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Education

California Institute of Technology, *Division of Geological and Planetary Sciences*
Ph.D. Geophysics, 2010
Dissertation: Mechanical Models for Interseismic Deformation in Subduction Zones
Advisor: Prof. Mark Simons

University of Kentucky, *Department of Geological Sciences*
M.S. Geology, 2003
Thesis: Nonlinear Asperity-Scale Frictional Melting Model
Advisors: Prof. Kieran O'Hara (Geol.), Prof. Jim McDonough (Mech. Eng.)

University of Cincinnati, *Department of Civil & Environmental Engineering*
M.S. Environmental Engineering, 1997
Thesis: A Model for Urban Ozone Dynamics in the Cincinnati Metropolitan Area
Advisors: Prof. Pratim Biswas, Prof. Shafiq Islam

Indian Institute of Technology – Bombay, *Department of Mechanical Engineering*
B.Tech. Mechanical Engineering, 1994
Senior Thesis: Experimental & Theoretical Study of Gas-Liquid Slug Flows in Horizontal Channels

Professional Experience

Research Fellow	Utah State University		2016 - Present
3D Modeler/Detailer	Nucor Building Systems *(steel buildings)*		2016-2018
Post-doctoral Associate	Utah State University	Mentor: Tony Lowry	2014 - 2016
Post-doctoral Fellow	National Taiwan University	Mentor: John Suppe	2010-2014
Teaching Assistant	California Institute of Technology (*Geodynamics, Inverse Theory, Field Geophysics*)		2005-2007
Research Assistant	California Institute of Technology	Advisor: Mark Simons	2004-2010
Research Assistant	University of Kentucky	Advisor: Kieran O'Hara	2001-2003
Teaching Assistant	University of Cincinnati (*Fluid Mechanics*)		1995-1996
Environmental Engineer	Science Applications International Corporation		1997-2002

Grants, Awards and Honors

Selected Grants Pending**,** Utah State University

USGS: Toward Earthquake System Science: Western U.S. Lithospheric Stress/Strain Partitioning of Mantle Dynamics; with Tony Lowry (USU); $179,086 to USU. 2016-2018
NSF: Dynamics and rheology of Africa's magmatic rift zone from modeling of potential field and seismic data; with Tony Lowry (USU), and Cindy Ebinger (Rochester); $ 154,132 to USU

Gutenberg Fellowship, Seismological Laboratory, California Institute of Technology 2003-2004
Department-wide competitive award given to the best incoming PhD student

Pirtle Fellowship, Department of Geological Sciences, University of Kentucky 2001-2003

Research Interests

Crustal and lithospheric dynamics: 3D/4D numerical modeling of regional tectonic deformation over timescales for mountain-building/orogenesis (tens of million years), incorporating plate-motion history, as well as realistic material properties (rheology) and Earth structure.

Developing spatio-temporal constraints for numerical models (i.e., initial and boundary conditions): new plate-motion histories; lithospheric/mantle structure inferred from tomography; present-day 3D lithospheric stress field from focal-mechanisms; gridding geologic datasets.

Seismic hazards: Complete seismic-cycle simulations (~10^2-10^3 yr scale) of fault creep following seismic ruptures along realistic 3D faults, using high resolution geodetic, seismic, and neotectonic datasets to constrain fault/off-fault rheology.

Professional Service

Session co-convener, American Geophysical Union Fall Meeting (*T51F/T53C*) 2010

Linking Geodetic Observations to Mechanical Properties of the Lithosphere: New Methods & Models

Peer review: *NSF-EAR, Geophys. J. Intl. (GJI), Earth Planets Space (EPS), Seismol. Res. Lett. (SRL)*

Publications

[7] Wu, J., J. Suppe, Lu R.-Q., **R.V. S Kanda** (2016), Philippine Sea and East Asian plate tectonics since 52 Ma constrained by new subducted slab reconstruction methods, *J. Geophys. Res*, *121, 4670–4741, doi:10.1002/2016JB012923.*

[6] Lu R.-Q., J. Suppe, D.-F. He , J. Wu, **R.V. S Kanda**, B. Liu, Y.-G. Chen (2013), Deep subducting slab reconstruction and its geometry, kinematics: a case study for the Tonga-Kermadec slab from tomography, *Chinese J. Geophys.*, V56 (11), p.3837-3845.

