

A list of research products, information and services, models and model simulations, and an assessment of their impact (1g)

GFDL's principal research product is peer-reviewed publications on atmospheric and oceanic dynamics, natural climate variability, and anthropogenic change. Its publication record is discussed in Supporting Documents 1a and 1c. There are a number of other important products and services provided by GFDL that are discussed here.

Assessments

GFDL has played a major role in a number of assessments related to climate change and ozone. These include the following IPCC Assessment Reports:

1990 "FAR": Future projections based largely on GFDL model. 6 GFDL personnel contribute to the Report.

1995 "SAR": GFDL model one of ~6 models used for future projections. 9 GFDL personnel contribute to the Report.

2001 "TAR": GFDL model is "2nd tier" out of ~12 models. 15 GFDL personnel contribute to the Report.

2007 "AR4": GFDL CM models (CM2.0 and CM2.1) are two of the best out of ~24 models. 20 GFDL personnel contribute to the Report.

The IPCC, along with GFDL contributors to it, was a co-recipient of the 2007 Nobel Peace Prize for its sustained efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change.

For the IPCC 5th Assessment Report (AR5) due in 2013, GFDL will include contributions from new Earth System Models based on CM2.1, decadal predictions using CM2.1, results from a new coupled climate model, CM3, so-called "time slice integrations" using a high-resolution atmospheric model, and a limited number of high-resolution coupled model integrations.

In addition to the IPCC assessments on climate change, two GFDL scientists have ongoing contributions to a set of reports on ozone:

1998 UNEP Scientific Assessment of Ozone Depletion

2002 UNEP Scientific Assessment of Ozone Depletion

2005 IPCC Special Report on "Safeguarding the Ozone Layer and the Global Climate System"

2006 UNEP Scientific Assessment of Ozone Depletion

GFDL scientists contributed to the following Synthesis and Assessment Reports (SAPs) from the Climate Change Science Program (CCSP):

- 1.1 - Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences
- 2.4 - Trends in emissions of ozone-depleting substances, ozone layer recovery, and implications for ultraviolet radiation exposure
- 3.1 - Climate Models: An Assessment of Strengths and Limitations
- 3.2 - Climate Projections Based on Emissions Scenarios for Long-Lived and Short-Lived Radiatively Active Gases and Aerosols
- 3.3 - Weather and Climate Extremes in a Changing Climate
- 3.4 - Abrupt Climate Change

GFDL was the lead in the development of SAP 3.2.

Models

GFDL provides numerical models to its collaborators and the public through its Data Portal (<http://data1.gfdl.noaa.gov/>). These models include:

Ocean Models: The Modular Ocean Model (MOM) is used by over 500 ocean researchers worldwide. An ocean model that represents Generalized Ocean Layer Dynamics (GOLD) is being used by GFDL's university collaborators.

Atmospheric models: The finite volume (fv) dynamical core expressed on a lat-lon horizontal grid is being used by GFDL's university collaborators, other NOAA research laboratories, and at the Department of Energy. These customers are also using the atmospheric physics package that was in GFDL's world-class coupled climate models from the Intergovernmental Panel on Climate Change (IPCC) 4th assessment Report (AR4). A version of the FV dynamical core expressed on a cubed sphere, featured in GFDL's newest coupled climate models, is also shared with its NASA collaborators. Even older versions of GFDL's models, such as its spectral dynamical core, are still in use by university researchers worldwide.

Other GFDL models are available through GFDL's Source Code Repository (<https://fms.gfdl.noaa.gov/gf/>) but are unsupported.

Data

Public data sets from GFDL are made available through the GFDL Data Portal. The Data Portal is designed to allow one to download files, display data files attributes, and graphically display the data. One can download complete files via "http" and "ftp" access. One can also display data file attributes that provide information about file contents without having to download the file itself. Continued development of the Live Access Server is ongoing to enhance the ability of a remote user to graphically display the data.

Registration for the GFDL Data Files is free. Users are requested to complete the Registration Form for Public Data Files (found on the right hand menu) when they first begin using the data

portal. Information from this form will be used to provide registered users with news on when additional public data becomes available and when corrections are made to existing public data. The information gathered will not be used for any purposes other than to send notices about GFDL Data Portal Services.

