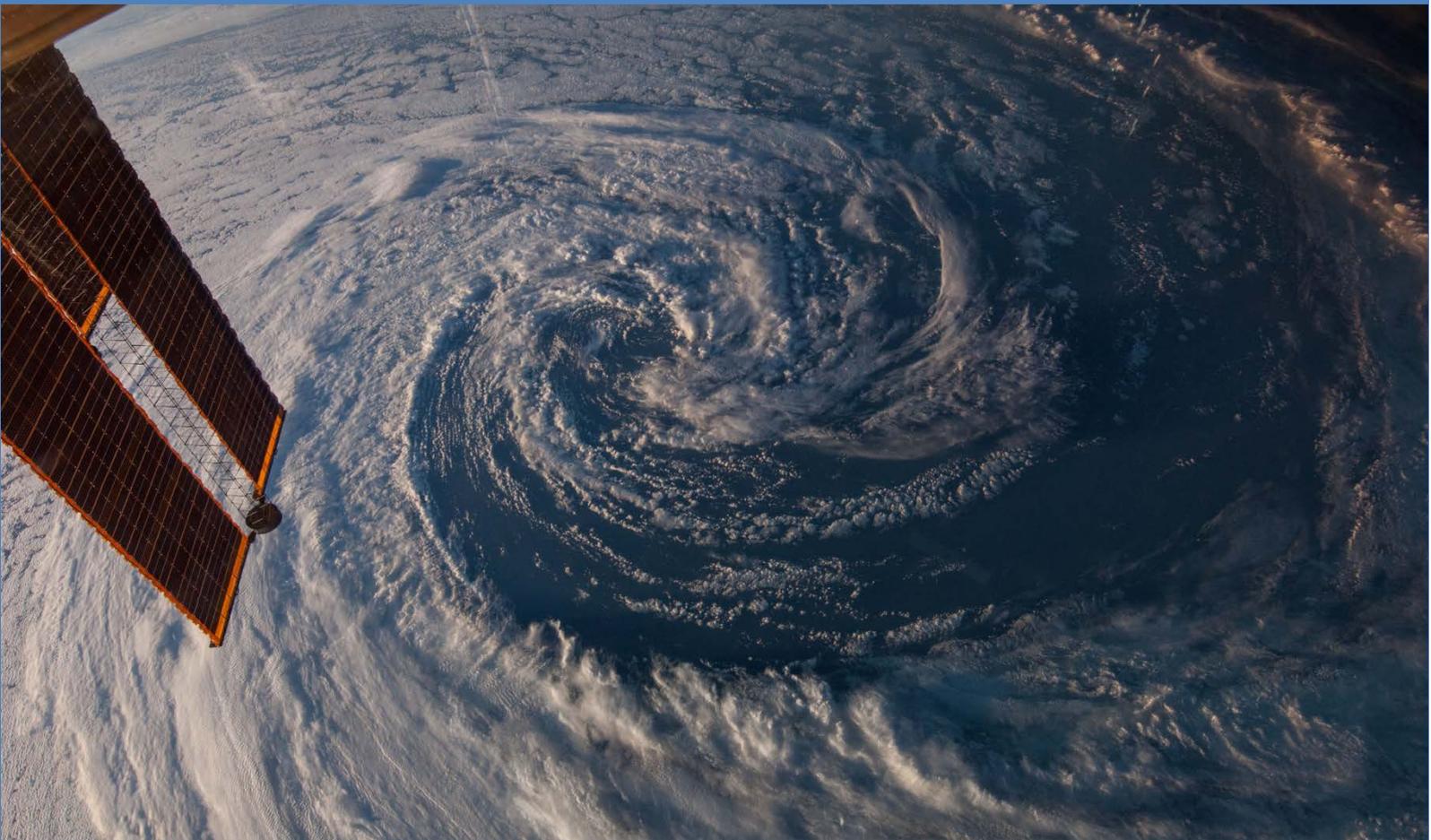


TRUSTED DATA SERVICES TO SUPPORT CLIMATE CHANGE RESEARCH



*Side event convened by the World Data System
ahead of the premier climate science conference leading to COP21*



