



U.S. National Space Weather Strategy

UN Committee on the Peaceful Uses of Outer Space

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Bill Murtagh
Assistant Director for Space Weather
Office of Science and Technology Policy
Executive Office of the President

Severe Space Weather – Societal and Economic Impacts



Space Weather Impact – 4 Nov 2015

SECTIONS HOME SEARCH The New York Times

Solar Storm Knocks Out Flight Control Systems in Sweden

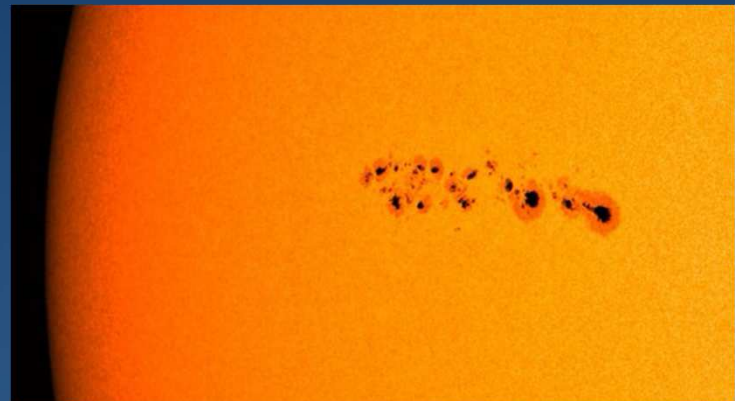
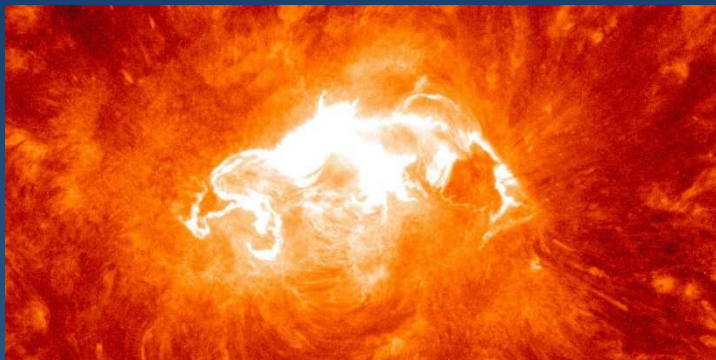
The Weather Channel 29° Anchorage... 46° Vilnius, Lit... 84° Patanga...

Science

Massive Solar Storm Halts Air Travel in Sweden

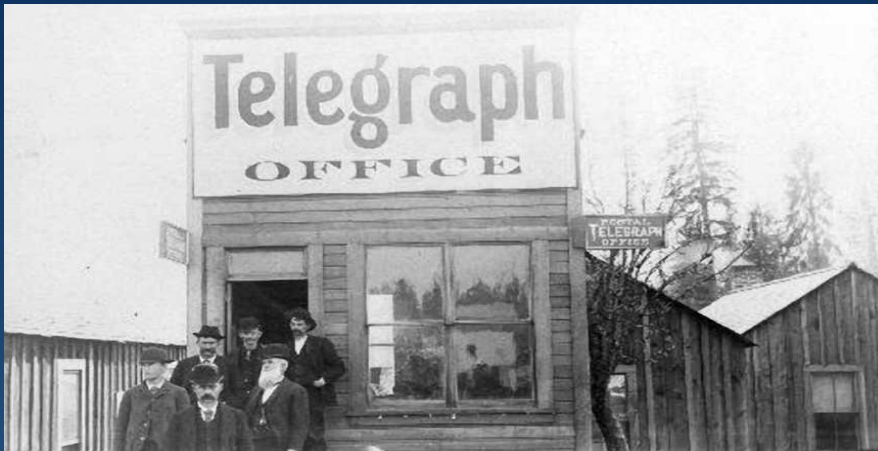
Published Nov 5 2015 09:09 AM EST | The Associated Press

“Flights disappeared from radar screens in Swedish air traffic control towers during the blackout, which lasted about an hour”