The data files on the data portal are stored in netCDF (network Common Data Form). The files are intended to be compliant with the COARDS conventions for the standardization of netCDF files.

From March 2006 through April 2009, the GFDL Data Portal has served 260,000 requests for files, roughly 200,000 via HTTP the rest via FTP to 1,300 distinct hosts. These requests were for 22,000 distinct files (a “distinct file” is a distinct file served to a distinct host). These files total 75.5 terabytes of NetCDF data. In 2009 alone, GFDL is sending out an average of ~8 TB of data per month, or about 24,000 fulfilled requests monthly.

Simulations

Model output and documentation from a set of multi-century experiments performed using GFDL’s CM2.0 and CM2.1 models are available to the public (<http://nomads.gfdl.noaa.gov/CM2.X/>). Data sets accessible from the GFDL Data Portal include those from CM2.X experiments associated with the Intergovernmental Panel on Climate Change’s 4th Assessment Report (IPCC AR4) and the US Climate Change Science Program (US CCSP). A subset of this data was sent to the Department of Energy’s Program for Climate Model Data and Intercomparison (PCMDI), the central data repository in support of the IPCC AR4.

Real-time seasonal forecasts over North America are available at GFDL’s website (<http://gfdl.noaa.gov/seasonal-to-interannual-experimental-predictions>) as a research product.

Presentations

GFDL scientists share their findings and results through active participation at national and international conferences. On the pages that follow are two tables, one of the host-paid invited talks presented by GFDL scientists and the other of GFDL paid talks at various conferences and workshops, all during Fiscal Years 2008 and thus far in 2009:

Host-paid Invited Talks				
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)
10/1/2007	Ramaswamy, V.	Radiative Forcing Climate: Uncertainties and Gaps	World Climate Research Programs/International Geosphere-Biosphere Program/Global Climate Observing System Workshop	Sydney, Australia
10/9/2007	Winton, Michael	Considering Arctic Sea Ice Stability	Stony Brook University	Stony Brook, NY
10/11/2007	Dixon, Keith	Using Computer Models to Investigate the Role of the Ocean in Global Climate Change and Learning About Earth's Climate via a Synthesis of Observations, Theory, and Computer Modeling	2007 Association of Science-Technology Centers Conference	Los Angeles, CA
10/20/2007	Ginoux, Paul	Analysis of Dust Transport and Deposition to Antarctica Observed by the A-Train Instruments, Measured In Ice Core Data, and Simulated with the GFDL Model	A-Train Symposium and VI-Aerocom Meeting	Lille, France
11/1/2007	Knutson, Thomas	Hurricanes and Climate Change	International Workshop on Wave Hindcasting and Forecasting and Coastal Hazards	Oahu, HI
11/19/2007	Ramaswamy, V.	Aerosol - Climate Interactions: A Modeling Perspective	Diamond Jubilee Celebration - International Symposium on Aerosol-Chemistry Climate Interaction	Ahmadabad, India
11/26/2007	Ramaswamy, V.	Radiative Forcing Agents	World Climate Research Program/International Center for Theoretical Physics Workshop	Trieste, Italy
11/27/2007	Vecchi, Gabriel	Tropical Pacific Signature of Global Warming	CLIVAR Workshop on Western Tropical Pacific	Guangzhou, China
12/18/2007	Winton, Michael	Does the Arctic Sea Ice Have a Tipping Point?	Harvard University	Cambridge, MA
1/12/2008	Held, Isaac	Large-Scale Atmospheric Dynamics and Global Warming	University of Miami	Miami, FL
2/19/2008	Knutson, Thomas	Hurricanes and Climate Change	University of Miami	Miami, FL
3/10/2008	Griffies, Steve	Physical Problems in Simulating the Global Ocean Climate	American Physical Society Condensed Matter Meeting	Washington, DC
3/12/2008	Toggweiler, J. Robert	What the Ice Ages Are Trying to Tell Us About Climate Sensitivity	Leverhulme Symposium	Cambridge, United Kingdom
4/8/2008	Knutson, Thomas	Have Humans Affected Atlantic Hurricane Climate?	Bahamas Weather Conference	Grand Bahamas Island, Bahamas
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Host-paid Invited Talks				
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)
4/21/2008	Ramaswamy, V.	Role of Anthropogenic Aerosols on Changes in Asian Monsoon System	International Workshop on Anthropogenic Changes of Asian Monsoon	Nanjing, China
5/16/2008	Dixon, Keith	Forecasting Climate Change	Scripps Howard Institute for the Environmental Workshop for Reporters	Jupiter, FL
6/5/2008	Ramaswamy, V.	Global Warming Potential in AR 4	United Nations Framework Convention on Climate Change /Subsidiary Body for Scientific and Technological Advice /Intergovernmental Panel on Climate Change Meeting	Bonn, Germany
6/10/2008	Knutson, Thomas	Climate Change and Hurricanes	University of Rhode Island-Narragansett Bay	Narragansett Bay, RI
6/29/2008	Dixon, Keith	Aspen Global Change Institute	Exploring Decadal Predictability in GFDL's CM2.1 Model	Aspen, CO
9/20/2008	Griffies, Steve	Developments within WGOMD and Recommendations for AR5	CLIVAR WGCM Meeting	Paris, France
9/20/2008	Ramaswamy, V.	Lecture on Overview of Climate Theory of Climate Change; Aerosol and Climate	International Summer School on Atmospheric and Oceanic Sciences 2008	L'Aquila, Italy
9/22/2008	Vecchi, Gabriel	Coupled Air-Sea Interaction in Indian Ocean Cooling Events	CIRENE Conference	Paris, France
10/2/2008	Vecchi, Gabriel	Tropical Circulation, Global Warming and the Future	University of Arizona	Tucson, AZ