TRUSTED DATA SERVICES FOR GLOBAL SCIENCE

The mission of the World Data System (WDS) is to promote long-term stewardship of, and universal and equitable access to, quality-assured scientific data and data services, products, and information across a range of disciplines in the natural and social sciences, and the humanities. WDS aims to facilitate scientific research under the International Council for Science's umbrella by coordinating and supporting trusted scientific data services for the provision, use, and preservation of relevant datasets, while strengthening their links with the research community. WDS was established by the Council in 2009 building on the recognized legacy of its World Data Centres and Federation of Astronomical and Geophysical data analysis Services.

Accredited by:

- [Our Common Future under Climate Change](#)
- [COP21 Label](#)



Supported by:

- [International Council for Science \(ICSU\)](#)
- [Group on Earth Observations \(GEO\)](#)
- [Committee on Data for Science and Technology \(CODATA\)](#)
- [Organisation for Economic Co-operation and Development \(OECD\)](#)
- [Research Data Alliance \(RDA\)](#)

TRUSTED DATA SERVICES

TO SUPPORT CLIMATE CHANGE RESEARCH

Side event convened by the World Data System ahead of the premier climate science conference leading to COP21

Date: 6 July 2015

Time: 09:00–13:00

Location: UNESCO Miollis (Building VI, Salle XIII, [1 Rue Miollis, 75015 Paris](#))

Live Broadcast: Add [Periscope](#) app on your mobile device (iOS/Android) and follow us on Twitter [@ICSU_WDS](#) for the live link

Abstract:

Several high-profile cases have highlighted the need for open sharing of quality-assured data underlying published scientific knowledge. For example, the integrity of data underlying critical climate research was challenged in the so-called Climategate, and several scientific studies have reported the impossibility of reproducing results of experimental research because of missing or poor quality datasets. Scientific data services—with certified technical and scientific capacities—are essential components of the research environment. They play an essential role in ensuring the integrity and availability of datasets, and thus promote trust in open science.

Global scientific initiatives, such as the Intergovernmental Panel on Climate Change and the International Polar Years, provide ample evidence that appropriate acquisition, handling, sharing, exploitations and dissemination of scientific research data is of critical importance to the success of critical international collaborative endeavours. Appropriate provisions must be made at an early stage, and as an integral part of the scientific planning, to identify and secure reliable and trustworthy scientific data services to support research activities.

This side event—convened by the [World Data System](#) ahead of the International Scientific Conference [Our Common Future under Climate Change](#)—will provide complementary high-level perspectives from climate scientists, data service providers, and policy makers. It will also highlight significant contributions to promote open data sharing, improve data preservation and data services quality in support of climate change research and policymaking. The discussions will enrich the debate and inform the subsequent ICSU side event, which ultimately will help develop a statement on key messages for the 21st UNFCCC Conference of the Parties (COP21) later in 2015.

DRAFT PROGRAMME

08:30–09:00 **Registration** (badge & programme) at [1 Rue Miollis, 75015 Paris](#) (ID or Passport required)

Opening remarks

09:00–09:10 **Professor Sandy Harrison** (Chair, ICSU World Data System Scientific Committee)

Keynote presentations

09:10–09:35 **Dr Erik Kjellström** (Rossby Centre, Swedish Meteorological and Hydrological Institute)
Production and use of regional climate model projections at the Swedish Meteorological and Hydrological Institute.

09:35–09:55 **Dr Barbara Ryan** (Group on Earth Observations: GEO)
Building a Global Earth Observation System of Systems (GEOSS) and the Importance of Broad, Open Data Policies

09:55–10:15 **Dr Julian Meyer-Arneke [in lieu of Dr Michael Bittner]** (Earth Observation Centre at the German Aerospace Center: DLR)
The World Data Centre for Remote Sensing of the Atmosphere (WDC-RSAT): Service for Science.

