Leyang Feng

Curriculum Vitae (Dec 2019)

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Department of Environmental Health & Engineering
Johns Hopkins University (540) 613-2304
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EDUCATION

Johns Hopkins University, the U.S.

Ph.D. in Geography and Environmental Engineering Aug 2018 - Present
Research Interests: Greenhouse Gas Modeling, Geostatistical Inverse Modeling
Advisor: Dr. Scot Miller (Johns Hopkins University)

Virginia Tech, the U.S.

M.S. in Geography **Cumulative GPA: 3.9** 2013 – 2015
Geospatial Information Technology Certificate 2015
Master's Thesis: Sensitivity Analysis of Hot/Cold Pixel Selection in SEBAL Model for Landsat-based ET Estimation
Advisor: Dr. Yang Shao (Virginia Tech)

Lanzhou University, China

B.S. in Geography 2009 - 2013
Senior research thesis: The Spatio-temporal Variation Analysis of Groundwater and Response to Land-use Change in the Middle Reaches of the Heihe River Basin, China
Advisor: Dr. Yanyun Nian (Lanzhou University), Dr. Jian Zhou (CAREERI, CAS)

RELATED EXPERIENCE

Feb 2018 – Aug 2018	Research Fellow, Department of Environmental Science, American University
Sep 2015 – Jan 2018	Post Masters Research Associate, PNNL – JGCRI
2013 – 2015	Teaching Assistant, Geography Department, Virginia Tech
2014 Summer	Geospatial Analyst, Center for Geospatial Information Technology, Virginia Tech
2014 Summer	Graduate Research Assistant, Department of Dairy Sciences, Virginia Tech
2012 – 2013	Research Assistant, Laboratory of Remote Sensing and Geospatial Science, CAS

SKILLS

Programming Language: Python, R, Matlab, and shell scripting in HPC environment
Geospatial programming: Python (NumPy, SciPy, ArcPy, Shapely); R (sp, raster, rgdal, rgeos)
Data analysis (classification, regression, and visualization): R (caret, gglot2)
GIS/RS Software: GDAL, GEOS, QGIS in Linux environment and ArcGIS, ENVI on Windows
Web design and mesh-ups: Markdown, MathPad, Jekyll, LaTex (showcase: GCAM documentation)
Web-scraping using Python and R (showcase: GSMFirefly, NPDP-Dam-Scraper)

HIGHLIGHTED PROJECTS

Master's Thesis, Virginia Tech May 2014 – May 2015

Topic: **Sensitivity Analysis of Hot/Cold Pixel Selection in SEBAL Model for Landsat-based ET Estimation**

Advisor: Dr. Yang Shao (Virginia Tech)

- Comprehensive understanding in surface heat fluxes and ET estimation algorithms in SEBAL
- Hard-coded SEBAL modules in Matlab with rearrangement and improvement
- Automated extreme pixels selection methods and conducted sensitivity analysis to changing pixel pairs

SESYNC Research Project, Department of Environmental Science, AU Fab 2018 – Aug 2018

Topic: **A Noise Insensitive Trajectory Algorithm (NITA) for Remote Sensing Change Detection**

PI: Dr. Mike Alonzo (AU)

- Improve NITA's ability to detect a broad range of land cover dynamics
- Analyze large volumes of satellite data in HPC environment
- Re-write NITA in Python and JavaScript to be deployed on Google Earth Engine

JGCRI Research Project, PNNL - JGCRI Sep 2015 – Jan 2018

Topic: **A Community Emissions Data System (CEDS) for Historical Emissions**

PI: Dr. Steven Smith (PNNL)

- Designed and developed a gridding module independently to translate GHG emission products of CEDS from tabular format into spatial distributions (CF-compliant NetCDF grids)
- Deployed gridding module using parallel computing scheme in HPC environment to ensure product delivery
- Contributed in CEDS overall development and conducted code review for other team member
- Used version control system in developing and encapsulated gridding function into R package

JGCRI Research Project, PNNL - JGCRI Aug 2016 – Jan 2018

Topic: **IAM (Integrated Assessment Model) emissions harmonization**

PI: Dr. Steven Smith (PNNL)

- Design and develop a system/software in R language independently to process IAM emissions for harmonization, downscaling and gridding
- Automated pipeline to implement downscaling and gridding algorithms
- Functions and routines will be encapsulated into open-source R package and harmonization system will be hosted on IIASA server to process any incoming IAM emissions

JGCRI research project, PNNL - JGCRI Jan 2017 – Jan 2018

Topic: **Investigating the Economic Impacts of Carbon Cycle Uncertainty using HECTOR and GCAM**

PI: Dr. Corinne Hartin (PNNL)

- Conducted sensitivity analysis on Hector against four varying parameters
- Utilized quasi random sampling techniques to generate parameter set for sensitivity analysis
- Managed and set up parallel running scheme for 800,000 Hector runs under HPC environment

Senior research thesis, Lanzhou University Aug 2012 – Apr 2013

Topic: **The Spatio-temporal Variation Analysis of Groundwater and Response to Land-use Change in the Middle Reaches of the Heihe River Basin, China**

