

## Charles K. Wilson II

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### EDUCATION

- 1998 B.S. Geology, University of Arizona
- 2003 Ph.D. Geophysics, "Constraining Lithospheric Deformation Mechanisms with Teleseismic Conversions", University of Colorado, Boulder (advisor: C. Jones)

### PROFESSIONAL EXPERIENCE

- 2005 Post-Doctoral Scholar, Lamont-Doherty Earth Observatory, Columbia University, (advisor: J. Gaherty )
- 2003-04 *George A. Thompson Post-Doctoral Fellow*, Stanford University (advisors: S. Klemperer, B. Biondi)
- 2002 **WesternGeco** , Denver Research Center, Research Intern
- 1998-03 University of Colorado, Boulder, Research Assistant
- 1997-98 United States Geological Survey, Tucson, AZ, Research Assistant

### AWARDS

- 2003-04 *George A. Thompson Post-Doctoral Fellow*, Stanford University (advisors: S. Klemperer, B. Biondi)
- 2002 Hess Grant, University of Colorado, Boulder
- 2001 Hess Grant, University of Colorado, Boulder
- 2000 Warren O. Thompson award, University of Colorado, Boulder

### FIELD EXPERIENCE

- 2004 Passive/Active source seismic study of the extension paradox at the northwest margin of the Basin-&-Range Province, Nevada
- 2000-02 Deformation of the lower crust beneath strike-slip faults: Array studies of teleseismic converted phases in the Marlborough Fault System, South Island, New Zealand
- 1998-00 Lithospheric structure of the Coso volcanic system, Coso Geothermal Area, Coso Geothermal Area, China lake Naval Weapons Station, Ridgecrest, CA
- 1997-98 High Resolution Seismic Imaging of a low-angle normal fault, Santa Rita Mountains, Tucson, AZ

### INVITED TALKS

- University of Victoria, Wellington, Department of Geol. and Gphy., Summer 2001
- University of Colorado, Boulder, Department of Geography, Summer 2002
- Colorado School of Mines, Department of Geophysics, Fall 2002

Stanford University, Department of Geophysics, Spring 2003  
USGS-Golden, Earthquake Hazards Weekly Seminar Series, Summer 2003  
University of California, Santa Cruz, Department of Geophysics, Spring 2004  
USGS-Menlo Park, Earthquake Hazards Group Seminar, Summer 2004  
University of California, Santa Barbara, Department of Geol. Sci., February 2005.

### **PEER REVIEWED PUBLICATIONS**

**Wilson, C. K.**, J. Shragge, and B. Artman, Teleseismic imaging with wave equation migration, *Stanford Exploration Project-Annual Report*, 115, 2004.

**Wilson, C.K.**, Jones, C.H, Molnar, P., Sheehan, A.F. and O.S. Boyd, Distributed deformation in the lower crust and upper mantle beneath a continental strike-slip fault zone: Marlborough Fault System, South Island, New Zealand, *Geology*, vol. 32, 837-840, 2004.

Sheehan, A.F., Schulte-Pelkum, V., Boyd, O., and **C. K. Wilson**, Passive Source Seismology of the Rocky Mountain Region, accepted for AGU geophysical monograph.

**Wilson, C.K.**, Constraining Lithospheric Deformation Mechanisms Using Teleseismic Conversions, Ph.D. Dissertation, University of Colorado, Boulder, 2003.

**Wilson, C. K.**, C. H. Jones, and H. J. Gilbert, A single-chamber silicic magma system inferred from shear-wave discontinuities of the crust and uppermost mantle, Coso geothermal area, California, *J. Geophysical Research*, 108 [B5], 10.1029/2002JB001798, 2003.

### **PUBLICATIONS IN PREPARATION**

Shragge , J., B. Artman, and **C. K. Wilson**, Shot-profile migration of teleseismic wavefields, submitted to *Geophysics*, March 2005.

**Wilson, C.K.** and Guitton, A., Teleseismic Wavefield Interpolation and Signal Extraction using High Resolution Linear Radon Transforms, submitted to *Geophysical Journal International*, March 2005.

### **EXTENDED ABSTRACTS AND OTHER PUBLICATIONS**

**Wilson, C.K.**, and C.H. Jones, Geothermal Resource Mapping Using Teleseismic Conversions, Ridgecrest, California, Extended Abstract, presented at the Geothermal Resource Council Annual Meeting, Indian Wells, CA, September 2004.

**Wilson, C.K.**, and C.H. Jones, *Using Antelope for Passcal Field Data Management*, IRIS-DMS electronic newsletter, vol. IV, no. 2, June 2002, <http://www.iris.washington.edu/newsletter/vol4no2/Antelope.pdf>

### **ABSTRACTS**

Baher, S., Fuis, G., **Wilson, C.K.**, Langenheim, V., and J. Murphy, The Onshore-Offshore LARSE I Transect: San Clemente Island to the Mojave Desert--

