

Nicole E. Button

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Education

Ph.D. Geology and Geophysics, Louisiana State University at Baton Rouge Expected Graduation 2017
Advisor: Dr. Suniti Karunatillake, Planetary Science Laboratory (www.lsupsl.org)
Dissertation Topic: Remote Sensing Across the Terrestrial Planets, with an emphasis on Mars

B.S. Science of Earth Systems (oceanography concentration), Cornell University May 2012
Minor in Marine Biology

Field Semester Programs:

SEA Semester: Oceans and Climate Fall 2011
Cornell University Earth and Environmental Systems Field Program in Hawaii Spring 2010

Publications

- Button, N.**, Karunatillake, S., Husch, J., Skok, J.R., Rice, M. "Distinguishing Between Terrestrial Bombsags and Dropstones Settings with Implications for Gusev and Gale Craters, Mars" (*submitted to the Journal of Geophysical Research - Planets*)
- Button, N.** "Validation of salinity data from the Aquarius/SAC-D and Soil Moisture and Ocean Salinity (SMOS) missions in the Agulhas Current System" (*in preparation*)
- Susko, D., Karunatillake, S., **Button, N.** "Martian Chemical Provinces Give Insight into Elysium Volcano's Igneous – Processes" (*in preparation*)
- Karunatillake, S., Wray, J., Gasnault, O., McLennan, S., Rogers, A., Squyres, S., Boynton, W., Skok, J.R., **Button, N.**, Ojha, L. "The association of hydrogen with sulfur on Mars across latitudes, longitudes, and compositional extremes." (*submitted to the Journal of Geophysical Research - Planets*)
- Pritchard, M., Henderson, S., Jay, J., Soler, V., Krzesni, D., **Button, N.**, Welch, M., Semple, A., Glass, B., Sunagua, M., Minaya, E., Amigo, A., Clavero, J. "Reconnaissance earthquake studies at nine volcanic areas of the central Andes with coincident satellite thermal and InSAR observations." *Journal of Volcanology and Geothermal Research* 280 (2014): 90-103. (doi: 10.1016/j.volgeores.2014.05.004)
- Karunatillake, S., Zhao, Y., McLennan, S., Skok, J.R., **Button, N.** "Does Martian soil release reactive halogens to the atmosphere?" *Icarus* 226.2 (2013): 1438-1446. (doi: 10.1016/j.icarus.2013.07.018)

Project Team Experience

- Member of the MVP (Mojave Volatile Prospector) Rover Mission Science Team, NASA Ames August 2014 – Present
- Processing TextureCam images to develop a program that can identify different surface terrains
- Advisor for the MIDDAS (Mars Ice Deposit Detection by Application of Seismology) Project Team August – December 2014
Planetary Science Laboratory, Louisiana State University
- Submitted a proposal to the Mars One 2018 Lander University Competition and placed in the Top 10
 - <https://community.mars-one.com/projects/middas-mars-ice-deposit-detection-by-application-of-seismology>
- Member of the Violet Satellite Project Science Team, Cornell University November 2008 – May 2011
- Developed the second choice science objective (investigation of polar mesospheric clouds) for the spectrometer onboard the student designed and built satellite to be launched in the coming years

Programming Skills: Matlab, IDL

Certifications:

USA Rugby Level 1 Referee • SCUBA Certified with PADI: Open Water Diver • B3 Combination Helicopter/Airplane Safety

Conference Presentations

- Button, N.,** Skok, J. R., Heldmann, J., Thompson, D., Ortega, K., Francis, R., Karunatillake, S. “Results of Texturecam Processing from the Mojave Volatiles Prospector (MVP) Rover Mission.” Lunar and Planetary Science Conference (2015). (*poster, Abstract #2239*)
- Button, N.** “Validation of SMOS and Aquarius/SAC-D Salinity Data in the Agulhas Current System.” American Meteorological Society (AMS) Annual Meeting (2014). (*oral*)
- Button, N.,** Husch, J., Karunatillake, S., Skok, J.R. “Distinguishing Between Bombsags and Dropstones on Mars with Implications for Gusev and Gale Crater.” American Geophysical Union (AGU) Fall Meeting (2013). (*poster, Abstract #P23B-1781*)
- Button, N.** and Subrahmanyam, B. “Validation of SMOS and Aquarius Salinity Data in the Agulhas Region.” SMOS & Aquarius Science Workshop, IFREMER, Brest, France (2013). (*oral*)
- Pritchard, M., Krzesni, D., **Button, N.,** Jay, J., Henderson, H., Glass, B., Soler, V., Amigo, A., Sunagua, M., Minaya, E., Clavero, J., Barrientos, S. “Reconnaissance seismology at nine volcanoes of the central Andes.” American Geophysical Union (AGU) Fall Meeting (2012). (*poster, Abstract #V53B-2817*)
- Russo, S., **Button, N.,** Wilhelm, M.B., Warnke, N. “An Overview of the Science Mission for the Violet Satellite Project.” National Conference on Undergraduate Research (NCUR), Ithaca College (2011). (*poster*)
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Leadership and Volunteering

