



European Grid of Solar Observations (EGSO)

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EGSO – European Grid of Solar Observations



- **EGSO is a Grid test-bed addressing a particular application**
 - Designed to improve access to solar data for the solar physics and other communities
 - Addresses the problem of a distributed heterogeneous data set and a scattered user community
- **Funded under the EC's Information Society Technologies (IST) thematic programme of Framework 5**
 - Started March 2002; duration of 36 months
- **Ten partners in Europe and the US, led by UCL-MSSL**
 - 3 in UK, 2 in France, 2 in Italy, 1 in Switzerland, 2 in US
- **Currently gathering user and science requirements and talking to data providers**
 - Detailed design work starts in September
- **Desirable to have EGSO and VSO collaborate as closely as possible**
 - Can achieve more together

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">European Grid of Solar Observations</p> 	<h2 style="text-align: center;">The Problem addressed</h2>
	<ul style="list-style-type: none"> ● Observations used to build up a picture of the plasma in multi-dimensional parameter space (incl. x, y, z, t, T & ρ) <ul style="list-style-type: none"> ● Users need access to as many wavelengths as possible ● For technical and practical reasons: <ul style="list-style-type: none"> ▶ UV, EUV, X-rays and γ-rays observed from space ▶ Radio and optical wavelengths observed from the ground (coverage) ● Data centres and observatories located around the world <ul style="list-style-type: none"> ● Large and small facilities (with varying resources) ● Aim is to make it easy to add new data sets ● Increasing data volumes require new methodology ● Users scattered around the world <ul style="list-style-type: none"> ● Do not need to know where the data is located ● Capabilities of users computing vary greatly ● Authentication issue needs serious consideration <ul style="list-style-type: none"> ▶ Want to minimize how this affects the user

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">European Grid of Solar Observations</p> 	<h2 style="text-align: center;">EGSO Search Engine</h2>
	<ul style="list-style-type: none"> ● Enhanced cataloguing used to select observations <ul style="list-style-type: none"> ● Metadata versions of observing catalogues tie together heterogeneous data sets – data itself left untouched ● New types of catalogues allow searches on events, features and phenomena rather than just date & time, pointing, etc... ● Ancillary data (images, time series, etc.) provide additional search criteria and enhance the capabilities of the (Graphic) User Interface ● Input can be local to search engine (e.g. at “catalogue warehouses”) and/or remote sources ● Users able to temporarily include their own catalogues, etc. as search engine inputs ● Catalogue Registry allows hierarchical optimization ● Alternate entry point (to User Interface) allows access by researchers from other disciplines: <ul style="list-style-type: none"> ● Astrophysics, Climate Physics, Space Weather...

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">European Grid of Solar Observations</p> 	<h2 style="color: #800000;">Handling the data</h2>
	<ul style="list-style-type: none"> ● An objective is to dramatically enhance access to the data <ul style="list-style-type: none"> ● User only needs to know observations exist, not where located ● Addition of new sources made as simple as possible ● System able to optimize use of sources (closest, least used...) ● Process as much data at source as possible <ul style="list-style-type: none"> ● Solar data are usually stored in raw form <ul style="list-style-type: none"> ▶ Extraction and calibration done on the fly ▶ Software for processing defined by instrument team (IDL, C...) ● Processing reduces volumes of data moved around ● Simplifies requirements on user's own system ● Standard (pipe-line) processing adequate for many users <ul style="list-style-type: none"> ● Extract and calibrate the selected observations ● More complex problems require ability to uplink code <ul style="list-style-type: none"> ● Used in analysis of extended data sets (helioseismology, etc) ● System allocates resources (CPU, disk space, etc) ● Security and integrity of source must be ensured

