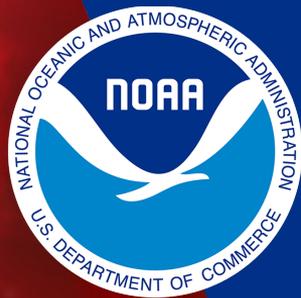


Safeguarding Society with Actionable Space Weather Information



Discussion topic:
**Maximizing Solar Minimum:
Communicating Its Impacts,
Opportunities, and Importance**

Discussion Leads

Howard Singer - Space Weather Prediction Center

Elsayed Talaat – Universities Space Research Association

NAS Space Weather Roundtable, December 5, 2025

Issues for Solar Minimum Discussion

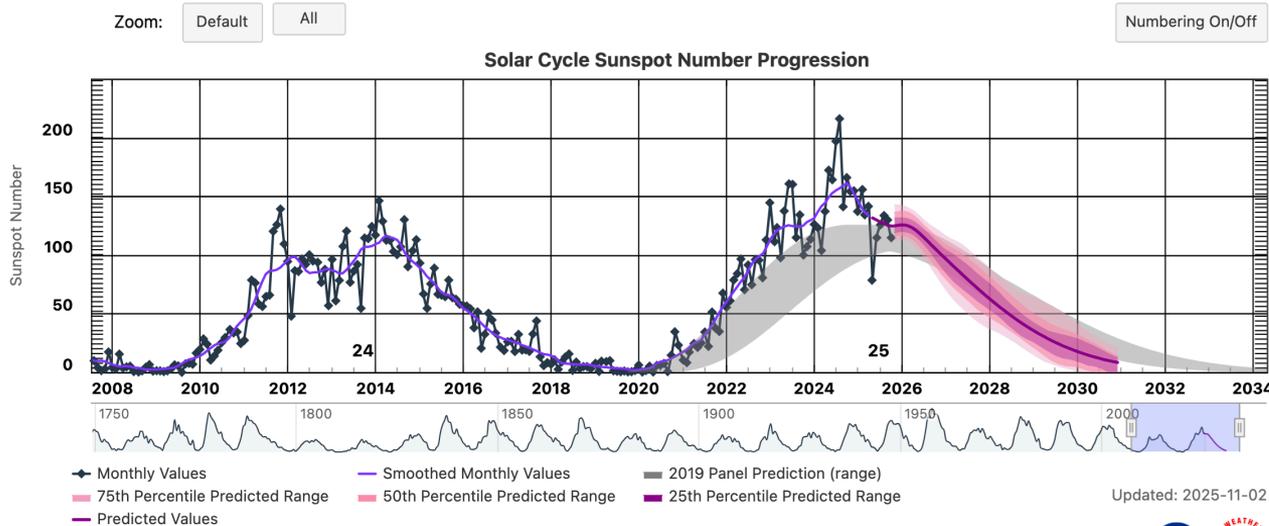
How to:

- **Ensure consistent communication** to policymakers, space-weather users, and the public on conditions and potential impacts during solar minimum
- **Reduce complacency** by emphasizing continued risks and the importance of preparedness even in quieter solar-cycle periods
- **Maintain awareness and engagement** in ongoing space-weather monitoring, research, and operational activities throughout the solar minimum
- ...



Solar Cycle 24-25

SOLAR CYCLE PROGRESSION



- Solar Cycle 25 turned more active than anticipated in early May 2024.
- Intense surge in solar activity with a number of powerful solar flares, SPEs, and geomagnetic storms.

M. Miesch <https://www.swpc.noaa.gov/products/solar-cycle-progression>



Space Weather During Solar Minimum

- **Space Weather is always present throughout the solar cycle**
- **In general, solar generated activity such as CMEs, Flares, and Solar Particle Events are less frequent during Solar Min than Solar Max, but forecasters, and those impacted by space weather, must always be poised to respond to these types of strong space weather activity**
- **Some of the largest geomagnetic storms have occurred outside of solar max**
- **Some space weather is particularly influential during solar min or the declining phase of the solar activity cycle, e.g.**

Issue	Why it Matters
Higher Galactic Cosmic Rays	Radiation risk to satellites, astronauts, aviation
Recurrent high-speed streams	Frequent moderate geomagnetic storms
Flares and CMEs	Can still cause significant disturbances
Low thermospheric drag	Increased debris lifetime and collision risk





Space Weather During Solar Minimum: Forecaster Considerations and Opportunities

- **Opportunity for forecasters to invest time into developing and modernizing new and revised products and services**
- **Investing in improved customer, researcher and international communications and coordination**
- **More time for on shift learning and understanding of space weather (R2O), including models and observations**
- **Reanalysis of previous events and impacts to prepare for what comes next**
- **...**