10:15–10:45 **Dr Giulia Ajmone Marsan** (Organisation for Economic Co-operation and Development: OECD, Directorate for Science, Technology and Innovation)
Policies to promote data-sharing: recent trends in OECD countries

10:45–11:00 **Q&A**

Exhibition and Posters

11:00–11:30 Coffee break (see details about Exhibition and Posters on the next page)

Short presentations

11:30–11:45 **Dr Robert Chen** (University of Columbia, CIESIN/SEDAC): *Integrating environmental and socioeconomic data to support interdisciplinary research and applications*

11:45–12:00 **Dr Marko Komac**: *OneGeology as an open geodata model and the advantage of the distributed data system*

12:00–12:15 **Mr Michael Böttinger** (World Data Centre Climate/DKRZ): *Unveiling Climate Change—High End Visualization at the German Climate Computing Centre (DKRZ)*

12:15–12:30 **Mr Mark Parsons** (Research Data Alliance): *Open Data is not Enough*

12:30–13:00 **Q&A**

Adjourn

Beyond data

14:00–17:00 [Science and the Road to Transformation: Opportunities in the post-2015 global climate regime.](#)
Special event convened by ICSU in UNESCO Fontenoy, Salle Segur 7th Floor.

Posters

- **Dr Juanle Wang** (World Data Centre for Renewable Resources of the Environment): Remote Sensing Image Atlas of Environmental Change in China at the World Data Centre: Renewable Resources and Environment
- **Dr Lynn Yarmey** (US National Snow and Ice Data Centre): The University of Colorado World Data Service

OPENING REMARKS



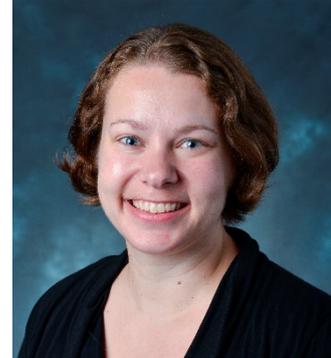
Professor Sandy Harrison:

Chair, ICSU World Data System Scientific Committee

Sandy Harrison is a Professor of Palaeoclimates and Biogeochemical Cycles and Director of the Centre for Past Climate Change at the University of Reading in the UK, and also a Professor in Ecology and Evolution Centre for Research Excellence at Macquarie University, Australia. She studied geography at the University of Cambridge, did her Masters in Geomorphology at Macquarie University and a PhD at the University of Lund in Sweden. Professor Harrison is a palaeoclimate diagnostician with a special interest in the role of the land-surface, terrestrial biosphere, fire and hydrological processes on modulating regional climates. She uses large-scale syntheses of data in combination with global models to diagnose these interactions. She is President of the Palaeoclimate Commission of the International Quaternary Association (INQUA) and Co-Chair of the Palaeoclimate Modelling Intercomparison Project (PMIP), where she leads the effort to evaluate climate models.

DEMONSTRATION

**Dr Lynn Yarmey: *Demonstration of the new
Global Glacier Browser***



The Global Terrestrial Network for Glaciers (GTN-G www.gtn-g.org) is the framework for the internationally coordinated monitoring of glaciers in support of the United Nations Framework Convention on Climate Change (UNFCCC). The network is jointly run by the World Glacier Monitoring Service (WGMS), the U.S. National Snow and Ice Data Center (NSIDC), and the Global Land Ice Measurements from Space initiative (GLIMS). The latest update of the GTN-G website provides a quicker overview of datasets on global glacier distribution and changes. A new “Global Glacier Browser” provides a map based overview on all available datasets and the new “Global Glacier Dataset Catalogue” provides standardized one page descriptions of these datasets and links to the individual data access pages. All these datasets are compiled within the GTN-G and are made freely available for scientific and educational purposes. The use of data and information from GTN-G requires acknowledgement to the GTN-G operational body (i.e., WGMS, NSIDC, GLIMS) and/or the original investigators and sponsoring agencies according to the citation recommendations given in the individual datasets.

