AAKASH AHAMED

Hydrologist • Geophysicist • Remote Sensing Data Scientist • (908) 370-7738 • aakashahamed@gmail.com

EDUCATION

STANFORD UNIVERSITY   **Stanford, CA**
PhD Candidate in Geophysics   **2017 - Present**
Dissertation Title: *"Advancing the use of Remote Sensing Data and Models to Understand Hydrologic Processes in California"*
Research Interests: Hydrologic remote sensing, model-data fusion, machine learning, and data assimilation for applications in water resources management, agriculture, natural hazards, and energy.

BOSTON COLLEGE   **Chestnut Hill, MA**
MSc Earth/Environmental Sciences (full scholarship)   **2012 - 2014**
Honors: Research Fellowship (2013-2014), Head Teaching Assistant (2013), Winner of Boston College GIS Contest (2014), President of Department Graduate Student Association (2013-14)

FRANKLIN & MARSHALL COLLEGE   **Lancaster, PA**
BS Geosciences (with honors), BA Government   **2008 - 2012**
Honors: Geomorphology Research Award (2012), Satell Scholar (2011-12), John Marshall Pre-Law Honor Society (2011-12), Richard M. Foose Memorial Fellowship (2011), Hackman Scholar (2010-11)

PROFESSIONAL EXPERIENCE

National Aeronautics and Space Administration (NASA)   **Greenbelt, MD**
Support Scientist, Goddard Space Flight Ctr. Hydrological Sciences Lab   June 2015 – Dec. 2018
- Algorithm and software development, publications, international conference presentations for near real time satellite flood monitoring and impact assessment systems (part time since 2017).
- Satellite based landslide detection and extreme precipitation monitoring systems used for disaster prediction and response in Nepal.

Ceres Imaging   **Oakland, CA**
Remote Sensing / Image Processing Scientist   Feb. 2017 - Sept. 2017
- Early technical employee at venture backed startup. Image analysis and software development of precision agricultural remote sensing products for water stress and nutrient optimization.

World Wildlife Fund (WWF)   **Washington, DC**
Research and GIS Analyst, Sustainability R&D Team   Sept. 2014 - June 2015
- Water resources and agricultural optimization strategies for complex corporate supply chains.

SKILLS

Operating Systems: Linux, Unix, Mac, Windows
Programming Languages: Python, R, Matlab, C/C++ (basic), LaTeX, Javascript, HTML, CSS
Packages: NumPy, SciPy, Pandas, Matplotlib, Seaborn, Jupyter
Data Science: Scikit-Learn, Keras, Tensorflow, Theano
Image Processing: Scikit-Image, OpenCV, Agisoft Phoscan, OpenDroneMap
Geospatial: Google Earth Engine, GDAL, Xarray, NetCDF, HDF5, Rasterio, Geopandas, Finoa, Shapely, ArcGIS, QGIS, ENVI, PostGIS
Software Development: Git, Make, Heroku, Docker, Multiprocess, Anaconda, Vagrant, virtualenv
Graphics and Audio: Photoshop, Illustrator, Microsoft Office Suite, Ableton, Audacity

PUBLICATIONS

Ahamed, A., Knight, R., Alam, S., Pauloo, R. and Melton, F., (2021). Assessing the utility of remote sensing data to accurately estimate changes in groundwater storage. Science of The Total Environment, 807, p.150635.

Fayne, J. V., **Ahamed, A.**, Roberts-Pierel, J., Rumsey, A. C., & Kirschbaum, D. (2019). Automated Satellite-Based Landslide Identification Product for Nepal. Earth Interactions, 23(3), 1-21.

Oddo, P. C., **Ahamed, A.,** Bolten, J. D. (2018). Socioeconomic Impact Evaluation for Near Real-Time Flood Detection in the Lower Mekong River Basin. Hydrology, 5(2), 23.

Ahamed, A., and Bolten, J. D. (2017). A MODIS-based automated flood monitoring system for Southeast Asia. International Journal of Applied Earth Observation and Geoinformation, 61, 104-117.

Ahamed, A., Bolten, J.D., Doyle, C.S., Fayne, J.V. (2017). Near Real Time Flood Monitoring and Impact Assessment Systems. In Remote Sensing of Hydrological Extremes.