10/2/2008	Wittenberg, Andrew	Natural and Forced Modulation of ENSO in the GFDL CM2.1 Coupled GCM	Department of Atmospheric & Oceanic Science, University of Maryland	College Park, MD
10/21/2008	Findell, Kirsten	Impact of Common SST Anomalies on Global Drought and Pluvial Frequency	US CLIVAR Drought Working Group Meeting	Lincoln, NE
11/17/2008	Lau, Ngar-Cheung	The Role of Air-Sea Interaction in the Climatological Evolution and ENSO-Related Variability of the Summer Over South China Sea and Western Pacific	Conference on Teleconnections in the Atmosphere and Oceans	Trieste, Italy
11/18/2008	Held, Isaac	Aspects of the Theory of Telecommunications	Conference on Teleconnections in the Atmosphere and Oceans	Trieste, Italy
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Host-paid Invited Talks				
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)
12/3/2008	Ginoux, Paul	NOAA GFDL Dust Modeling Effort/AEROCOM Dust Project and Evaluation Data	NOAA/NCEP	Washington, DC
12/12/2008	Knutson, Thomas	Have Humans Affected Atlantic Hurricane Climate?	Lamont-Doherty Earth Observatory	Palisades, NY
1/29/2009	Donner, Leo J.	Convection System and Large-Scale Flow	Royal Academy Symposium on Numerical Simulations in Science and Engineering	Seville, Spain
1/29/2009	Gnanadesikan, Anand	What if the Ocean Were Blue? The Impact of Shortwave Absorption on Climate	Old Dominion University	Norfolk, VA
2/10/2009	Ramaswamy, V.	The Science of Climate Modeling: What Has Been Accomplished and What Are the Challenges?	NOBLIS	Falls Church, VA
2/18/2009	Gnanadesikan, Anand	GFDL's Earth System Modeling Efforts as Part of AR5	JAMSTEC Workshop on Earth System Modeling	Yokohama, Japan
2/18/2009	Levy, Hiram II	CCSP 3.2: Air Quality vs. Climate	ESRL	Boulder, CO
3/4/2009	Vecchi, Gabriel	Cooperative Actions for Disaster Risk Reduction	Climate Change and Wind	Tokyo, Japan
3/26/2009	Wittenberg, Andrew	CO ₂ -induced Changes in Tropical Climate, As Simulated by the GFDL Coupled GCMs	International ENSO Workshop, Greenhouse 2009	Perth, Australia
3/31/2009	Wittenberg, Andrew	Understanding & Simulating El Niño: Lessons From the GFDL Coupled GCMs	Bureau of Meteorology (CAWCR)	Melbourne, Australia
4/3/2009	Wittenberg, Andrew	Understanding & Simulating El Niño: Lessons From the GFDL Coupled GCMs	CSIRO Marine Laboratories	Hobart, Tasmania
4/19/2009	Vecchi, Gabriel	Climate Change Signature in the Eastern Equatorial Pacific	Galapagos Climate Change Workshop	Galapagos, Ecuador
4/23/2009	Knutson, Thomas	Atlantic Hurricanes and Global Warming	Tokyo Marines 4th Summit on Global Warming and Climate Change	Atlanta, GA
4/28/2009	Ramaswamy, V.	Quantifying Climate Change: Challenges and Opportunities	Special Session- International Human Dimensions Programs Meeting	Bonn, Germany
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Host-paid Invited Talks				
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)
5/4/2009	Delworth, Thomas	Simulated Atlantic Meridional Overturning Circulation (AMOC) Response to Climate Change in a High Resolution Global Coupled Climate Model	Atlantic Meridional Overturning Circulation Meeting	Annapolis, MD
5/18/2009	Levy, Hiram II	Interactions Between Climate and Air Quality	30th NATO/SPS International Technical Meeting on Air Pollution	San Francisco, CA
5/29/2009	Dixon, Keith	Glimpse From Inside the Fascinating World of Modeling (Climate)	NOAA Hollings Scholars Orientation	Silver Spring, MD
5/31/2009	Vecchi, Gabriel	Indian Ocean Climate Change and Variability in GFDL Coupled Model	CLIVAR Indian Ocean Panel Meeting	St. Denis, La Reunion, France
6/21/2009	Dixon, Keith	The Atmosphere-Ocean Connection in the Earth's Climate System	AMS Broadcast Mets Pre-Conference Workshop	Portland, OR

