Jasmin G. John

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Research Interests

Thresholds, transitions and associated timescales of the Earth System. Coastal interactions and impacts.

Education

M.A., Astronomy, 1985, Columbia University, New York.
B.A., (double major) Applied Mathematics, Physics, 1983, Barnard College, New York.

- Second alternate for Grace Potter Rice Fellowship.
- Honors in Applied Mathematics.
- Dean's List: 1979-1982.

Employment/Professional Experience

Geophysical Fluid Dynamics Laboratory/NOAA, Princeton, New Jersey.
11/06-present: Research Physical Scientist, Biogeochemistry, Ecosystems and Climate Group.
Berkeley Atmospheric Sciences Center, Dept. of Earth and Planetary Science, University of California, Berkeley.
6/98-11/06: Programmer/Analyst III, Carbon-Climate Interactions Group.
Department of Applied Physics & Nuclear Engineering, Columbia University.
7/92-5/98: Senior Staff Associate, Carbon-Climate Interactions Group and Biogeochemical Cycles Group, Resident at NASA/Goddard Institute for Space Studies, New York (6/86-5/95), and University of Victoria, Victoria, B.C., Canada (6/95-5/98).
7/87-6/92: Staff Associate, Biogeochemical Cycles Group, Resident at NASA/GISS, New York.
6/86-6/87: Senior Staff Research Assistant, Biogeochemical Cycles Group, Resident at NASA/GISS, New York.
Barnard College Work Study, Resident at NASA/Goddard Institute for Space Studies, New York.
6/82-5/84: Programmer/Research Assistant, Cloud Climatology Group.

Awards

Department of Commerce Silver Medal (2013)
Team award "for the development and application of NOAA's first comprehensive Earth System Models that couple the carbon cycle and climate to project changes."

Technical Experience

Hardware: CRAY XT6, SGI Altix, IBM RS/6000, SUN, SGI Origin, IBM-SP, CRAY J-90/PVP.
Operating Systems: UNIX, Linux, Windows, Mac OS-X, MS-DOS, VM/CMS.
Software: FERRET, NCO, IDL, MATLAB, NCL, CDAT, NCARGraphics, MS Office, Adobe Illustrator.
Models:

GFDL ESM2.6, ESM2.5, ESM2M, ESM2G, ESM2Mc, ESM2.1, CM2M, CM2G, AM3, AM2, MOM4p1, MOM4p0, GOLD, LM3, LM3v, SIS.
NCAR CCSM, CAM, CCM3, NCOM, POP, LSM, CLM, MATCH.
GISS CGCM, GISS-UCB TTM, AGCM, Bryan-Cox OGCM.
Other CASA, SLAVE, CENTURY, SiB.

Languages: Fortran 77, Fortran 90, C, HTML.

Professional Society Memberships

American Geophysical Union (AGU)
American Meteorological Society (AMS)
Earth Science Women's Network (ESWN)
Federally Employed Women (FEW)

Publications

Stock, C. A., J. P. Dunne and J. G. John: (in review): Drivers of trophic amplification of ocean productivity trends in a changing climate. *Biogeosciences Discussions*. doi:10.5194/bgd-11-11331-2014. 7/14.

Stock, C. A., J. P. Dunne and J. G. John: Global scale carbon and energy flows through the planktonic food web: an analysis with a coupled physical-biological model, *Progress in Oceanography*. doi:10.1016/j.pocean.2013.07.001. 2014.

Dunne, J. P., R. J. Stouffer and J. G. John: Reductions in labour capacity from heat stress under climate warming. *Nature Climate Change*, 3(6), doi:10.1038/nclimate1827, 2013.

John, J. G., A. M. Fiore, V. Naik, L. W. Horowitz, and J. P. Dunne: Climate versus emission drivers of methane lifetime from 1860-2100, *Atmos. Chem. Phys.*, 12, 12021-12036, doi:10.5194/acp-12-12021-2012, 2012.