KEYNOTES



Dr Erik Kjellström: *Production and use of regional climate model projections at the Swedish Meteorological and Hydrological Institute*

Extensive work within the framework of the international coordinated regional downscaling experiment (CORDEX) has been undertaken over recent years. The Swedish Meteorological and Hydrological Institute (SMHI) has contributed to the initiation and design of CORDEX and by performing a large number of regional climate model simulations. An important part of the work relates to data handling including post processing, standardized output and quality control, in order to facilitate further use and dissemination of results. The presentation will provide a snapshot of results from regional climate model ensembles and how these have been used in a climate service perspective in Sweden. Further, their use in international projects involving not only European partners, but also partners from other continents, will provide an illustration of the transferability of results across borders.

Dr Barbara Ryan: *Building a Global Earth Observation System of Systems and the Importance of Broad, Open Data Policies*

The Global Earth Observation System of Systems (GEOSS), built by the Group on Earth Observations (GEO), is both a policy framework and an emerging infrastructure that allows decision makers to respond more effectively to the many environmental challenges facing the world today, including climate change. Built upon broad, open data-sharing practices, information from an expanding array of observation systems is being made available to users around the world. Having ready access to observations from multiple systems is a prerequisite for both environmental decision-making and economic development. Climate is one of nine Societal Benefit Areas (SBAs) that have framed GEO's work during its first decade, with the strategic target of achieving effective and sustained global climate observations and reliable delivery of quality climate information needed to predict, mitigate and adapt to climate variability and change. In the Climate SBA, participants have contributed data, research and other related Earth observation activities. The presentation will focus on international efforts to build GEOSS, the importance of broad, open data policies for all countries, and a view into the next decade for GEO.



Dr Julian Meyer-Arnek: *The World Data Centre for Remote Sensing of the Atmosphere (WDC-RSAT)—Service for Science*

The World Data Center for Remote Sensing of the Atmosphere, WDC-RSAT, offers scientists and the general public free access to a continuously growing collection of atmosphere-related satellite-based data sets, information products and services. Focus is on atmospheric trace gases, aerosols, dynamics, radiation, and cloud physical parameters. Complementary information and data on surface parameters is also provided. This is achieved either by giving access to data stored at the data center or by acting as a portal containing links to other providers. As part of the WMO-WDC family, WDC-RSAT handles non-satellite based data relevant for validation. WDC-RSAT is also part of the Virtual Alpine Observatory, VAO, which aims to interlink alpine observatories focusing on environmental topics in the atmosphere, biosphere, hydro- and cryosphere. WDC-RSAT is developing techniques providing VAO stations with satellite based data and information products and to allow for computing-on-demand applications. Strategies and techniques to properly validate data sets, including for example data assimilation methods, are developed and tested.

Dr Giulia Ajmone Marsan: *Policies to promote data-sharing—recent trends in OECD countries*

As documented in the OECD Science, Technology and Industry Outlook 2014, open science and open data are “hot issues” for science policy in many countries. In this regard, the policy imperatives are not only to make science more efficient but also to promote innovation, engage citizens in scientific activities and more effectively address complex challenges, including climate change. Whilst most OECD countries have implemented policies to promote open access to scientific publications and are building repositories for open government data, fewer countries have implemented policies specifically targeting research data sharing. At the same time, efforts to promote data sharing are confronted with several obstacles that are at least partially amenable to policy intervention. For example, data collection and curation efforts are not normally acknowledged as important research outputs and not all researchers have the necessary skills to participate in data sharing efforts. Policy action is required to incentivize and facilitate data sharing and to promote skills development. In areas, such as climate change research there is a need for scientists, data managers and science policy-makers/funders to work more closely together in order to fully exploit the exciting opportunities presented by the rapid evolution of Information and communication technologies.