GFDL-paid Talks -- Invited and Not-Invited					
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)	Invited
10/5/2007	Held, Isaac	The Response of the Hydrological Cycle to Global Warming	Berkeley Atmospheric Science Center Symposium	Berkeley, CA	Yes
10/10/2007	Dunne, John	Implementation of Ocean Acidification Parameterizations in Global Modes	Ocean Acidification Workshop	San Diego, CA	Yes
10/26/2007	Donner, Leo J.	Toward AM3: GFDL's Next-Generation Atmospheric General Circulation Model	High Resolution Modeling Workshop of the Atmosphere Workshop	Reading, United Kingdom	Yes
10/29/2007	Gnanadesikan, Anand	Ventilation Variability in the North Pacific as Simulated by a Coupled Climate Model	North Pacific Marine Science Organization Annual Meeting	Victoria, Canada	Yes
10/30/2007	Donner, Leo J.	Toward AM3: GFDL's Next-Generation Atmospheric General Circulation Model	UK Met Office Seminar	Exeter, United Kingdom	Yes
11/6/2007	Knutson, Thomas	Hurricanes in a Changing Climate: Key Issues and Remaining Challenges	National Academies' Climate Research Committee	Washington, DC	Yes
11/6/2007	Stern, William	Simulating Equatorial Convective Waves and the MJO in GCMs at GFDL	Madden-Julian Oscillation (MJO) Workshop - New Approaches to Meet the Challenges of the MJO	Irvine, CA	Yes
11/7/2007	Dixon, Keith	Computer Modeling of the Global Climate and its Role in the Assessment of Climate Change	Northeast Regional Operational Workshop	Albany, NY	Yes
11/13/2007	Levy, Hiram II	1) Ozone, Soot and Sulfate at the Intersection of Climate; 2) Air Quality, Regional Radiative Forcing; and 3) Regional Climate: Science and Policy Issues	University of Maryland and University of Virginia	College Park, MD and Charlottesville, VA	Yes
11/16/2007	Delworth, Thomas	Abrupt Climate Change	NOAA Climate Program Office	New York, NY	Yes
1/20/2008	Knutson, Thomas	Is There a Discernible Human Influence on Hurricane?	American Meteorological Society Annual Meeting	New Orleans, LA	Yes
1/23/2008	Donner, Leo J.	Microphysics in Climate Modeling	American Meteorological Society Annual Meeting	New Orleans, LA	Yes
1/27/2008	Knutson, Thomas	Is There a Discernible Human Influence on Hurricane?	International Detection Attribution Group	Boulder, CO	Yes
3/2/2008	Delworth, Thomas	Decadal Predictability of the AMOC as Simulated in the GFDL CM2.1 Model	Ocean Science Meeting 2008	Orlando, FL	Yes
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GFDL-paid Talks -- Invited and Not-Invited					
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)	Invited
3/2/2008	Donner, Leo J.	Global Indirect Effects of Aerosol Indirect Forcing: IPCC and Beyond (Lifetime Effect)	Dahlen Conference	Frankfurt, Germany	Yes
3/2/2008	Zhang, Rong	Impact of the Atlantic Multidecadal Oscillation on North Pacific Climate Variability	Ocean Science Meeting 2008	Orlando, FL	Yes
4/7/2009	Wittenberg, Andrew	CM3: Tropical Climate and ENSO	GFDL-NCAR Atmospheric GCM Meeting	Princeton, NJ	Yes
4/12/2008	Donner, Leo J.	On the Importance for Modeling the general circulation of Closure Theory for Cumulus Parameterization	European Geosciences Union Annual Meeting	Vienna, Austria	Yes
4/27/2008	Bender, Morris	Improvements to the Navy's Version of the GFDL Tropical Cyclone Model (GFUN) and Evaluation of its Prediction Skill	American Meteorological Society Hurricane Conference	Orlando, FL	Yes
5/6/2008	Bewtra, Aneet	Workload Management: Collaborative Approaches for Increased User Efficiencies	DICE Alliance 2008	Mason, OH	Yes
5/20/2008	Donner, Leo J.	Toward AM3: GFDL's Next-Generation Atmospheric General Circulation Model	National Centers for Environmental Prediction/Goddard Space Flight Center	Greenbelt and Camp Springs, MD	Yes
5/23/2008	Field, Arlene	North America as a Source and Receptor of Hemispheric Ozone Pollution: Seasonal Variability, Uncertainties, and Policy Implications	Joint Assembly-American Geophysical Union	Fort Lauderdale, FL	Yes
5/27/2008	Ramaswamy, V.	Role of Anthropogenic Aerosols in the 20th Century Climate Change	American Geophysical Union Spring Meeting	Fort Lauderdale, FL	Yes
5/29/2008	Vecchi, Gabriel	Indonesian Throughflow in the GFDL Model	INSTANT Workshop at Lamont Doherty Earth Lab in NY	Palisades, NY	Yes
6/17/2008	Vecchi, Gabriel	Changes to Large-Scale Circulation and Global Warming	Climate Symposium at the Monte Veritas Center	Zurich, Switzerland	Yes
