



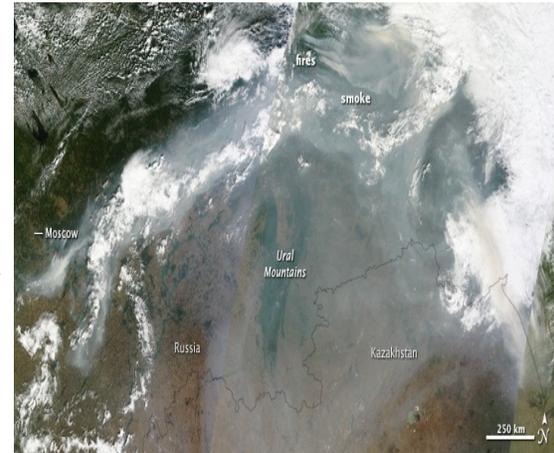
The Giovanni News

GODDARD EARTH SCIENCES DATA & INFORMATION SERVICES CENTER (GES DISC)

SPECIAL
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The autumn rush: plenty of new Giovanni papers to read

At the end of August 2011, a survey of the newest papers in which the NASA Giovanni system was utilized was conducted, and this survey found 35 new papers. Could such a publication rate be sustained? Not everyone thought so, but it could; in just September and October 2011, 38 more papers with Giovanni involvement were published. We also had our first two “three-timers”, authors of three papers in one year who used Giovanni, Mark Jury of the University of Puerto Rico – Mayaguez and Sergei Sitnov from the A. M. Obukhov Institute of Atmospheric Physics. (We think there have been occurrences of three or more papers in one year that shared a co-author, but this was the first time we saw three first-author papers from the same scientists).



Fires raged in central Russia in the summer of 2010, and were studied with Giovanni. Recent research has indicated that the conditions which led to the fires likely resulted from climate change, and similar conditions are expected to occur more often in the future.

Editor's Note:

This is our special December issue of The Giovanni News. As we have done in past years, this issue highlights presentations by GES DISC staff members at the World Championships of Geoscience, otherwise known as the 2011 American Geophysical Society Fall Meeting in San Francisco, California. This year, there are 15 posters and 2 talks with GES DISC staff members as first authors (and several more posters and presentations with GES DISC staff members as co-authors). In this issue, we provide the title, authors, presentation date and time, and a short summary extracted from the author's abstract. Early next year all the poster presentations will be online at the GES DISC Web site. Note that presentations which involve Giovanni are highlighted.

The other article in this special issue is about the somewhat startling results of our latest Giovanni literature survey. We realize that you just received our Autumn issue, with a publication-count update; well, when we checked again in November, there were a lot more papers, and 2011 will certainly be another record-breaking year. (Also, we are now getting email messages from Google Scholar whenever a new Giovanni paper appears, so we'll tweet about some of those on the @nasa_giovanni Twitter feed.)

Happy reading, and Happy Holidays!
The Giovanni News Editors,
Jim Acker and Wainie Youn

There were some intriguing papers in this most recent “batch”:

- Maria Efstathiou of the University of Athens sought to determine if atmospheric ozone concentrations might change prior or subsequent to earthquakes in Greece.
- Natalia Chubarova of Moscow State University, with co-authors from the A.M. Obukhov Institute of Atmospheric Physics and NASA Goddard Space Flight Center, used Giovanni to investigate smoke aerosols generated by the massive fires in Russia during the summer of 2010.
- Nazereno Diodato of the Met European Research Observatory in Italy and his colleagues examined the “aggressiveness” of rainfall in Mediterranean countries over 300 years. In the context of these researchers, “aggressiveness” means the extent to which extreme storm events contribute to erosion, land degradation, and nutrient loss from soils.
- Ulrike Fallet and fellow researchers from the NIOZ Royal Netherlands Institute for Sea Research used NASA ocean biogeochemical model (NOBM) data in Giovanni, from GSFC oceanographer Watson Gregg, in a paleotemperature analysis of foraminifera in sediments of the Mozambique Channel off the southeastern coast of Africa.
- Kenneth Tobin and Marvin Bennett of Texas A&M International University included Giovanni in their research tools to investigate satellite precipitation measurements for seven river watersheds in the United States.
- Kyriaki Kelektoglou from the Department of Engineering at the University of Thrace, Greece and his research colleagues employed Giovanni to conduct a one-year study of aerosols and clouds over the northeast Mediterranean Sea.
- Pooja Rani from Meerut College, India, and colleagues from the India Meteorological Department listened for thunder before the onset of the Arabian Sea monsoon.
- All of the most recent paper citations are found in the news article on the GES DISC home page, “Research papers utilizing Giovanni appear in a flurry during autumn 2011”, http://disc.sci.gsfc.nasa.gov/gesNews/giovanni_publications_update_oct_2011

