


**General Studies Programme
and
Space Weather Activities at ESA**

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GSP support to space weather activities, past present and
future

- Space Weather Applications Pilot Project (ex 02/L31)
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- Real - time GIC Simulator
- Quickmaps and history of effects of Ionospheric Scintillations on GPS/Glonass signals
- Operational Distribution Service of 2D TEC maps over Europe for natural hazard studies
- Geosynchronous Environment for Identification of Satellite Hit Anomalies (GEISHA)
- Space Weather Impact on Precise Positioning applications on GNSS
- Reliability Services for Scandinavian Navigation systems Users
- Real - time GIC Forecast Service for Geomagnetically Induced currents
- Solar Wind Monitoring and Induction Modelling for GICs
- Development of a Virtual Airline space Weather Service through Operational Risk Modelling of Space Weather Impacts
- Geomagnetic activity Forecast - Service for Prospectors and Surveyors
- Daily Ionospheric Forecasting Service (DIFS)
- Spacecraft Hazard and Anomaly Forecasting Tool (SHAFT)
- Ionospheric Forecasting and Nowcasting Tools
- Support to forecasting services for Ionosphere conditions and relative effects on Radio-communications/ localisation
- Auroras Now!
- SIDC - Solar Influence Data Analysis Centre
- Validation of near real-time GPS Occultation Data Products for Meteorological services
- Nano satellite beacons for space weather monitoring
- ESA Space Weather Programme
- ESA Space Weather Programme


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GSP support to space weather activities, past present and
future

Since Feb 1999 until April 2003: 3235 KEuros


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GSP support to space weather activities, past present and future

- SWWT CONSULTANCY
- CONSULTANCIES
- TECHNICAL EXPERTISE
- MISSIONS


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GSP support to space weather activities, past present and future

Since 2001: 116 KEuro


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Space Weather in the framework of ESA programmes

- Science programme, Ulysses, SOHO, Cluster-II
- Solar physics
- Plasma physics
- Magnetospheric physics
- Any possible space weather programme at ESA shall not bypass the science programme selection process for missions.
- Approximation ESA/EC is leading to two important programmes:
 - Galileo
 - GMES (Global Monitoring for Environment and Security)
- Galileo and GMES are programmes with an important defense component

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Is there real needs and uses for space weather data?

- The main goal of the pilot projects is to answer as concretely as possible if there is or not a real need for a space weather service and in which context.
- Actual position: Galileo and GMES might have a need for a space weather forecasting service. However these needs and uses are not presently demonstrated.
- Let's use the pilot projects to demonstrate if there are needs and uses with **objectivity** and **credibility**
- GSP has fulfilled its objectives in supporting SW
- After completion the pilot projects, SW activities shall be able to go further without any support from the GSP

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Is there a real needs and uses for space weather? And the structure of the Pilot projects.

1. A space Weather European Network, SWENET, of service development activities (SDA's) involving service providers, users, and data providers
 - The pilot projects investigate needs and uses of space weather data
 - Do not start with any predefined assumption for possible needs and uses
2. An infrastructure development, coordination and support activity
 - Shall not aim at reinforcing an already existing network
 - The goal shall be to give support to the SDA's
3. A quantitative evaluation of the benefits of the service
 - Independent evaluation
 - Involvement of GMES and EC in the evaluation process