Dunne, J. P., J. G. John, E. N. Shevliakova, R. J. Stouffer, et al.: GFDL's ESM2 global coupled climate-carbon Earth System Models Part II: Carbon System formulation and baseline simulation characteristics, *J. Climate*, 26(7), doi:10.1175/JCLI-D-12-00150.1, 2012.

Dunne, J. P., J. G. John, A. J. Adcroft, S. M. Griffies, R. W. Hallberg, E. N. Shevliakova, R. J. Stouffer, et al.: GFDL's ESM2 global coupled climate-carbon Earth System Models Part I: Physical formulation and baseline simulation characteristics, *J. Climate*, 25(19), doi:10.1175/JCLI-D-11-00560.1, 2012.

Gnanadesikan, A., J. P. Dunne and J. John, Understanding why the volume of suboxic waters does not increase over centuries of global warming in an Earth System Model, *Biogeosciences,* 9, 1159-1172, doi:10.5194/bg-9-1159-2012, 2012.

Gnanadesikan, A., J. P. Dunne, and J. John: What ocean biogeochemical models can tell us about bottom-up control of ecosystem variability, *ICES Journal of Marine Science,* 68, 1030-1044, 2011.

Henson, S. A., J. L. Sarmiento, J. P. Dunne, L. Bopp, I. Lima, S. C. Doney, J. John, and C. Beaulieu: Detection of anthropogenic climate change in satellite records of ocean chlorophyll and productivity, *Biogeosciences,* 7, 621-640, doi:10.5194/bg-7-621-2010, 2010.

Hoffman, F., I. Fung, J. Randerson, P. Thornton, J. Foley, C. Covey, J. John, et al.: Terrestrial biogeochemistry in the community climate system model (CCSM), *Journal of Physics: Conference Series*, 46, 363-369, 2006.

Patra, P. K. et al.: Sensitivity of inverse estimation of annual mean CO_2 sources and sinks to ocean-only sites versus all-sites observational networks, *Geophys. Res. Lett.,* 31, L05814, 2006.

Friedlingstein, P., et al.: Climate–Carbon Cycle Feedback Analysis: Results from the C4MIP Model Intercomparison, *J. Climate,* 19, 3337–3353, doi: 10.1175/JCLI3800.1, 2006.

Doney, S. C., K. Lindsay, I. Fung and J. John: Natural Variability in a Stable, 1000-Year Global Coupled Climate-Carbon Cycle Simulation, *J. Climate,* 19*,* 3033-3054, 2006.

Baker, D. F., et al.: TransCom3 inversion intercomparison: Impact of transport model errors on the interannual variability of regional CO_2 fluxes, 1988-2003, *Global Biogeochem. Cycles,* 20, GB1002, doi: 10.1029/2004GB002439, 2006.

Fung, I., S. Doney, K. Lindsay and J. John: Evolution of carbon sinks in a changing climate. *Proc. Nat. Acad. Sci.,* 102, 32*,* 11201-11206, 2005.

Bonfils, C., I. Fung, S. Doney and J. John: On the detection of summertime terrestrial photosynthetic variability from its atmospheric signature, *Geophys. Res. Lett.,* 31*,* L09207, doi:10.1029/2004GL019453, 2004.

Maksyutov, S., and Transcom-3 Modelers: Effect of recent observations on Asian CO_2 flux estimates by transport model inversions, *Tellus*, 55B, 522-529, 2003.

Gurney, K. R., R. M. Law and TransCom3 modellers: Transcom3 inversion intercomparison: Model mean results for the estimation of seasonal carbon sources and sinks, *Global Biogeochem. Cycles,* 18, GB1010, doi:10.1029/2003GB002111, 2004.

Law, R. M., Y.-H. Chen, K. R. Gurney and Transcom 3 Modellers: TransCom3 CO_2 inversion intercomparison: 2. Sensitivity of annual mean results to data choices, *Tellus B,* 55: 580-595. doi: 10.1034/j.1600-0889.2003.00053.x, 2003.

