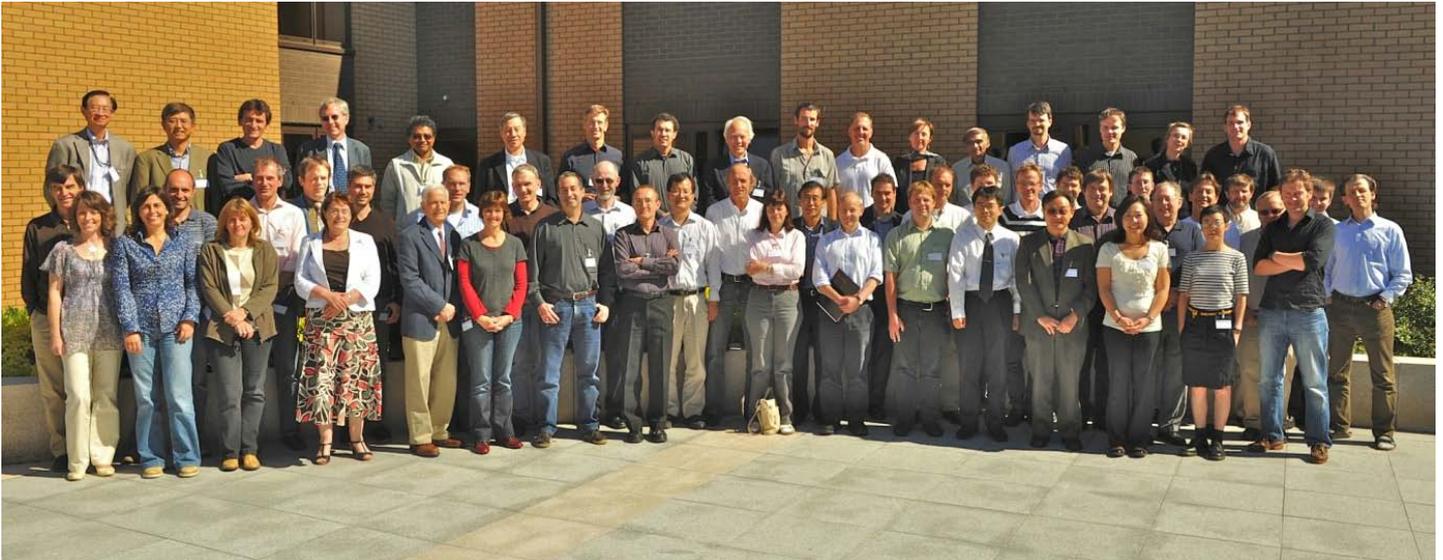


News in This Quarter

Joint ECMWF-JCSDA Workshop



Satellite observations in the visible, infrared, and microwave provide a great deal of information on clouds and precipitation as well as the clear regions above the clouds. A major issue is how to use this information to initialize cloudy and precipitating atmospheric regions in NWP models. Most cloud- and/or rain-affected observations are discarded in current data assimilation systems. Since clouds and precipitation often occur in sensitive regions in terms of forecast impact, such improvements in assimilation are likely necessary for continuing significant gains in weather forecasting.

In 2005, the Joint Center for Satellite Data Assimilation (JCSDA) sponsored an international workshop that covered the three main topics related to assimilating observations in cloudy/precipitating regions, namely satellite observing capabilities, modeling radiative transfer and cloud/precipitation formation, and data assimilation. From 15th to 17th June ECMWF hosted a joint ECMWF-JCSDA workshop and to document the developments since the 2005 workshop and to produce recommendations to ECMWF, JCSDA, and other NWP centers and scientific communities for future research developments and collaboration. About 65 participants attended the workshop representing most major NWP centers around the world as well as research institutes and universities.

The workshop sessions covered the current status of cloud/precipitation assimilation at NWP centers, special issues related to cloud and precipitation affected observations, radiative transfer modeling, cloud and precipitation representation in numerical models, and problems of integrating such data in operational data assimilation systems. A novel approach to working group organization was adopted. Rather than forming groups according to discipline area - the typical method - integrated groups composed of experts in observation, modeling and data assimilation ran in parallel. Each group was asked to discuss the same set of questions and to produce recommendations across these disciplines.

