



Space Weather Resilience



Space Weather Prediction Center

National Weather Service

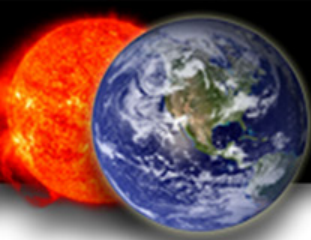
National Oceanic and Atmospheric Administration

SWEF

22 June 2023



*Safeguarding Society with
Actionable Space Weather Information*



Communicating space weather information

Impact Decision Support Services

70k subscribers

Satellite Companies, Airlines, Communications
State and Local Emergency Managers



Operations and Watch Centers



557th Weather Wing



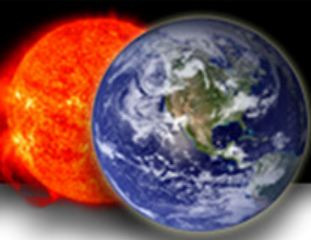
NASA Mission Control



NERC
NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION



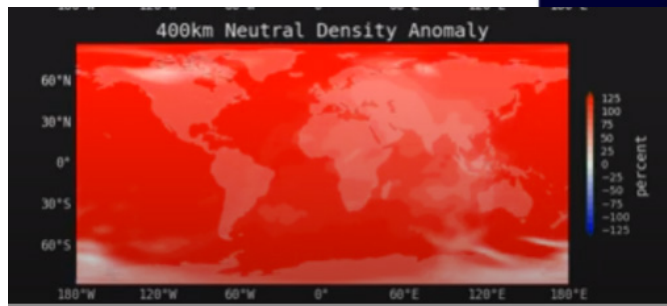
Situation Room



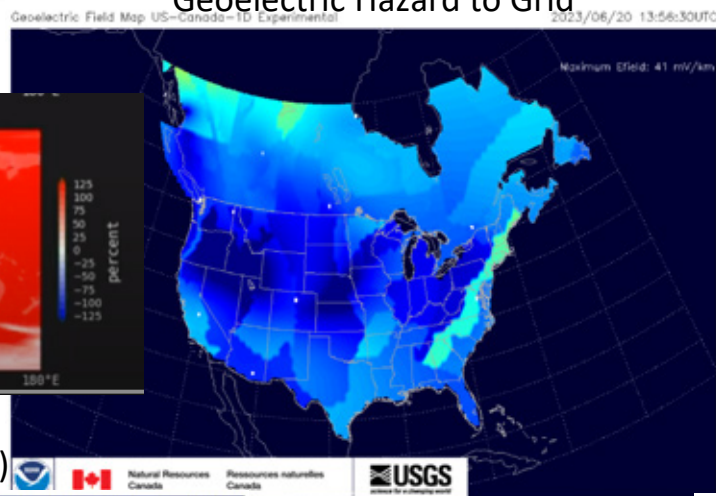
Communicating space weather information

Space weather Graphics

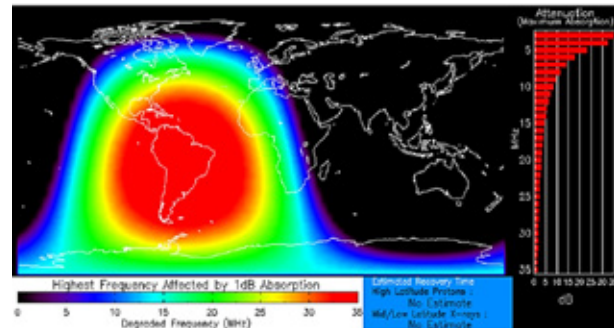
WAM model – Satellite Drag



Geoelectric Hazard to Grid



D-Region – HF Radio Degradation



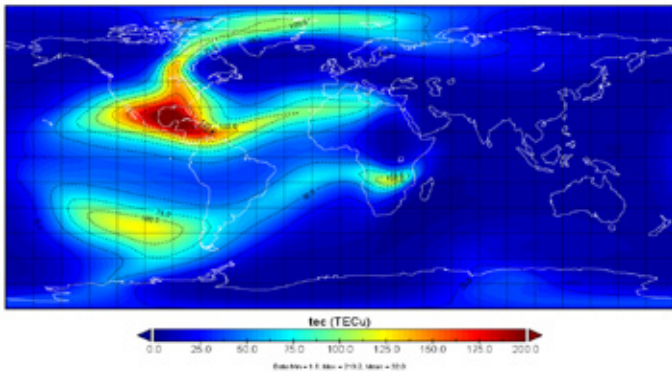
Strong X-ray flux

Product Valid At: 2023-02-11 15:49 UTC

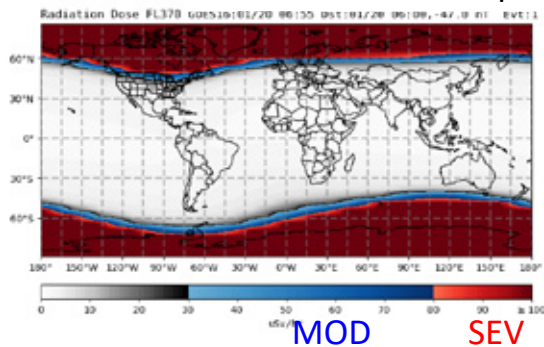
Normal Proton Background

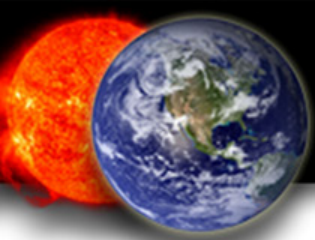
NOAA/SWPC Boulder, CO USA

Total Electron Content (TEC)



FAA CARI-7 model – Radiation Exposure





NOAA Space Weather Scales

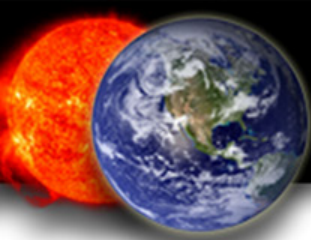
2+ year National & International effort underway to update the NOAA Space Weather Scales

