

## Curriculum Vitae

### **Gopal K. Mulukutla**

Research Scientist II,  
Water Systems Analysis Group,  
Earth Systems Research Center, Institute for the Study of Earth, Oceans and Space,  
University of New Hampshire (UNH).

### **EDUCATION**

**Ph.D., Ocean Engineering,** [University of New Hampshire](#) (UNH), Durham, NH.

**M.S., Ocean Engineering,** [Indian Institute of Technology Madras](#), India.

**B.E., Civil Engineering,** [Andhra University](#), Visakhapatnam, India.

### **PROFESSIONAL EXPERIENCE**

1. **September 2011-to present: Research Scientist II**, Water Systems Analysis Group, Earth Systems Research Center (formerly Complex Systems Research Center), Institute for the Study of Earth, Oceans and Space, UNH.
2. **September 2009-August 2011: Post-Doctoral Research and Teaching Associate**, Complex Systems Research Center, Institute for the Study of Earth, Oceans and Space, UNH.

### **TEACHING EXPERIENCE**

**Fall 2014** – Lead Instructor *NR995 Data Analysis Methods for Temporally Intensive Hydrology and Biogeochemistry Measurements* (with Wil Wollheim) at the Department of Natural Resources and the Environment, UNH.

### **RESEARCH INTERESTS**

- (a) **Sensors and sensing systems** - Development and deployment of sensing networks for environmental monitoring including storm and tidal surge monitoring, biogeochemical water quality, in coastal, estuarine, riverine and terrestrial ecosystem environments.
- (b) **Water resources engineering** – Biogeochemical water quality of surface waters with focus on coastal river systems and estuaries.
- (c) **Geotechnical and seafloor engineering** - Free fall penetrometers, in situ testing of seafloor sediments, soil-structure interaction, design of foundations for port and harbor structures, and offshore structures. Digital image analysis techniques applied to civil engineering and geology- Determination of physical properties of geo-materials (soils, volcanic rock etc.) using 2D and 3D microscopy and application of advanced digital image analysis techniques.

### **RELEVANT PUBLICATIONS**

1. **Gopal K Mulukutla**, Wilfred M. Wollheim, Richard Carey, Joseph E. Salisbury, Thomas K Gregory and William McDowell. High frequency concurrent measurements in watershed and impaired estuary reveal coupled DOC and decoupled Nitrate dynamics. *Geophysical Research Letters* (**in review**).
2. Curran, B., Routhier, M., **Mulukutla, G.** A Preliminary Vulnerability Assessment of Coastal Architectural and Archeological Resources Relative to Water Table and Sea Level Rise within the Strawberry Banke Historic District of Portsmouth, NH. *APT Bulletin – Journal of Preservation Technology. Special Issue on Climate Change and Preservation Technology. Volume 47 (1) 2016.*
3. **Mulukutla, Gopal**, Godbois, Brian, and Frey, Serita. Deployment of a Large-Scale Soil Moisture Geosensor Network- Experience and Lessons Learnt. Invited article *ACM SIGSPATIAL Magazine* 7 (2) July 2015.
4. Richard O. Carey, Wilfred M. Wollheim, and **Gopal Mulukutla** (2014). Characterizing Storm-Event Nitrate Fluxes in a Fifth Order Suburbanizing Watershed Using In Situ Sensors. *Environmental Science & Technology* 2014 48 (14), 7756-7765 (cites: 10).

5. Colucci, S., Palladino, D., **Mulukutla, G.**, Proussevitch, A. (2013) 3-D Reconstruction of ash vesicularity: insights into the origin of ash-rich explosive eruptions. *Journal of Volcanology and Geothermal Research*, 255(1), pp 98-107, <http://dx.doi.org/10.1016/j.jvolgeores.2013.02.002> (cites:6).
6. A.A. Proussevitch, **G.K. Mulukutla**, and D.L. Sahagian. (2011) A New 3D Method of Measuring Bubble Size Distributions From Vesicle Fragments Preserved On Surfaces Of Volcanic Ash Particles, *GSA Geosphere*, vol. 7; no. 1; p. 1–8, [doi: 10.1130/GES00559.1](https://doi.org/10.1130/GES00559.1) (cites:9).
7. **Mulukutla, G.K.**, Huff, L.C., Melton, J.S., Baldwin, K.C. and Mayer, L.A. (2011) Sediment identification using free fall penetrometer acceleration-time histories. *Marine Geophysical Research*, 32 (3), pp 397-411. [doi 10.1007/s11001-011-9116-2](https://doi.org/10.1007/s11001-011-9116-2) (cites:6).

## **SKILLS**

1. **MATLAB**: Advanced skills time series analysis, and image analysis methods.
2. **Arduino/C++ programming and open source electronics**: Development of open source sensors for environmental monitoring.
3. **ArcGIS**: Advanced Skills in ArcMAP for Geospatial Analysis.
4. **PERL, Fortran**: Extensive programming experience .
5. Development of Measurement Techniques in Environmental Monitoring: Programming in CRBasic for Campbell Scientific Data Loggers using Analog, RS-232 or SDI-12 Measurement Protocols.
6. Extensive experience programming and deploying the following field sensors: (Marine) Free Fall Cone Penetrometer, CTDs, ADCP; (Aquatic) Dissolved Oxygen, pH, turbidity, chlorophyll, chromophoric dissolved organic matter nitrate (fdom), phosphate, water level (stage height), conductivity; (Terrestrial) soil respiration (CO<sub>2</sub>), soil moisture/temperature/electrical conductivity air temperature rain and snow gauge.