Working group recommendations were discussed in a final plenary session and will be integrated into a set of recommendations to ECMWF and JCSDA to advance the assimilation of cloud/precipitation observations. More details on the workshop and all presentations can be accessed from

http://www.ecmwf.int/newsevents/meetings/workshops/2010/Satellite_observations/index.html

(George Ohring, JCSDA, and Peter Bauer, ECMWF)



Development of a New Reforecast Data Set for the NCEP Global Forecast System (GFS) Ensemble

Tom Hamill and Jeff Whitaker of the NOAA's Earth System Research Lab received a 1-year Department of Energy award of 14.5 million CPU hours for the purpose of developing an ensemble reforecast data set and demonstrating applications to renewable energy. This data set will be created within the next year using the GFS ensemble system from NOAA's National Centers for Environmental Prediction (NCEP), and the data set will be made publicly available thereafter. The exact configuration of the reforecast data set (the number of members, model resolution, period of reforecast, etc.) will be determined in the coming weeks in collaboration with scientists at NCEP and elsewhere. It is expected that forecasts will be

initialized from NCEP's newly created CFSRR (Climate Forecast System Reanalysis and Reforecast) reanalysis, plus initial perturbations from the operational NCEP ETR (Ensemble Transform with Rescaling). NOAA THORPEX is providing some support for archival of the data set.

Beyond renewable energy, this data set will have a number of potential applications. Perhaps of greatest interest to the data assimilation community is the possibility of de-biasing the prior forecasts in the assimilation process. A questionable assumption of an unbiased prior is commonly made in data assimilation. A large reforecast data set may be useful for estimating and correcting such systematic errors. The data set will also be used for many other experimental applications, including the calibration of precipitation and hydrologic forecasts.

For more information, please contact Tom Hamill, e-mail tom.hamill@noaa.gov (Tom Hamill, OAR)

JCSDA Science Steering Committee Meets



JCSDA SSC members (left to right), Stan Benjamin, NOAA; Gary Jedlovek, NASA; Craig Bishop, Chair, NRL; Florence Rabier, Météo-France; Louis Garand, Environment Canada; and Tony McNally, ECMWF. Unable to attend: Paul Menzel, University of Wisconsin, and Steve English, Met Office.

The seventh JCSDA Science Steering Committee (SSC) convened at the NOAA Offices in Silver Spring, MD from June 10 - June 11. The SSC assists JCSDA leadership by evaluating the merits/demerits of current and proposed JCSDA science activities, helping prioritize activities, and making recommendations on how the JCSDA might further enhance its value to its partner organizations and to the wider research community. SSC members Stan Benjamin, Craig Bishop (Chair), Louis Garand, Gary Jedlovek, Tony McNally and Florence Rabier participated in this year's

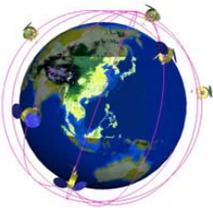
meeting; members Paul Menzel and Steve English were unable to attend. JCSDA Director Lars-Peter Riishojgaard provided the SSC members with the 2009 JCSDA Annual Report and revised Strategic and Program plans for the JCSDA. In addition, the Director and the science managers from each of the partner agencies outlined the JCSDA science activities of their organizations and identified the major scientific challenges in satellite data assimilation at their centers. At the end of the meeting, each of the SSC members presented verbal recommendations. These verbal



recommendations are to be followed by a set of written recommendations in a report to be submitted in July.
(Craig Bishop, NRL)

place in Taiwan in mid July. Senior management from NOAA/NESDIS and NOAA/NWS, and representatives from the University Corporation for Atmospheric Research (UCAR), will attend the planning session, which will be held at the National Science Council and the Central Weather Bureau.

On the research side, JCSDA is working on the development of a more accurate forward operator and on acquiring GPS RO observations from other missions in real time for evaluation and possibly future implementation in the operational global forecast system.
(Lidia Cucurull, JCSDA)



Cosmic Corner:

NOAA is moving forward with the planning of a COSMIC follow-on mission, in partnership with Taiwan. A FORMOSAT-7/ COSMIC-II Joint Program Planning Meeting will take

8th JCSDA Workshop on Satellite Data Assimilation



Some 100 scientists, representatives of JCSDA partner agencies, program managers, and JCSDA management/staff participated in the 8th Annual JCSDA Workshop on Satellite Data Assimilation, held at the University of Maryland Baltimore County, May 4 -5, 2010. The purpose of these annual workshops is to review the ongoing and planned scientific development sponsored by the Center,

and to plan and coordinate future efforts. The JCSDA supports scientific development work with proposal-based, internally directed funds as well as with external grants awarded via a competitive Federally Funding Opportunity open to the broader scientific community. In addition, JCSDA individual partners undertake their own research that overlaps with JCSDA objectives.



