SPIDR

SPACE PHYSICS INTERACTIVE DATA RESOURCE

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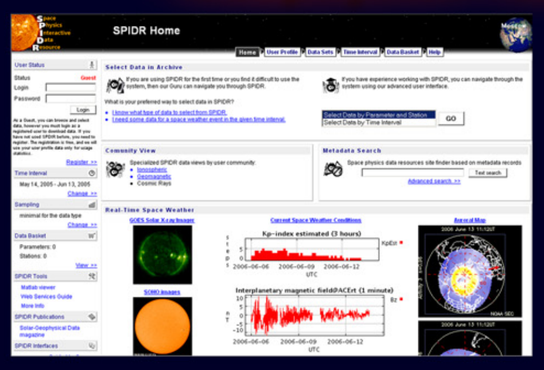
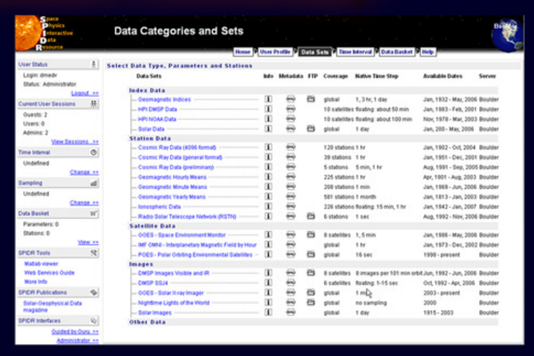




Main data sections

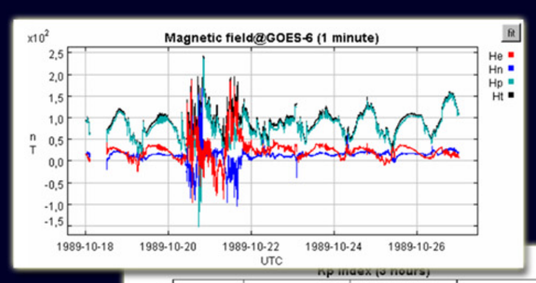
- SSN – sunspot numbers daily, from 1700
- Geomagnetic variations (minute and hourly) from 1901, in near-real time
- Geomagnetic and solar indices hourly, from 1932, in near-real time
- Ionosphere hourly, from 1954, in near-real time
- IMF – interplanetary magnetic field and solar wind (minute and hourly), from 1973, in near-real time
- GOES – geostationary NOAA satellites, from 1986
- DMSP – defense meteorological satellites, from 1991, in near-real time
- Solar images, from 1915
- Cosmic rays, from 1951

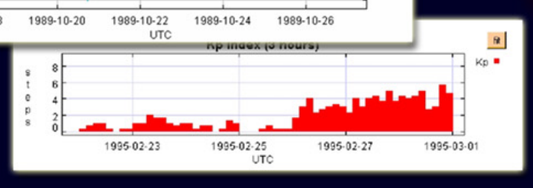
Space Weather Reanalysis segment

The objective of this joint DOD/NOAA project is to generate a complete 11 year space weather representation using physically consistent data driven space weather models.

The project will create a consistent, integrated historical record of the near Earth space environment by coupling observational data from space environmental monitoring systems archived at NGDC with data-driven, physically based numerical models. The resulting product will be an enhanced look at the space environment on consistent grids, time resolution, coordinate systems and containing key fields allowing an interested user to quickly and easily incorporate the impact of the near-Earth space climate in environmentally sensitive models.

