MINUTES

OF THE

50th MEETING

OF THE

CEOS WORKING GROUP ON
INFORMATION SYSTEMS AND SERVICES

(WGISS)

Meeting held virtually

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# WGISS Plenary Session

## [Welcome and Introductions, Adoption of Agenda](https://youtu.be/xf_lDx7vqoM)

Robert Woodcock (CSIRO) introduced the session noting that WGISS-50 is being held as a virtual meeting; all presentations are pre-recorded and available here: <http://ceos.org/meetings/wgiss-50/>. They can also be found inline in this document on each section heading.

Participants reviewed the video and presentation content prior to the main conference and the material was not presented in the main conference. The main conference will consisted of Q&A with speakers and discussion.

## [CEOS Executive Officer (CEO) Report](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_CEO%20Report.pptx)

Kerry Sawyer (NASA)

Kerry Sawyer highlighted slide 9, containing key relevant discussion points and actions for WGISS from the SIT Technical Workshop-2020.

Rob (CSIRO) will represent WGISS at the ARD on the Cloud meeting coordinated by GEO with public cloud providers. Some solutions that need to be addressed are the possibility of using regional providers. This is a large issue that needs to be addressed.

## [Systems Engineering Office (SEO) Report](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_SEO_Report.pptx)          [Video Presentation](https://youtu.be/UMm7Wtf9pGM)

Brian Killough (NASA)

Brian highlighted that Sentinel 1 ARD will generate Sentinel DCs for Africa. The principal formats are COGS and ZARR.

Brian clarified that the Open Earth Alliance to expand the impact of the ODC to more regional DC activities, solutions, a user forum, algorithm hub.

# Data DISCOVERY and ACCESS

## General Reports

### [IDN](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_IDN_Report.pptx)

Michael Morahan (NASA)

### [CWIC and CWIC Evolution](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_CWICReport_Evolution.pptx)

Minnie Wong (NASA).

Minnie highlighted the transition of CWIC functionality toward NASA’s Common Metadata Repository (CMR); it will be a soft decommissioning with little impact to data providers.

### [FedEO](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_FedEO_Report.pptx)

Y. Coene (Spacebel, ESA), A. Della Vecchia (Randstad, ESA)

Damiano commented that they are looking at the possibility of coexistence of different interfaces, while ensuring that the users are not forced to move before they can finish their own research; technology is moving faster than institutions.

### Discussion

Michael noted that there may not be enough awareness that the IDN can go down to granules. Damiano commented that the metrics show that there has been a lot of progress in the dataset discovery and connectivity. The duplication of data is still an issue.

Damiano Guerrucci shared the new link for STAC Sprints: <https://github.com/radiantearth/community-sprints/blob/master/08182020-remote/software/progress.md>

## [FedEO Catalogue API Evolution](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_fedeo_catalogue_api.pptx)

Y. Coene (Spacebel, ESA), A. Della Vecchia (Randstad, ESA)

## [FedEO Metadata Edition](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_fedeo_metadata_editor.pptx)

Y. Coene (Spacebel, ESA), A. Della Vecchia (Randstad, ESA)

## [STAC Community Sprint: Web Link](https://github.com/radiantearth/community-sprints/blob/master/08182020-remote/software/progress.md)

Chris Holmes (Planet Labs)

## [STAC CMR](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_CMR-STAC%20Overview.pptm)

Valerie Dixon (NASA)

## [FedEO STAC API and STAC Browser](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_fedeo_stac_api_stac_browser.pptx)

Y. Coene (Spacebel, ESA), A. Della Vecchia (Randstad, ESA)

# TECHNOLOGY EXPLORATION

## [Future Webinars Planning](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_Future_Webinars_Planning.pptx)

Yousuke Ikehata (NASA)

A proposal was presented with the goal of webinars to increase awareness and interest in WGISS activities (Best Practices, White papers, Survey results, and available systems).

## [CEOS Branded Webinar Plans with WGCapD](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_WGCapDCEOSBrandedWebinars.pptx)

Nancy Searby (NASA)

The discussion centered around branding of webinar, and aligning them with different types of users..