**NASA Earth Science Data
at your fingertips –
& in your mind
<http://giovanni.gsfc.nasa.gov>**



AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Monday, December 5

Using Open and Interoperable Ways to Publish and Access LANCE AIRS Near-Real Time Data

*Peisheng Zhao**, Christopher Lynnes, Bruce Vollmer, Andrey Savtchenko, Wenli Yang

IN11B. Current Capabilities and Future Needs of Near Real Time Data I Posters

8:00 AM - 12:20 PM; Halls A-C

In this poster, Zhao and his co-authors discuss how data from the Atmospheric Infrared Sounder (AIRS) is integrated into the NASA Land Atmosphere Near real-time Capability for EOS (LANCE) system. AIRS data are made available via an OPeNDAP server, with search capability augmented by granule maps displayed on a map of the Earth. AIRS NRT data will be made available via a Web portal that is designed for customized data downloading and visualization, which is introduced in their presentation.

Retrospective Analog Year Analyses Using NASA Satellite Data to Improve USDA's World Agricultural Supply and Demand Estimates

*William L Teng**, Harlan D Shannon

B13B. Agricultural Mapping, Monitoring, and Data Visualization for a Changing Global Environment III Posters

1:40 PM - 6:00 PM; Halls A-C

Teng and Shannon discuss an improved method to identify analog years, years with similar weather patterns and growing seasons that are utilized to estimate crop yields by the World Agricultural Outlook Board (WAOB). Rather than relying on visual inspection of precipitation time series, this method utilizes a statistical approach based on a modified coefficient of determination, the analog index (AI). The study also compares the performance of AI for time series derived from surface-based observations vs. satellite-based measurements (NASA TRMM and other data). The results found that crop yield estimates based on satellite data were closer to measured yields than are estimates derived from surface-based precipitation measurements.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Tuesday, December 6

Making Earth Science Data Records for Use in Research Environments (MEaSURES) Projects Data and Services at the GES DISC

Bruce Vollmer, Dana Ostrenga, Andrey K Savtchenko, James Edward Johnson, Jennifer Chu-Feng Wei, William L Teng, Irina Gerasimov (Thomas Hearty)*

IN21A. Earth System Data Records (ESDRs), Uncertainty and Metadata I Posters

8:00 AM - 12:20 PM; Halls A-C

Vollmer and his colleagues from the NASA GES DISC describe the Making Earth Science Data Records for Use in Research Environments (MEaSURES) data archive and distribution effort, which will provide data from 7 MEaSURES projects. The Earth System Data Records (ESDRs) created by MEaSURES teams will be made available through the MEaSURES Information Portal, and data distribution will be enable with multiple services such as Mirador, OPeNDAP, and the Simple Subset Wizard.

Challenges in characterizing, assessing, and capturing quality of remote sensing data

Gregory G Leptoukh, Christopher Lynnes, Peter Arthur Fox, Daniel Q Tong, Ross Bagwell, John A Gaultieri, Francis Lindsay, Oleg Aulov*

IN21C. The Challenge of Data Quality in Earth Observations and Modeling Posters

8:00 AM - 12:20 PM; Halls A-C

Leptoukh et al. describe the recent Earth Science Information Partners (ESIP) Federation effort to address the Data and Information Quality challenges. Efforts to characterize climate change are increasingly reliant on satellite data. The presentation describes the group's initial attempt to systematically characterize, capture, and provision quality and uncertainty information of remote sensing data, addressing three facets of data quality: universal data quality dimensions or indicators; data production-based error propagation or simulation; and user application-based accuracy requirements and analysis.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Tuesday, December 6

NASA Giovanni Portals for NLDAS/GLDAS Online Visualization, Analysis, and Intercomparison