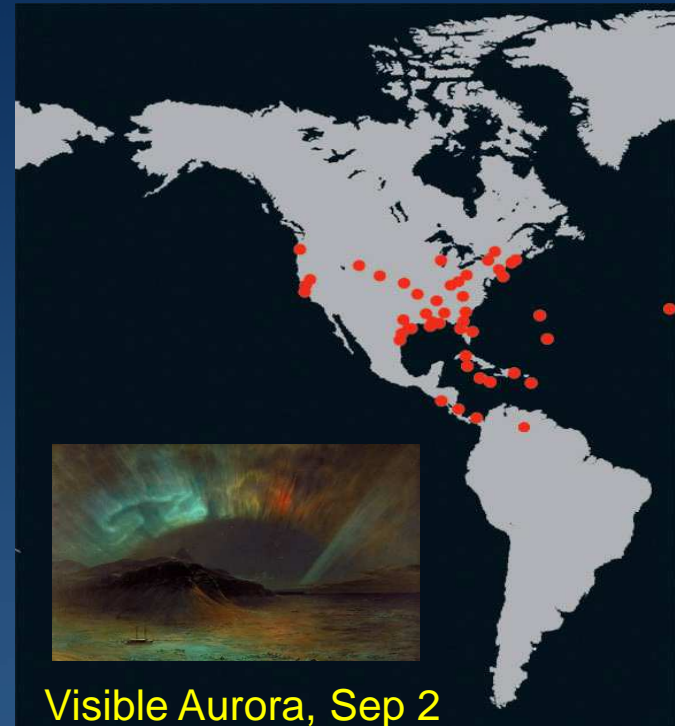


Extreme Space Weather: Carrington Event, September 1859

“All our exchanges, from the northern coast of the Island of Cuba gave glowing descriptions of the Aurora Borealis - as bright in the tropics as in the northern zones” [New Orleans Daily Picayune, September 7, 1859]



Discharges shocked telegraph operators and set the telegraph paper on fire.

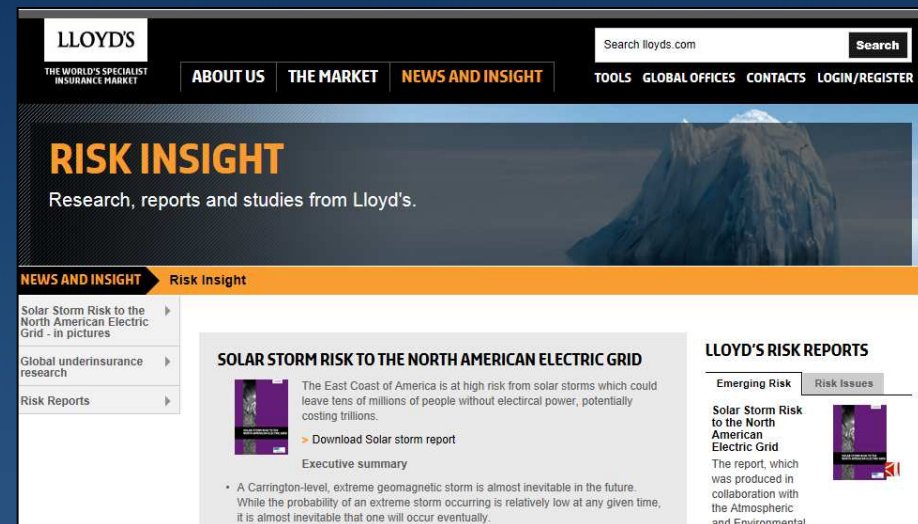


Visible Aurora, Sep 2



Lloyds Report (21 May 2013): *Solar Storm Risk to the North American Electric Grid*