## [Jupyter Notebooks Survey Results, Developing a Best Practice](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/1.%20Tuesday%20Sept%2022/2020.09.22_Jupyter.pptx)

Esther Conway (UKSA)

Esther highlighted the final slide with proposed activities, thanking everyone who helped put the survey together and the responses. Leadership and participation is sought for the way forward; there is a lot of interest, a lot of people to contribute to webinars, a lot want to see a BP document.

It is proposed to initiate a task within Interoperability, Access, and Stewardship groups. An action needs to be formulated.

Rob commented that this is an opportunity for WGISS around the evolution of discovery, technologies, similar technology sets. There is a tremendous amount of very nearly compatible systems. The EAIL would be a node, joined by others. The Jupyter Notebooks can live there and be accessible and interoperable, making analytics interoperable along with discovery. Communities are looking for support of their analytics so demonstration codes are useful and can be achieved through the different notebooks.

# Data INTEROPRABILITY and USE

The emphasis of this session is around use and analysis of data.

## [CEOS Earth Analytics Interoperability Lab (EAIL)](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_WGISS_EAIL.pptx)  [video presentation](https://youtu.be/n-da0ZJgCBg)

Rob Woodcock (CSIRO), Brian Killough (NASA)

The purpose of the EAIL is to find solutions to interoperability problems and to develop related best practices. Its nodes will be within the CEOS community but outside agency firewalls; it is deployed on Amazon West. The WGISS community will be engaged around this experiment, helping to determine the requirements for data and the capabilities that exist in other CEOS groups. To test interoperability there will need to be a mix of deployments. The demand has been more enthusiastic than expected, and projects or agencies that would like to be a node should contact Rob or Brian. The first projects to be selected if they can result in quick wins in order to demonstrate what this can achieve; they will have to be well organized and defined.

The nodes can be within agency systems. A node is a combination of data and computing, so a JN environment or an analytics environment can be involved in an experiment.

## [CEOS EAIL Rice Project Proposal](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_EAIL_Rice_Proposal.pptx) [video presentation](https://youtu.be/eGselOPVuxw)

Shin-ichi Sobue (JAXA)

Shin-ichi noted that the datasets are available: there is an intention to use Sentinel 1 SAR. One thing to discover is what type of processing needs to be done – using time series and radar for cloudy conditions since the goal is to estimate inundated data based on growing stage.

Rama asked about the challenges of bringing together all the sources of SAR data, with different frequencies and polarizations. Using high resolution optical for spatial resolution and existing tools in cooperation with CEOS agencies. Liping mentioned a NASA funded project on monitoring the crop planting, condition, and yield in South Asia, and suggested collaboration..

## [CEOS COAST](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_COAST.pdf)

Paul DiGiacomo (NOAA)

Paul commented that COAST is transboundary and transdisciplinary. There are a number of challenges with the data that are being worked on but the hope is to have the data flow ready soon. Paul noted that NOAA has a SAR enterprise ocean algorithm processing system called SAROPS - to generate consistent ocean products across S1, RCM, et al. Rob remarked that the slide with Data Needs, challenges and risks. Very useful.

Merrie Beth Neely said that several pilots are planned; discussion will be needed to decide if different nodes should be utilized for each pilot, or if all the pilots should be in the same node.

## [WGCV – DEMIX](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_TMSG-DEMIX4.pptx)

Peter Strobl (EC)

This is a case of relatively simple data, but not so simple algorithms.

Rob noted the need for an inventory of DEM tools, noting if they are OS and that are suited to work on projected data.

## [WGDisasters Flood Pilot](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_CEOS_WGDIsaster_GEOLEOSAT.pptx)

Guy Schumann (NASA)

Guy discussed the selected location that provides large and regular flooding.

## [Artificial Intelligence at the service of Geospatial Information](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_WGISS-AI4GEO.pptx)   [video presentation](https://youtu.be/_pSPsL4_XMY)

Pierre-Marie Brunet (CNES)

This is an artificial intelligence project applied to VHR with the objective to allow data scientists to use the data coming from different departments. <https://theia-ide.org/> is the web interface. Rob suggested that this can work as a node in the EAIL.