Time series plots: GIF images or cooperative applets



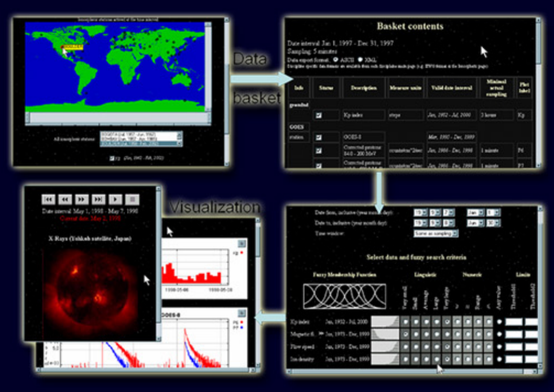


Nighttime Lights of the World

DMSP images

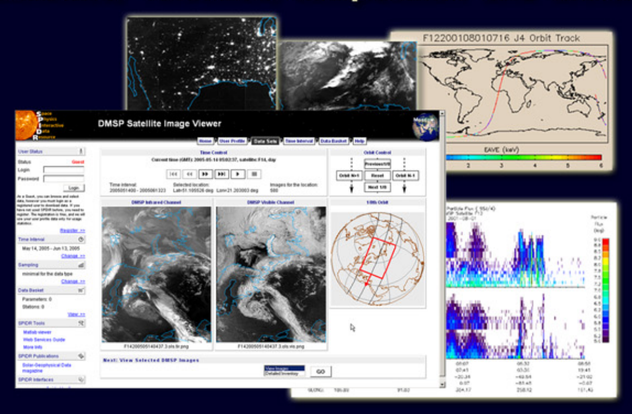
Each DMSP satellite has a 101 minute, sun-synchronous near-polar orbit at an altitude of 830km above the surface of the earth. The visible and infrared sensors (OLS) collect images across a 3000km swath, providing global coverage twice per day. The combination of day/night and dawn/dusk satellites allows monitoring of global information such as clouds every 6 hours. The microwave imager (MI) and sounders (T1, T2) cover one half the width of the visible and infrared swath. These instruments cover polar regions at least twice and the equatorial region once per day. The space environment sensors (J4, M, IES) record along-track plasma densities, velocities, composition and drifts.

Data mining for SW events in SPIDR



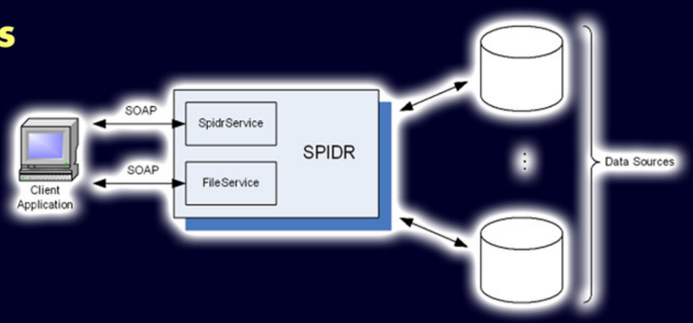
SPIDR can be used as a data source for ESSE data mining engine, which uses fuzzy logic to search for custom scenarios in numeric data arrays. The connection to ESSE engine is established via web-services interface, which can be also used to connect SPIDR data archives to third-pary data mining and data processing facilities.

The Nighttime Lights of the World dataset contains the first satellite-based global inventory of human settlements,derived from nighttime data from the Defense Meteorological SatelliteProgram (DMSP) Operational Linescan System (OLS). The DMSP-OLS has the unique capability to observe faint sourcesof visible-near infrared emissions present at the Earth's surface, including cities, towns, villages, gas flares,and fires. NGDC has developed algorithms for producing georeferenced fire and nighttime lights products.

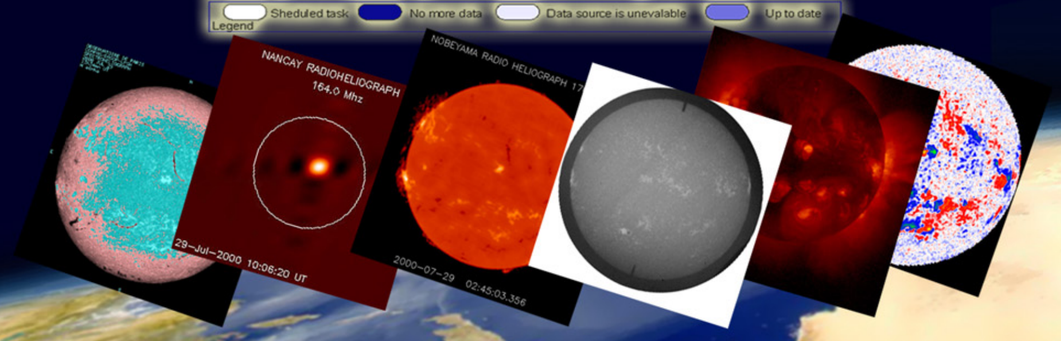


Solar images

SPIDR Web Services



Web Services technology is used by SPIDR to access databases and metadata both for the SPIDR web application (interactive interface for human users) and for the SPIDR web clients (third party programs exporting and importing data and metadata in the batch B2B mode). In addition to the WS SOAP protocol the SPIDR web application can access databases directly using JDBC drivers. If database is hosted on the server at the same LAN as the SPIDR web application, then the local access mode may be more efficient compared to the remote one; but if the database is located outside the local network then the JDBC connections will be the most probably blocked by a firewall and the SOAP protocol becomes the only reliable way to access the data.



http://clust1.wdcb.ru/spidr