Advisor: Dr. Yanyun Nian (Lanzhou University), Dr. Jian Zhou (CAREERI, CAS)

- Time-series analysis of long-term hydrometeorological observation data
- Remote sensing image process and classification
- USGS-Modflow groundwater simulation and land-use coupled water resource assessment

Research Training Programs for Innovation May 2011 – May 2012

Funded by Ministry of Education of the People's Republic of China

Topic: **Retrieval of the optical thickness and effective radius of cloud using FY - 3 data**

Advisor: Dr. Tianhe Wang (Lanzhou University)

- Thorough study in SBDART radiation transfer model
- Developed cloud micro-properties retrieval algorithms for FY - 3 dataset
- Improved the accuracy and efficiency of Nakajima's dual-channels retrieval algorithm

PUBLICATION & PRESENTATION

Feng, L., et al., 2019. Gridded Emissions for CMIP6, Geosci. Model Dev. Discuss., in review.

Gidden, M., [...], **Feng, L.**, rt al., 2019. Global emissions pathways under different socioeconomic scenarios for use in CMIP6: a dataset of harmonized emissions trajectories through the end of the century. Geoscientific Model Development Discussions, 12(4), pp.1443-1475.

Bond-Lamberty, […], **Feng, L.**, et al., 2019. gcamdata: An R Package for Preparation, Synthesis, and Tracking of Input Data for the GCAM Integrated Human-Earth Systems Model. Journal of Open Research Software, 7(1).

Li, X., […], **Feng, L**., et al., 2018. Tethys–A Python Package for Spatial and Temporal Downscaling of Global Water Withdrawals. Journal of Open Research Software, 6

Ferreira, G., Cayford, E.L., **Feng, L.,** et al., 2018. Use of satellite remote-sensing techniques to predict the variation of the nutritional composition of corn (Zea mays L) for silage. Maydica, 61(1), p.6.

Hoesly, R.M., Smith, S.J., **Feng, L**., et al., 2018. Historical (1750–2014) anthropogenic emissions of reactive gases and aerosols from the Community Emissions Data System (CEDS). Geoscientific Model Development (Online), 11

Li, X., […], **Feng, L.,** et al., 2017. Xanthos–a global hydrologic model. Journal of Open Research Software, 5

Zhou, Q., Leng, G. and **Feng, L.**, 2017. Predictability of state-level flood damage in the conterminous United States: the role of hazard, exposure and vulnerability. Scientific Reports, 7(1), p.5354.

Li, X., Cui, Y., & **Feng**, L. 2012. Observability-controllability model of periphery to quantitative analysis of human influence on runoff, Journal of Systems Engineering, 27(5): 692 – 698.

Tavakkoil, S., **Feng, L.,** et al., 2019. A Temporally-dynamic and Spatially-resolved Comparison of Life Cycle Greenhouse Gas Emissions from Coal and Natural Gas-fired Electricity in the United States, AGU Fall Meeting Abstracts

Miller, S., […], **Feng, L.,** et al.,2019. The role of long term atmospheric observations in evaluating methane emissions policies for the oil and gas sector, AGU Fall Meeting Abstracts

Dorheim, K, […], **Feng, L.,** et al., 2018. Evaluating the economic impact of improving uncertainty in the carbon, AGU Fall Meeting Abstracts

Li, X., […], **Feng, L**., et al., 2017. Open Source Tools for Assessment of Global Water Availability, Demands, and Scarcity, AGU Fall Meeting Abstracts

Feng, L., Smith, S., 2016. A Flexible Gridding System for Emissions – An implementation for CEDS and CMIP6, JGCRI Integrated Assessment Workshop and GCAM Community Modeling Meeting poster presentation.

Feng, L., Zhao, S. 2014. Assessing the accuracy of the NLCD 2006 impervious surface for Selected Southwest Virginia Cities, ASPRS Annual Conference poster presentation.

AWARDS

FASINATE Workshop Travel Award, NCAR, 2019
Lee and Albert H. Halff Doctoral Student Award, Johns Hopkins University, 2018
Graduate Assistantship, Geography Department, Virginia Tech, 2013 – 2015
Excellent Thesis for Graduation, Lanzhou University, 2013
Undergraduate Student Research Scholarship, Chinese Academy of Sciences, 2013
Student Award for Research and Innovation, Lanzhou University, 2012
Outstanding Achievement Award, Research Training Program, Lanzhou University, 2012
Third Class Scholarship, Lanzhou University, 2011 – 2012

SERVICE

Abstract Reviewer for the Third International Workshop on Earth Observation and Remote Sensing Applications (EROSA 2014)
Volunteer work in the Annual Meeting of SouthEastern Division of Association of American Geographers, 24/11/2013 – 26/11/2013
Volunteer work in the International Symposium on the Uplift of the Qinghai-Tibetan Plateau and its Societal and Environmental Impacts, served as an oral translator, China, 10/08/2012 – 11/08/2012
Volunteer work in the Symposium of Physical Geography and Ecological Safety, served as an assistant organizer, China, 21/07/2012 – 25/07/2012