[5] **Kanda, R. V. S.**, E. A. Hetland, and M. Simons (2013), Asperity model for fault creep and interseismic deformation in northeastern Japan, *Geoph. J. Intl.*, 192, p.38-57, *doi: 10.1093/gji/ggs028*.

[4] **Kanda, R. V. S.,** and M. Simons (2012), Practical implications of the geometrical sensitivity of Elastic Dislocation models for field geologic surveys, Tectonophysics, 560–561, p. 94–104, *doi: 10.1016/j.tecto.2012.06.040*.

[3] **Kanda, R. V. S.**, and M. Simons (2010), An elastic plate model for interseismic deformation in subduction zones, *J. Geophys. Res.*, *115*, B03405, *doi:10.1029/2009JB006611*.

[2] Thomas, W. A., **R. V. S. Kanda**, K. D. O'Hara, D. M. Surles (2008), Thermal footprint of an eroded thrust sheet in the Southern Appalachian Thrust Belt, Alabama, USA, *Geosphere*, 4(5), p. 814-818, *doi 10.1130/GES00168.1*.

[1] **Kanda, R. V. S.**, and D. J. Stevenson (2006), Suction mechanism for iron entrainment into the lower mantle, *Geophys. Res. Lett.*, 33, L02310, *doi:10.1029/2005GL025009*.

Manuscripts in Preparation (2)

Kanda, R. V. S., Lowry, A. R., Buiter, S. H., Mounting wedge suction driven by lower mantle resistance triggers flattening of subducting slabs

Kanda, R. V. S., Suppe, J., Y.-J. Hsu, Y.-M. Wu, Multi-scale characterization of the present day 3D stress field based on focal mechanisms and tomographic structure in the vicinity of Taiwan

Selected Conference Abstracts

Kanda, R. V. S., A. R. Lowry (2018), Towards Earthquake System Science: Constraining Basal Mantle Stress Partitioning Within the Lithosphere and Crust, Final *EOS Trans AGU*, 96, Fall Meet. Suppl., Abstract T43G-0506

A. R. Lowry, **R. V. S. Kanda**, X. Ma, B. Scheppmann, D. L. Schutt (2018), Towards Earthquake System Science: In-Situ Physical State from Geophysical Properties, Final *EOS Trans AGU*, 96, Fall Meet. Suppl., Abstract T31H-1932

Kanda, R. V. S., A. R. Lowry, S. Buiter, S. Ellis (2015), Causes for the Onset and Stability of Flat Slabs and Associated Overriding Plate Deformation Inferred from Numerical Thermo-Mechanical Models, *EOS Trans AGU*, 96, Fall Meet. Suppl., Abstract T33B-03

Berry, M., A.R. Lowry, D. Schutt, **R.V. S. Kanda**, J. Buehler (2015), Cold and Wet at the Roots of US Cordilleran High Elevation, *EOS Trans AGU*, 96, Fall Meet. Suppl., Abstract T11C-2907

Suppe, J.; J. Wu, C. D. Lin, **R. V. S. Kanda** (2014), The trajectory of India towards Eurasia recorded by subducted slabs: evidence for southward subduction of the Tethys Ocean under India after 130 Ma, *EGU General Assembly*, Abstract 15713.

Wu, J., R.-Q. Lu, J. Suppe, **R. V. S. Kanda** (2014), The East Asian Sea: A vanished Cenozoic ocean between the Pacific and Indian oceans revealed by subducted slab constraints, *EGU General Assembly*, Abstract 11339.

Liu, H.-F., J. Wu, J. Suppe, R.-Q. Liu, **R. V. S. Kanda** (2014), Seismic tomographic constraints on the Antarctic-Eastern Australian margin of Gondwanaland in the Mesozoic, *EGU General Assembly*, Abstract 10350

Kanda, R. V. S., J. Suppe J. E. Wu (2013) 2D/3D Numerical Models of the Taiwan Orogen: Oblique Arc-Continent Collision overlying Orthogonal Subduction Systems, *EOS Trans AGU*, 94, Fall Meet. Suppl., Abstract T51F-2524.

Suppe, J., S. Carena, **R. V. S. Kanda,** Y.-M. Wu, H.-H. Huang, J. E. Wu (2013), Kinematics of subduction and plate convergence under Taiwan and its geomorphic, geodetic and seismic expressions, *EOS Trans AGU*, 94, Fall Meet. Suppl., Abstract T21G-07.