## [CEOS Interoperability Terminology](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/CEOS%20Interoperability%20Terminology%20Report.pdf) [video presentation](https://youtu.be/_vgnnhKEp0k)

Rob Woodcock (CSIRO)

## [Entwine Point Tiles (for point cloud data like ICESat-2)](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_EPT.pdf)  [video presentation](https://youtu.be/hvY844PcyX8)

Dan Pilone (NASA), Trevor Skaggs (Element 84)

## Agency updates on FDA, ARD, Data Cubes, Best Practice

### WGISS Best Practice for Cloud-based Data Formats

Groups are looking for guidance from WGISS. The ESIP community is doing some work that potentially will provide insight.

### [Accessing and Processing Brazilian EO Data Cubes with ODC](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.BrazilDataCube_ODC.pdf) [video presentation](https://youtu.be/bsbSey23wcI)

Karine Ferreira (INPE)

### [CSIRO EASI Hub Data Pipelines](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_easi-data-pipelines.pdf)  [notes](http://ceos.org/document_managemeant/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_easi-data-pipelines-notes.pdf)

Matt Paget (CSIRO)

### [CEOS Carbon Portal](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_CarbonPortal.pdf)

Liping Di (NOAA)

### [SAR2CUBE](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_SAR2CUBE.pdf)

Alexander Jacob (EURAC)

### [EuroDataCube](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/2.%20Wednesday%20Sept%2023/2020.09.23_EURO%20DATA%20CUBE.pdf)

Gunnar Brandt (Brockmann Consult)

### Discussion

Liping suggested that since there are many different Cloud-based data formats (Cloud-GEOTiff, Zarr, Entwine point tiles), should WGISS consider a unified interface to access data in those different cloud-based formats?

# Data PRESERVATION and STEWARDSHIP

Mirko Albani (ESA)

## Persistent Identifier Best Practice

### [NASA Update](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_NASA_PID.pptx)

Dawn Lowe (NASA)

### [NOAA Update](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_NOAA-Persistent-Identifiers.pptx)

Nancy Ritchey (NOAA)

### [ESA Update](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_ESA%20Update.pptx)

Iolanda Maggio (RHEA, ESA)

### [ISRO Update](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_Persistent_Identifiers_ISRO.pptx)

T. Sai Kalpana (ISRO)

### PID Best Practice

Iolanda Maggio (RHEA, ESA)

Iolanda presented the PID BP, noting the possibility of an update on the use of landing pages for DOIs and links to software. Rama (NASA) shared a link to NASA’s software citation guidelines: <https://www.esipfed.org/esip-outputs-list/software-citation-guidelines>

It was agreed not to change the recommendation when data is reformatted.

There was also discussion on event-based DOIs.

Iolanda requested offline comments on three additional points.

### [PID Discussion](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_%20Persistent%20Identifier%20-%20Discussion.pptx)

Discussion centered on the automation of the creation a DOIs.

## Technical Content and Information Preservation

### [JAXA Experience](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_JAXA_PID.pptx)

Makoto Natsuisaka (JAXA)

### [ESA Experience](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_Technical%20Content%20and%20Information%20Preservation.pptx)

Iolanda Maggio (RHEA, ESA)

### Discussion

Mirko commented that the data providers rely on the landing pages for navigating through the data, and availability of services and tools. It will be helpful to augment with the discovery of services, associated datasets, campaigns, events. Rama added that preserving the links is as important as preserving the associated knowledge.

## [International Cooperation on AVHRR Data](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.22_AVHRR%20International%20Cooperation%20Activities%20and%20Partners.pptx)

Mirko Albani (ESA), Stefan Wunderle (U of Bern)

The 1-km AVHRR archive covering Europe from 1981 – 2019 is an exceptional example of a successful compilation of different data holdings. Several datasets are available worldwide constituting a unique asset for mankind

Next steps are to inform the National Space Agencies with AVHRR data holdings about the consolidation procedure and the accessibility of the European data set. This may result in a similar activity and finally to a One-Stop-Shop for all users. Liaise with AVHRR data holders in North America, China, Mongolia, Africa, Australia and South America to possibly start cooperation activities to ensure data consolidation/harmonization/archiving/discovery/access.

Ken commented that GHRSST started working on this several years ago. He will provide a point of contact for this. There is a need to identify contacts for other sources as well, specifically China and Kenya.

## [NOAA Update on Data Preservation and Stewardship](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_NOAA_Data_Preservation-Stewardship.pptx)

Nancy Ritchey (NOAA)

Nancy summarized that this presentation gives the results of NOAA’s cloud pilots.