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GFDL-paid Talks -- Invited and Not-Invited					
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)	Invited
6/28/2008	Field, Arlene	Hemispheric Transport of Ozone Pollution: Multi-Model Assessment of the Role of Methane and the Conventional Ozone Precursors	Quadrennial Ozone Symposium	Tromso, Norway	Yes
6/29/2008	Delworth, Thomas	US-Japan Workshop on Global Change	Decadal Predictability and Prediction, Using the GFDL CM 2.1 Climate Model	Boulder, CO	Yes
7/24/2008	Rosati, Anthony	GFDL Coupled Data Assimilation and Mitigation of Decadal Prediction	NOAA Reanalysis	Silver Spring, MD	Yes
7/24/2008	Vecchi, Gabriel	Global Warming and Tropical Circulation, Indo-Pacific Ocean Changes and Global Warming	American Geophysical Union's West Pacific Geophysics Meeting	Cairns, Australia	Yes
9/9/2008	Ginoux, Paul	Dust WRCP: Using Satellite Data in Global Modeling of Dust	3rd International Dust Workshop Leipzig University	Leipzig, Germany	Yes
9/10/2008	Gnanadesikan, Anand	Carbon Sequestration by Ocean Iron Fertilization: A Review of the Major Issues	NOAA Seminar	Silver Spring, MD	Yes
9/12/2008	Levy, Hiram II	Impact of Air Pollution on Our Future Climate	University of Iowa Seminar	Iowa City, IA	Yes
9/25/2008	Ginoux, Paul	Effect of Dust Decadal Variability on Climate	CEA/LSCE Meeting	Paris, France	Yes
9/28/2008	Donner, Leo J.	Climate Modeling Issues at GFDL on the EVE of AR 5	NOAA CPPA PI Meeting	Silver Spring, MD	Yes
9/29/2008	Wilson, R. John	Development of MARS Climate Model Using FMS	MARS Climate Modeling Center Workshop	Mountainview, CA	Yes
10/21/2008	Vecchi, Gabriel	Ocean-Atmosphere Coupling Over Warm Pool Regions	CLIVAR-AAMP Meeting and WCRP Monsoon Workshop	Beijing, China	Yes
11/10/2008	Wilson, R. John	Simulation of the 2001 Planet-Encircling Dust Storms with the NASA/NOAA Mars GCM	Third International Workshop on the Mars Atmosphere: Modeling and Observation	Williamsburg, VA	Yes
11/12/2008	Ramaswamy, V.	Climate Modeling at GFDL: The Scientific Challenge	NCEP	Camp Springs, MD	Yes
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GFDL-paid Talks -- Invited and Not-Invited					
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)	Invited
11/24/2008	Westley, Marian	Ocean Fertilization, Carbon Credits and the Kyoto Protocol	Climate Working Group and ONE NOAA Seminar	Silver Spring, MD	Yes
12/2/2008	Bender, Morris	Simulation of Intense Atlantic Hurricanes Activity in a 21st Century Warmed Climate Using the GFDL High-Resolution, Coupled Hurricane Model	Third International Workshop on High-Resolution and Cloud Modeling	Honolulu, HI	Yes
12/2/2008	Delworth, Thomas	Decadal Mechanism of the Atlantic MOC	Fall Meeting of Climate Research Committee of National Academy	Washington, DC	Yes
12/2/2008	Lin, S.-J.	The GFDL High-Resolution Atmosphere Model for Short-Term Forecast and Long-term Simulation of Tropical Cyclones	Third International Workshop on High-Resolution and Cloud Modeling	Honolulu, HI	Yes
12/2/2008	Rosati, Anthony	Decadal Prediction: Ocean Initialization and Related Data Issues	Fall Meeting of Climate Research Committee of National Academy	Washington, DC	Yes
12/10/2008	Lau, Ngar-Cheung	A Model Investigation on the Role of Air-Sea Interaction in the Climatological Evolution and ENSO-related Variability of the Summer Monsoon over South China Sea and Western Pacific	School of Marine and Atmospheric Science, Stony Brook University	Stony Brook, NY	Yes
12/12/2008	Westley, Marian	Ocean Fertilization, Carbon Credits and the Kyoto Protocol	Earth Science Women's Network (ESWN) Career Workshop and AGU	San Francisco, CA	Yes
12/14/2008	Ramaswamy, V.	Spectral Signature of Climate Change at the Top of the Atmosphere	American Geophysical Union	San Francisco, CA	Yes
1/21/2009	Lin, S.-J.	GFDL's High-Resolution Simulations and Vision for the Future	Workshop on Climate Models on 100K and 1M Cores	Chicago, IL	Yes
1/23/2009	Zhang, Rong	Coherent Surface-Subsurface Fingerprint of the Atlantic Meridional Overturning Circulation	Lamont-Doherty Earth Observatory	Palisades, NY	Yes
2/2/2009	Lin, S.-J.	A Multi-Scale Non-Hydrostatic Modeling System for Tropical Cyclone Predictions	NOAA/AOML	Miami, FL	Yes
2/5/2009	Stouffer, Ron	Oceans Role in Climate Changes	Bucknell University	Lewisburg, PA	Yes
