ASHLEY BELLAS-MANLEY

ADDRESS	Department of Aerospace Engineering Sciences University of Colorado Boulder 3775 Discovery Drive, Boulder, CO, 80309
EMAIL & WEBSITE	ashley.bellas@colorado.edu ashleybellas.github.io

EDUCATION	08/2014-05/2021	University of Colorado Boulder, Department of Physics Ph.D. in Geophysics: *Reconciling the Rheology of Earth's Lithosphere Across Vastly Different Length- and Time-Scales* Thesis advisor: Prof. Shijie Zhong
	09/2009-05/2014	University of British Columbia B.Sc. in Geophysics with distinction
EMPLOYMENT	08/2024-present	Professional Research Associate Department of Aerospace Engineering Sciences, University of Colorado Boulder
	08/2022-08/2024	Postdoctoral Associate Department of Aerospace Engineering Sciences, University of Colorado Boulder
	08/2021-08/2022	Postdoctoral Fellow Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology
	05/2021-08/2021	Postdoctoral Associate Department of Physics, University of Colorado Boulder

PUBLICATIONS

1. **Bellas-Manley, A.,** R.S. Nerem, & B.D. Hamlington (submitted), Extrapolation of the Satellite Altimeter Record to Understand Regional Variations in Future Sea Level Change, *J. Geophys. Res.: Oceans.*

2. Karnauskas, K., R. S. Nerem, J .T. Fasullo, **A. Bellas-Manley**, et al. (submitted) On the Drivers of Regional Sea Level Change over the Altimeter Era, *J. Geophys. Res.: Oceans.*

3. Rodell, M., Barnoud, A., Robertson, F.R., Richard P. Allan, **A. Bellas-Manley**, M. G. Bosilovich, D. Chambers, F. Landerer, B. Loomis, R. S. Nerem, M. M. O'Neill, D. Wiese & S. I. Seneviratne (2024), An Abrupt Decline in Global Terrestrial Water Storage and Its Relationship with Sea Level Change. *Surv Geophys*. https://doi.org/10.1007/s10712-024-09860-w

4. Hamlington, B.D., **Bellas-Manley, A.,** Willis, J.K. *et al*. (2024), The rate of global sea level rise doubled during the past three decades. *Nature Commun Earth Environ* 5, 601. https://doi.org/10.1038/s43247-024-01761-5

5. **Bellas-Manley, A.** & L. Royden (2024), Basal Mantle Flow Over LLSVPs Explains Differences in Pacific and Indo-Atlantic Hotspot Motions, *J. Geophys. Res.: Solid Earth,* 129, e2023JB027636. https://doi.org/10.1029/2023JB027636

6. **Bellas, A.,** S.J. Zhong, & A.B. Watts (2022), Reconciling lithospheric rheology between laboratory experiments, field observations, and different tectonic settings, *Geophysical Journal International*, 228, 857–875.

7. **Bellas, A.,** & S.J. Zhong (2021), Effects of a weak lower crust on the flexure of continental lithosphere, *J. Geophys. Res.: Solid Earth,* 126, 10, e2021JB022678.

8. **Bellas, A.,** & S.J. Zhong (2021), Seismic strain rate and flexure at the Hawaiian Islands constrain the frictional coefficient, *Geochemistry, Geophysics, Geosystems*, 22, e2020GC009547.

9. **Bellas, A.,** S.J. Zhong, & A.B. Watts (2020). Constraints on the rheology of the lithosphere from flexure of the Pacific Plate at the Hawaiian Islands. *Geochemistry, Geophysics, Geosystems*, *21*, e2019GC008819. https://doi.org/10.1029/2019GC008819.

10. **Bellas, A.,** S.J. Zhong, D. Bercovici, & E. Mulyukova (2018), Dynamic weakening with grain-damage and implications for slab detachment, *Phys. Earth Planet. Int*., 285, 76-90.

CONFERENCE PRESENTATIONS

NASA Solid Earth Team 2.0 Meeting (2024), Washington, D.C., *The Half-Century Record of Changes in the Earth's Oblateness from Satellite Laser Ranging: What Is It Telling Us?*

CESM2 Workshop (2024), Boulder, CO, *Using the CESM2 Large Ensemble to Evaluate CSEOF Separation of Internal and Forced Components of Sea Level Change*

Colorado Glaciology Conference (2024), Boulder, CO, *Earth's Oblateness as a Long Term Record of the Cryosphere*

AGU Fall Meeting (2023), San Francisco, CA. *Data-Driven Approaches to Understanding Future Regional Sea Level Change*, G53B-03.