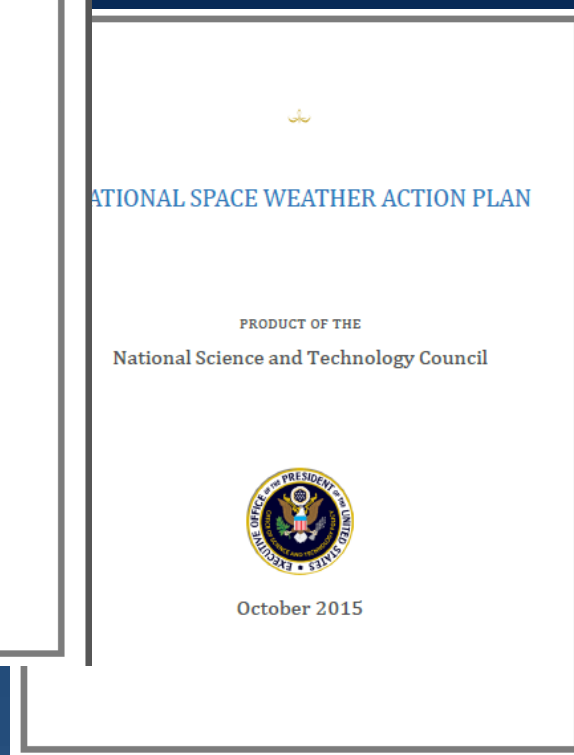
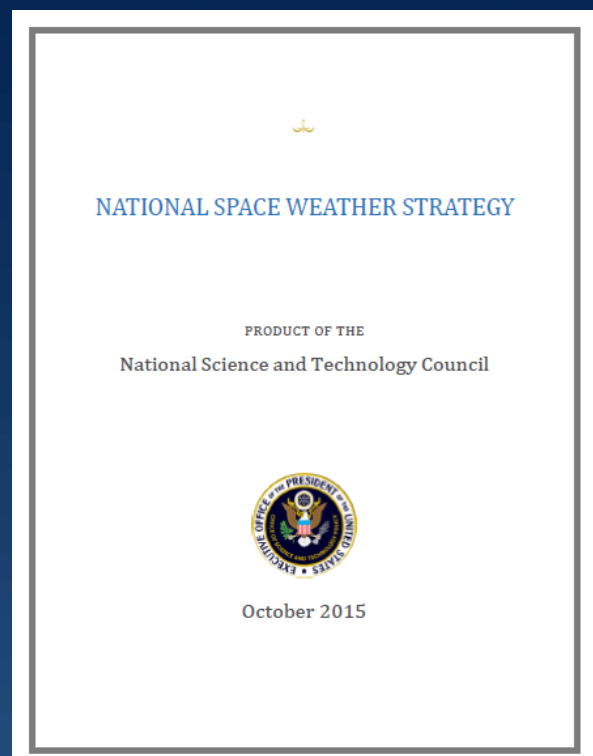
- US population at risk of extended power outage: **20-40 mil**
- Duration: **16 days to 1-2 years**
- Economic cost: **\$0.6-2.6 trillion USD**
- Highest Risk: **DC-NYC corridor**
- Gulf Coast states, including **Florida**, identified as "**high risk**" area



The screenshot displays the Lloyds website interface. At the top, the Lloyds logo is on the left, and a search bar is on the right. Below the logo, the text 'THE WORLD'S SPECIALIST INSURANCE MARKET' is visible. The main navigation menu includes 'ABOUT US', 'THE MARKET', and 'NEWS AND INSIGHT'. A secondary menu lists 'TOOLS', 'GLOBAL OFFICES', 'CONTACTS', and 'LOGIN/REGISTER'. The central banner features the heading 'RISK INSIGHT' and the subtext 'Research, reports and studies from Lloyd's'. Below this, a 'NEWS AND INSIGHT' section is active, showing a list of items: 'Solar Storm Risk to the North American Electric Grid - in pictures', 'Global underinsurance research', and 'Risk Reports'. The main content area highlights the report 'SOLAR STORM RISK TO THE NORTH AMERICAN ELECTRIC GRID' with a summary: 'The East Coast of America is at high risk from solar storms which could leave tens of millions of people without electrical power, potentially costing trillions.' It includes a 'Download Solar storm report' link and an 'Executive summary' section. To the right, a 'LLOYD'S RISK REPORTS' section lists 'Emerging Risk' and 'Risk Issues', with the current report highlighted.



The National Strategy and Action Plan



Released on 29 October 2015



National Space Weather Strategy

A cohesive all-of-government strategy was necessary to ensure the federal government was positioned to mitigate, respond to and recover from a major space weather storm

Nov 2014 – Space Weather Operations, Research, and Mitigation (SWORM) Task Force is established

Tasked to develop:

- National Space Weather Strategy (NSWS)
- Space Weather Action Plan



National Space Weather Strategy – Whole Enterprise Involvement

- Multi-agency effort – both science and preparedness
- All Actions coordinated with White House Office of Science and Technology Policy, National Security Council, and Office of Management and Budget
- Public Comment Period - stakeholders provided input and feedback on National Strategy

Strategy will require us to strengthen our interagency, public-private and international partnerships, in a whole community approach.



