

BRETT A. BUZZANGA

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www.github.com/bbuzz31

EDUCATION

- Old Dominion University** *August 2021*
Doctor of Philosophy
Overall GPA: 3.93/4.0
- Old Dominion University** *August 2017*
Master of Science
Overall GPA: 3.92/4.0
- Brookdale Community College** *May 2013*
A.S. in Science & Mathematics
Overall GPA: 3.98/4.0
- Rutgers University** *May 2011*
B.A in Political Science, Philosophy
Overall GPA: 3.55/4.0

EXPERIENCE

- NASA JPL** Fall 2020 - Present
Intern *Remote*
- Incorporating state-of-the-art observational data and model results in a statistical framework to quantify regional drivers of 20th century East Coast sea-level change.
- NASA JPL** Summer 2020
Intern *Remote*
- Evaluated remotely-sensed data from NASA satellite altimeters (ICESat-2, Jason-3) and *in-situ* observations to measure regional sea-level trends.
- NASA JPL** Summer 2019
Intern *Pasadena, CA*
- Mapped coastal subsidence with high-resolution time-series Interferometric Synthetic Aperture Radar (InSAR) and GPS measurements technologies
- Old Dominion University** May 2015 - Aug 2020
Research Assistant *Norfolk, VA*
Sep 2017 - Aug 2021
- Developed adaptable InSAR & GPS workflows that support ongoing monitoring of coastal vertical land motion
 - Leveraged open-source software for InSAR processing and time-series analysis: ISCE & StaMPS for persistent scatter methods; ARIA-tools, GIANt, and MintPy for the small baseline subset approach
 - Applied these software and workflows to quantify the impact of a groundwater injection infrastructure project currently underway in coastal Virginia (<https://www.hrsd.com/swift>)

- Ongoing work with sea-level Practitioners, including the Institute for Coastal Resilience and Hampton Roads Planning District, to incorporate sea-level science and vertical land motion information into decision making

May 2015 - Sep 2017

Front and backend web development of:

- Dr. Ben Hamlington's Ocean Remote Sensing Lab website
- The Socioeconomic and Environmental Information Needs Knowledge Base (www.seeinkb.net)

Nathanial B. Palmer Cruise 16-01

Jan 2016 - Feb 2016

Research Assistant

Palmer Station Antarctica LTER

- Processed sediment cores and performed chemical analyses aboard an oceanographic research cruise

NASA Develop

Fall 2015

Intern

Langley Air Force Base, VA

- Created a land use/land cover classification of the Albemarle - Pamlico Sound Watershed
- Focused on wetland delineation for use in identifying trends in declining wetland health
- Used GIS and public remote sensing data (LANDSAT)

ReVireo

May 2011 - May 2012

Client Relations Manager

New Brunswick, NJ

- Managed and streamlined client relations in an energy efficiency certification startup
- Assisted in business development decisions

TEACHING

Old Dominion University

Aug 2014 - May 2016

Teaching Assistant

Norfolk, VA

- Introduction to Oceanography (two semesters)
- Introduction to Global Climate Change (two semesters)
- Oceanography for Teachers (one semester)

Kaplan Test Prep

Jan 2013 - Present (Inactive)

SAT Teacher/Tutor

Greater NYC

- Taught SAT/ACT preparation classes and individually tutored high school students

PROGRAMMING EXPERTISE

- Co-developer to **ARIA-tools**, a suite of Python libraries with Jupyter documentation for manipulating standard ARIA interferograms (NTR-51702),
- Contributor to **RAiDER**, a Python and C library for tropospheric corrections for interferograms (NTR-51433),
- Contributor to **MintPy**, a Python library for InSAR time-series analysis,
- User of the **ISCE** InSAR processor,
- User of the **GIAnt** InSAR time-series processor,
- User of the **Stamps** InSAR time-series processor,
- Developer of **bayesGRD**, an extension to bayesGIA (<https://github.com/christopherpiecuch/bayesGIA>), a Bayesian model of 20th Century East Coast relative sea-level change written in MATLAB,

