

IUGONET

Inter-university Upper atmosphere Global Observation NETwork

Metadata DB for Upper Atmosphere

Adaptation of DSpace to Geoscience

Yukinobu KOYAMA^{*1}, Takahisa KOUNO^{*2}, Hiroo HAYASHI^{*1}, Tomoaki HORI^{*2},
Yoshimasa TANAKA^{*3}, Daiki YOSHIDA^{*1}, Satoru UENO^{*1}, Masato KAGITANI^{*4},
Shuji ABE^{*5}, Atsuki SHINBORI^{*1}, Naoki KANEDA^{*1}
^{*1} Kyoto Univ., ^{*2} Nagoya Univ., ^{*3} NIPR, ^{*4} Tohoku Univ., ^{*5} Kyushu Univ.



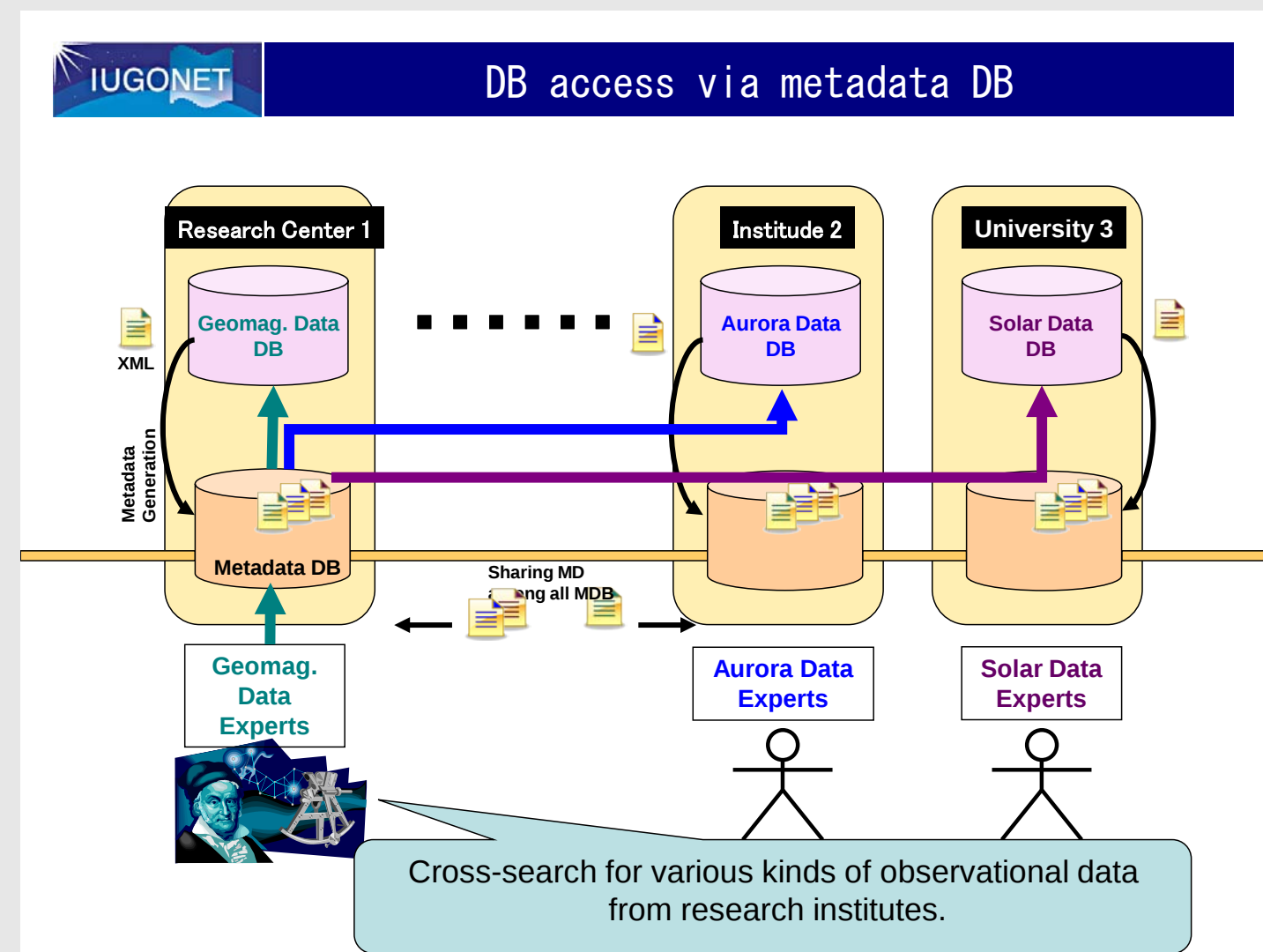
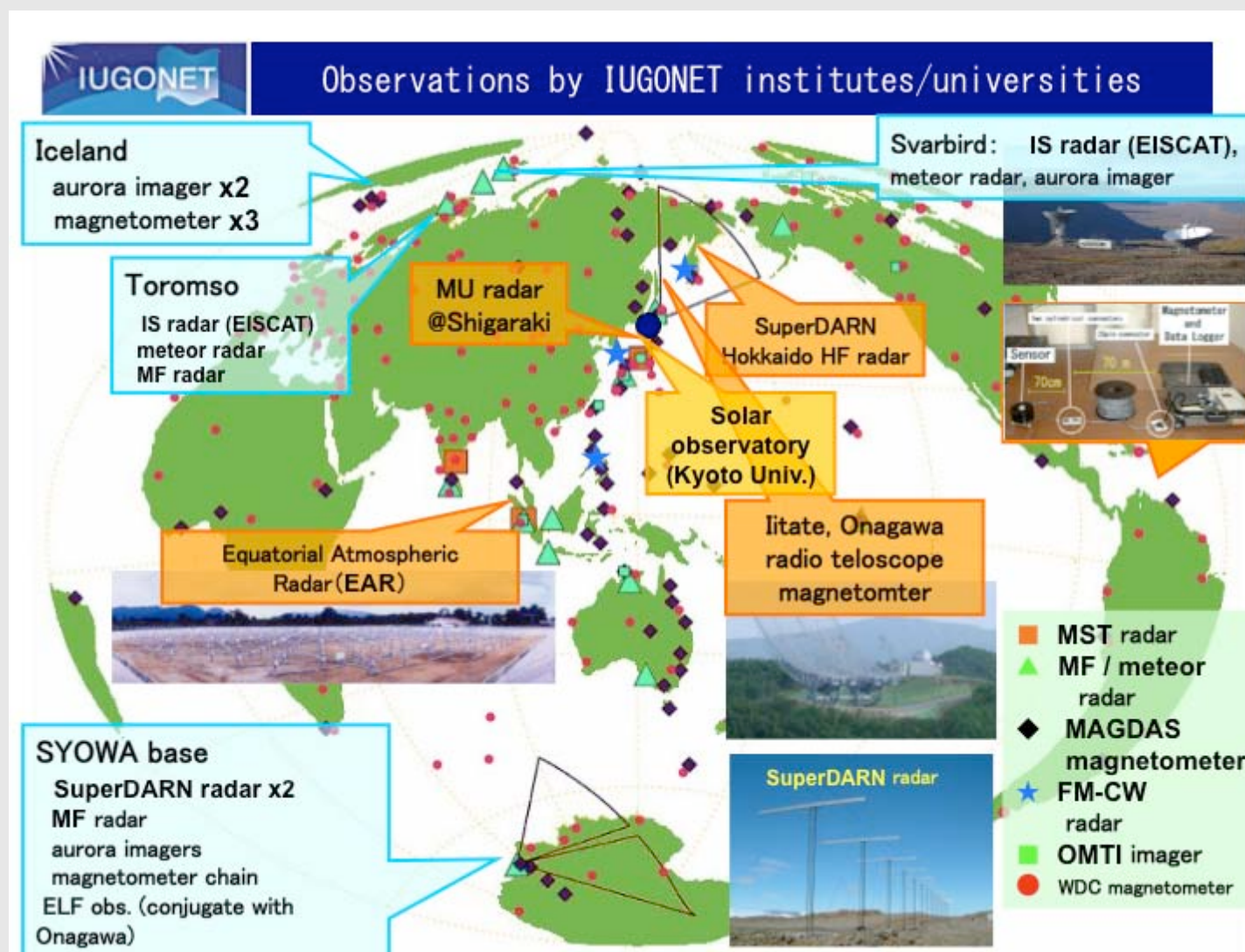
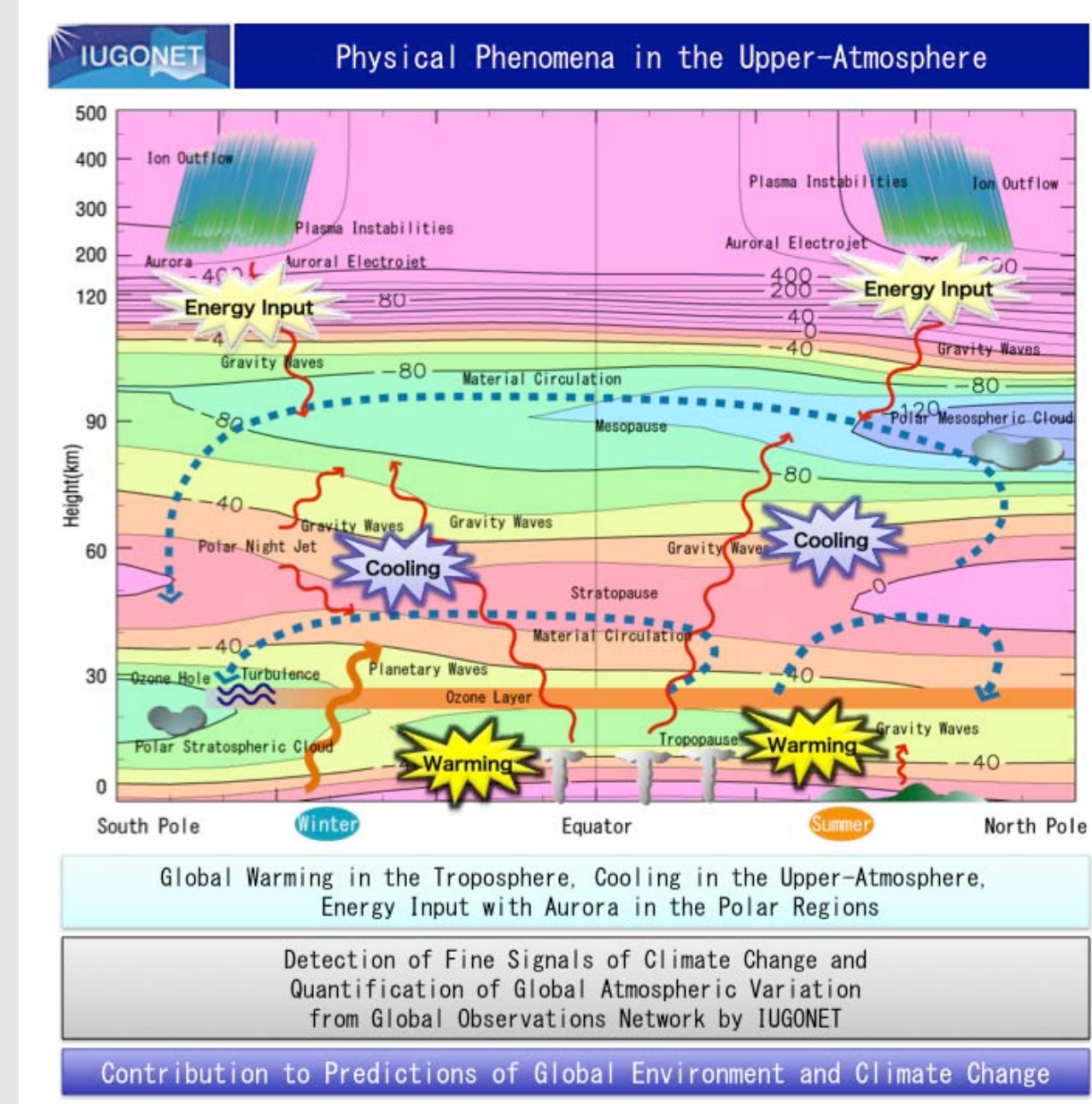
Contact address: webmaster@iugonet.org

