Gregory R. Quetin

EDUCATION

PhD, Atmospheric Sciences
University of Washington, 2017
Advisor: Abigail L. S. Swann

Master of Sciences, Atmospheric Science
University of Washington, 2015
Advisor: Abigail L. S. Swann

Bachelors of Science in Aeronautical and Astronautical Engineering
University of Washington, 2007
Minor in Physics

POSITIONS

Stanford University Feb 2018 - Present
Remote Sensing Ecohydrology Lab
Palo Alto, California

Postdoctoral Researcher

Carbon cycle model data fusion using multiple remote sensing observations. Attribution of terrestrial biosphere carbon emissions to climate change.

University of Washington Sep 2012 - Dec. 2017
EcoClimate Lab
Seattle, Washington

Graduate Researcher Assitant

Observations of ecosystem functioning from space remote sensing, analysis and comparison with Earth System models.

NASA/CalTech Jet Propulsion Laboratory Aug 2007 - July 2012
Pasadena, California

Mechanical Engineer

Lead mechanical engineer for Next Generation Imaging Spectrometer. Desgin, fabrication, delivery, and integration of opto-mechanical and actuator assemblies for imaging spectrometers.

PUBLICATIONS

Peer Reviewed

Quetin, G. R., Bloom, A. A., Bowman, K. W., & Konings, A. G. (2020). Carbon Flux Variability from a Relatively Simple Ecosystem Model with Assimilated Data is Consistent with Terrestrial Biosphere Model Estimates. *Journal of Advances in Modeling Earth Systems*.

Quetin, G. R. and Swann, A. L. S. Sensitivity of Leaf Area to Interannual Climate Variation as a Diagnostic of Ecosystem Function in CMIP5 Carbon Cycle Models. *Journal of Climate* 31, 8607–8625 (2018).

Quetin, G. R. and Swann, A. L. S. Empirically Derived Sensitivity of Vegetation to Climate across Global Gradients of Temperature and Precipitation. *Journal of Climate* 30, 5835–5849 (2017).

Prager, J., Winglee, R., Ziemba, T., Roberson, B. R., & **Quetin, G.** (2008). Ion energy characteristics downstream of a high power helicon. Plasma Sources Science and Technology, 17(2), 025003. https://doi.org/10.1088/0963-0252/17/2/025003

PUBLICATIONS (continued)

Peer Reviewed

Bloom, A. A., Bowman, K. W., Liu, J., Konings, A. G., Worden, J. R., Parazoo, N. C.,...**Quetin, G. R.**,...(2020). Lagged effects dominate the inter-annual variability of the 2010–2015 tropical carbon balance. Biogeosciences Discussions, 2020, 1–49. https://doi.org/10.5194/bg-2019-459

Burnett, M. W., **Quetin, G. R.**, & Konings, A. G. (2020). Data-driven estimates of evapotranspiration and its controls in the Congo Basin. Hydrology and Earth System Sciences, 24(8), 4189–4211.

In Review (manuscript available upon request)

Worden, J., Saatchi S. S., Keller, M., Bloom, A. A., Fu, R., Worden, S., Liu, J., Parazoo, N., Fisher, J., Worden, H., Yin, Y., Bowman, K., Gentine, P., Konings, A., **Quetin, G. R.**, Williams, M., Reager, J. T., Barkhordarian, A., Fahy, K., Shi, M., and Schimel, D. Satellite Observations of The Changing Tropical Carbon and Water Cycles. *Reviews of Geophysics*.

In Preparation

Quetin, G. R., Famiglietti C. A., Dadap N. D., Bloom, A. A., Bowman, K. W., Diffenbaugh N. S., Liu J., Trugman A. T., and Konings, A. G. (in prep). Partitioning the land carbon sink over the past century: response of respiration to increased plant growth largely offsets CO2 fertilization.

Other

Miller, S. H., Fesen, R., Hillenbrand, L., Rhodes, J., Baird, G., Blake, G.,**...Quetin, G. R...** et al. (2014). Airships: A New Horizon for Science. ArXiv E-Prints.

Coles, J. B., Richardson, B. S., Eastwood, M. L., Sarture, C. M., **Quetin, G. R**., Hernandez, M. A., et al. (2011). Spectrally and radiometrically stable wide-band on-board calibration source for in-flight data validation in imaging spectroscopy applications. In 2011 Aerospace Conference (pp. 1–8). Big Sky, USA: IEEE. https://doi.org/10.1109/AERO.2011.5747392

AWARDS

Graduate Fellowship, UW Program on Climate Change (2012 - 2013)

Top Scholar Award from UW Department of Atmospheric Sciences (2012)

PRESENTATIONS

Invited

American Geophysical Union Fall Meeting. “Empirically Derived and Simulated Sensitivity of Vegetation to Climate Across Global Gradients of Temperature and Precipitation”. New Orleans, LA, 2017.

NASA/CalTech Jet Propulsion Laboratory Carbon Club. “Empirically derived sensitivity of vegetation to climate across the globe”. Pasadena, CA, 2015.

Oral

American Geophysical Union Fall Meeting. “Attribution of Historical Terrestrial Carbon Uptake due to Climate Change”. San Francisco, CA, 2019.

European Geophysical Union Annual Meeting. “Net Biosphere Exchange in Recent Past: Uncertainty Comparison Between Model-data Fusion and Earth System Models”. Vienna, Austria, 2019.