Fayne, J. V., Bolten, J.D., Lakshmi, V., **Ahamed, A.** (2017). Optical and Physical methods for Mapping Flooding with Satellite imagery. In Remote Sensing of Hydrological Extremes.

Merritts, D., Walter, R., **et al.** (2011). Anthropocene streams and base-level controls from historic dams in the unglaciated mid-Atlantic region, USA. Philosophical Transactions of the Royal Society: Mathematical, Physical and Engineering Sciences, v. 369, no. 1938, p. 976-1009.

CONFERENCE ABSTRACTS

Ahamed, A., Rao, K., and Konings, A.G., (2022). Estimation of Root Zone Soil Moisture from Remotely Sensed Data using Machine Learning. In 102nd American Meteorological Society Annual Meeting. AMS.

Ahamed, A. and Knight, R., (2021). Spatiotemporal Analysis of Hydrologic Response Times in California's Sierra Nevada. In AGU Fall Meeting 2021. AGU.

Ahamed, A. and Knight, R. (2021). Monitoring spatial and temporal variations in groundwater supply. In AGU Fall Meeting 2021. AGU.

Alam, S., **Ahamed, A.,** Goebel, M. and Knight, R.J., (2021). The use of remote sensing data to monitor changes in stored groundwater in a heavily stressed subbasin in the Central Valley. In AGU Fall Meeting 2021. AGU.

Knight, R., Kang, S., **Ahamed, A.,** Lees, M. and Goebel, M., (2021). Advancing the Adoption of Earth Imaging for Multi-Scale Groundwater Science and Management. In NSG2021 1st Conference on Hydrogeophysics (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers.

Ahamed, A., Knight, R., Pauloo, R., Melton, F.S. and Wei, Z., (2020). Development of a Remote-Sensing-Based Method to Monitor Changes in Groundwater Storage. In AGU Fall Meeting Abstracts (Vol. 2020, pp. SY035-0009).

Ahamed, A., Knight, R.J., Melton, F.S., Pauloo, R. and Wei, Z., (2019). Remote Sensing-Based Estimation of Groundwater Storage Changes in California's Central Valley. In Chapman Conference on the Quest for Sustainability of Heavily Stressed Aquifers at Regional to Global Scales. AGU.

Ahamed, A., Dewar, N., Knight, R., (2018). Predicting Agricultural Production in California Using Satellite Data and Machine Learning. Eos, Transactions, AGU, American Geophysical Union, Washington, DC, LA, December 10-14, 2018, abstract #H31H-2004:

Oddo, P., **Ahamed, A.,** Bolten, J.D., (2017). Socio-economic Impact Analysis for Near Real-Time Flood Detection in the Lower Mekong River Basin. Eos, Transactions, AGU, American Geophysical Union, New Orleans, LA, December 11-15, 2017, abstract #H104-298721.

Ahamed, A., Bolten, J.D., (2016). Assessing the Utility of a Satellite-Based Flood Inundation and Socio-Economic Impact Tool for the Lower Mekong River Basin. Eos, Transactions, AGU, American Geophysical Union, San Francisco, CA, December 12-16, 2016, abstract # NH53A-1986.

Ahamed, A., Bolten, J.D., Doyle, C.S., (2016). Assessment of Monsoon Flood Disaster Impacts in Southeast Asia: Implications for Rapid Disaster Response. EGU General Assembly, 2016, Vienna, Austria, April 17-22, 2016, abstract #EGU2016-ASC-2016-17958.

Roberts-Pierel, J., **Ahamed, A.**, Fayne, J., and Rumsey, A., (2015). New Products for Near Real-Time Enhanced Landslide Identification and Precipitation Monitoring, Eos, Transactions, AGU, American Geophysical Union, San Francisco, CA, December 14-18, 2015, abstract #NH44B-03.

Ahamed, A., Snyder, N.P., and David, G.L.C., (2014). Factors influencing watershed average erosion rates calculated from reservoir sedimentation in eastern USA, Eos, Transactions, AGU, American Geophysical Union, San Francisco, CA, December 15-19, 2014, abstract #EP33A-3611.

Ahamed, A., Snyder., N.P., and David., G., (2014). Geomorphic and land use controls on erosion rates in eastern USA. GSA Abstracts with Programs, Lancaster, PA, March 23-25, 2014, v. 46, no. 2, p. 1.