Hualan Rui, William L Teng, Bruce E Vollmer, David M Mocko, Hiroko K Beaudoin, Matthew Rodell*

H23H. Uncertainty Assessment, Optimization, and Sensitivity Analysis in Integrated Hydrologic Modeling as Applications of HydroInformatics I Posters

1:40 PM - 6:00 PM; Halls A-C

This presentation provides information on three new and improved portals of NASA Giovanni which provide data from the North American Land Data Assimilation System (NLDAS) and Global Land Data Assimilation System (GLDAS). NLDAS and GLDAS are generating a series of land surface forcing (e.g., precipitation, surface meteorology, and radiation), state (e.g., soil moisture and temperature, and snow), and flux (e.g., evaporation and sensible heat flux) products, simulated by several land surface models. NLDAS and GLDAS have generated more than 30 and 60 years of data, respectively. The three new portals provide hourly NLDAS data, three-hour GLDAS data, and 1.0°x1.0° monthly data from GLDAS-2 NOAH model product (Jan. 1948 – Dec. 2008) and GLDAS-1 CLM, Mosaic, NOAH, and VIC model products (Jan. 1979 – present).

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Wednesday, December 7

Reusable Social Networking Capabilities for an Earth Science Collaboratory

Christopher Lynnes, Daniel Da Silva, Gregory G Leptoukh, Rahul Ramachandran*

IN33E. Semantic, Linked Data, and Drupal-Based Solutions for Science II

1:40 PM - 3:40 PM; Room 102

2:40 PM - 2:55 PM

In his talk, Lynnes and colleagues propose the creation of an Earth Science Collaboratory (ESC): a framework that would enable sharing of data, tools, workflows, results and the contextual knowledge about these information entities. The Drupal platform is well positioned to provide the key social networking capabilities to the ESC. As a proof-of-concept of a rich collaboration mechanism, a Drupal-based mechanism for graphically annotating and commenting on results images from analysis workflows in the online Giovanni analysis system for remote sensing data was developed. Community interaction allows the annotations to be tagged and shared, and the system is also augmented with a Research Notebook capability.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Thursday, December 8

Accessing Recent Trend of Land Surface Temperature from Satellite Observations

Suhung Shen, Gregory Leptoukh, and Peter Romanov*

GC41C. Regional Climate Impacts 7: Environmental, Socioeconomic, and Climatic Changes in Northern Eurasia and Their Feedbacks to the Global Earth System---The Role of Remote Sensing and Integrative Studies I Posters

8:00 AM - 12:20 PM; Halls A-C

The importance of land surface temperature (LST) to study of terrestrial ecosystems and surface energy budgets underscores the presentation by Shen, Leptoukh, and Romanov. In their study, monthly climatology LST from MODIS-Terra and MODIS-Aqua are calculated and compared, and these data are also compared to the skin surface temperatures from the Modern Era Retrospective-analysis for Research and Applications (MERRA) project. The calculated climatology and anomaly of MODIS LST will be integrated into the online visualization system, Giovanni, at NASA GES DISC for easy access and use by scientists and general public.

Facilitating NASA Earth Science Data Processing Using Nebula Cloud Computing

Aijun Chen, Long Pham, Steven Kempler, Michael Theobald, Esfandiari Asghar, Jane Campino, Bruce Vollmer, Christopher Lynnes*

IN41A. Computational and Software Engineering Challenges in Earth Science I Posters

8:00 AM - 12:20 PM; Halls A-C

Chen et al. examine the complexities and benefits of migrating several GES DISC applications to the NASA Nebula Cloud Computing platform. For this proof-of-concept study, three applications were migrated: a) The Simple, Scalable, Script-based Science Processor for Measurements (S4PM) for processing scientific data; b) the Atmospheric Infrared Sounder (AIRS) data process workflow for processing AIRS raw data; and c) the GES-DISC Interactive Online Visualization AND aNalysis Infrastructure (GIOVANNI). Analysis of the AIRS workflow migration indicated that Nebula performance significantly exceeded that of the local GES DISC system, likely due to newer and advanced hardware in Nebula.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

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Thursday, December 8

Observational Sensitivity to Climate Variability using AIRS/Aqua and MERRA

Thomas J Hearty, Eric Fetzer, Baijun Tian, Yuk L Yung, Bruce Vollmer, Andrey K Savtchenko, Peter M Smith, Michael Theobald, Dana Ostrenga*

