BENJAMIN IDINI

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Research Interests

Planetary Interiors and Evolution · Ocean Worlds · Tidal Interactions · Extraterrestrial Seismology· Gravity Radio Science · Solar System Exploration · Earthquake Mechanics · Earthquake Ground Motion · Tectonic Deformation

Education

PhD in Planetary Science, *California Institute of Technology, Pasadena, CA* 2022
MS in Geophysics, *California Institute of Technology, Pasadena, CA* 2019
MS in Earthquake Engineering, *Universidad de Chile, Santiago, Chile* 2016
BS in Civil Engineering, *Universidad de Chile, Santiago, Chile* 2013

Academic Appointments

UC President's Postdoctoral Fellow, *University of California, Santa Cruz, CA* September 2022 — Present
Graduate Research/Teaching Assistant, *California Institute of Technology, Pasadena, CA* June 2017 — August 2022
Research Geophysicist, *Universidad de Chile, Santiago, Chile* March 2016 — June 2017

Refereed Publications

13. Flores-Cuba, J., et al., including **Idini, B.** (In prep.) Mechanisms and seismological signatures of rupture complexity induced by fault damage zones in fully-dynamic earthquake cycle models.
12. Idini, B. & Nimmo, F. (In press). Resonant stratification in Titan's global ocean. The Planetary Science Journal.
11. Idini, B., Ruiz, S., et al. (2024). Double distance dependence in high–frequency ground motion along the plate boundary in Northern Chile. Journal of South American Earth Sciences, 133. [10.1016/j.jsames.2023.104699]
10. Howard, S., et al., including **Idini, B.** (2023). Jupiter's interior from Juno: Equation-of-state uncertainties and dilute core extent. Astronomy and Astrophysics, 672. [10.1051/0004-6361/202245625]
9. Idini, B. & Stevenson D.J. (2022). The gravitational imprint of an interior–orbital resonance in Jupiter–Io. The Planetary Science Journal, 3(4), 89. [10.3847/PSJ/ac6179]
8. Idini, B. & Stevenson D.J. (2022). The lost meaning of Jupiter's high–degree Love numbers. The Planetary Science Journal, 3(1), 11. [10.3847/PSJ/ac4248]
7. Idini, B. & Stevenson D.J. (2021). Dynamical tides in Jupiter as revealed by Juno. The Planetary Science Journal, 2(2), 69. [10.3847/PSJ/abe715]
6. Idini, B. & Ampuero J-.P. (2020). Fault-zone damage promotes pulse-like rupture and back-propagating fronts via quasi-static effects. Geophysical Research Letters, 47(23), e2020GL090736. [10.1029/2020GL090736]
5. Erickson, B., et al., including **Idini, B.** (2020). The community code verification exercise for simulating sequences of earthquakes and aseismic slip (SEAS). Seismological Research Letters, 91(2A), 874-890. [10.1785/0220190248]
4. Ross, Z., **Idini, B.**, et al. (2019). Hierarchical interlocked orthogonal faulting in the 2019 Ridgecrest earthquake sequence. Science, 366, 6463. [10.1126/science.aaz0109]
3. Gurnis, M., et al., including **Idini, B.** (2019). Incipient subduction at the contact with stretched continental crust: The Puysegur Trench. Earth and Planetary Science Letters, 520, 212-219. [10.1016/j.epsl.2019.05.044]
2. Leyton, F., et al., including **Idini, B.** (2018). Empirical site classification of CSN network using strong-motion records. Seismological Research Letters, 89(2A), 512-518. [10.1785/0220170167]
1. Idini, B., Rojas, F., et al. (2017). Ground motion prediction equations for the Chilean subduction zone, Bulletin of Earthquake Engineering, 15, 5. [10.1007/s10518-016-0050-1]

Software Publications

1. Luo, Y., Ampuero, J.P., et al., including **Idini, B.** (2017). QDYN: a Quasi-DYNamic earthquake simulator (v1. 1). Zenodo.(doi: 10.5281/zenodo. 322459).

