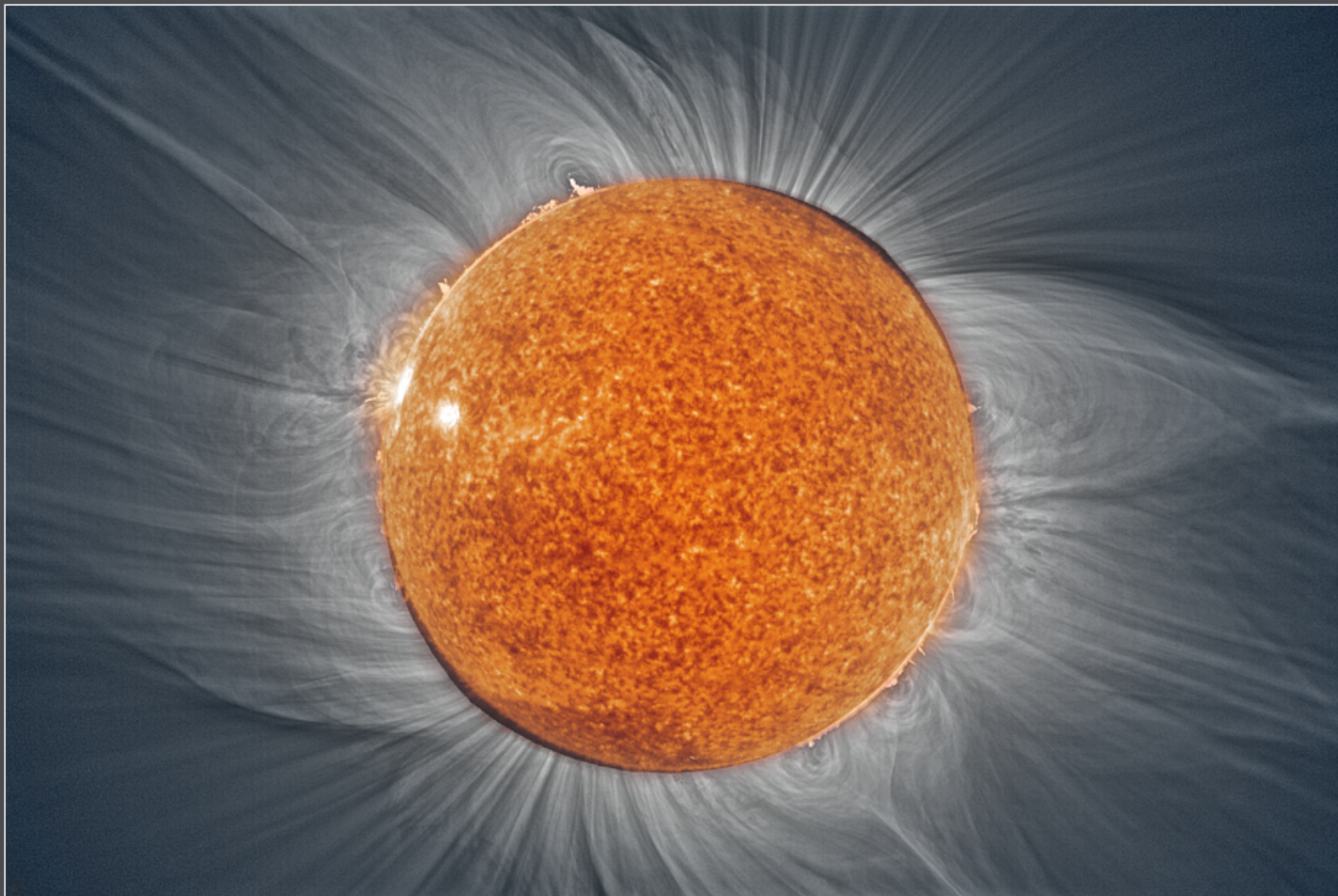
Goddard Space Flight Center





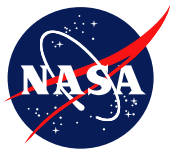
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The Solar Cycle in the Corona