University of Washington Atmospheric Sciences Seminar. “Interactions of Vegetation and Climate: Remote Observations, Earth System Models, and the Amazon Forest”. Seattle, WA, 2017.

University of Washington Atmospheric Sciences Seminar. “Interactions of Leaf Area and Climate Variability as a Functional Constraint for CMIP5 Models”. Seattle, WA, 2017.

Community Land Model Workshop. “Leaf Area-Climate Interaction as a Functional Constraint Across CMIP5 Models”. Boulder, CO, 2017.

PRESENTATIONS (continued)

Oral

The International Land Model Benchmarking Project Meeting. "Empirically Derived Sensitivity of Vegetation to Climate as a Possible Functional Constraint". Washington DC, 2016.

University of Washington Atmospheric Sciences Seminar. "Global Response of Vegetation to Inter-annual Climate Variability". Seattle, WA, 2015.

Graduate Climate Conference. "Empirically derived sensitivity of vegetation to climate across the globe". Woods Hole, MA, 2015.

Ecological Society of America. "Empirically derived sensitivity of vegetation to climate across the globe". Baltimore, MD, 2015.

Selected Posters

Chapman Conference: Understanding Carbon Climate Feedbacks. "Attribution of Historical Terrestrial Carbon Uptake due to Climate Change" La Jolla, CA, 2019.

American Geophysical Union Meeting. "Net Biosphere Exchange in Recent Past: Uncertainty Comparison Between Model-Data Fusion and Earth System Models". Washington, DC, 2018.

Graduate Climate Conference. "Modeled Ecoclimate Interaction: How climate determines ecoclimate interations across CMIP5 Model, comparison with remote observations". Pack Forest, WA, 2016.

American Geophysical Union Meeting. "Time Change in Ecosystem Climate Relationship: The Statistical Relationship Between Remotely Sensed Vegetation and Climate for the Last 15 years is not Reflective of the last 30 years". San Francisco, CA, 2015.

13th International Swiss Climate Summer School "Linking Land Use, Land Cover, and Climate". "Climate Constraints on Vegetation: Global Mapping of Ecology-Climate Coupling and Sensitivity" University of Bern, Grindelwald, Switzerland, 2014.

TEACHING AND MENTORING

Teaching Assitant, ATMS 111: Introduction to Climate Change, University of Washington (2014)
Taught four sections of 30 students once a week, developed interactive lesson plans and problem sets to support the main lecture content.

Science Expert, School of Art + Design Information Design Class (2014, 2016)
Taught concepts of climate, and climate change to design students. Consulted on the development of class projects for visualizing climate data.

Lesson Development and Test, 4th and 5th Graders at Alki Elementary school (2014)
In partnership with the teacher and a colleague, developed and tested a hands on lesson on how tree coring is used to measure tree growth and climate.

WORKSHOP PARTICIPATION

CARDAMOM Workshop: Development and Analysis with Model Data Fusion, University of Edinburgh (2019)

Keck Institute for Space Studies: Exploring New Multi-Instrument Approaches to Observing Terrestrial Ecosystems and the Carbon Cycle from Space, CalTech (2015)

XXIII Alpine Summer School "Land-atmosphere interactions: coupling between the energy, water and carbon cycles", Valsavarenche, Italy (2015)

Program on Climate Change Summer Institue (2013, 2014, 2015)

Community Land Model Tutorial, National Center for Atmospheric Research (2013)

Ecosystem Demography Model 2 (ED2) Workshop, Harvard University (2012)

Keck Institute for Space Studies, Airships: A New Horizon for Science, CalTech (2012)

SERVICE AND OUTREACH

Peer Review: Nature Climate Change, Journal of Applied Meteorology and Climatology, Remote Sensing Environment, Journal of Geophysical Research Biogeosciences, Journal of Geophysical of Research-Atmospheres, Climate Dynamics

Grant Review: National Aeronautics and Space Administration

Professional Society Member: America Geophysical Union

Graduate Student Representative to the Board: Program on Climate Change, University of Washington (2015 - 2017)

Organizing Committee/Session Chair, Graduate Climate Conference, University of Washington (2014, 2016)

Department of Atmospheric Sciences Outreach, Univeristy of Washington (2012 - 2017)

Co-Founder, Science by Design, University of Washington (2014 - 2016)

Graduate Student Representative to the Faculty, Atmospheric Sciences, University of Washington (2013 - 2015)

President and CEO, Pasadena Triathlon Club (2011)

SCIENTIFIC FIELD CAMPAIGNS

Designed and installed calibration instrumentation on CalTech Submillimeter Telescope at Mauna Kea, Hawaii.

Lead instrument operator for month long deployment of the Airborne Second Generation Precipitation Radar on the NASA DC-8 aircraft in Bangor, Maine.

One-week deployment on Twin Otter aircraft with AVIRIS Imaging Spectrometer in Hawaii.

Provided operation support for airborne instruments Laser Absorption Spectrometer – CO2 during cross-country flight in Twin Otter aircraft, and on site in Langley, Virginia.

OTHER RELEVANT EXPERIENCE

Lead Engineer — Sept 2007 – Jan 2013
SpaceDiver Inc.
Pasadena, California

Space Grant Paid-Internship — June - Sept 2006
NASA/CalTech Jet Propulsion Laboratory
Pasadena, Californa

Research Assistant — Dec. - March 2005
United States Antartic Program
Palmer Station, Antarctic Peninsula

Undergraduate Research Assistant — 2004, 2006, 2007
Advanced Propulsion Lab
University of Washington
Seattle, Washington