U41B. Earth Science Advances Following 10 Years of Aqua Observations I Posters

8:00 AM - 12:20 PM; Halls A-C

Hearty and his scientific colleagues examined two important modes of climate variability, the El Niño Southern Oscillation (ENSO) and North Atlantic Oscillation (NAO), using observations from the Atmospheric Infrared Sounder (AIRS) and the Modern Era Retrospective-Analysis for Research and Applications (MERRA). The primary issue examined was the influence of temperature and water vapor sampling bias in AIRS data compared to MERRA data; AIRS sampling biases become increasingly significant at higher latitudes.

Newly Released TRMM Version 7 Products, GPCP Version 2.2 Precipitation Dataset and Data Services at NASA GES DISC

Dana Ostrenga, Zhong Liu, William L Teng, Bhagi Trivedi, Steven Kempler*

H43C. Global Precipitation Measurement, Validation, and Applications III Posters

1:40 PM - 6:00 PM; Halls A-C

This presentation describes the newly released TRMM Version 7 data set. TRMM Version 7 has several changes including new parameters, new products, metadata, and data structures, etc. Version 2.2 of the Global Precipitation Climatology Project (GPCP) dataset has been added to the TRMM Online Visualization and Analysis System (TOVAS; URL: <http://disc2.nascom.nasa.gov/Giovanni/tovas/>), allowing online analysis and visualization without downloading data and software. Results of basic intercomparison between the new and the previous versions of both TRMM and GPCP will be presented to help understand changes in data product characteristics. The Precipitation Data and Information Services Center (PDISC), which includes provision of near-real-time precipitation products, is also described.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Friday, December 9

AeroStat: NASA Giovanni Tool for Statistical Intercomparison of Aerosols

Jennifer Wei, Maksym Petrenko, Gregory Leptoukh, Chris Lynnes, Daniel da Silva, Mahabaleshwara Hegde, and Charles Ichoku*

IN51C. Interoperability Solutions in Earth Science Data Systems I Posters

8:00 AM - 12:20 PM; Halls A-C

Wei et al.'s presentation delineates an important new data portal in Giovanni, AeroStat, designed to perform direct statistical intercomparison of global aerosol parameters. AeroStat utilizes MAPSS (Multi-sensor Aerosol Products Sampling System) data that provide spatio-temporal statistics for multiple Level 2 aerosol products (MODIS Terra, MODIS Aqua, MISR, POLDER, OMI and CALIOP) sampled over AERONET ground stations. The dataset period, 1997-2011, encompasses a number of scientifically challenging cases of long-term global aerosol validation from multiple sensors. Case studies will be presented to show the described functionality and capabilities of AeroStat, and possible directions of the future development.

Determining the Completeness of the Nimbus Meteorological Data Archive

James Edward Johnson, John Firor Moses, Steven Kempler, Emily Zamkoff, Atheer Al-Jazrawi, Irina Gerasimov, Bhagirath Trivedi

IN53B. Issues in Scientific Data Preservation and Stewardship II Posters

1:40 PM - 6:00 PM; Halls A-C

Johnson and his colleagues discuss aspects of the preservation effort for Nimbus satellite meteorological data from the 1960s and 1970s. Numerous challenges have been encountered in this effort, including lack of metadata, obsolete hardware systems, and outdata file formats. Furthermore, the data consist of a combination of digital data and images on film media. In this presentation, a comparison of data files and scanned images from the Nimbus-2 High-Resolution Infrared Radiometer (HRIR) for September 1966, to determine whether the data and images are properly archived with correct metadata, is described.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

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Friday, December 9

Global Deep Blue Aerosol climatology from SeaWiFS in comparison to MODIS: Evaluation, Variability and Applications

T. Kunhikrishnan, Jennifer Wei, Gregory G Leptoukh, Corey Bettenhausen, Andrew M Sayer, Christina Hsu*

A53C. Multisensor and Model Aerosol Data Inter-comparison and Synergy III Posters

1:40 PM - 6:00 PM; Halls A-C

In this poster, the development of a long-term aerosol climatology from data collected by SeaWiFS is described. The development of this climatology utilized the Deep Blue algorithm, and derived climatologies that enabled examination of global trends and anomalies. As a case study, the Patagonian, Arabian, Sahelian and southwestern US deserts were evaluated by sampling the SeaWiFS both with and without DB quality control, and by comparing them with MODIS climatologies for the same region.