2/8/2009	Vecchi, Gabriel	Climate Change and Tropical Circulation	George Mason University	Fairfax, VA	Yes
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DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)	Invited
2/13/2009	Stouffer, Ron	Uncertainty in the Response to Increasing CO ₂	American Association for the Advancement of Science Annual Meeting	Chicago, IL	Yes
2/14/2009	Knutson, Thomas	Has Global Warming Affected Atlantic Hurricane Activity?	American Association for the Advancement of Science Annual Meeting	Chicago, IL	Yes
2/20/2009	Rosati, Anthony	Linkages Between ISI and Decadal/Centennial Time Scales	NOAA Workshop on Intraseasonal and Interannual Prediction	Silver Spring, MD	Yes
2/23/2009	Ramaswamy, V.	Modeling of the Earth System	Senate Commerce Committee Staff	Washington, DC	Yes
3/3/2009	Ramaswamy, V.	Unresolved and Under-Resolved issues Concerning Aerosols: Implications for Climate Estimates	Joint IPCC-WCRP-IGBP Workshop: New Science Directions and Activities Relevant to the IPCC AR5	Honolulu, HI	Yes
3/16/2009	Donner, Leo J.	Cloud Macrophysics, Microphysics, and Aerosol in Climate and NWP Models	NCEP/EMC/CPO Workshop on Parameterization of Cloudiness	Washington, DC	Yes
4/19/2009	Donner, Leo J.	Cumulus Parameterization in the GFDL AR5 General Circulation Model	European Geosciences Union	Vienna, Austria	Yes
4/30/2009	Wilson, R. John	Traveling Waves and Instabilities in the Martian Atmosphere	University of Maryland	College Park, MD	Yes
5/3/2009	Marchok, Tim	Evaluation of Rainfall and Wind Structure Forecast in Operational Models and HFIP Model Verification	Hurricane Forecast Improvement Project (HFIP) Workshop	Miami, FL	Yes
5/4/2009	Zhang, Rong	Coherent Surface-Subsurface Fingerprint of the Atlantic Meridional Overturning Circulation	Atlantic Meridional Overturning Circulation Meeting	Annapolis, MD	Yes
5/12/2009	Vecchi, Gabriel	Pacific Response to Global Warming	Florida State University and University of Miami	Tallahassee, FL and Miami, FL	Yes
5/24/2009	Vecchi, Gabriel	Towards Attribution of Atlantic Tropical Cyclone Activity Changes	American Geophysical Union Spring Meeting	Toronto, Canada	Yes
10/9/2007	Ginoux, Paul	Aerosol Modeling at GFDL	NOAA Atmospheric Chemical Modeling Workshop	Boulder, CO	No
11/8/2007	Gross, Brian	NOAA/DOE Partnership on HPC	Climate Working Group Meeting	Washington, DC	No
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GFDL-paid Talks -- Invited and Not-Invited					
DATES	SPEAKER	TITLE OF PRESENTATION	MEETING	PLACE (CITY)	Invited
11/13/2007	Hallberg, Robert	Impact of Jackson Parameterization in CM2.2	Gravity Current Entertainment Climate Process Team Meeting	Miami, FL	No
3/2/2008	Dunne, John	Coupling Between the C, N, P, Fe, Si, Ca, and Lithogenic Cycles in a Global Ocean Biogeochemical and Ecological Model	Ocean Science Meeting 2008	Orlando, FL	No
4/15/2008	Wittenberg, Andrew	Natural Modulation of ENSO in the GFDL CM2.1 Coupled GCM	EGU General Assembly	Vienna, Austria	No
5/29/2008	Wittenberg, Andrew	Indonesian Throughflow Transports, Variability, and Change in the GFDL Coupled GCMs	International Nusantara Stratification and Transport (INSTANT) Workshop, Lamont-Doherty Earth Observatory	Palisades, NY	No
6/4/2008	Hallberg, Robert	Impact of Overflow and Stratified Shear Mixing on the Antarctic Circumpolar Current	Southern Ocean Workshop	Oxford, UK	No
6/19/2008	Wittenberg, Andrew	Natural Modulation of ENSO in the GFDL CM2.1 Coupled GCM	13 th Annual Community Climate System Model Workshop	Breckenridge, CO	No
11/9/2008	Dunne, John	Coupling Between the C, N, P, Fe, Si, Ca, and Lithogenic Cycles in a Global Ocean Biogeochemical Ecological Model	Conference on Integrating Biogeochemistry and Ecosystems in a Changing Ocean	Miami, FL	No
12/3/2008	Vecchi, Gabriel	Hurricane and Climate	NOAA HQ	Silver Spring, MD	No
12/14/2008	Wittenberg, Andrew	Understanding ENSO Modulation in the GFDL CM2.1 Coupled GCM	Fall AGU Meeting	San Francisco, CA	No
4/19/2009	Freidenreich, Stuart	Analysis of Shortwave Surface Flux Biases in the GFDL GCM	European Geosciences Union	Vienna, Austria	No
4/25/2009	Hallberg, Robert	Scaling Eddy Parameterizations with Marginally Resolved Eddies	CLIVAR/Working Group on Ocean Model Development (WGOMOD) Workshop on Ocean Mesoscale Eddie	Exeter, UK	No