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">European Grid of Solar Observations</p> 	<h2 style="color: #800000;">Who is involved</h2>
	<ul style="list-style-type: none"> ● University College London (UK) — Coordinator <ul style="list-style-type: none"> ● Dept. of Space and Climate Physics (MSSL) ● Dept. of Computer Science ** ● Rutherford Appleton Laboratory (**) (UK) ● University of Bradford, Dept. of Cybernetics ** (UK) ● Institute d'Astrophysique Spatiale ** (France) ● Observatoire de Paris-Meudon (France) ● Istituto Nazionale di Astrofisica (Italy) <ul style="list-style-type: none"> ● Includes Observatories of Turin, Florence, Naples and Trieste ● Politecnico di Torino, Dept. Automation & Informatics ** (Italy) ● University of Applied Sciences, Dept. of Computer Science ** (Switz.) ● Solar Data Analysis Center (NASA-GSFC) (USA) ● National Solar Observatory (USA) <p>Partners selected to include expertise in space and ground-based observations, and in computer science</p> <p>Notes: ** Groups with IT expertise</p>

 <i>European Grid of Solar Observations</i>	<h2>Contact details</h2> <ul style="list-style-type: none"> • • EGSO homepage: <ul style="list-style-type: none"> • http://www.mssl.ucl.ac.uk/grid/egso <p>The web page pages are still being created and will shortly include things like:</p> <ul style="list-style-type: none"> • A bulletin board, Wiki, Forum • Information on the project and how you can collaborate • Etc... <p>Please use the e-mail address on the web page, or contact rdb@mssl.ucl.ac.uk</p>
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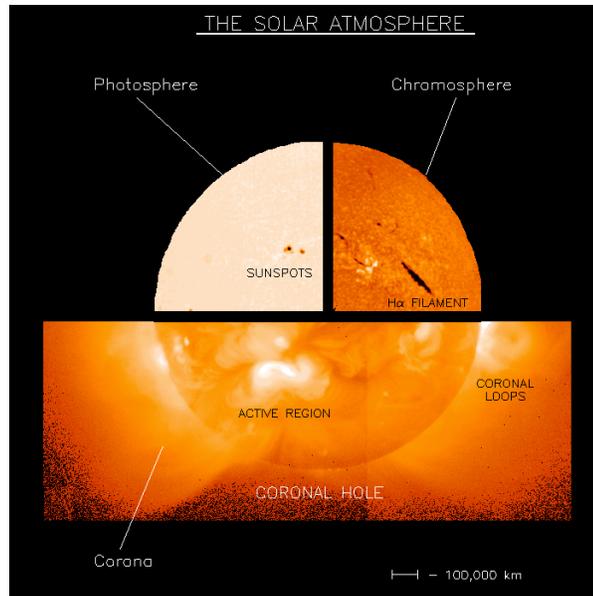
 <i>European Grid of Solar Observations</i>	
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Handling the data

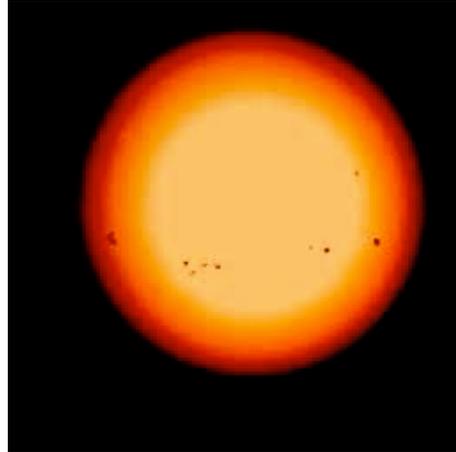
- **An objective of EGSO is to dramatically enhance access to the data**
 - User does not need to know where the data comes from
 - System able to optimize use of sources
- **Process as much data at source as possible**
 - Reduces volumes of data moved around
 - Simplifies requirements on user's own system
- **Standard (pipe-line) processing adequate for many users**
 - Extract and calibrate the selected observations
- **More complex problems need ability for user to uplink their own code to data source**
 - Security and integrity of source must be ensured

Layers in the solar atmosphere



EGSO – Solar Observations

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- The appearance of the Sun changes dramatically with wavelength
- For a complete picture, scientists need to use as wide a range of observations as possible
- Identifying what observations were made and then retrieving them is a major obstacle