MODIS Aerosol Optical Depth Bias Adjustment using Machine Learning Algorithms

Arif Albayrak, Jennifer Wei, Maksym Petrenko, David Lary, and Gregory Leptoukh*

A53C. Multisensor and Model Aerosol Data Inter-comparison and Synergy III Posters

1:40 PM - 6:00 PM; Halls A-C

The study described in this poster describes an effort to remove biases and systematic errors from the MODIS (both Terra and Aqua) aerosol data products using Machine Learning algorithms. The Aerosol Robotic Network of sun-photometers (AERONET) will be used as a baseline for evaluating the MODIS aerosol products (Dark Target for land and ocean, and Deep Blue retrieval algorithms). The results of bias adjustment for MODIS Terra and Aqua are planned to be incorporated into the AeroStat Giovanni as part of the NASA ACCESS funded AeroStat project.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

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Friday, December 9

Effects of Data Quality on the Characterization of Aerosol Properties from Multiple Sensors

Maksym Petrenko, Charles Ichoku, Gregory Leptoukh*

A53C. Multisensor and Model Aerosol Data Inter-comparison and Synergy III Posters

1:40 PM - 6:00 PM; Halls A-C

The presentation by Petrenko, Ichoku, and Leptoukh examines how minor differences in the cross-characterization procedure utilized to enable cross-comparison of aerosol properties between ground-based and spaceborne measurements can significantly affect results, which are required for data validation. The importance of, and potential difficulties with, quality assurance / quality control (QA/QC) information is emphasized. The group studies the effects of several QA/QC parameters on cross-characterization of aerosol properties between the data acquired by multiple spaceborne sensors, using the Multi-sensor Aerosol Products Sampling System (MAPSS).

The Increasing Use of Remote Sensing Data in Studying the Climatological Impacts on Public Health

Steve Kempler, Karl Benedict, Pietro Ceccato, Meredith Golden, Susan Maxwell, Stan Morain, Radina Soebiyanto, Daniel Tong*

H53D. Hydroepidemiology: Understanding Connections Between Hydrology and Human Health II Posters

1:40 PM - 6:00 PM; Halls A-C

This collaborative presentation provides an overview of several items related to the session topic, including: a) a perspective of the use of remote sensing data in public health research; b) NASA funded systems developed to facilitate specific public health decision and public support services; and c), insights on remote sensing data and information services that are available for public health studies and decision making. The purpose of this presentation is to provide a (strong) flavor of the data and information services available to public health research and decision making, to invoke new ways of thinking about how public health work can be accomplished, and to stimulate new ideas on how information services can be further utilized. Several specific examples are described.

GES DISC AGU POSTER PRESENTATION ABSTRACTS





AGU FALL MEETING 2011

San Francisco, California, USA | 5-9 December

Friday, December 9

Cross-cutting Interoperability in an Earth Science Collaboratory

Christopher Lynnes, Rahul Ramachandra, Kwo-Sen Kuo*

IN53D. Interoperability Solutions in Earth Science Data Systems II

1:40 PM - 3:40 PM; Room 102

2:40 PM - 2:55 PM

This talk by Lynnes describes the interoperability challenges of an Earth Science Collaboratory (ESC), a prototype of which is described in his previous talk on Wednesday. Such a collaboration framework poses three sets of cross-cutting interoperability challenges. Firstly, Vertical Interoperability would be needed to enable the knitting together of data with tools, data and tools with workflows, workflows with results, and results with journal articles. Secondly, Procedural Interoperability would enable the seamless progression of tasks in a unified work environment from one task to the next in science analysis, such as the progression from data discovery to data access to data usage. The third type of cross-cutting interoperability is Meta-Interoperability, the ability for one interoperable framework to interoperate with an overlapping or competing framework. Each of these three sets of interoperability challenges has both a syntactic and a semantic aspect. While many of the challenges have been addressed individually in the Earth and Space science informatics community, a concerted effort by the community is required to bring the ESC to fruition.

GES DISC AGU POSTER PRESENTATION ABSTRACTS