Conference Presentations (O: Oral, P: Poster)

12. Resonant stratification in Titan and other icy satellites with global oceans, DPS-EPSC Annual Meeting, San Antonio TX, 2023 (O).
11. Future investigations of ocean dynamics in ocean worlds using orbiting spacecraft, Bay Area Planetary Science Conference, Santa Cruz CA, 2023 (O).
10. A tale of two planets: dilute cores in Jupiter and Saturn from in-situ spacecraft observations, UC Santa Cruz Postdocs Association Symposium, Santa Cruz CA, 2023 (O).
9. A tale of two planets: dilute cores in Jupiter and Saturn from in-situ spacecraft observations, UC PPFP Annual Meeting, Lake Arrowhead CA, 2023 (O).
8. The gravitational imprint of dynamical tides in Jupiter (invited), AGU Fall Meeting, Chicago IL, 2022 (O).
7. Tidal constraints on the radial extension and static stability of Jupiter's dilute core, AGU Fall Meeting, New Orleans LA, 2021 (P).
6. Dynamical tides in the Jovian System as revealed by Juno, AGU Fall Meeting, remote, 2020 (P).
5. The first three days of the 2019 Ridgecrest earthquake sequence, SCEC Annual meeting, Palm Springs CA, 2019 (P).
4. A Bayesian Image of the 2017 Kermanshah Seismic Sequence in the Northwestern Zagros, AGU Fall Meeting, Washington DC, 2018 (O).
3. Rupture Complexity Promoted by Damaged Fault Zones in Earthquake Cycle Models. In AGU Fall Meeting, New Orleans LA, 2017 (P).
2. Empirical dynamic amplification factors for sites based on seismic noise, 16th World Conference on Earthquake Engineering, Santiago, Chile, 2017 (O).
1. Ground motion prediction equations for the Chilean subduction zone, 2nd Geophysical Signatures of Earthquakes and Volcanoes - 2GSEV, Santiago, Chile, 2016 (P).

Invited Seminars and Colloquia

MIT, Earth, Atmospheric, and Planetary Science Department Lecture Series	May 17, 2023
UC Santa Cruz, Baskin School of Engineering, Geophysical and Astrophysical Fluid Dynamics Seminar	May 12, 2023
UC Davis, Earth and Planetary Science Department Seminar	April 19, 2023
UC Santa Cruz, Earth and Planetary Science Department Whole Earth Seminar	April 18, 2023
UC San Diego & San Diego State University, Astrophysics Seminar	March 1, 2023
UC San Diego, Scripps Institution of Oceanography, IGPP Seminar	February 28, 2023
UC Berkeley, Center for Integrative Planetary Science Seminar	February 1, 2023
Rice University, Earth, Environmental, and Planetary Science Department Colloquium	January 19, 2023
UCLA, Earth, Planetary, and Space Sciences Department Colloquium	October 11, 2022
UC Santa Cruz, Other Worlds Laboratory, Astronomy and Astrophysics Planetary Lunch Seminar	November 7, 2022
Universidad de Chile, Department of Geophysics Seminar (virtual)	June 17, 2022
Caltech, DIX Planetary Science Seminar	April 27, 2021
Caltech, DIX Planetary Science Seminar	June 2, 2020

Mentorship, Leadership, and Outreach

Guide in *La Noche de las Estrellas*, Lick Observatory	2023
Mentor in the *Lamat* program, UC Santa Cruz	2023
Mentor in the Eugene Cota-Robles Fellowship program, UC Santa Cruz	2022 — Present
Primary convener and session organizer at AGU Fall Meeting, session: Giant Planet Interiors	2023
Invited speaker at NASA's Hyperwall Exhibition, AGU Fall Meeting, Chicago IL	2022
Invited speaker at Science Journeys, Caltech (youtube.com/user/caltech)	2021 — 2022
Mentor in the EPS/ESCI Undergraduate program, UC Santa Cruz	2022

