

Summer Modeling Research Experiences (SMOREs)



2021 CIG Pilot Program Student Presentations



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Program Overview

- **Motivation**

- Members of the geodynamics community come from a broad range of communities, many of which are the least diverse in STEM
- Too few undergraduates with proper numerical and computational backgrounds

- **Challenge**

- Simultaneously increase computational competency and diversity in students recruited into the geodynamics community

- **Solution**

- Provide funded training and research opportunities for undergraduates
- Specifically target underrepresented groups in advertising

Acknowledgements

- **NSF**
 - Supporting CIG and providing guidance on the program
- **CIG Director Lorraine Hwang**
 - Funding, supporting, and organization
- **Dave Stegman (UCSD)**
 - Organization and advice from prior REU activities
- **CIG SSC Members - Sylvain Barbot, Krista Soderlund, Cian Wilson**
 - Review of applications
- **Participants: Mentors and Students**

Participants

- **Students* (out of 35 applicants)**

- Elena Ehrlich (North Carolina State)
- Keneni Godana (University of Illinois at Chicago)
- Dante Hickey (Reed College)
- Hiva Mohammadzadeh (Pierce College *now at* UC Berkeley)
- Brittany Okonkwo (UC Santa Barbara)

- **Mentors**

- Magali Billen (UC Davis)
- Katie Cooper (Eastern Washington)
- Eric Mittelstaedt (University of Idaho)
- John Naliboff (New Mexico Tech)
- Max Rudolph (UC Davis)
- Shi Joyce Shim (Georgia Tech)
- Suzanne Smrekar (NASA - JPL)
- Dave Stegman (UC San Diego)
- Laura Waters (New Mexico Tech)
- Jolante Van Wijk (New Mexico Tech)

Team approach in assigning mentor pairs.

Program Structure

VIRTUAL



mantle
convection

melt and
volatiles

long term
tectonics

- **2 weeks virtual tutorials**
 - Basics of python
 - Geodynamic Processes
 - Geodynamic Modeling
- **6-8 weeks research projects**
- **Meet weekly:**
 - Project updates, tips for grad school applications, ...

Presentations

As Above So Below: A Simulation of the Continental Lithosphere and LLSVPS as Thermal Insulators using ASPECT

Dante Hickey, *Reed College*

Early Earth Influence of Radiogenic Heating on Mid-Ocean Ridge Depths and Seafloor Subsidence

Keneni Godana, *University of Illinois at Chicago*

Interactions between Lithospheric Instabilities and Formation of Mantle Plumes in Venus

Hiva Mohammadzadeh, *Los Angeles Pierce College*

Bayesian Uncertainty Quantification of Subduction Zone Rheology from the Geoid

Elena Ehrlich, *North Carolina State University*



Outlook

- **2022 SMOREs and Beyond?**

- Recruiting for a lead and mentors (2022)
- Extend to more areas of the geodynamics community
- NSF REU grant and expanded CIG community tutorials for 2023



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Schedule

November 18 @ 1P PT: CIG Annual Business Meeting

Upcoming Webinars Thursdays @ 2P PT

December: AGU *no webinar*

January 13: Raj Moulik, *Princeton University*

February 10: Ryan Orvedahl, *UC Davis*

March 10: Kali Allison, *UC Davis*



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