In the first session, Director Riishojgaard presented a JCSDA Program Update and Overview, in which he highlighted: progress in development of 4D-Var assimilation systems, including operational implementation of the Navy's system and development of a 4D-Var infrastructure by NASA and NOAA; a JCSDA initiative to secure a supercomputing resource that can be made available to external investigators to test algorithms in the context of operational partner systems; the positive feedback on the JCSDA's first Summer School in 2009; the characteristics of successful research to operations projects: strong collaboration with JCSDA partners and access to JCSDA code, infrastructure, computing resources; and upcoming events, including the first joint ECMWF/JCSDA Workshop on Assimilating Satellite Observations of Clouds and Precipitation into NWP Models, June 15-17 in Reading, UK, and tentative plans for JCSDA hosting the WMO Global Observing System Impact Workshop in 2011.

Representatives of the JCSDA partner agencies then reviewed recent accomplishments at their organizations, and Chairs of the JCSDA Working Groups on the Community Radiative Transfer Model, Microwave Sensors, Oceans, Land, and Atmospheric Composition presented progress reports.

The second and third sessions featured 36 oral and poster presentations by JCSDA investigators. Session four consisted of breakout group discussions of the JCSDA science priority areas. In the final plenary, breakout group chairs summarized issues and recommendations to JCSDA management for their scientific areas.

Copies of the oral presentations, poster papers, and breakout group reports from the workshop are posted at http://www.jcsda.noaa.gov/meetings_Wkshp2010_Agenda2.php

2010 Summer GSI Community Tutorial

The 2010 Summer Gridpoint Statistical Interpolation (GSI) Data Assimilation System Community Tutorial was held on June 28 - 30, 2010 at the NCAR Foothills Laboratory, Boulder, Colorado. This tutorial was the first community tutorial and was hosted jointly by the Developmental Testbed Center (DTC) and NOAA/NCEP/EMC.

The GSI system is becoming a community model and the purpose of the tutorial was to train potential users of the system. It is anticipated that users will contribute their R&D findings back to the operational centers (NCEP in this case) as part of an O2R and R2O process (O: operational, R: research). Researchers, university students, and agency employees participated in this first tutorial.

The tutorial was a three day venture with 11 hours of lectures and 8 hours of hands-on sessions. Some 40 students



Dr. John Derber, NOAA/NCEP/EMC, lectures at GSI tutorial.

from the United States and several other countries/regions participated. The invited lecturers and practical session instructors, representing several GSI development/support teams, including four from NOAA/NCEP/EMC, one from NASA/GMAO, one from NOAA/GSD, two from NCAR and three from DTC, provided first-hand information on the GSI system.

A total of 13 lectures were given covering various aspects of the GSI data assimilation system:

- Fundamentals of Data Assimilation
- Overview of GSI
- GSI Setup, Run and Namelist
- GSI Software Design
- An Overview of Meteorological Observations in BUFR Format (including "PrepBUFR" files)
- Community Tools (1): PrepBufr Converter
- Background and Observation Error Estimation and Tuning
- Community Tools (2): GEN_BE for GSI
- Satellite Radiance Assimilation
- GSI Diagnostics
- Radar Observation Assimilation
- GPS RO Data Assimilation
- A Brief Tutorial on 4DVAR and Adjoint Capabilities in GSI

The lectures are posted at http://www.dtcenter.org/com-GSI/users/docs/presentations_2010.php



The GSI system is a unified variational data assimilation system that is currently part of the operational Global Forecast System and North American Mesoscale Model. It will be part of the Weather Research and Forecasting Rapid Refresh system that is slated to replace the Rapid Update Cycle run at NOAA/NCEP in 2010. For more information on the GSI system, please visit:

<http://www.dtcenter.org/com-GSI/users/index.php>

(Hui Shao, JCSDA)

People

Jim Yoe Returns to JCSDA



Dr. James G. Yoe has been selected to join the NOAA/NCEP Office of the Director and to serve as the Chief Administrative Officer for the JCSDA, replacing Dr. Wayman Baker, who retired in October 2009.

