....impossible without the cooperation of:

T. Darnell, *HAO (MLSO)*
S. Freeland, *LMSAL*
Dale Gary, *NJIT*
K. Reardon, *Oss. Astrophys. di Arcetri*
K. Tolbert, R. Schwartz, *NASA GSFC*
D. Wilkinson, *NOAA SEC*
How small is that box?

Design remains the same as design published in 2002/12, 1.0 release in 2003/12, but....
Richer in features

- Browser query interface offers multiple search methods, including combinations
- GUI/shopping cart allows sorting by columns, viewing of thumbnails (where available)
### Search and selection

- Search by data source and facility/instrument

#### Provider: Source: Instrument Drilldown

- **HANET (H-alpha Network, Big Bear Lake)**
- **HAO (High Altitude Observatory, NCAR)**
- **LSSP (Laboratory for Space and Solar Physics, NASA/Goddard)**
  - **RHESSI (Reuven Ramaty High Energy Solar Spectroscopic Imager)**
- **MSU (Montana State University)**
- **NGDC (National Geophysical Data Center, NOAA)**
  - **GOES-12 (Geosynchronous Operational Environmental Satellite - 12)**
- **NSO (National Solar Observatory)**
- **OBSPM (Département d'Astronomie Solaire de l'Observatoire de Paris)**
- **OVRO (Owens Valley Radio Observatory)**
- **SDAC (Solar Data Analysis Center, NASA/Goddard)**
  - **SOHO (Solar and Heliospheric Observatory)**
  - **TRACE (Transition Region And Coronal Explorer)**
- **SHA (Stanford Helioseismology Archive, Stanford U.)**
Search and selection

• or by physical observable
Search and selection

- or by wavelength/frequency
Search and selection

- or by “nicknames,” commonly used names for specific data types
Search and selection

- or by combinations of search methods
- here, provider and wavelength range
A sample search experience

- Look for EUV images in a certain time range
A sample search experience

- While search is progressing, most browsers will display time range, other search parameters

- Note how nickname “EUV image” translates to a certain wavelength range and a physical observable
### VSO Search Results

**New Search**

<table>
<thead>
<tr>
<th>Sort Only</th>
<th>Rearrange only</th>
<th>Sort &amp; Rearrange</th>
<th>Views: Basic</th>
<th>Thumbs</th>
<th>Links</th>
<th>Long</th>
</tr>
</thead>
</table>

10 Records Found

SDAC

10 Returned

#### Select Check Criteria

- Check/Uncheck...
- All Above this box
- All Below this box
- Just this box

- Check All
- Uncheck All

<table>
<thead>
<tr>
<th>Thumbnail</th>
<th>Time Start</th>
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<th>Min WaveLength</th>
<th>Max WaveLength</th>
<th>Wave Type</th>
<th>Observable</th>
<th>Source</th>
<th>Instrument</th>
<th>Extent</th>
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</table>

**Comments? Help us improve VSO**

Note “thumbnail” image options
## VSO Search Results

**Show Search Params :: [show]**

**total entries: 14**

**<< prev  -1-  next >>**

**Sort Only | Rearrange only | Sort & Rearrange**

**Views: Basic | Thumbs | Links | Long**

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<td>2005.02.05 13:00:26</td>
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<td>EIT</td>
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<tr>
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<td>2005.02.05 13:08:11</td>
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<td>N/A</td>
<td>intensity</td>
<td>SOHO</td>
<td>EIT</td>
<td>N/A</td>
</tr>
</tbody>
</table>
A sample search experience

Hits now sorted by ascending wavelength
A sample search experience

Selection via check boxes and/or “above/below” controls
A sample search experience

Shopping cart trope

Unique cart ID for future reference (e.g. in publications)
A sample search experience

Delivery method determined by data provider(s):

- tarball (requires e-mail address)
- individual links (as here)
Web browser is not the only possible interface

VSO also offers an Application Programming Interface (API)

Can be accessed from software as well

Example: senior undergraduate wrote Java-based client based on existing documentation
Latest features

- Catalog/event list search (metadata as data)
- Joined queries with “normal” data
- Web Services Description Language (WSDL) for other service providers (EGSO, CoSEC)
Internals changes

- Please see poster SH51B-05 (Bogart, Tian et al.) for changes in:
  - data model
  - performance
  - and much more on UI changes
Additional data services

- TRACE
  - by image (rather than hourly, compressed file)
  - a lot of images
- RHESSI
- GOES SXI
- Yohkoh Legacy

Already added:
- HANET
- Meudon
- OVRO
The “to do” list

- Work with new missions
  - STEREO imaging instruments access at STEREO Science Center will use VSO as search engine
  - SDO instruments
  - Solar-B
- Allow selection by all detector heads/telescopes, filter wheel positions, &c.
  - e.g. LASCO C2, clear; Yohkoh SXT, GOES SXI filters
- And more (user comments)....
How generic can we be?

• Could the internals of the VSO be used by VO’s in other disciplines currently planned or under development?