Primary convener and session organizer at AGU Fall Meeting, session P013: Giant Planet Interiors 2022
Invited speaker in Urban Math Collaborative program, Long Beach Unified School District 2021
Host in Caltech's *Astronomía en el Bar* (Astronomy on tap hosted in Spanish; youtube.com/c/CaltechAstro) 2021
Mentor in Caltech's International Student Buddy Program 2020 — 2021
Judge in Caltech's Summer Undergraduate Research Fellow (SURF) poster competition 2020 — 2021
Panelist at Science for March Seismological Laboratory booth, Caltech 2018
Director in Student Federation Board, Universidad de Chile 2014
Director in Engineering Student Council Board, Universidad de Chile 2013

Grants, Honors, and Awards

NASA's Juno mission, Interior Working Group cochair contract (~$450k USD) 2022
Travel award, EPSC-DPS joint meeting ($2k USD) 2023
Travel award, USRA-LPI Uranus Flagship Workshop ($2.5k USD) 2023
Travel award, NASA Outer Planets Assessment Group ($1k USD) 2022
University of California President's Postdoctoral Fellowship (~$600k USD) 2022
AGU Outstanding Student Presentation Award ($500 USD) 2021
Division of Geological and Planetary Sciences Fellowship, California Institute of Technology (~$70k USD) 2017
Highest Distinction Major Graduate, Universidad de Chile 2016
CONICYT Master of Science Fellowship, Ministry of Education, Chile (~$17k USD) 2014
Bicentenario Scholarship, Ministry of Education, Chile (~$10k USD) 2012
Honored Undergraduate Student, Universidad de Chile 2011, 2012

Teaching Assistant Experience

California Institute of Technology
Planetary Physics 2022
Planetary Structure and Evolution 2021
Geodynamics 2020
Freshman Seminar: Earthquakes 2019
Universidad de Chile
Advanced Structural Dynamics 2015
Seismic Design of Structures 2015

Planetary Exploration

Europa Clipper Mission, Science Team Affiliate April 2023 — Present
National Aeronautics and Space Administration *United States*

Juno Mission, Science Team Affiliante and Interiors Working Group Chairman January 2020 — Present
National Aeronautics and Space Administration *United States*

KISS Study (invitation only): Determining the Interior Structure of Uranus September 11-15, 2023
Keck Institute for Space Studies *Pasadena, CA*

- A think-tank event that jointly produced an integrated plan outlining a series of calculations together with observations that, if implemented, will be able to discriminate among competing models for Uranus's interior structure.

Planetary Science Summer School May 2022 — Aug 2022
National Aeronautics and Space Administration – Jet Propulsion Laboratory *Remote, United States*

- Jointly formulated the strategic science goals, operation, and payload of a NASA New Frontiers mission concept to extract a surface sample from comet 67P/Churyumov–Gerasimenko and return it to Earth for laboratory analysis.

Magnus G. Langseth Research Vessel, Science Crew March 2018
Lamont-Doherty Earth Observatory *Puysegur Trench, Pacific Ocean*

- Assisted the deployment of instrumentation and acquisition of seismic, magnetic, and radar data while navigating the Pacific Ocean.

Professional Organizations

Division for Planetary Sciences of the American Astronomical Society (DPS-AAS) 2023 — Present
Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) 2021 — Present
Affiliate to the Keck Institute for Space Studies (KISS) 2019 — Present
American Geophysical Union (AGU) 2017 — Present

Appearences in News Articles

Image of 'violent' earthly phenomenon captured on Jupiter, Ariana Bindman, SFGATE June 20, 2023
The tides of Jupiter can help scientists understand the history of the Solar System, Passant Rabie, Inverse Magazine May 5, 2021
Raising Tides on Jupiter with Its Moons, Susanna Kohler, AAS Nova April 21, 2021
Lessons from Ridgecrest, Robert Perkins, AAAS EurekAlert! October 17, 2019
Unprecedented movement detected on California earthquake fault capable of 8.0 temblor, Rong-Gong Lin II, LA Times October 17, 2019
Se detecta movimiento sin precedentes en una falla sísmica en California capaz de producir un temblor de 8.0, Rong-Gong Lin II, The San Diego Union-Tribune En Español October 17, 2019