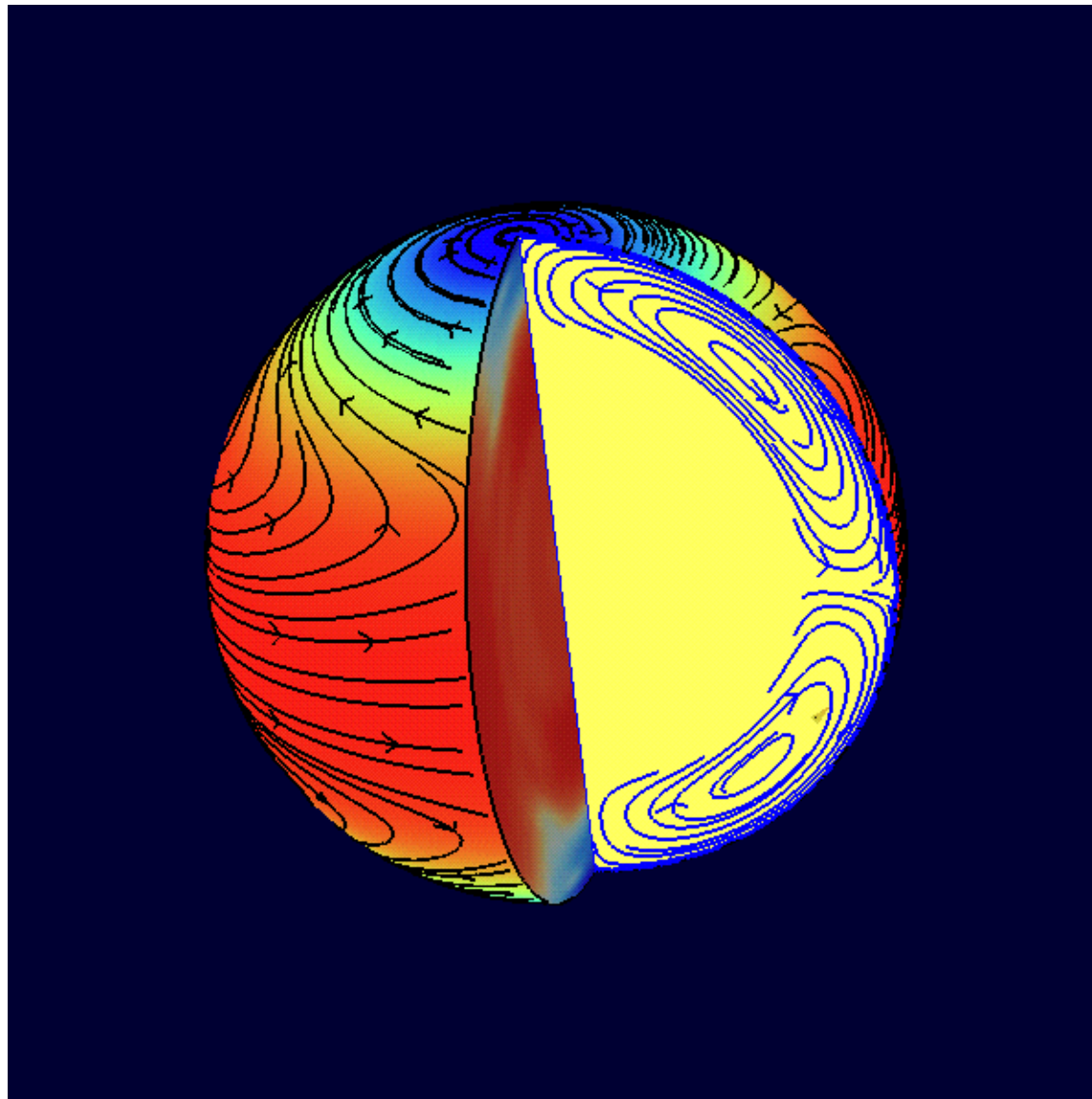


Total Solar Eclipse 2006

© 2006 Miloslav Druckmüller, Peter Aniol, ESA/NASA

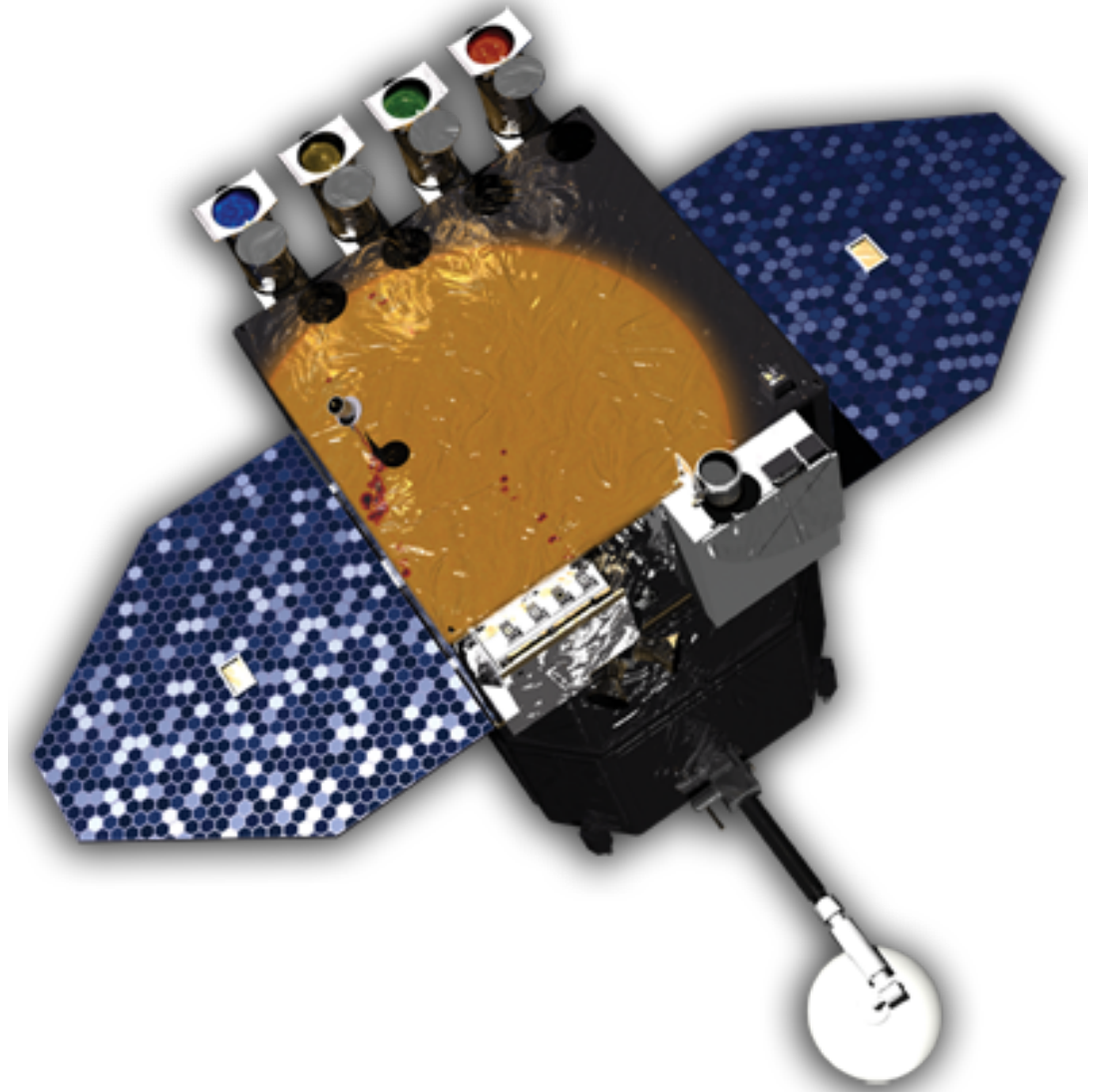


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The Solar Dynamics Observatory

SDO, the first mission of *Living With a Star*, will provide the data needed to understand the solar convection zone and how magnetic field is assembled and dissipated in the solar atmosphere.





