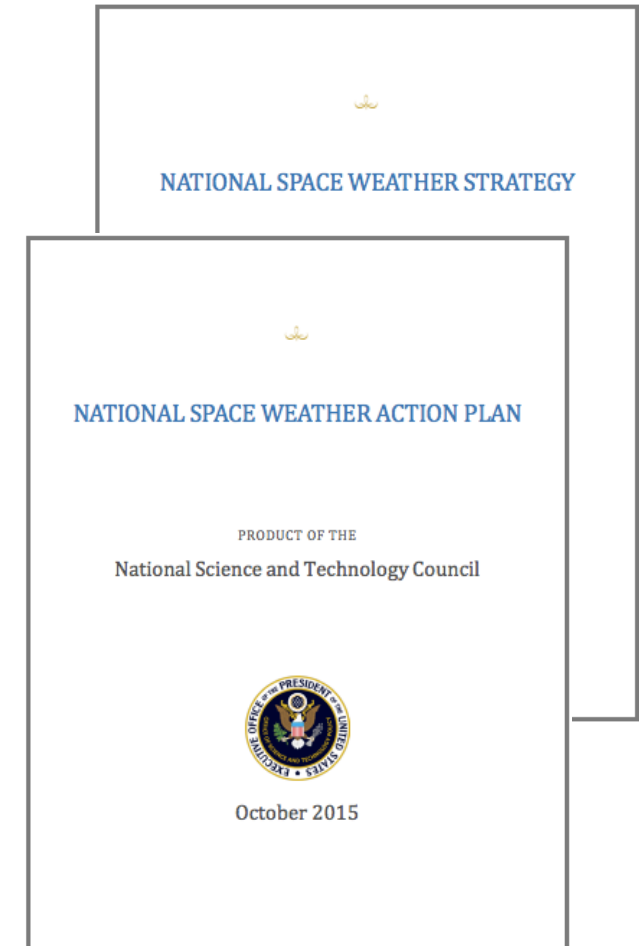




# Space Weather Risks are Recognized - Mitigation Plans are being Developed

- U.S. National Strategy and Action Plan released October, 2015
- Developed by the Space Weather Operations, Research, and Mitigation Task Force
- Addresses benchmarks, response, data, research, modeling, and operations
- National and international actions





# National Space Weather Strategy Space Weather Event Benchmarks

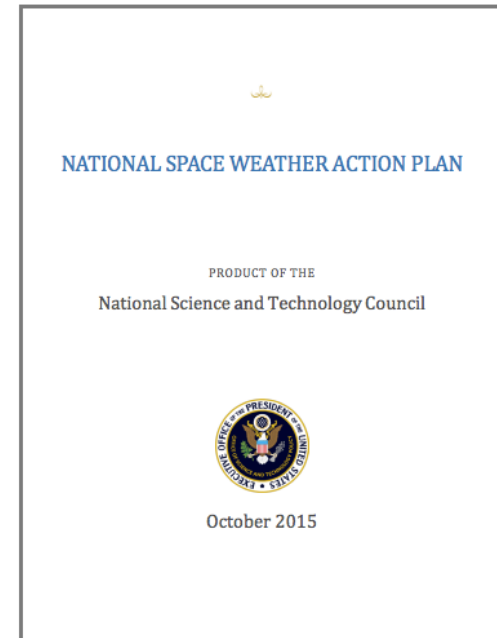
Provide a clear and consistent description of space-weather events – not to classify system impact

Phase 1: Quick turnaround using existing information

Phase 2: Rigorous analysis, where needed

Reexamine at least every five years

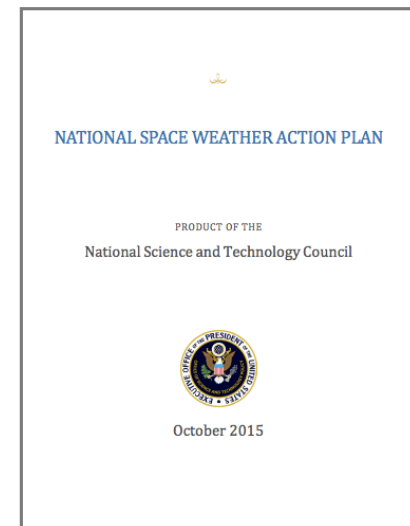
- Induced geo-electric fields
- Ionizing radiation
- Ionospheric disturbances
- Solar radio bursts
- Upper atmospheric expansion





# National Space Weather Strategy Response and Recovery Capabilities

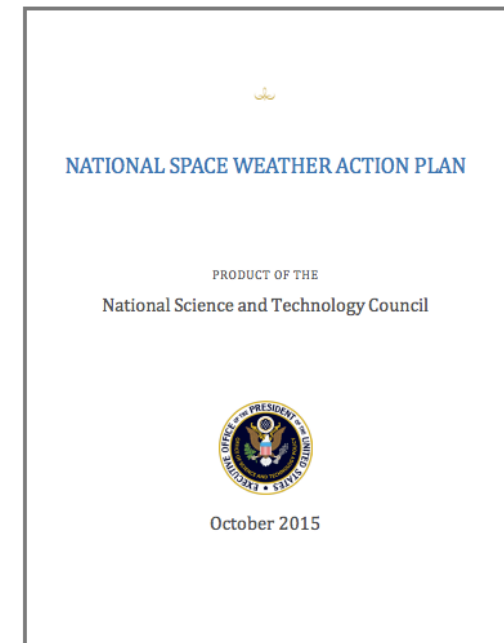
- Complete an all-hazards power outage response and recovery plan
- Support planning for management of extreme space weather events
- Coordinate development of power-restoration priorities and expectations
- Conduct exercises to test response and recovery plans