Jim is very familiar with the Joint Center from his past tenure as NOAA/NESDIS Deputy Director of the Joint Center. More recently, Jim served as the Systems Integration Coordinator for the NPOESS Data Exploitation Program in the NESDIS Office of Systems Development. Prior to his stint as JCSDA Deputy Director, Jim worked in the NESDIS Center for Satellite Applications and Research (STAR), where he led GPS-RO and wind lidar activities. In his announcement of the appointment, Dr. Louis Uccellini, Director, NCEP, and Member, JCSDA Management Oversight Board, said that “we are pleased that Jim has decided to come back to the Joint Center management team, and I know that they look forward to the additional help he will bring and to benefit from the experience he has gained from working with NPOESS and NPP.”

Stan Benjamin Appointed JCSDA Associate Director



Dr. Stan Benjamin has been appointed to the position of JCSDA Associate Director for NOAA’s Office of Oceanic and Atmospheric Research (OAR). As a JCSDA Associate Director, he will represent OAR on JCSDA’s Executive Team. Stan is currently Chief, Assimilation and Modeling

Branch, Global Systems Division, NOAA Earth Systems Research Laboratory, in Boulder, Colorado. He is already

quite familiar with JCSDA activities through his membership on JCSDA’s Science Steering Committee. In his announcement of Stan’s Appointment, Col. Mark Zettlemoyer, Chair, JCSDA Management Oversight Board, stated that “Stan’s background and current position as Chief of the Global Systems Division Assimilation and Modeling Branch make him a great fit.”

Stan received his M.S. and Ph. D. degrees in Meteorology from the Pennsylvania State University. At NOAA/OAR’s Assimilation and Modeling Branch, he directed development of the Rapid Update Cycle, an operational data assimilation/numerical forecast system running at the NWS National Centers for Environmental Prediction that provides analyses and short-range forecasts at high frequency (every 1hr) using asynoptic observations. He is currently directing or co-directing development of several models: the global icosahedral isentropic atmospheric model (FIM – Flow-following finite-volume Icosahedral Model); the HRRR model (3km High-Resolution Rapid Refresh, updated hourly with radar reflectivity assimilation over US); and the WRF/GSI-based Rapid Refresh planned to replace RUC in early 2011.

Welcome aboard, Stan.

Meet Andrew Collard



Andrew Collard joined the JCSDA in January 2010 as a member of the NOAA/NCEP/EMC data assimilation group, where he is working on the assimilation of satellite radiance observations.

He comes to EMC after twelve years at the Met Office in the UK, including five years on secondment to ECMWF, where he worked primarily on the assimilation of the advanced infrared sounders, AIRS and IASI. Prior to that, Andrew obtained his both his B.A. (1989) and D.Phil. (1993) at Oxford University. His doctoral work involved observing the atmosphere of Venus at near infrared wavelengths from Galileo. Andrew also spent five years at the University of Wisconsin, splitting his time between analyzing the Earth’s atmosphere using advanced infrared sounding instruments and the Jovian atmosphere with in situ observations from the Galileo entry probe.

Andrew currently lives in Silver Spring with his wife, son and daughter in anticipation of being close to work when the JCSDA moves to College Park.



Federal Funding Opportunity Awards

The following table lists the proposals selected for funding under the 2010 JCSDA Federal Funding Opportunity (FFO). The FFO Program is the JCSDA's mechanism for funding external research. Congratulations to the successful applicants.

Title	Institution	PI
Radiative Transfer Modeling Support to the JCSDA	Atmospheric & Environmental Research (AER)	Jean-Luc Moncet, PI Vivianne Payne, Co-PI
Techniques for Assimilating Geostationary Lightning Mapper Data & Assessment of the Resulting Impact on Forecasts	NOAA/National Severe Storms Lab.	Don MacGorman, PI Edward Mansell, Co-PI Conrad Ziegler, Co-PI
Research in Support of Radiance Assimilation of Clouds & Precipitation	CIMSS (NESDIS Cooperative Institute)	Tom Greenwald, PI Ralf Bennartz, Co-PI Andrew Heidinger, Co-PI
Data Assimilation of Lightning in WRF 4-D VAR Using Observation Operators	Florida State Univ.	Henry Fuelberg, PI I. Michael Navon, Co-PI
Utility of GOES-R Instruments for Hurricane Data Assimilation & Forecasting	CIRA (OAR & NESDIS Cooperative Institute)	Milija Zupanski, PI Louis Grasso, Co-PI Dusanka, Zupanski, Co-PI
Evaluation and Further Improvement of Land Surface Temperature and Emissivity in Noah/CRTM under Snow and Snow-free Conditions for Accelerated Use of Satellite Data over Land	Univ. of Arizona	Xubin Zeng, PI Michael Barlage, PI Zhou Wang, Co-PI Fei Chen, Co-PI
CIMSS Participation in the Utility of GOES-R Instruments for Hurricane Data Assimilation & Forecasting	CIMSS (NESDIS Cooperative Institute)	Jun Li, PI Milija Zupanski, PI Dusanska Zupanski, Co-PI Louis Grasso, Co-PI
MODIS & AVHRR-derived Polar Winds Experiments-using the NCEP GDAS/GFS	CIMSS (NESDIS Cooperative Institute)	David Santek, PI James Jung, Co-PI