<http://www.iugonet.org/>

Issues for investigating upper atmosphere

The integration analysis by using various kinds of observational data is necessary for investigating the mechanism of long-term variations in the upper atmosphere. However, there are no way to cross-search their DBs which are distributed over many research institutes.

For resolving this inconvenience, we build the metadata DB in order to cross-search their DBs.



Ideally, the metadata DB system which can deal with arbitrary metadata is the best but

- default setting of DSpace is for Dublin Core metadata format,
- IUGONET Common metadata format has deeper tree structure than Dublin Core metadata format.

Therefore we gave up to handle complete shape metadata which is described in IUGONET common metadata format as 'metadata' of DSpace. Then we customized it according to following two rules.

1. Complete shape metadata is stored as 'content' of DSpace.
2. Some search targets are chosen from the metadata (qualifier is created like right figure.)

metadata_field_id	metadata_schema_id	element	qualifier
177	2	NumericalData	AccessInformationFormat
147	2	Granule	SourceURL

<Space>
<NumericalData>
<AccessInformation>
<Format>
</AccessInformation>
</NumericalData>
</Space>

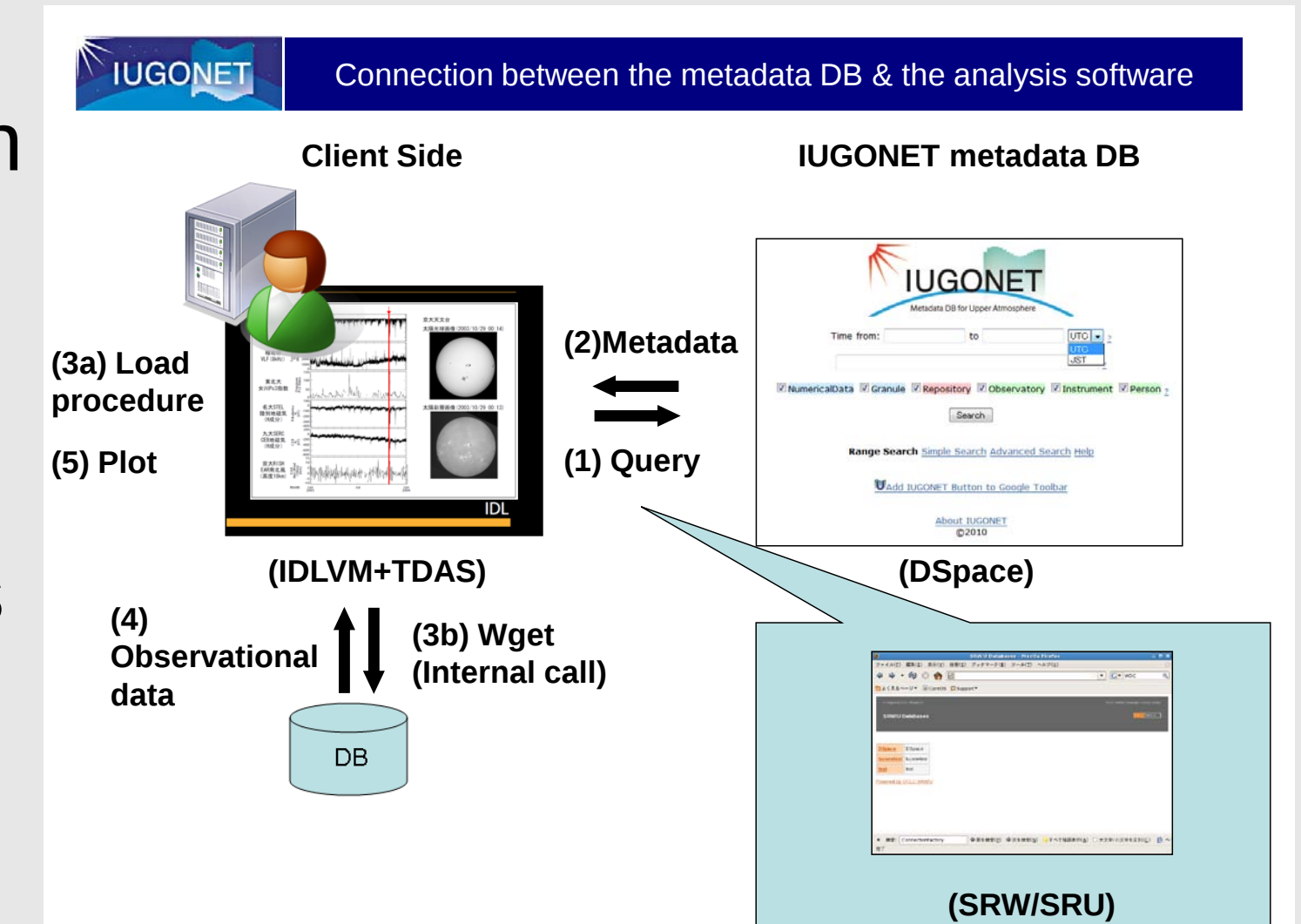
<Space>
<Granule>
<Source>
<URL>
</Source>
</Granule>
</Space>

