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Space Weather as a Global Challenge - NATO

4 April 2016

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- **NATO's essential purpose is to safeguard the freedom and security of its 28 member nations**
- **In addition, “cooperative security” is assured through a wide network of partner relationships with 41 nations and organisations around the globe**
- **In terms of ensuring security, NATO recognizes the importance of resilient critical infrastructures and services**
- **Including agriculture, food and water; public health; energy; transportation; communications; and civil protection;**



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Why does NATO care about Space Weather?

- **Recognition that the effects of an extreme space weather incident on communications and power and the resultant cascading effects on dependent critical infrastructures and services may be beyond catastrophic**



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What is NATO doing for Civil Preparedness?

- **Prepared a Food for Thought paper in 2011 regarding the affects on civil communications**
- **Conducted a seminar on Preparing for Extreme Space Weather in 2013 chaired by Stephen Evans (NATO), Craig Fugate (FEMA), Helena Lindberg (MSB)**
 - **Included a panel on Early Warning with Bill Murtagh and a panel on Multinational Cooperation with Mark Gibbs**
- **Established a Working Group in 2014 reporting to the Civil Emergency Planning Committee to do further work in the area**
- **In 2015 conducted a seminar with Transportation experts to further understand the potential affects on all modes of transport**



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What is NATO doing for Civil Preparedness?

- **In 2016 the working group issued a report on Space Weather to the Civil Emergency Planning Committee NATO member and partner nations**
- **Contributions from Sweden, Finland, the United Kingdom, Canada and the United States**
- **More in depth discussion of the consequences of an Extreme Space Weather Incident**
- **Included the measures that can be undertaken to improve resilience**

What else is NATO doing for Space Weather?

- **The NATO Science and Technology Organization (STO)**
- **Acts as NATO's principal organization for science and technology research**
- **Has a number of ongoing activities including understanding space domain perturbations and their impacts on NATO including the provision of mitigation techniques**
- **SCI-283 (17/05/2016 to 18/05/2016 in United Kingdom) - Symposium on "Considerations for Space and Space-Enabled Capabilities in NATO Coalition Operations"**



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What else is NATO doing for Space Weather?

- **NATO Science for Peace and Security Programme (SPS)**
- **Enhances cooperation and dialogue with all partners, based on scientific research, innovation, and knowledge exchange**
- **Co-funding a project to establish a unique network of existing high-precision ground-based ionospheric sounders in Europe which allows coordinated monitoring of the ionosphere to predict the propagation of waves and warn users of any irregularities (launched 2014)**



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National Space Weather Action Plan

- **National Space Weather Action Plan - 6.4.3**
- **United States Departments and Agencies will participate in the Civil Emergency Planning Committee (CEPC) of the North Atlantic Treaty Organization (NATO) to advise NATO planners on possible implications of space weather for NATO operations;**
 - **to promote consistency in communications and operations among NATO members and partner nations;**
 - **and to assist in and, as appropriate, lead development of training and exercise events.**



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Thank You

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