	Geomagnetic Storms	Solar Radiation Storms	Radio Blackouts
Extreme	G5	S5	R5
Severe	G4	S4	R4
Strong	G3	S3	R3
Moderate	G2	S2	R2
Minor	G1	S1	R1

OSTP Priority

“Assess and update, as appropriate, the NOAA space weather scales, in coordination with Sector Risk Management Agencies, and the public and private sector”

Significant Government, Industry, and International Community Engagement



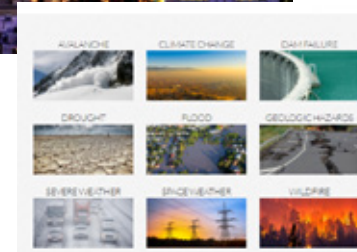
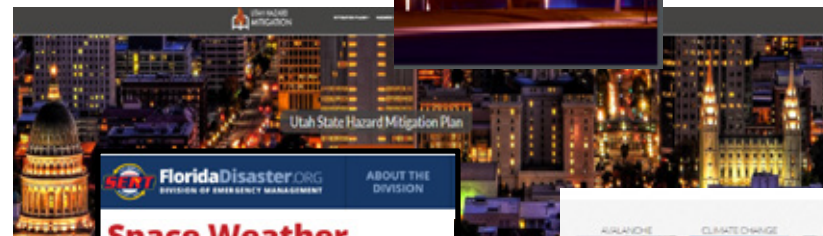
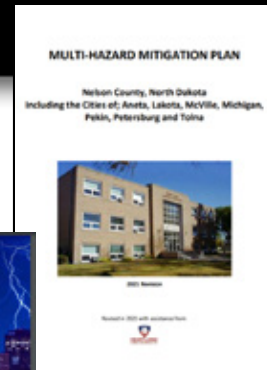
Space Weather Preparation – State and Local Government

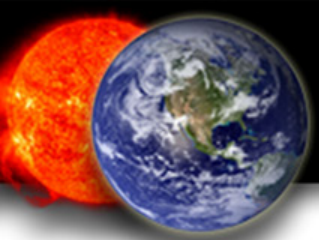
Much effort to address space weather at federal levels

- Space weather knowledge and preparedness varies greatly at State and Local Government levels
- Incorporate space weather into mitigation strategies locally
- Educate – e.g., emergency management conferences, exercises, local weather forecast office outreach



Space Weather





Communication Plan

DOC, DHS, and NSC will further refine strategic messaging and communications for an impending extreme space weather event to ensure the U.S. government is prepared, speaks with one voice, and able to minimize the impact of mis-, dis-, and mal-information

- Notification and Communications Regarding Potential Major Space Weather Event to public and end-users