Gurney, K. R., et al.: TransCom3 CO_2 inversion intercomparison: 1. Annual mean control results and sensitivity to transport and prior flux information, *Tellus Series B,* 55(2), 555-579, 2003.

Gurney, K. R., R. M. Law and TransCom3 modellers: Towards robust regional estimates of CO_2 sources and sinks using atmospheric transport models, *Nature,* 415, 626-630, 2002.

Fung, I., S. K. Meyn, I. Tegen, S. C. Doney, J. G. John, and J. K. B. Bishop: Iron supply and demand in the upper ocean, *Global Biogeochem. Cycles,* 14, 281-295, 2000. Correction in *GBC*, 14, 697-700.

Gajewski, K. R. et al.: The climate of North America and adjacent ocean waters ca 6 ka, *Canadian J. Earth Sci.,* 37, 661-681, 2000.

Fung, I., C. B. Field, J. A. Berry, M. V. Thompson, J. T. Randerson, C. M. Malmstrom, P. M. Vitousek, G. J. Collatz, P. J. Sellers, D. A. Randall, A. S. Denning, F. Badeck and J. John: Carbon 13 exchanges between the atmosphere and biosphere, *Global Biogeochem. Cycles,* 11, 507-533, 1997.

Friedlingstein, P., I. Fung, E. Holland, J. John, G. Brasseur, D. Erickson and D. Schimel: On the contribution of CO_2 fertilization to the missing biospheric sink, *Global Biogeochem. Cycles,* 9, 541-556, 1995.

Friedlingstein, P., K. C. Prentice, I. Y. Fung, J. G. John and G. P. Brasseur: Carbon biosphere-climate interactions in the last glacial maximum climate, *J. Geophys.Res.,* 100*,* 7203-7221, 1993.

Bouwman, A. F., I. Fung, E. Matthews and J. John: Global analysis of the potential for N_2O production in natural soils, *Global Biogeochem. Cycles,* 7, 557-597, 1993.

Matthews, E., J. John and I. Fung: Rice Cultivation and Methane Emission, Documentation of Distributed Geographic Data Sets, *NASA Technical Memorandum* 104595, 1993.

Fung, I., J. John, J. Lerner, E. Matthews, M. Prather, L. P. Steele and P. J. Fraser: Three-dimensional model synthesis of the global methane cycle, *J. Geophys. Res.,* 96, 13033-13065, 1991.

Fung, I. and J. John: Interannual and longer-term changes of the terrestrial biosphere and their relationships to atmospheric CO_2 variations. In: *Proceedings of Third International Conference on Analysis and Evaluation of Atmospheric CO_2 Data Present and Past, Environmental Pollution Monitoring and Research Programme No. 59,* World Meteorological Organization, 1989.

Acknowledgments*

Acknowledged in these publications for assistance in either execution of model experiments, programming, providing code for analysis and visualization, or with graphics.

*Saba, V. S., C. A. Stock et al., Projected response of an endangered marine turtle population to climate change. *Nature Climate Change*, 2, doi:10.1038/nclimate1582, 2012.

*Rykaczewski, R. R., and J. P. Dunne: Enhanced nutrient supply to the California Current Ecosystem with global warming and increased stratification in an earth system model, *Geophys. Res. Lett.*, 37, L21606, doi:10.1029/2010GL045019, 2010.

*Lee, J.-E., I. Fung, D. DePaolo and C. C. Henning: Analysis of the global distribution of water isotopes using the NCAR atmospheric general circulation model, *J. Geophys. Res.*, 112, doi:10.1029/2006JD007657, 2007.

*Angert, A., S. Biraud, C. Bonfils , C. Henning , W. Buermann , J. Pinzon , C. Tucker , I. Fung: Drier summers cancel out the CO_2 uptake enhancement induced by warmer springs, *Proc. Nat. Acad. Sci.,* 102, 10823-10827, 2005.

*Lintner, B., A. Gilliland, I. Fung: Mechanisms of convection-induced modulation of passive tracer interhemispheric transport interannual variability, *J. Geophys. Res.,* 109, doi:10.1029/2003JD004306, 2004.

