SCOSTEP-WDS Workshop on
Global Data Activities for the Study of Solar-Terrestrial Variability

Takashi Watanabe
WDS International Programme Office
NICT
STELAB, Nagoya Univ.
Variability of the Sun and Its Terrestrial Impact

VarSITI

SCOSTEP is an ICSU Interdisciplinary Body tasked with the responsibility to organize long-term scientific programs in solar terrestrial physics and Variability of the Sun and Its Terrestrial Impact (VarSITI) is that program for the period 2014 – 2018. VarSITI was defined based on a community effort in the form of a forum organized by the International Space Science Institute (ISSI) in Bern in May 2013. The VarSITI program will strive for international collaboration in data analysis, modeling, and theory to understand how the solar variability affects Earth. The VarSITI program will have four scientific elements that address solar-terrestrial problems keeping the current low solar activity as the common thread:

1) SEE (Solar evolution and Extrema)
2) ISEST (International Study of Earth-affecting Solar Transients/MiniMax24)
3) SPeCIMEN (Specification and Prediction of the Coupled Inner-Magnetospheric Environment), and
4) ROSMIC (Role Of the Sun and the Middle atmosphere/thermosphere/ionosphere In Climate).

VarSITI Co-Chairs:

Prof. Katya Georgieva, Bulgaria  
Prof. Kazuo Shiokawa, Japan
Data Systems in SCOSTEP Community (partial listing)

- Virtual Observatories
- SPASE
- SPIDER
- ESPAS
- IUGONET
- WDC for STP, Moscow
- Data systems operated by individual scientific projects
The ICSU World Data System

The International Council for Science’s World Data System (ICSU-WDS) is striving to build a worldwide ‘community of excellence’ for scientific data by certifying Member Organizations—holders and providers of data or data products—from wide-ranging fields using internationally recognized standards. WDS Members are the building blocks of searchable common directories and catalogues with which to form a data system that is both interoperable and distributed.

TRUSTED DATA SERVICES FOR GLOBAL SCIENCE

Goals
- Enable universal and equitable access to quality-assured scientific data, services, products and information
- Ensure long-term data stewardship
- Foster compliance to agreed-upon data standards and conventions
- Provide mechanisms to facilitate and improve access to data and data products

Initial System Architecture & Functional Structure
ICSU-WDS is an interdisciplinary global federated system of long-term data archives and data services. Roles in the system encompass the entire data management chain, from data production to publication, and WDS Members can hold a number of these roles. Emphasis is also placed on linking with data production facilities, in particular, science projects and programmes.

Membership & Certification
Different membership-types are available for organizations, depending on their activities and interests. As of July 2014, ICSU-WDS has accredited 66 Members and co-opted another 20:

56 Regular Members—organizations dealing directly with data curation and data analysis services.
10 Network Members—umbrella organizations representing groups of data centres and/or data services.
3 Partner Members—organizations that do not deal directly with data, but contribute funding or other support to ICSU-WDS.
17 Associate Members—organizations interested in the WDS endeavour, but that do not contribute direct funding or other material support.
### SCOSTEP-Related WDS Members (Feb. 2015)