A Note from the Director



It has been a busy spring for Joint Center management and staff. First we hosted the JCSDA Science Workshop at UMBC in May, a few weeks later we convened our Science Steering Committee in Silver Spring, and finally a few weeks ago we held our first joint Workshop with ECMWF at their location in Reading. News articles about

these events appear elsewhere in this issue, but here I'd like to add my personal observations.

The Workshop followed the format from last year with a few tweaks: Overview presentations from the JCSDA partners were reintroduced, and as a result we needed two full days rather than the one and a half days that had been the norm for several years. Several interesting recommendations came out of the break-out discussions in the Working Groups. Some were relatively straightforward and were addressed at our scientific priorities. Others were related to the working structure of the JCSDA and even though they are welcome and may be highly relevant, they are probably more difficult to implement in the immediate future.

The Science Steering Committee meeting was as always full of good discussion and we had ample opportunity for candid exchanges of opinions and ideas with our committee members. We have not yet seen the written recommendations from the committee members, but my sense is that they were very supportive overall of our efforts. Especially the leading role that the Joint Center is taking in radiative transfer modeling was highly appreciated and this was held out as a model for us to follow also in other subject areas.

The ECMWF/JCSDA Workshop on Assimilating Satellite Observations of Clouds and Precipitation into NWP Models was a new and very positive experience for us. For many years, ECMWF has been using the workshop format as a vehicle for culling input from the wider scientific community and turning it into recommendations for ECMWF development and implementation. When Peter Bauer from ECMWF approached us a little over two years ago about having joint ECMWF/JCSDA event, our initial ambition was modest: To expand the traditional ECMWF format slightly in the hope of attracting an additional ten or so

US participants. In fact, close to 30 US participants showed up, the vast majority of whom were affiliated with the Joint Center in one form or another, so by that measure we were much more successful than we had hoped for. We look forward to seeing the final recommendations from this workshop once the editorial work has been completed.

So after a busy spring we are looking forward to an equally busy fall, with a Joint Center/HFIP Workshop, the inauguration of the new JCSDA computer as two of the highlights. We also plan to have a Joint Center Executive Team retreat in the fall, to give ourselves the opportunity to fully digest the outcome of the two Workshops and the Science Steering Committee and hopefully convert it into action plans for the Joint Center.

Thanks again to all of you who helped organize or who participated in either (or both) Workshops of the past two months, and we look forward to seeing you again at other JCSDA venues!

Lars Peter Riishojgaard, Director, JCSDA

Outlook for Next Quarter

JCSDA Seminars



JCSDA seminars are generally held on the third Wednesday of each month in Room 707 of the World Weather Building. Presentations are posted at <http://www.jcsda.noaa.gov/JCSDASeminars.php> prior to each seminar. Off-site personnel may view and listen to the seminars via webcast and

conference call. Upcoming seminars are listed on the following page..

Check <http://www.jcsda.noaa.gov/JCSDASeminars.php> for updates.



Upcoming Seminars

<i>Date</i>	<i>Speaker</i>	<i>Affiliation</i>	<i>Title</i>
<i>September 15, 2010</i>	Tony Clough	Clough Radiation Associates	Forward Modeling for Microwave and Infrared Remote Sensing: Spectroscopic Issues and LBL_CRA
<i>TBD</i>	Ricardo Todling	NASA/GSFC/ Global Modeling and Assimilation Office	The GMAO Data Assimilation System: Status and Future Directions
<i>TBD</i>	Tom Auligne	NCAR	Recent Developments on the Assimilation of Cloudy Radiances with WRF

Editor's Note: Unsolicited articles for the JCSDA Quarterly Newsletter are encouraged as are suggestions for seminar speakers or topics. Please send them to George.Ohring@noaa.gov.