# National Space Weather Strategy Assessment, Modeling, and Prediction of Impacts

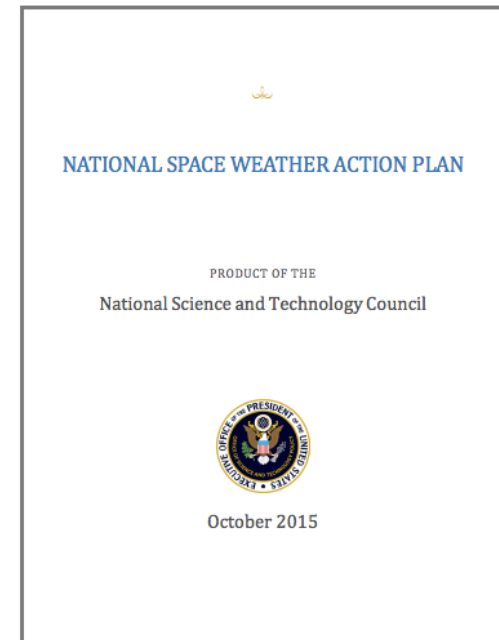
- Assess vulnerability of critical infrastructures
- Develop real-time infrastructure assessment capability
- Improve operational models that forecast effects on critical infrastructure
- Improve operational impact forecasting and communications
- Conduct research on effects of space weather on infrastructure sectors





# National Space Weather Strategy Understanding and Forecasting

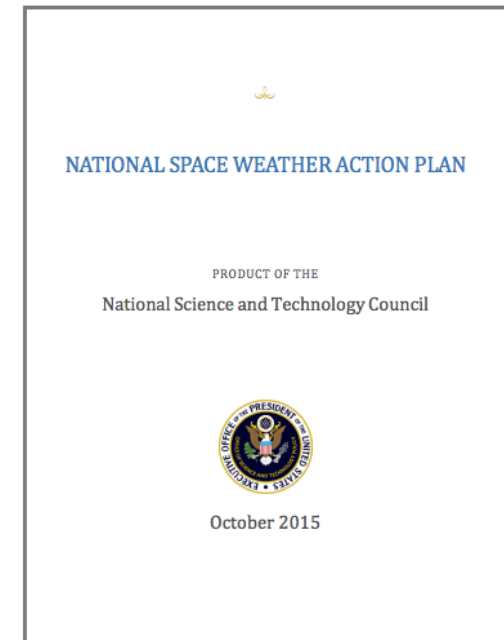
- Improve understanding of user needs
- Ensure that products are actionable for decision making
- Establish baseline observing capability
- Improve forecasting lead-time and accuracy
- Enhance fundamental understanding
- Improve effectiveness of research to operations





# National Space Weather Strategy International Coordination

- Build international support at the policy level (e.g., WMO, COPUOS, ICAO, ITU)
- Increase international engagement on observations, infrastructure, data sharing, modeling, research
- Strengthen coordination on products and services
- Promote preparedness for extreme events

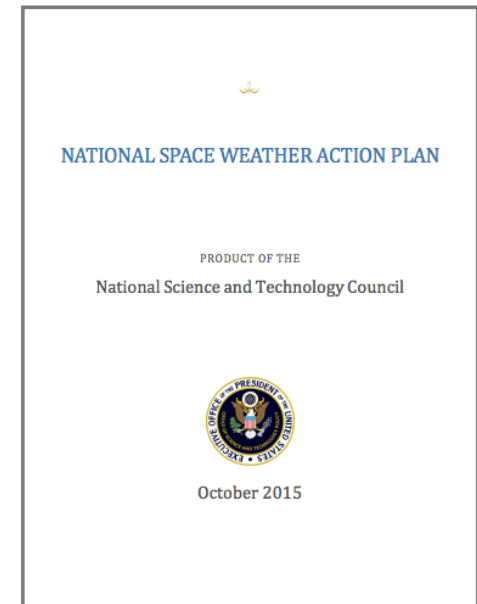




# National Space Weather Strategy

## Baseline Observational Capability for Operations

- Sustain SOHO/LASCO coronagraph measurements
- Develop options for follow-on L1 measurements, including coronagraph
- Sustain/enhance solar imaging, solar magnetic field, H-alpha, solar radio, X-ray, energetic particles
- Sustain/enhance geomagnetic monitoring network
- Enable/enhance GNSS radio occultation data
- Sustain/enhance ground-based neutron monitor data



Achievable through  
international  
partnerships



# National Space Weather Strategy Data Actions – Aviation Sector

- Define requirements for real-time monitoring of radiation environment for health and safety of crew and passengers
- Develop/improve models for real-time assessment of radiation levels at commercial flight altitudes

