

Expert Meeting on Improving Space Weather Forecasting in the Next Decade

To be held in conjunction with the 51st session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space (COPUOS)
10 – 21 February 2014, Vienna International Centre, Vienna, Austria

Dates: 10-11 February 2014, Co-incident with the first two days of the Scientific and Technical Subcommittee (STSC) of the Committee on the Peaceful Uses of Outer Space (COPUOS)

Location: The United Nations, Vienna International Center, Vienna, Austria
(Conference Room C6, Building C, 7th floor)

The International Space Weather Initiative (ISWI), with the support of the United Nations Committee for the Peaceful Uses of Outer Space, has been very active in promoting the installation of new ground-based instrumentation in non-traditional locations. In particular, there has been substantial progress in the observation of the equatorial ionosphere, solar transients, and energetic particles from space. In the coming decade these observations will become available in real time and will be an important new data source for the forecasting of space weather events. New instruments are either in the process of deployment, or planned over the next decade. Similarly, the International Living with a Star (ILWS) program has been very active coordinating the plans of the world's space agencies in the planning of new space missions, and in the development of space weather modeling and forecasting.

Space weather is inherently an international enterprise. Solar and magnetic storms can affect large regions of the Earth simultaneously, and equatorial ionospheric disturbances occur routinely around the globe. It is therefore appropriate to promote improvement in space weather forecasting for the benefit of all nations. The purpose of this meeting is to bring together international scientists currently working in space weather research to discuss the paths for improvement of space weather forecasting during the next decade. Current forecasts are useful, but have limited accuracy.

New space missions and ground based instrumentation will ultimately provide data which will substantially improve space weather predictions. Examples include broad arrays of ground based instruments, sub-L1 missions employing solar sail technology or special deep space orbits to maintain position between the Sun and Earth could increase the current warning time for interplanetary disturbances by up to a factor of ten. New missions with spacecraft stationed at L5, on the far side of the Sun, or over the pole of the Sun have also been suggested.

The vulnerabilities of global navigation satellite systems (GNSS) are well categorized, and it is understood that space weather is the largest contributor to single-frequency GNSS errors. Primary space weather effects on GNSS include range errors and loss of signal reception. The GNSS industry faces several

scientific and engineering challenges to keep pace with increasingly complex user needs: developing receivers that are resistant to scintillation and improving the prediction of the state of the ionosphere. With GNSS modernization, the use of additional signals is expected to reduce errors caused by the ionosphere.

Contributions for this meeting are solicited as both oral and poster presentations that identify new and innovative missions, instruments, and theoretical developments that point to new observational information required to improve our basic forecasting capability or accuracy during the next decade. Priority for oral presentation will be given to contributions suggesting new instrumentation, ground or space based, new mission concepts, and theoretical contributions which suggest new observations needed to improve current space weather forecasting. Participation is open to all and broad international participation is anticipated. Presentations will be made available online in electronic format subsequent to the meeting, and the results of the meeting will be summarized in a brief report.

The agenda will feature an introductory and overview session with very general talks about space weather, followed by a session on the current state of forecasting, sessions on Ground Based instrumentation including GNSS, and sessions on new observational concepts for space missions that will provide new data for space weather forecasting in the future.

For additional information contact one of the convenors listed below:

Joseph M Davila, joseph.m.davila@nasa.gov

Madhulika Guhathakurta, madhulika.guhathakurta@nasa.gov

Sharafat Gadimova, sharafat.gadimova@unoosa.org

Patricia Doherty, Patricia.Doherty@bc.edu