GRAPE (GNSS Research and Application for Polar Environment) Expert Group

cross link between SSG PS and GS.

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The goal of the Expert Group GRAPE, built on the previous Action Group GWSWF (GPS for Weather and Space Weather Forecasting), is to continue to intensify the international efforts to build and coordinate a robust network of collaborations in order to answer a variety of space weather related needs through ad hoc data sharing and model development.

A number of activities have been successfully pursued since the last GRAPE business meeting held in Portland, during the XXXII SCAR in Portland (OR-USA), 13-25 July 2012, that can be briefly summarised as follow:

1) The GRAPE WEB has been designed and issued in October 2012, www.grape.scar.org, and will be maintained by INGV team. INGV received 3000USD by SCAR (SSG PS) in January 2013 to support this action.
2) The Annals of Geophysics (www.annalsofgeophysics.eu/index.php/annals) GRAPE Special Issue is in publication. This Special Issue collect recent reports on work performed in the polar regions and on the datasets collected in time by the instrumentation deployed across various countries. This collection will set the starting point for further research in the field, especially in the perspective of the new and very advanced space system that will be available in the next few years. Papers will be found that describe the initiatives to deploy instrumental arrays to observe the ionospheric scintillation phenomenon, to build hardware/ software structures to store the relevant data and to make it available in appropriate formats. Other papers deal with more proper scientific analyses of the available data, ranging from the analysis of the relation between scintillation and conditions in the interplanetary medium to the evaluation of the effects taking place in the near Earth regions, in the inner magnetosphere and in the statistical representation of ionospheric conditions. A climatological description of the scintillation scenario is given both for the polar regions and for the mid-latitudes. Finally a different, but no less relevant, analysis is given with respect to the water vapor content and its effects at tropospheric levels.