

# Timothy Robert Nelson

tnelson@geol.sc.edu Timothy.Nelson@outlook.com

## Education

**Doctor of Philosophy, Geological Sciences**, (In progress, Graduation expected in 2013)

University of South Carolina, Columbia, SC

**Master of Science, Geological Sciences**, August 2011

University of South Carolina, Columbia, SC

**Bachelor of Science, Summa cum Laude with Honors in Geology**, May 2004

University of Kentucky, Lexington, KY

## Work Experiences

### **Research Assistant**

03/2013-Present, 5/2010 - 8/2012, 6/2005 - 8/2008, 6/2004 - 8/2004

University of South Carolina, Columbia, SC

- Prepared, calibrated, deployed and recovered acoustic and optical instruments in the coastal and estuarine environments.
- Calibrated OBS, ADCP, and ABS systems for the measurement of suspended sediment concentration.
- Coded acoustic inversion techniques for the inversion of acoustic signal from ABS to estimate suspended sediment concentration.
- Utilized time series analysis and signal processing techniques for the calculation of meteorological, hydrodynamic, bedform morphology and sediment transport parameters.
- Assisted in the design and installation of real-time remote data collection systems for oceanographic instruments located off two South Carolina piers.
- Assisted in the installation of two WERA HF Radar systems.
- Conducted beach profile and GPS surveys.
- Participated in research cruises involving instrument deployment, recovery and CTD profiles onboard the research vessels: NOAA's R/V Nancy Foster, URI's R/V Endeavor and Skidaway Institute's R/V Savannah.

### **Instructional Assistant**

1/2010 - 12/2010, 6/2004 - 4/2005

University of South Carolina, Columbia, SC

- Prepared and instructed five environmental and four physical geology laboratory classes.
- Led numerous field trips to environmental sites of interest.
- Proctored and graded tests and assignments.
- Prepared and maintained labs for 13 physical geology sections, ordered and inventoried lab material, supervised 4 laboratory assistants and maintained student grades in an online grading database.

### **8<sup>th</sup> Grade Science Teaching Partner**

8/2008 - 12/2009

Richland School District One, Columbia, SC

- Instructed students through the use of inquiry based learning consisting of lecture, discussion, demonstration, and laboratory activities.

### **Research Assistant**

1/2003 - 12/2003

University of Kentucky, Lexington, KY

- Designed and created analytical protocols for determining the uranium-thorium-lead chemical age of monazite crystals using an Electron Microprobe.

## Additional Course Work Experience

- Participated in the deployment, collection, data processing and interpretation of seismic traces.
- Mapped geologic formations, created geologic maps, cross sections and interpreted sequence stratigraphy in the four corners region of the United States, the southern Appalachians and the Bluegrass Region of Kentucky.
- Participated in a field based class of the Gulf of Mexico regional sequence stratigraphy, salt dome formation, and identification of oil and gas reservoirs from seismic traces.
- Participated in a hydrology class performing well water level measurements to map the water table and determine the rate and direction of groundwater flow.

## **Publications**

### **Journal Articles**

- Nelson, T.R., Voulgaris, G., (in prep). Predicting Transient Geometry and Characteristics of Wave-Induced Ripples.
- Nelson, T.R., Voulgaris, G., (submitted). Temporal and Spatial Evolution of Wave-Induced Ripple Geometry: Regular vs. Irregular Ripples. *Journal of Geophysical Research*.
- Nelson, T.R., Voulgaris, G., Traykovski, P., (submitted). Predicting Wave-Ripple Equilibrium Geometry. *Journal of Geophysical Research*.
- Warner, J.C., Armstrong, B., Sylvester, C.S., Voulgaris, G., Nelson, T.R. Schwab, W.C., Denny, J.F., 2012. Storm-induced inner-continental shelf circulation and sediment transport: Long Bay, South Carolina. *Continental Shelf Research*, 42, 51-63, doi:10.1016/j.csr.2012.05.001.

### **Abstracts**

- Nelson, T.R., Voulgaris, G., 2012. The Influence of Ripple Geometry on Seabed Roughness and Vertical Suspended Sediment Concentration Profiles. 2012 Ocean Sciences Meeting, Salt Lake City, Utah, Book of Abstracts, pp. 337-338.
- Nelson, T.R., Voulgaris, G., 2011. Predicting the Temporal and Spatial Evolution of Regular and Irregular Ripple Geometry under Varying Hydrodynamic Forcing. 2011 GSA Annual Meeting, Minneapolis, MN, Geological Society of America Abstracts with Programs, Vol. 43(5), p. 497
- Nelson, T.R., Voulgaris, G., Warner, J.C., 2008. A Model to Predict the Evolution of Suspended Sediment Concentration Profiles and Bedforms Before, During, and After Storm Events. *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract OS21E-1206.
- Nelson, T.R., Voulgaris, G., Warner, J.C., 2008. Temporal and Spatial Evolution of Small Scale Ripples on the Inner Shelf. 2008 Ocean Sciences Meeting, Orlando, Florida, Book of Abstracts, pp. 293-294.
- Nelson, T.R., Voulgaris, G., Hanes, D.M., Warner, J.C., 2004. Spatial and Temporal Variability of Wave Ripple Wavelengths in the Inner Shelf. *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract No. OS21B-1232.

### **Other**

- Nelson, T.R., 2011. A 2-D Time Dependent Ripple Prediction Model for Wave Dominated Flows, Unpublished MS Thesis, Department of Earth and Ocean Sciences, University of South Carolina, Columbia, SC, 83pp.
- Kim, Y.H., Gutierrez, B., Nelson, T., Dumars, A., Maza, M., Perales, H. Voulgaris, G., 2004. Using the Acoustic Doppler Current Profiler (ADCP) to Estimate Suspended Sediment Concentration. Technical Report CPSPD/04/02. Coastal Processes & Sediment Dynamics Laboratory, Department of Geological Sciences, University of South Carolina, Columbia, SC, 20pp.

## **Skills**

### **Computer Software**

- Proficient in: Microsoft Windows, Microsoft Office 2000-2010 (Word, Excel, PowerPoint, Outlook, OneNote, Publisher)
- Working Knowledge of: Linux Systems, ACD Systems Canvas. Adobe Photoshop, Adobe Lightroom, Corel VideoStudio

### **Data Analysis Software**

- Proficient in: Matlab®
- Working Knowledge of: Promax, CodeWarrior C++, Arc GIS

### **Field Sampling and Monitoring Instrumentation and Software**

- Teledyne/RDI Acoustic Doppler Current Profiler: BBTalk (a Hyperterminal Interface), WavesMon, WinADCP
- Sontek Acoustic Doppler Velocimeter (Hydra and Triton): SonUtils, ViewHydra, WinADV
- Aquatec Acoustic Backscatter System: AQUAtalk and AQUAview
- Nortec Aquadopp: AquaPro
- Imagenx Sector Scanning and Profiling Sonar: Win881a
- Various CTD and OBS systems
- WERA (Wellen Radar) High Frequency Radar System

## **Professional Memberships**

- American Geophysical Union
- Geological Society of America
- Golden Key International Honour Society

### **Professional Development**

- The 2013 Turbulence Webinar Series. Jan. 23-Feb. 6, 2013. Presented by The Centers for Ocean Sciences Education Excellence – Ocean Systems
- COAWST Modeling System Training. Jul. 23-26, 2012. USGS Woods Hole Science Center, Woods Hole, MA. Participated through WebEx.