- President of the Baton Rouge Women’s Rugby Football Club June 2015 – Present
- Vice President of the LSU AAPG Student Chapter Academic Year 2015 – 2016
- Captain of the LSU Women’s Rugby Football Club Academic Year 2014 – 2015
- Vice President of the LSU Women’s Rugby Football Club Academic Year 2014 – 2015
- Mentor for EnvironMentors, Louisiana State University Academic Years 2013 – 2014, 2014 – 2015
- Volunteer for Cornell Alumni Admissions Ambassador Network (CAAAN) Academic Years 2013 – 2014, 2014 – 2015
- Vice President for Marine Science Graduate Society, University of South Carolina at Columbia Academic Year 2012 – 2013
- Graduate Student Representative, Marine Science Program, University of South Carolina at Columbia Academic Year 2012 – 2013
- Mentor for Women’s Student Services, University of South Carolina at Columbia Academic Year 2012 – 2014
- Volunteer for AWANA, First Baptist Church, Columbia, SC Fall 2012
- Committee and Founding Member of the Science of Earth Systems Student Association Academic Year 2011 – 2012
- Lab Assistant, Dr. Drew Harvell Marine Invertebrate Lab, Cornell University December 2009 – May 2012
- President of Coral Club, Cornell University Academic Year 2010 – 2011
- Intern for the Koke’e Resource Conservation Program (KRCP), Kaua’i May 2010 – June 2010

Teaching Experience

- Station Supervisor for the Dryden High School 9th Grade Earth Science Field Trip at Taughannock State Park May 2015
 - Guest Lecturer in the Astronomy Class and 9th Grade Earth Science Field Trip, Dryden High School May 2014
 - Teaching Assistant Training (GRAD 701), University of South Carolina at Columbia Fall 2012
 - Station Supervisor for the Dryden High School 9th Grade Earth Science Field Trip at Taughannock State Park May 2011
 - Guest Lecturer in the 9th Grade Earth Science Classes, Dryden High School December 2010
 - Teaching Assistant for EAS 7500: Satellite Remote Sensing in Biological Oceanography, Cornell University June 2009
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Awards

- Department of Geology & Geophysics Scholarship, LSU Academic Year 2014 – 2015
- Student Travel Grant: AGU 2013 Fall Meeting through Lunar Graduate Conference December 2013
- Student Travel Grant: 11th Meeting of the Venus Exploration Analysis Group (VEXAG) November 2013
- Student Travel Grant: Analog Sites for Mars Missions II: Past, Present and Future Missions to Mars August 2013
- South Carolina Space Grant Consortium: Graduate Research Assistantship May 2013
- Dean’s List, Cornell University Fall 2010
- NASA/New York Space Grant Consortium’s Undergraduate Early Science & Engineering Research Competition Oct. 2010
- Segal Americorps Education Award August 2010

Research Experience

Research Assistant for Dr. Subrahmanyam Bulusu, University of South Carolina at Columbia Academic Year 2012 – 2013

- Validated salinity data from Aquarius/SAC-D and Soil Moisture and Ocean Salinity (SMOS) satellites in the Agulhas Current

Undergraduate Research Experience at Cornell University:

Research Assistant for Dr. Matthew Pritchard

July 2010 – September 2011, January 2012 – August 2012

- Located local earthquakes of three volcanoes in the central Andes to compare to local earthquakes of a supervolcano
- Used MODIS data to observe the hotspot at Cordon-Caulle, South America before and after the June 6, 2011 eruption

Research Assistant for Dr. Donald Banfield

December 2007 – September 2011

- Catalogued clouds on Mars in order to calculate the probability a cloud will be present at the locations of the Mars Exploration Rovers at a given time of the year

Research Assistant for Dr. Peter Thomas

June 2009 – December 2009

- Mapped seasonal changes of the southern polar cap on Mars using the Context Camera on Mars Reconnaissance Orbiter

Co-author on Abstracts

Heldmann, J. L., Colaprete, A., Cook, A., Roush, T., Deans, M., Elphic, R., Lim, D., Skok, J. R., **Button, N. E.**, Karunatillake, S., Garcia, G. “Mojave Volatiles Prospector (MVP): Science and Operations Results from a Lunar Polar Rover Analog Field Campaign.” Lunar and Planetary Science Conference (2015). *Abstract #2165*.

Karunatillake, S., Wray, J., Gasnault, O., McLennan, S. M., Rogers, A. D., Squyres, S., Boynton, W. V., Skok, J. R., **Button, N. E.**, Ojha, L. “Latitudinal Variation in the Association of H₂O with Sulfur in Martian Soil.” Lunar and Planetary Science Conference (2015). *Abstract #1175*.

Karunatillake, S., Wray, J., Gasnault, O., McLennan, S. M., Rogers, A. D., Boynton, W. V., Skok, J. R., **Button, N. E.**, Ojha, L. “Variations in the association of H₂O with sulfur on Mars.” American Geophysical Union (AGU) Fall Meeting (2014). *Abstract #P41A-3890*.

Pritchard, M., Welch, M., Jay, J., **Button, N.** “A remote sensing assessment of the impact of the 2010 Maule, Chile earthquake (Mw 8.8) on the volcanoes of the southern Andes.” American Geophysical Union (AGU) Fall Meeting (2011). *Abstract #S14A-05*.

Additional Presentations

- “Mars Rocks!” FameLab: Exploring Earth and Beyond (December 2013). (<http://youtu.be/iMcvJ6vM7ec>). (*oral*)
- “Volcanic Earthquakes in Bolivia.” Planetary Lunch Series, Department of Astronomy, Cornell University (September 2011). (*oral*)
- Button, N.** and Pritchard, M. “Volcanic Earthquakes in Bolivia.” Undergraduate Research Symposium, Dept. of Earth and Atmospheric Sciences, Cornell University (September 2011). (*poster*)
- “Interannual Variability at the South Polar Cap of Mars.” Undergraduate Research Fair, Department of Astronomy, Cornell University (October 2009). (*poster*)
- “Mars Down Under.” Cornell Astronomical Society Lecture Series, Fuertes Observatory, Cornell University (October 2009).
- “An Opportunity with Mars.” Conversations with a Scientist, Dryden Central School (November 2007). (*oral*)
- “What mystery lies behind the Surface Type 2 material located in the lowlands of Mars?” Planetary Lunch Series, Department of Astronomy, Cornell University (September 2007). (*oral*)