National Space Weather Strategy – Structure

Strategy articulates six high-level goals

1. Establish Benchmarks for Space-Weather Events
2. Enhance Response and Recovery Capabilities
3. Improve Protection and Mitigation Efforts
4. Improve Assessment, Modeling, and Prediction of Impacts on Critical Infrastructure
5. Improve Space-Weather Services through Advancing Understanding and Forecasting
6. Increase International Cooperation

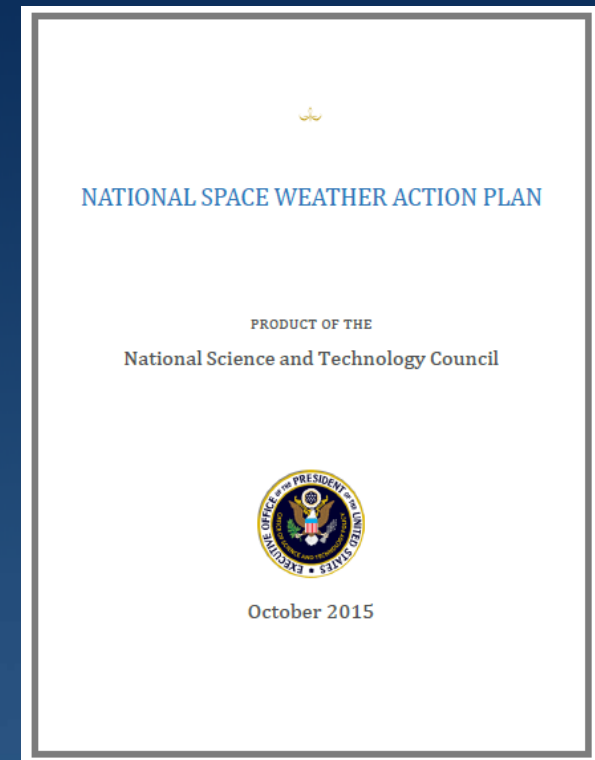


National Space Weather Action Plan

A National Space Weather Action Plan (NSWAP) establishes a process to implement the National Space Weather Strategy

The NSWAP establishes specific activities with:

- implementation timelines
- detailed actions
- specific agency assignments



Goal 6. Increase International Cooperation

Space weather should be regarded as a global challenge requiring a coordinated global response.

- **Build international support and policies for acknowledging space weather as a global challenge**
- **Increase engagement with the international community on observation infrastructure, data sharing, numerical modeling, and scientific research**
- **Strengthen international coordination and cooperation on space-weather products and services**
- **Promote a collaborative international approach to preparedness for extreme space-weather events**



Way Forward – NSTC Subcommittee on Space Weather

NATIONAL SCIENCE AND TECHNOLOGY COUNCIL (NSTC)

| COMMITTEE ON ENVIRONMENT, NATURAL RESOURCES, AND SUSTAINABILITY (CENRS) Tamara Dickinson (OSTP), Kathryn Sullivan (NOAA), Glenn Paulson (EPA) | | |
|--|---|--|
| AQRS: Air Quality Research (SC) | | SOST: Ocean Science & Technology (SC)* |
| CSMSC: Critical & Strategic Mineral Supply Chains (SC) | SDR: Disaster Reduction (SC) | SWAQ: Water Availability & Quality (SC) |
| IARPC: Interagency Arctic Research Policy Committee (IWG)* | SES: Ecological Services (SC) | T&R: Toxics & Risk (SC) |
| ISTS: Integration of Science and Technology for Sustainability (TF) | <u>SGCR</u> : Global Change Research (SC) | USGEO: U.S. Group on Earth Observations (SC) |

Subcommittee on Space Weather Operations, Research, and Mitigation (SWORM)

Co-Chairs

NOAA

OSTP

Dep. Homeland Security

Office of Federal Coordinator of Meteorology:
Executive Secretary

Departments and Agencies

Working Groups





THANK YOU!

