**Harsha Lokavarapu**

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## Professional Preparation

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|---|---|---|---|
| University of California, Davis | MS | Geology<br>Thesis advisor Louise H. Kellogg | 2017– |
| University of California, Davis | BS | Computer Science | 2010-2015 |
| University of California, Davis | Minor | Applied Mathematics | 2010-2015 |

## Computing Skills and Experiences

### Languages

1. Continuous Integration Tools:
   (a) Jenkins - touched every CIG code
   (b) Travis
2. Code Development Contributions
   (a) Advanced Solver for Problems in Earth's ConvecTion (ASPECT)
   (b) Calypso
   (c) Generalized Reservoir Modeling (Ms. Thesis Project)
3. Parallel Processing/High Performance Computing (HPC)
   (a) NSF Texas Advanced Computing Center:
      i. Stampede and Stampede 2.0 with Xeon Phi Processors
      ii. Maverick - Nvidia K20 GPU cluster
   (b) Math and Physical Science (MPS) HPC Cluster
      i. Ymir
      ii. Peloton
   (c) SLURM
   (d) Experience - ran strong and weak scaling tests for
      i. Calypso - published as poster at Fall AGU 2014
      ii. ASPECT - As part of work associated with DSF paper (not included with published version)
4. Outside Interests:
   (a) Virtual Reality - (A-frame)
   (b) 3-D Design/Printing
   (c) Kereas, Tensorflow

## Publications

### Refereed Journal Publications

### Submitted

L. H. Kellogg, D. L. Turcotte, M. Weisfeiler, H. Lokavarapu[@], S. Mukhopadhyay, (2018) "Implications of a Reservoir Model for the Evolution of Deep Carbon", *Earth and Planetary Science Letters*, Ms. Ref. No.: EPSL-D-17-01055

### Accepted

R. Gassmoeller, H. Lokavarapu[@], E. Heien, E. G. Puckett, and W. Bangerth, (2018) "Flexible and scalable particle-in-cell methods with adaptive mesh refinement for geodynamic computations", *Geochemistry, Geophysics, Geosystems* manuscript 2018GC007508R View Accepted Manuscript

### Appeared

E. G. Puckett, D. L. Turcotte, L. H. Kellogg, Y. He[†], J. M. Robey[*], and H. Lokavarapu[@] (2018) "New numerical approaches for modeling thermochemical convection in a compositionally stratified fluid", Special issue of . *Physics of the Earth and Planetary Interiors* associated with the 15th Studies of the Earth's Deep Interior (SEDI) Symposium (*Phys. Earth. Planet. In.)* **276**:10–35, 10.1016/j.pepi.2017.10.004 View Article

### Poster Presentations

L. H. Kellogg, H. Lokavarapu[@], D. L. Turcotte, and S. Mukhopadhyay (2017) "A reservoir model study of the flux of carbon from the atmosphere, to the continental crust, to the mantle", *Annual Geophysical Union Fall Meeting 2017*

J. Jiang, A. P. Kaloti, H. R. Levinson, N. Nguyen, E. G. Puckett, and H. Lokavarapu[@] (2016) "Benchmark Results Of Active Tracer Particles In The Open Souce Code ASPECT For Modelling Convection In The Earth's Mantle", *Annual Geophysical Union Fall Meeting 2016*

E. G. Puckett, D. L. Turcotte, L. H. Kellogg, H. Lokavarapu[@], Y. He[†], and J. M. Robey[*] (2016) "New Numerical Approaches To thermal Convection In A Compositionally Stratified Fluid", *Annual Geophysical Union Fall Meeting 2016*

H. Lokavarapu[@], and H. Matsui (2015) "Optimization of Parallel Legendre Transform using Graphics Processing Unit (GPU) for a Geodynamo Code", *Annual Geophysical Union Fall Meeting 2015*

J. A. Russo, E. H. Studley, H. Lokavarapu[@], I. Cherkashin, and E. G. Puckett (2014) "A New Monotonicity-Preserving Numerical Method for Approximating Solutions to the Rayleigh-Benard Equations", *Annual Geophysical Union Fall Meeting 2014*

H. Lokavarapu[@], H. Matsui, and E. M. Heien (2014) "Parallelization of the Legendre Transform for a Geodynamics Code", *Annual Geophysical Union Fall Meeting 2014*

[@]Undergraduate Student
[*]Graduate Student
[†]Postdoctoral Scholar

## Educational Details:

### Math Courses

- 21B - Differential Calculus
- 21C - Integral Calculus
- 21D - Vector Analysis
- 22A - Linear Algebra
- 22B - Differential Equations
- 118A - Partial Differential Equations
- 118B
- 125A - Real Analysis (Foundations of Calculus)
- 125B
- 135A - Probability
- 150A - Modern Algebra
- 150B
- 167 - Advanced Linear Algebra: Matrix Methods in Data mining and Pattern Recognition
- 228A - Computational methods for Differential Equations

### Computer Science Courses

- 10 - Concepts of Computing
- 20 - Discrete Mathematics for Computer Science
- 30 - Introduction to Programming and Problem Solving
- 40 - Software and Object-Oriented Programming
- 50 - Machine Dependent Programming
- 60 - Data Structures and Programming
- 120 - Theory of Computation
- 122A - Algorithm Design
- 140A - Programming Languages
- 150 - Operating Systems
- 152A - Computer Networks
- 153 - Computer Security

- 154A - Computer Architecture
- 158 - Parallel Architectures
- 170 - Artificial Intelligence
- 188 - Ethics in an Age of Technology