<table>
<thead>
<tr>
<th>Alaska Satellite Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric Science Data Center (Distributed Active Archive Center)</td>
</tr>
<tr>
<td>Australian Antarctic Data Centre</td>
</tr>
<tr>
<td>Canadian Astronomy Data Centre/ Canadian Virtual Observatory</td>
</tr>
<tr>
<td>Centre de Donnees astronomiques de Strasbourg (CDS)</td>
</tr>
<tr>
<td>Chinese Astronomical Data Center</td>
</tr>
<tr>
<td>Chinese Space Science Data Center</td>
</tr>
<tr>
<td>DKRZ- WDC Climate</td>
</tr>
<tr>
<td>Environment Climate Data Sweden</td>
</tr>
<tr>
<td>Goddard Earth Sciences Data and Information Services Center (GES DISC)</td>
</tr>
<tr>
<td>INTERMAGNET</td>
</tr>
<tr>
<td>International Service of Geomagnetic Indices</td>
</tr>
<tr>
<td>International Space Environment Service (ISES)</td>
</tr>
<tr>
<td>International Virtual Observatory Alliance (IVOA)</td>
</tr>
<tr>
<td>IPS Radio and Space Services</td>
</tr>
<tr>
<td>Italian Centre for Astronomical Archive - IA2</td>
</tr>
<tr>
<td>Paleoclimatology Branch, NOAA's National Climatic Data Center</td>
</tr>
<tr>
<td>Ukrainian Geospatial Data Center</td>
</tr>
<tr>
<td>WDC - Geoinformatics and Sustainable Development</td>
</tr>
<tr>
<td>WDC - Geomagnetism, Copenhagen</td>
</tr>
<tr>
<td>WDC - Geomagnetism, Edinburgh</td>
</tr>
<tr>
<td>WDC - Geomagnetism, Kyoto</td>
</tr>
<tr>
<td>WDC - Geomagnetism, Mumbai</td>
</tr>
<tr>
<td>WDC - Ionosphere and Space Weather</td>
</tr>
<tr>
<td>WDC - Meteorology, Asheville</td>
</tr>
<tr>
<td>WDC - Meteorology, Obninsk</td>
</tr>
<tr>
<td>WDC - Remote Sensing of the Atmosphere</td>
</tr>
<tr>
<td>WDC - Rockets, Satellites and Earth Rotation</td>
</tr>
<tr>
<td>WDC - Solar Activity / BASS2000</td>
</tr>
<tr>
<td>WDC - Solar-Terrestrial Physics, Moscow</td>
</tr>
<tr>
<td>WDC - Sunspot Index and Long-term Solar Observations (SILSO)</td>
</tr>
<tr>
<td>World Data Services for Geophysics (NGDC)</td>
</tr>
<tr>
<td>WDC for Cosmic Rays</td>
</tr>
<tr>
<td>WDC for Aurora</td>
</tr>
<tr>
<td>WDC for Scientific Satellites</td>
</tr>
</tbody>
</table>
Collaboration between ICSU World Data System and SCOSTEP/VarSITI

T. Watanabe\textsuperscript{1,2,3} and R. Edmunds\textsuperscript{1}
\textsuperscript{1}ICSU WDS International Programme Office, Tokyo, Japan
\textsuperscript{2}Solar-Terrestrial Environment Laboratory, Nagoya University, Nagoya, Japan
\textsuperscript{3}National Institute of Information and Communications Technology, Tokyo, Japan
Dates: 28-30 September 2015
Place: National Institute of Information and Communications Technology (NICT), Tokyo
Principal Sponsors: SCOSTEP, WDS
Co-Sponsors: STEL, NIPR, NICT
SCOPE

- Stimulate collaboration between SCOSTEP and WDS in long-term archiving and opening of quality-assessed data produced by VarSITI and related programs

- Build a “feed-back loop” between data providers (+archivers) and data users

- Introduce advanced information technologies to data-oriented activities under VarSITI
**Scientific Organizing Committee (* Committee Chairs*)

T. Watanabe* ICSU WDS International Programme Office  
K. Shiokawa* Solar-Terrestrial Environment laboratory, Nagoya University  
J. Zhang* George Mason University  
J.B. Minster Scripps Institute of Oceanography, University of California  
M. Mustapha ICSU WDS International Programme Office  
V. Kopylov All-Russian Research Institute of Hydrometeorological Information-World Data Center  
W. Hugo South African Environmental Observatory Network  
T. Iyemori WDC for Geomagnetism, Kyoto, Kyoto University  
N. Gopalswamy Goddard Space Fright Center, NASA  
V. Obridko IZMIRAN, Russian Academy of Science  
T. Nakamura National Institute of Polar Research  
Y. Miyoshi Solar-Terrestrial Environment laboratory, Nagoya University  