# Agency Reports

## [NASA](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_WGISS50NASAReport.pptx)

Andy Mitchell (NASA)

## [NOAA](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_WGISS50NOAA_AgencyReport.pptx)

Nancy Ritchey (NOAA)

## [JAXA](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_JAXA_AgencyUpdate.pptx)

Makoto Natsuisaka (JAXA)

## [HSO](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_WGISSHSOreport.pptx)

Gabor Remetey-Fulopp (HSO)

## [ISO](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_ISOTC211-Report-to-WGISS50.pdf)

Liping Di (NOAA)

## [ISRO](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_WGISS50ISROReport.pptx)

Nitant Dube (ISRO)

## [Global Change Research Data Publishing and Repository](http://www.geodoi.ac.cn/WebEn/Default.aspx)

## [Global Islands and Coastlines Data](http://www.geodoi.ac.cn/WebEn/doi.aspx?Id=1265)

# WGISS Plenary, Part 2

## [Future Meetings](http://ceos.org/document_management/Working_Groups/WGISS/Meetings/WGISS-50/3.%20Thursday%20Sept%2024/2020.09.24_FutureMeetings.pptx)

Makoto Natsuisaka (JAXA)

Makoto proposed that WGISS-51 be held virtually on April 20-22, 2021, and WGISS-52 in October 2021. The next joint meeting with WGCV needs to be face-to-face.

## WGISS Summary and Discussion

Robert Woodcock (CSIRO)

WGISS has an opportunity to progress further the FDA and ARD strategies, CEOS projects, best practices and interoperability through:

* Evolution of Discovery and Access
* Jupyter Notebooks: Call to Action
* Earth Analytics Interoperability Lab ecosystem
* CEOS WG Projects and EAIL
* Cloud: data pipelines, infrastructure, analytics, data
* Data Stewardship: PID and NLP linking data-analytics-research outcomes

WGISS needs to organize to cover solutions to Sentinel 1 data pipelines, cloud native discovery, Jupyter Notebooks and to translate enthusiasm into practical outcomes. Andy suggested forming a board on the interoperability labs where stakeholders are all on board.

This will be discussed further by the WGISS-Exec.

# Glossary of Acronyms

AI Artificial Intelligence

API Application Programming Interface

ARD Analysis Ready Data

AWS Amazon Web Services

CEO CEOS Executive Officer

CEOS Committee on Earth Observation Satellites

COTS Commercial Off-the-Shelf

CSW Catalogue Service for the Web

CWIC CEOS WGISS Integrated Catalogue

DAAC Distributed Active Archive Center

DC data cube

DIF Directory Interchange Format

DOI Digital Object Identifier

ECV Essential Climate Variable

EO Earth Observation

ESIP Federation of Earth Science Information Partners

GCI GEOSS Common Infrastructure

GCMD Global Change Master Directory

GEO Group on Earth Observations

GEO-GLAM Global Agricultural Monitoring

GEOSS Global Earth Observation System of Systems

GFOI Global Forest Observations Initiative

GHG Greenhouse Gas

GIS Geospatial Information System

GPM Global Precipitation Mission

GPU Graphics Processing Unit

GSDI Global Spatial Data Infrastructure

GUI Graphical User Interface

HPC High Performance Computing

ICT Information and Communication Technology

IDN International Directory Network

ISO International Standards Organization

LSI Land Surface Imaging

LTO Linear Tape-Open

MOU Memorandum of Understanding

NRT Near real-time

NWIP New Work Item Proposal

OGC Open Geospatial Consortium

OS Open Source

PI Persistent Identifier

POC Point of Contac

RS Remote Sensing

SEO Systems Engineering Office

SDCG Space Data Coordination Group

SIT Strategic Implementation Team

SLT System Level Team

SWG Standards Working Group.

TEP Thematic Exploitation Platform

ToR Terms of Reference

UML Unified Modelling Language

UMM Unified Metadata Model

VC Virtual Constellation

WCS Web Coverage Service

WG Working Group

WGCV Working Group on Calibration and Validation

WGCapD Working Group on Capacity Building & Data Democracy

WGClimate Working Group on Climate

WGDisasters Working Group on Disasters