- Crustal blocks and the Moho, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract S53B-0206, 2004.
- Clapp, R.G. and **C.K. Wilson**, Using geologic information for constraining near surface velocity information, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract S33A-1077, 2004.
- Colgan, J.P., Lerch, D.L., Gashawbeza, E.M., **Wilson, C.K.**, Klemperer, S.L., and E. L. Miller, Preliminary Results of Seismic Refraction/Reflection Experiment in Northwestern Nevada and Northeastern California, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract S13B-1045, 2004.
- Wilson, C. K.**, J. Shragge, and B. Artman, Teleseismic Imaging with Wave Equation Migration, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract S33A-1091, 2004.
- Wilson, C.K.**, Jones, C.H, Molnar, P., and A.F. Sheehan, Evidence for Distributed Lower Crustal Deformation Within a Continental Strike-Slip Fault Zone: Marlborough Fault System, South Island, New Zealand, *Eos Trans. AGU*, 84 (47), Fall Meet. Suppl., Abstract S22A-0422, 2003.
- Wilson, C.K.**, Jones, C.H., and Sheehan, A. F., Lithospheric Structure of a Strike-Slip Fault Zone: Marlborough Fault Zone, South Island, presented at the 2003 SEISMIX meeting in Taupo, New Zealand.
- Wilson, C.K.**, Jones, C.H., and H. J. Gilbert, Shear-wave Discontinuities of the Crust and Uppermost Mantle from Short-period High-Density Arrays, Coso Geothermal Area, California, *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract T12A-1304, 2002.
- Sheehan, A.F., Wu, F.T., Bilham, R., Blume, F., Monslave, G., Bendick, R., Gilbert, H., de la Torre, T., Schulte-Pelkum, V., **Wilson, C.K.**, Huang, G.C., Pandey, M.R., Liu, H.B., Himalayan Nepal Tibet Broadband Seismic Experiment (HIMNT), *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract S61D-11, 2002.
- Wilson, C.K.**, H. J. Gilbert, and C. Jones, Lithospheric Seismic Discontinuity Imaging of the Coso Geothermal Field, 7<sup>th</sup> Annual Geothermal Program Office Technical Symposium, China Lake, California, May 23-24, 2001.
- Gilbert, H. J., **Wilson, C.K.**, Jones, C.H., and Sheehan, A. F., Imaging the Coso Geothermal Area Crustal Structure with an Array of High-Density Mini-Arrays, *Eos Trans. AGU*, 81(48), F899, 2000.
- Wilson, C. K.** and C. H. Jones, Receiver Function Analysis Using Dense Array Techniques as Applied to the Study of Crustal Structure at the Coso Geothermal Area near Ridgecrest, CA, 12<sup>th</sup> Annual Iris Workshop, Samoset, ME, May 7-11, 2000.
- Wilson, C. K.**, and C. H. Jones, Relationship of crustal discontinuities at the Coso Geothermal Area to regional structures of the southwestern Great Basin, *Eos Trans. AGU*, 80 (46), F666, 1999.

#### **ARCHIVED GEOPHYSICAL DATASETS**

- Wilson, C. K.**, C. H. Jones, A. F. Sheehan, P. H. Molnar, M. K. Savage, and T. Stern, Marlborough New Zealand Short Period Arrays, c. 0.8 Tb,

[http://www.passcal.nmt.edu/schedules/experiment\\_profiles/historical/subs/0029Marlborough\\_Fault\\_Zone\\_New\\_Zealand.html](http://www.passcal.nmt.edu/schedules/experiment_profiles/historical/subs/0029Marlborough_Fault_Zone_New_Zealand.html), dataset xb00, XB01, XB02, 2002.  
Jones, C. H., and R. A. Phinney, Coso Geothermal Field Short-Period Array experiment, *PASSCAL YA98, YA99, YA00*, 150 Gb of continuous data,  
[http://www.passcal.nmt.edu/schedules/experiment\\_profiles/historical/subs/9843C\\_rustal\\_Structure\\_of\\_Coso\\_Geothermal\\_Field\\_CA.html](http://www.passcal.nmt.edu/schedules/experiment_profiles/historical/subs/9843C_rustal_Structure_of_Coso_Geothermal_Field_CA.html), dataset YA98, YA99, YA00, 2000. (although my name does not appear here I actually did the archiving)

## **CURRENT RESEARCH PROJECTS**

**Wave equation migration of local and teleseismic earthquake wavefields** (with B. Artman and J. Shragge of the Stanford Exploration Project);

**Reconciliation of explosive source and earthquake source images of the San Andreas fault using finite difference simulations** (with G. Fuis and S. Baher of the USGS-Menlo Park)

**Seismic investigations of a continental strike-slip fault zone: Marlborough Fault System, South Island, New Zealand** (with C. Jones, P. Molnar, A. Sheehan, and O. Boyd, at the University of Colorado and M. Savage and T. Stern of Victoria University, Wellington)

**Understanding shallow principal stress rotations from topography on the brittle-ductile transition** (with C. Jones at the University of Colorado)

**Constraining tomographic inversions with Geologically determined steering filters** (with Bob Clapp of the Stanford Exploration Project)

**Lithospheric Structure of the Transition from Craton to Orogenic Belt in Northwest Canada** (with James Gaherty at LDEO)

## **STUDENTS SUPERVISED**

David Fee (now at University of Wyoming): undergraduate IRIS intern in NZ

Daniel Brothers (now at Scripps): undergraduate UROP intern at CU

## **COMMUNITY OUTREACH**

*Organized Stanford workshop on lithospheric seismic imaging*

I have organized a PRE-AGU workshop to be held before fall AGU (2004). The focus of the workshop is the use of industry seismic imaging techniques in crust and lithospheric imaging experiments focused on tectonic problems. For more information please see: <http://pangea.stanford.edu/~wilsonck/ImagingWS.htm>

*Constructed seismic station at St. Arnaud middle school (St. Arnaud, New Zealand)*

I taught students basics of seismology and earth structure

*Created Seismic processing flow for PASSCAL field data management using Antelope Database software*

I wrote a newsletter article and made scripts publicly available on my website for archiving PASSCAL data using an alternative database to the PASSCAL database (PDB)