**Local Organizing Committee (* Committee Chairs*)

K. Shiokawa Solar-terrestrial Environment Laboratory, Nagoya University  
N. Nishitani* Solar-terrestrial Environment Laboratory, Nagoya University  
M. Mokrane WDS-International Programme Office  
T. Watanabe* WDS-International Programme Office  
R. Edmunds WDS-International Programme Office  
Y. Murayama National Institute of Information and Communications Technology  
K. Murata National Institute of Information and Communications Technology  
S. Watari National Institute of Information and Communications Technology  
T. Nakamura* National Institute of Polar Research  
T. Iyemori WDC for Geomagnetism, Kyoto, Kyoto University  
Y. Ebihara Research Institute for Sustainable Humanosphere, Kyoto University  
S. Abe International Center for Space Weather Science and Education, Kyushu University
General structure of the workshop (TBD):

(S1) Data activity of VarSITI and WDS
(S2) Data-oriented information technology
(S3) Reports of data activities by participants of VarSITI and WDS
(S4) VarSITI data analysis session
(S5) Collaboration of WDS and SCOSTEP/VarSITI

<table>
<thead>
<tr>
<th>Date (2015)</th>
<th>AM</th>
<th>PM</th>
<th>Evening</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 Sep. (SUN)</td>
<td></td>
<td></td>
<td>Registration Icebreaker</td>
</tr>
<tr>
<td>28 Sep. (MON)</td>
<td>Data activity of VarSITI and WDS (S1)</td>
<td>Data-oriented Information Technology (S2)</td>
<td>Meetings</td>
</tr>
<tr>
<td>29 Sep. (TUE)</td>
<td>Reports of data activities by participants of VarSITI and WDS (S3)</td>
<td>VarSITI Data analysis Session (S4)</td>
<td>Informal Banquet</td>
</tr>
<tr>
<td>30 Sep. (WED)</td>
<td>VarSITI Data analysis Session (S4)</td>
<td>Collaboration of WDS and SCOSTEP/VarSITI (S5)</td>
<td></td>
</tr>
</tbody>
</table>
For radar data analysis

UDAS

SuperDARN, EISCAT, MU, and so forth

- Information -

New IUGONET pamphlet has been released. (Apr 1, 2014)
UDAS v3.00.3 has been released. (Dec 28, 2013)
Join IUGONET users mailing list.

IUGONET provides new research platforms, metadata database and analysis software UDAS, to facilitate the use and distribution of the long-term observation data for upper atmospheric physics that have been archived by the IUGONET members and collaborators. The efforts of IUGONET not only lead to the establishment of the research platforms to better understand global upper atmospheric phenomena, but also help to facilitate interdisciplinary researches.
SCOSTEP-WDS Workshop
Global Data Activities for the Study of Solar-Terrestrial Variability
28-30 September 2015
National Institute of Information and Communications Technology (NICT), Tokyo, Japan

Contact Point: contact-scostep-wds@icsu-wds.org

This joint workshop of the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) and the ICSU World Data System (ICSU-WDS) on ‘data’ will be held on 28–30 September 2015 in Tokyo, Japan. The principal objective of the workshop is to stimulate interaction among data providers (WDS members, data centres, data networks, etc.), data scientists, and data-oriented researchers of the SCOSTEP community. The new VarSITI* program of SCOSTEP will strive for international collaboration in data analysis, modelling, and theory to understand how the solar variability affects the Earth's environment. Long-term preservation and provision of quality-assessed data and information will be common objectives for SCOSTEP and WDS. Development of advanced data systems to enable scientists to perform multidisciplinary data-analysis will be another common target. This workshop will be a remarkable opportunity to initiate close collaboration between SCOSTEP and WDS to promote our data-oriented activities by introducing outcomes from the information technology. Data analysis of VarSITI Campaign Intervals will be another important

Important Dates
Abstract Submission:
1 April – 1 August 2015
Registration:
1 April – 15 September 2015
Proceedings Submission:
1 October 2015 – 31 January 2016