NASA Ocean Surface Topography Science Team Meeting (2023), San Juan, Puerto Rico. *Impacts of GIA Modeling Uncertainties on the Closure of the GMSL Budget, 10.24400/527896/a03-2023.3824*

NASA GRACE-FO Science Team Meeting (2023), Boulder, CO. *Impacts of GIA Modeling Uncertainties on the Closure of the Global Mean Ocean Mass Budget*

NASA Sea Level Change Science Team Meeting (2023), Pasadena, CA. *Data-Driven Approaches to Understanding Regional Variations in Future Sea Level Change*

Study of the Earth's Deep Interior Conference (2022), Zurich, Switzerland. *Basal Mantle Flow Over LLSVPs Explains Differences in Pacific and Indo-Atlantic Hotspot Motions*

AGU Fall Meeting (2021), New Orleans, LA. *Effects of a Weak Lower Crust on the Flexure of Continental Lithosphere*, T11D-05.

AGU Fall Meeting (2021), New Orleans, LA. *Reconciling Lithospheric Rheology Between Laboratory Experiments, Field Observations, and Different Tectonic Settings*, MR43A-06.

AGU Fall Meeting (2020). *Testing the Yield-Stress Envelope Method Against Finite Element Models of Flexure*, T011-0008.

AGU Fall Meeting (2019) San Francisco, CA. *Constraining the Frictional Coefficient: a Comparison of Strain Rate Inferred from Seismicity and 3D Viscoelastic Loading Models at Hawaii*, MR44A-03.

AGU Fall Meeting (2019) San Francisco, CA. *Elastic Thickness: A Comparison of Estimates from Fully Dynamic Viscoelastic Models and the Yield-Strength Envelope Method*, MR51B-0040.

Gordon Research Conference (2019) Holyoke, MA. *Constraining the rheology of the lithosphere using flexure at the Hawaiian Islands.*

AGU Fall Meeting (2018) Washington, D.C. *Constraining mantle rheology at lithospheric conditions using observations of flexure at the Hawaiian Islands*, MR24A-01.

Study of the Earth's Deep Interior Conference (2018), Edmonton, AB, Canada. *Dynamics of a Subducted Slab with Grain-Damage*

TEACHING

TA of General Physics 1: PHYS 1110 and General Physics 2: PHYS 1120 at CU Boulder for multiple semesters between 2014 and 2018. Responsibilities included leading recitation sessions and hosting exams.

TA of 12.001: Introduction to Earth and Planetary Geophysics at MIT (2022)

Course facilitator for Remote Sensing Seminar: ASEN 5210 (2022)

Guest lecturer in Satellite Geodesy: ASEN 6070 (2024)

Guest lecturer in Remote Sensing Data Analysis: ASEN 6337 (2024)

SKILLS

- Computational modeling
- MATLAB, Python, Fortran, C
- Writing grant proposals
- Data science
- Geodynamics
- Speaking
- Climate science
- Satellite geodesy
- Writing scientific papers

EXPERIENCE

Ten+ years computational modeling
Ten+ years data analysis
Seven+ years solid Earth geophysics
Two+ years climate physics

ABOUT ME

Welcome, and thank you for visiting my CV!

I am a highly conscientious individual. I care about understanding things thoroughly. I am inspired by beauty. I aim to serve a purpose. As a PhD candidate, I used flexure at the Hawaiian Islands to infer the *rheology* of the *lithosphere* and contribute to understanding why Earth is the only terrestrial planet in the solar system with plate tectonics. At MIT, I studied the structure and dynamics of ancient remnant anomalies which lie just above the core-mantle boundary. With the help of Steven Nerem at CU Boulder, I pivoted from solid Earth geophysics to climate science and learned to combine satellite observations with computational models to quantify, understand, and project sea level change. I am always looking for new opportunities to meet excellent people and pursue meaningful work. Please reach out if you are interested in working with me!

EXTRACURRICULAR ACCOMPLISHMENTS

Royal Conservatory of Music, Certificate in Piano, Grades 1-9	(2001-2009)
1st place, NSSAF Provincial Championship Cross Country Team Member	(2008)
Headmaster's Recognition Award for Academic Excellence in Spanish	(2008)
Summited five mountain peaks over 14,000'	(2014-2019)
Climbed a 5.12	(2018)
Climbed a V5	(2022)
Married my husband	(2022)
QOM on Royal Up & Over, Belmont MA	(2022)
Cycled over 100 km in a single ride	(2023)
Mountain biked Mag7, Captain Ahab, and Porcupine Rim in Moab, Utah	(2023)
Deadlifted 215 lbs	(2023)