- Developer of **ModSWMM**, a Python framework coupling the groundwater flow model MODFLOW-2005 (Fortran) and rainfall/runoff model SWMM (<https://github.com/bbuzz31/ModSWMM>; C),
- Adept in GIS, shell scripting, and web development,

PUBLICATIONS

- Hamlington, B., et al., Observation-Based Projections of Sea Level in 2050 for the Coastal United States, *Nature Communications Earth & Environment*, *in review*
- **Buzzanga, B.**, Heijkoop, E., Hamlington, B., Nerem, R. S., & Gardner, A. (2021). An assessment of regional ICESat-2 sea-level trends. *Geophysical Research Letters*, 48, <https://doi.org/10.1029/2020GL092327>.
- **Buzzanga, B.**, Bekaert, D. P. S., Hamlington, B., & Sangha, S. S. (2020). Toward sustained monitoring of subsidence at the coast using InSAR and GPS: An application in Hampton Roads, Virginia. *Geophysical Research Letters*, 47, <https://doi.org/10.1029/2020GL090013>.
- Bekaert, D.P.S, Hamlington, B., **Buzzanga, B.**, Jones, K., 2017. Spaceborne Synthetic Aperture Radar Survey of Subsidence in Hampton Roads, Virginia (USA), *Scientific Reports*, **7**(1), 14752.
- **Buzzanga, B.**, Precipitation and sea level rise impacts on groundwater levels in Virginia Beach, Virginia, *Masters Thesis, Old Dominion University*

PRESENTATIONS

- **Buzzanga, B.**, (2021). Measuring Subsidence in Hampton Roads from Space. Virtual Presentation to the Atmospheric and Planetary Sciences Department of Hampton University (Invited).
- **Buzzanga, B.** and Hamlington, B., 2020. Assessing the role of ICESat-2 in understanding coastal sea level. Poster presentation at the *American Geophysical Union, Fall Meeting*, Virtual.
- **Buzzanga, B.**, Bekaert, D., Hamlington B., Sanga, S., 2019. Towards Sustained Monitoring of Subsidence using InSAR and GNSS. Oral presentation at the *American Geophysical Union, Fall Meeting*, San Francisco
- **Buzzanga, B.**, Plag, H.P., 2017. Linking earth observations and models to societal information needs: The case of coastal flooding. Oral presentation at *Old Dominion University*, Norfolk, Virginia.
- **Buzzanga, B.**, 2016. Sea level rise impacts on precipitation-induced flooding. Poster presentation at the *American Geophysical Union, Fall Meeting*, San Francisco, California.
- **Buzzanga, B.**, Plag, H.P., 2016. Linking earth observations and models to societal information needs: The case of coastal flooding. Oral presentation at the *American Geophysical Union, Fall Meeting*, San Francisco, California.
- Roberts-Pierre, B., **Buzzanga, B.**, Pasco, M., Charlam, B., Patrick, J., 2015. Sensing the Sounds: An updated land use/landcover classification of the Albemarle and Pamlico Sounds. Oral presentation at *NASA Langley*, Langley Air Force Base, Hampton, VA.

HONORS AND AWARDS

- Student delegate for university forum on climate change moderated by Secretary of State John Kerry
- Dorothy Brown Smith Scholarship ×2, \$3000.00

ONGOING COLLABORATIONS

- Within JPL: 329B, 329C, 329F, 334H, 334K & 8x

- External: Missouri University of Science and Technology, NOAA, NGS, Old Dominion University, University of Alaska Fairbanks; University of Colorado Boulder; UCLA; USGS, Virginia Tech, Woods Hole Oceanographic Institute

PROFESSIONAL ACTIVITIES

- Participated in the UNAVCO InSAR Theory & Processing Course (Summer 2018)
- Participated in **Unlearning Racism In Geoscience** as part of the JPL Sea level and Ice 'Pod' (Spring 2021)
- NASA Sea-Level Change Team (Collaborator; 2021-2024)
- Reviewer for Geophysical Research Letters
- Member of the American Geophysical Union (since 2015)