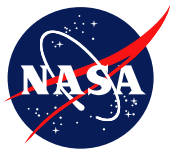
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Backup Slides Follow

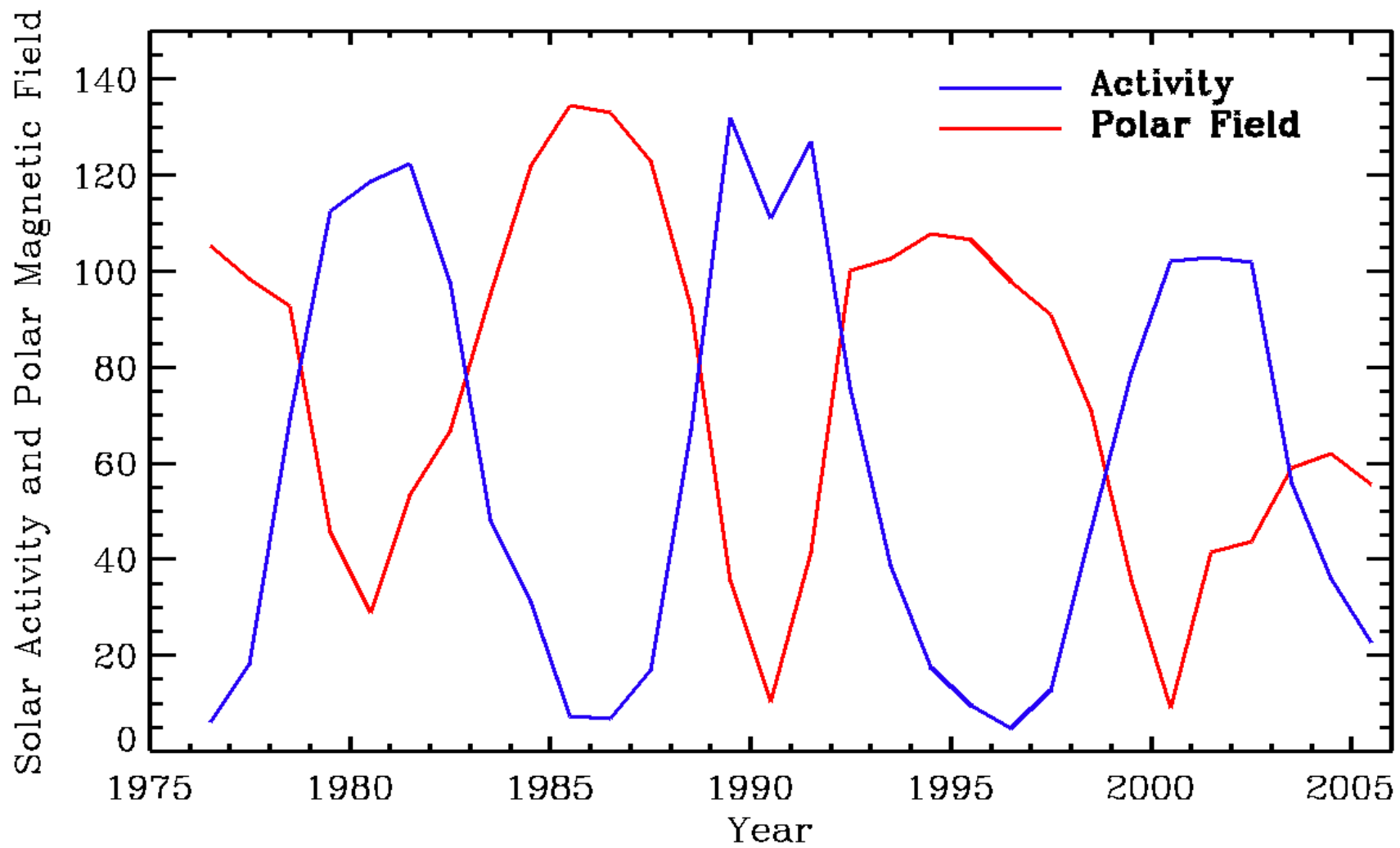


Radiation Hazards must be Understood to be Mitigated

- Radiation hazard is different for every orbit and duration
 - Incident particles range from cosmic rays to highly-relativistic electrons to solar protons
- Missions can have a 10-year leadtime, the Heliophysics Roadmap shows missions out to 2020!
- An understanding of the hazard in each of various study orbits may determine how the mission is designed
- Near-real-time knowledge of radiation hazard is also required
 - This requires short-term predictions of activity



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