Wu, J.E., J. Suppe, **R.V. S. Kanda** (2013), Plate tectonic reconstruction of South and East Asia since 43 Ma using seismic tomographic constraints: role of the subducted 'East Asia Sea', *EOS Trans AGU*, 94, Fall Meet. Suppl., Abstract T21G-01.

Kanda, R..V. S., J. Suppe, S. M. Ellis, S. Buiter (2012), 3D Numerical Models of Slab-Mantle Interactions: Implications for Eurasia Philippine Sea Arc-Continent Collision, *EOS Trans AGU*, 93, Fall Meet. Suppl., Abstract T43F-2739.

Suppe, J., **R..V. S. Kanda,** Y.-M. Wu (2012), The 3D lithospheric structure and plate tectonics of the on-going Taiwan arc-continent collision and delamination: a context for understanding patterns of geomorphic uplift and contemporary stress and geodetic displacement fields, *EOS Trans AGU*, 93, Fall Meet. Suppl., Abstract T41E-05.

Kanda, R. V. S., E. A. Hetland, M. Simons (2010), Persistence of Coseismic Rupture Asperities as Inferred from Interseismic Geodetic Observations from Northeastern Japan, *EOS Trans AGU*, 91(53), Fall Meet. Suppl., Abstract T51F-04.

Kanda, R. V. S. and M. Simons (2006), Simple Elastic Dislocation Models for Interpreting Interseismic Deformation in Subduction Zones, *EOS Trans AGU*, 87(52), Fall Meet. Suppl., Abstract T12C-02.

Kanda, R. V. S. and D. J. Stevenson (2004), A suction mechanism for iron entrainment from the outer core into the lower mantle, *EOS Trans AGU*, 85(47), Fall Meet. Suppl., Abstract MR43A-0880.

Kanda, R. V. S., and K. O'Hara (2002), Nonlinear Modeling of Frictional Melting at Asperity Tips, *EOS Trans AGU*, 83(47), Fall Meet. Suppl., Abstract S52B-1078.

Teaching Experience

Dept. of Geosciences, Utah State University: *Adjunct Faculty* 2014

- **Numerical Geodynamic Modeling** (*Graduate/Undergraduate mini-course, Fall 2014*)
- **Applied Geophysics** (*Advanced Undergraduate/Graduate, Spring 2020*)

Division of Geological & Planetary Sciences, Caltech: *Graduate Teaching Assistant* 2005-07

- **Geodynamics** (*Graduate, Spring 2007*): Prof. Mike Gurnis
- **Inverse Theory** (*Graduate, Winter 2007*): Prof. Malcolm Sambridge (visiting from ANU)
- **Field Geophysics** (*Graduate/Undergraduate*): Profs. Rob Clayton, Mark Simons, Joann Stock.
  Spring 2006: GPS, gravity, magnetic, seismic, & resistivity surveys: Chalfant Valley, E. California.
  Summer '2005: Developed Matlab-based graphical user interface for field seismic refraction studies

Dept. of Civil & Environmental Eng., Univ. of Cincinnati: *Graduate Teaching Assistant* 1996

- **Fluid Mechanics** (Hydraulic Systems) (*Undergraduate, Spring 1996*): Prof Shafiq Islam

University of Cincinnati - Educational Services: *Undergrad Math/Physics Tutor* 1994-95

Computational Experience

Numerical Methods	***Forward modeling:*** Arbitrary Lagrangian-Eulerian (ALE), particle-in-cell, finite element & finite difference formulations; ***Inverse modeling:*** linear/non-linear optimization, Markov chain Monte-Carlo (MCMC) Bayesian formulations.
Scientific Programming	Python (Numpy/Scipy/Matplotlib/VTK), Fortran 95/90/77, C
Software Applications	GMT, Matlab/Octave, CUBIT, Paraview, gOcad, SAC, Tekla Structures
System Administration	Linux/OS-X administration; shell-scripting; remote desktop management Currently, sole system administrator for: • 48-core RHEL Linux workstation (NTU) • 12-core Ubuntu Linux workstation (USU)

Selected Invited Talks

- Institute of Geological & Nuclear Sciences (GNS-Science), Lower Hutt, New Zealand
- Academia Sinica, Taipei, Taiwan
- National Taiwan University, Taipei, Taiwan
- National Central University, Jongli, Taiwan