In the near future, the metadata DB system which can deal with arbitrary metadata will be needed. ---> DSpace 2.0 ??

Connection between the metadata DB & the analysis software

IUGONET will provide the analysis software which is based on the THEMIS Data Analysis Software suite on IDL developed by UCB and UCLA. It runs on the client side.

- Metadata which includes location information (e.g., URL) of observational data is sent to the analysis software via SRW/SRU.
- The analysis software downloads observational data by using the location information.

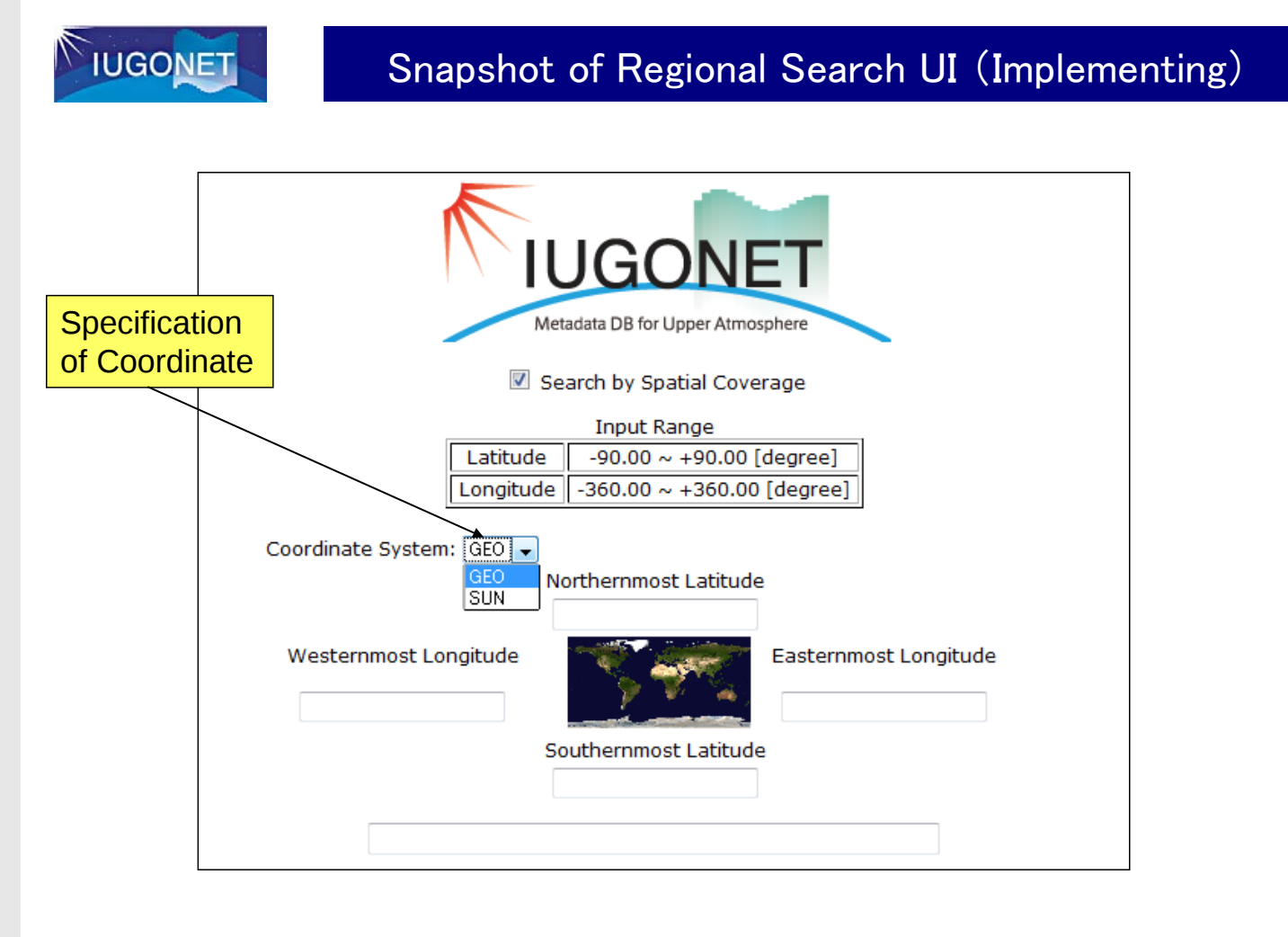


The SRW/SRU will be opened also to the other applications. We are discussing to switch to DSpace 1.6.2 to use OpenSearch too.

Metadata DB System

We adopted DSpace as our metadata DB system because there are so many case examples in Japanese academic information repositories. Our development environment are,

- CentOS 5.3-x86_64,
- DSpace 1.5.2,
- Httpd-2.2.3-31.el5.centos.4,
- Apache-tomcat-6.0.20,
- PostgreSQL-8.1.17,
- SRW/SRU rev. 126.