Ahamed, A., Napoli, V., Cox, T., Hilfiker, S., Blohm, F. A., Ebel, J.E.E., (2014). Hydrocarbon recovery potential of Taranaki Basin, New Zealand. Annual Imperial Barrel Award Competition, American Association of Petroleum Geophysicists, Pittsburgh, PA, March 21-22, 2014, Fourth Place.

Ahamed, A., Merritts, D.J., and Grand Pre, C.A., (2011). Bedload entrainment in a long-term floodplain wetland restoration experiment, Big Spring Run, PA. GSA Abstracts with Programs, Annual National Meeting, Minneapolis, MN, October 11-14, 2011, v. 43, no. 5, p. 472.

Ahamed, A., Merritts, D.J., and Grand Pre, C.A., (2011). Bedload entrainment in a long-term floodplain wetland restoration experiment, Big Spring Run, PA. Susquehannah Watershed Symposium, Bucknell University.

OUTREACH AND PROFESSIONAL SERVICE

2021 – Present: Science outreach at High School AP environmental science classes (2-3 hours / month)
2020 – 2021: Mentoring high school students on hydrology data science research (1-2 hours / week)
2019 – 2020: Co-created the Global Groundwater Statement, a website and call to action that gathered more than 1,000 signatories of leading groundwater scientists from ~100 countries (5 hours / month)
2019 – 2020: Student representative on American Geophysical Union Hydrology Remote Sensing Technical Committee (2 hours/month)
2018 – 2019: Stanford Graduate Student Advisory Council – liaison between graduate students in School of Earth Sciences and Stanford administrators (1 hour/week)
2017 – Present: Referee for (1) ISPRS International Society for Photogrammetry and Remote Sensing and (2) Hydrogeology Journal (5 hours/review)
2015 – 2017: Co-instructor of python programming course to NASA Goddard interns (1 hour/week)
2013 – 2014: President of Boston College Earth Sciences Graduate Student Association (1 hour/week)

PATENTS

LAR-18789 DEVELOP DRIP and SLIP Landslide Detection Package (DRIP-SLIP)
Government Agency: National Aeronautics and Space Administration
URL: https://software.nasa.gov/software/LAR-18789-1

FIELD RESEARCH EXPEDITIONS

Stanford Geomorphology Group Arid Lands Geochronology and Geomorphology. Stanford University Department of Geology. Mexican Hat, Utah. March 23 - April 1, 2019.

NASA Snow Expedition (SnowEx) 2016. NASA / US Forest Service. Grand Mesa, Colorado. September 26 - October 1, 2016.

NASA Soil Moisture Active Passive (SMAP) Satellite Validation Experiment (SmapVex). NASA / University of Manitoba. Winnipeg, Manitoba, Canada. July 9 - 18, 2016.

Connecticut River and Cape Code Estuarine Dynamics. Woods Hold Oceanographic Institute / Boston College. Connecticut River / Cape Cod, Massachusetts. May, 2014.

Dam sedimentation and River Morphology. Boston College / University of Maine. Penobscot River, Maine. August, 2013.

Wetland Restoration Experiment and Legacy Sediment Removal. Franklin & Marshall College / Pennsylvania Department of Environmental Protection. Big Spring Run, Pennyslvania. 2010 - 2012.

North Anatolian Fault Mapping and Analysis. South Dakota School of Mines and Technology. Taskesti, Turkey. July - August, 2011.

MEDIA

NASA.gov Feature (Floods):
https://www.nasa.gov/feature/goddard/2018/scientists-deploy-damage-assessment-tool-in-laos-relief-efforts
NASA.gov Feature (Landslides):
https://www.nasa.gov/feature/goddard/2016/using-nasa-data-to-detect-potential-landslides/
NASA Earth Observatory Feature (Landslides):
http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=88319&src=nhrss
Landsat Science Feature (Landslides):
http://landsat.gsfc.nasa.gov/detecting-landslides-in-nepal-with-landsat/
Fast Company Article (Air Quality):
http://www.fastcoexist.com/3031162/citizen-air-quality-sensors-cover-the-places-governments-cant-reach
Boston College Press Release (Air Quality):
http://www.bc.edu/libraries/newsletter/2014summer/gis.html