*Still, C. J., J. T. Randerson and I. Y. Fung: Large-scale plant light-use efficiency inferred from the seasonal cycle of atmospheric CO_2, *Global Change Biology,* 10*,* 1240-1252, 2004. Erratum: Still, C. J., Randerson, J. T., and I. Y. Fung: Erratum: Large-scale plant light-use efficiency inferred from the seasonal cycle of atmospheric CO_2, *Global Change Biology* 11(10), 1866-1866, 2005.

*Randerson, J. T., I. G. Enting, E. A. G. Schuur, K. Caldeira and I. Y. Fung: Seasonal and latitudinal variability of troposphere $\Delta 14CO_2$: Post bomb contributions from fossil fuels, oceans, the stratosphere, and the terrestrial biosphere, *Global Biogeochem. Cycles,* 16, 4, 1112, doi:10.1029/2002GB001876, 2002.

*Denning, A. S., M. Holzer, K. Gurney, M. Heimann, R. Law, P. Rayner, I. Fung, S.-M. Fan, S. Taguchi, P. Friedlingstein, Y. Balkanski, M. Maiss and I. Levin: Three-dimensional transport and concentration of SF6: A model intercomparison study (TransCom2), *Tellus,* 51B*,* 266-297, 1999.

*Dai, A., I. Y. Fung, A. D. Del Genio: Surface observed global land precipitation variations during 1900–88: *J. Climate*, 10, 2943–2962, 1997.

*Matthews, E.: Global litter production, pools, and turnover times: Estimates from measurement data and regression models, *J. Geophys.Res.,* 102*,* 18,771-18,800, 1997.

*Randerson, J. T., M. V. Thompson, T. J. Conway, I. Y. Fung and C. B. Field: The contribution of terrestrial sources and sinks to trends in the seasonal cycle of atmospheric carbon dioxide, *Global Biogeochem. Cycles*, 11(4), 535–560, doi:10.1029/97GB02268, 1997.

*Malmstrom, C. M., M. V. Thompson, G. P. Juday, S. O. Los, J. T. Randerson and C. B. Field: Interannual variation in global-scale net primary production: Testing model estimates, *Global Biogeochem. Cycles* 11(3):367–392, 1997.

*Randerson, J. T., M. V. Thompson, C. M. Malmstrom, C. B. Field and I. Fung: Substrate limitations for heterotrophs: Implications for models that estimate the seasonal cycle of atmospheric CO_2, *Global Biogeochem. Cycles,* 10, 585-602, 1996.

*DeFries, R. S., et al.: Mapping the land surface for global atmosphere-biosphere models: Toward continuous distributions of vegetation's functional properties, *J. Geophys. Res.* 100(D10), 20,867-20,882, doi:10.1029/95JD01536, 1995.

*Gornitz, V. and I. Fung: Potential distribution of methane hydrates in the world's oceans, *Global Biogeochem. Cycles,* 8, 335-347, 1994.

*Zaucker, F., Stocker, T. F., and Broecker, W. S.: Atmospheric freshwater fluxes and their effect on the global thermohaline circulation, *J. Geophys. Res.,* 99(C6), 12,443-12,457, 1994.

*Matthews, E.: Nitrogenous fertilizers: Global distribution of consumption and associated emissions of nitrous oxide and ammonia, *Global Biogeochem. Cycles*, 8, 4, 411-439, 1994.

*Dai, A. G. and I. Fung: Can climate variability contribute to the "missing" CO_2 sink?, *Global Biogeochem. Cycles*, 7, 599-609, 1993.

*Chappellaz, J. A., I. Y. Fung and A. M. Thompson: Atmospheric CH_4 increase since the Last Glacial Maximum: 1. Source estimates, *Tellus,* 45B, 228-241, 1993.

*Matthews, E., I. Fung and J. Lerner: Methane emission from rice cultivation: Geographic and seasonal distribution of cultivated areas and emissions, *Global Biogeochem. Cycles,* 5*,* 3-24, 1991.