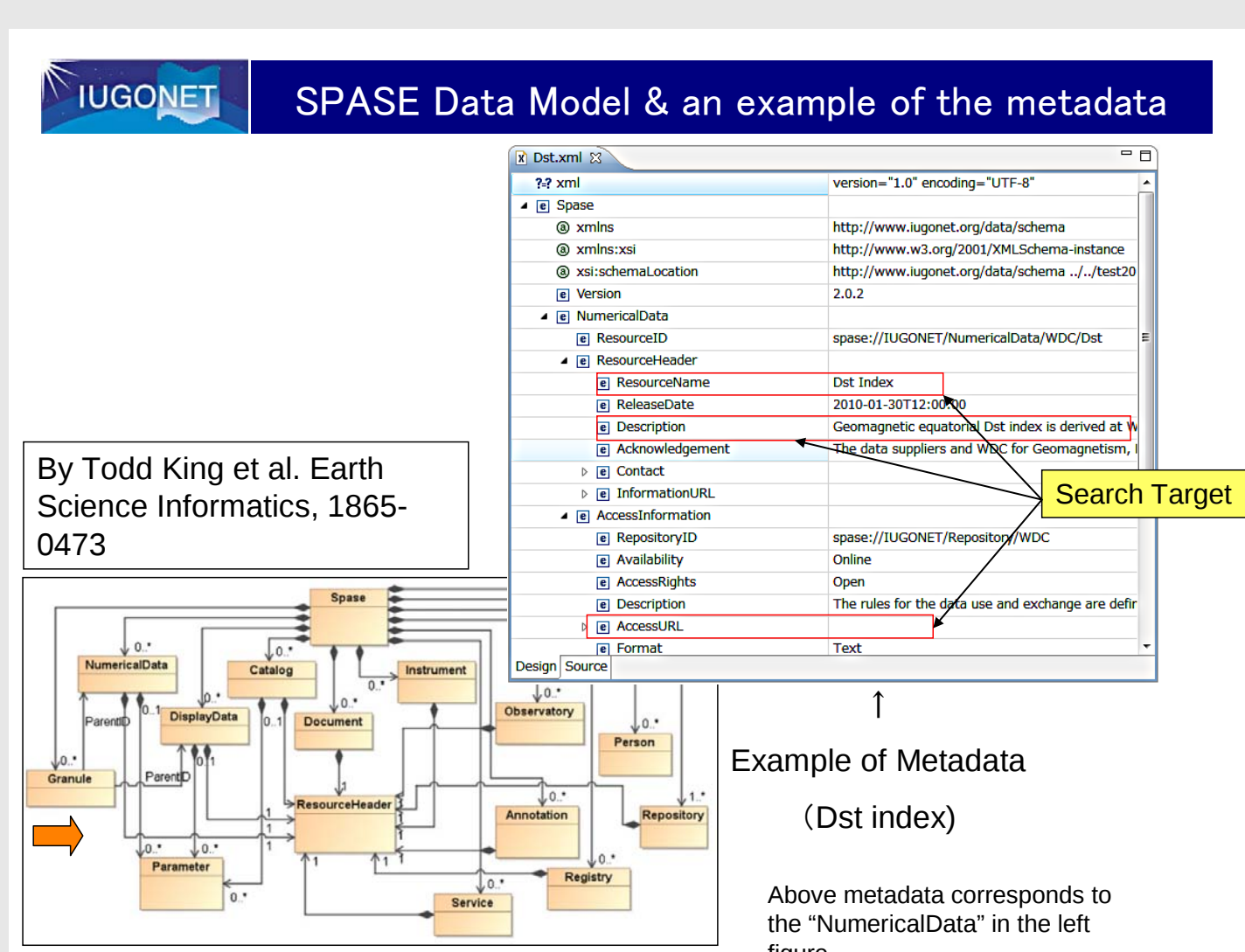


Metadata Format & Customization Points

We designed the **IUGONET common metadata format [1]** which is based on the **SPASE Data Model [2]**. Basically the metadata includes URL of observational data, start time of observation, spatial coverage of observation and so forth.

The additional elements of our own to the SPASE format are,

- element for describing the analogue data,
- element for describing the longitude and latitude which observation covers,
- element for describing the coordinate system for Solar images.



Conclusion

[Current Status]

- Building the metadata DB for geoscience by using DSpace 1.5.2.
- Metadata files in XML is stored as 'content' of DSpace.
- Preparing the connection between the metadata DB & the analysis software via SRW/SRU.

[Schedule]

- IUGONET will release the beta version of the metadata DB & the analysis software in Apr. 2011.

References

[1] Metadata format utilized for the IUGONET metadata database, Tomoaki HORI et al., MGI015-02, JPGU 2010

[2] SPASE 2.0: a standard data model for space physics, Todd King, James Thieman and D. Aaron Roberts, Earth Science Informatics, 1865-0473