SHORT PRESENTATIONS



Dr Robert Chen: *Integrating environmental and socioeconomic data to support interdisciplinary research and applications*

The NASA Socioeconomic Data and Applications Center (SEDAC) was established as an element of NASA's Earth Observing System Data and Information System (EOSDIS) to facilitate the integration of remote sensing and socioeconomic data needed to address pressing research and applied user needs at the intersection of human and environmental systems. SEDAC has developed a diverse set of trusted data products and services used widely in interdisciplinary climate change research, assessment, and decision-making. These include data on population, settlements and infrastructure, land use change, sea level rise impacts, disaster risk, poverty, food security, health, climate vulnerability, international environmental agreements, and future socioeconomic scenarios, as well as policy-relevant indicators on environmental performance and sustainability. Some data products are derived by blending remote sensing and socioeconomic data, whereas others are transformed to facilitate integration by users. Interdisciplinary data resources are essential in developing integrated approaches to climate change mitigation and adaptation. SEDAC is working to expand the accessibility of its data resources through open standards and interfaces and their long-term stewardship in partnership with SEDAC's host organization, the Center for International Earth Science Information Network (CIESIN) of the Earth Institute at Columbia University.

Dr Marko Komac: *OneGeology as an open geodata model and the advantage of the distributed data system*

OneGeology is an initiative of Geological Survey Organisations (GSO) around the globe initiated in 2007. Since then, OneGeology has been a leader in developing online geological map data using a new international standard to enable instant interoperability and sharing of geological data through an integrated distributed worldwide data system. Currently, OneGeology is increasing the openness and richness of that data from individual countries to create a multi-thematic global geological data resource, while securing its sustainability. Authoritative information on geology will help prevent natural disasters, explore resources (water, minerals and energy) and identify risks to human health on a planetary scale. Such a distributed data system enables prompt data updating and amendments and at the same time, ensures data owner's



control over the politically (or economically) sensitive data. Understanding our world, the geology beneath our feet and environmental challenges related to geology calls for accessibility of geoscience data: OneGeology Portal (portal.onegeology.org) is the place to find them.



Mr Michael Böttinger: *Unveiling Climate Change—High End Visualization at the German Climate Computing Centre (DKRZ)*

The German Climate Computing Center (DKRZ) is a national service center for climate and Earth system research in Germany. DKRZ provides supercomputers, high capacity data storage and archival as well as associated services to support climate modelers in their scientific workflow. The high-end visualization of climate model data is one of these services. With a visualization cluster, a remote 3D visualization solution and appropriate visualization software tools, visualization is an integral part of DKRZ's high performance computing environment. By using examples from the practical work with results from the CMIP5 simulations carried out by DKRZ and MPI-M with respect to IPCC AR5, the value of high-end visualization for understanding and communicating results of climate simulations is demonstrated.

**Mr Mark Parsons:
*Open Data is not Enough***

In recent years governments and research institutions have emphasized the need for open data as a fundamental component of open science. But we need much more than the data themselves for them to be reusable and useful. We need descriptive and machine-readable metadata, of course, but we also need the software and the algorithms necessary to fully understand the data. We need the standards and protocols that allow us to easily read and analyze the data with the tools of our choice. We need to be able to trust the source and derivation of the data. In short, we need an interoperable data infrastructure, but it must be a flexible infrastructure able to work across myriad cultures, scales, and technologies. This talk will present a concept of infrastructure as a body of human, organisational, and machine relationships built around data. It will illustrate how a new organization, the Research Data Alliance, is working in collaboration with the WDS and others to build those relationships to enable functional data sharing and reuse.





STRATEGIC TARGETS

- Make trusted data services an integral part of international collaborative scientific research
- Nurture active disciplinary and multidisciplinary scientific data services communities
- Improve the funding environment for Scientific Data Services
- Improve the trust in and quality of open Scientific Data Services
- Position ICSU-WDS as the premium global multidisciplinary network for quality-assessed scientific research data

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Back cover: Globe for visualization of climate simulations: WDCC/DKRZ



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