*Prentice K. and I. Fung: The sensitivity of terrestrial carbon storage to climate change, *Nature,* 346, 48-51, 1990.

*Prentice, K.C.: Bioclimatic Distribution of Vegetation for General Circulation Model Studies, *J. Geophys. Res.,* 95(D8), 11,811-11,830, doi:10.1029/JD095iD08p11811, 1990.

*Tans, P., I. Fung and T. Takahashi: Observational constraints on the global atmospheric CO_2 budget, *Science,* 247, 1431-1438, 1990.
*Fung, I.: An Earth Atlas. An unpublished atlas compiled and produced to celebrate the 65th birthday of Professor Bert Bolin, 1990.

Presentations († indicates invited presentation,* indicates poster presentation)
**Key Drivers of Methane Lifetime from 1860-2100.* GFDL Poster Expo, 7/2014.
**Fingerprints of centennial climate change on ocean biogeochemistry.* Gordon Research Conference on Ocean Global Change Biology, Waterville Valley, NH, 7/2014.
**Key Drivers of Methane Lifetime from 1860-2100.* GFDL Lab Review, 5/2014.
†*GFDL's next generation Climate and Earth System Models.* EMBRACE 3rd General Assembly, KNMI, 5/2014.
†*Climate, Carbon and Ecosystem Interactions.* Indian Institute of Tropical Meteorology, Pune, India, 8/2013.
†*Beyond CMIP5: Ongoing Earth System Efforts at GFDL.* EMBRACE 2nd General Assembly, UKMO, 6/2013.
†*GFDL's Earth System Models: Results and Future Developments*. Climate2013 workshop, LBNL, 3/2013.
Land carbon-climate interactions: GFDL Earth System Model (ESM) analysis. GFDL, 5/2012.
**Key Drivers of Methane Lifetime from 1860-2100.* AGU, Fall 2011.
**How Coupled are Ocean Heat and Carbon Uptake?* AGU, Fall 2010.
NCAR CCSM Coupled Carbon-Climate Model: Development, Implementation, and Assessment. GFDL, 9/2006.

Professional/Community Service
Initiated and led organization of inaugural GFDL Poster Expo**,** Summer 2014.
Contributing Author (Chapter 11 and Annex II): IPCC Fifth Assessment Report: Climate Change 2013: The Physical Science Basis.
External partner and collaborator (2012-present): Earth system Model Bias Reduction and assessing Abrupt Climate Change Project (EMBRACE).
Member (2004-2006): Carbon-Land Model Intercomparison Project (C-LAMP).
Member (2001-2006): Coupled Climate Carbon Cycle Model Intercomparison Project (C4MIP).
Member (2001-2006): NCAR CCSM Biogeochemistry Working Group.
Member (1996-2004): Atmospheric Tracer Transport Model Intercomparison Project (TransCom).
Member (1992-2002): NASA EOS-IDS Biosphere-Atmosphere Interactions.
Ad-hoc reviewer for: GMDD.

Mentorship
Aaron Match - Cornell University. NOAA Hollings Scholar resident at GFDL, May 27-July 25 2014.

Teaching Experience
Invited Lecturer**.** Summer School on Fundamentals of Ocean Climate Modelling at Global and Regional Scales, INCOIS, Hyderabad, India. Aug 5-14 2013.

Outreach
2011 Young Women's Conference in Science, Engineering, Technology and Mathematics, Princeton Plasma Physics Laboratory – Poster Presentation: "Projecting the Future with Earth System Modeling"
2010 Young Women's Conference in Science, Engineering, Technology and Mathematics, Princeton Plasma Physics Laboratory – Poster Presentation: "Projecting the Future with Climate and Earth System Modeling"

Professional Development/Training
Building Leadership and Management Skills for Success. ESWN, Providence, RI, 6/2013.
Skills for Networking and Communication. ESWN, Madison, WI, 6/2012.