

PAUL A. KAPP
Curriculum Vitae

PERSONAL INFORMATION

Age: 35 Married, two children
Department of Geosciences, University of Arizona, Tucson, AZ, 85721
(520) 626-8763 pkapp@email.arizona.edu

EDUCATION

| | | | |
|-----|---------------------------------|---------------------------------------|------|
| PhD | Geology | University of California, Los Angeles | 2001 |
| BS | Geology, emphasis in Geophysics | University of Arizona | 1996 |
| | Geophysics Field Camp (SAGE) | Santa Fe, New Mexico | 1996 |
| | Geology Field Camp | Indiana University | 1995 |

PhD advisors: An Yin (primary), Mark Harrison, and Craig Manning

CHRONOLOGY OF EMPLOYMENT

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|-------------|---------------------|---|
| Fall 2008 - | Associate Professor | University of Arizona |
| 2002-2008 | Assistant Professor | University of Arizona |
| 2004-Pres. | Adjunct Professor | Institute of Tibetan Plateau Research, Chinese Academy of Sciences |

HONORS AND AWARDS

- 2009, Geological Society of America, Fellow
- 2008, Geological Society of America Outstanding Young Scientist Award (Donath Medal)
- 2004, University of Arizona, College of Science Early-Career Teaching Award

RESEARCH STATEMENT

Expertise & Aims

My expertise lies in tectonics, regional geology (geological mapping and synthesis), and structural analysis from outcrop to regional scale. Aims of my research include understanding the (1) growth and collapse of orogens in general, (2) timescales and mechanisms of plateau formation, (3) metamorphism and exhumation of high-pressure rocks and basement terranes, (4) processes that act before, during, and after suturing of continents, (5) development of low-angle normal fault systems and associated basins, (6) temporal-spatial distribution of shortening, basin development, and magmatism in collisional and Cordilleran-style settings and its implications for lower crustal and mantle processes, and (7) the tectonic evolution of Asia from the Proterozoic to Present. Most recently, I have initiated projects investigating wind erosion in central Asia and its tectonic and climatic implications, the tectonic significance of Neoproterozoic gneiss domes in the Eastern Desert of Egypt, and the Cretaceous – early Tertiary development of the central Andes.

Approach

I pursue my research interests through a combination of field (2-4 months per year) and analytical research. My field work involves geological mapping, determining the kinematics of major structures, and measuring stratigraphic sections. My analytical research primarily involves U-(Th)-Pb geochronology, $^{40}\text{Ar}/^{39}\text{Ar}$ thermochronology, and thermobarometry. I integrate my results, along with geochemical and geophysical data sets when appropriate, in the form of regional and lithosphere-scale cross sections and kinematic restorations. My approach is question driven. This has led me to establish collaborative, multidisciplinary projects and to work in all major structural settings (contractional, extensional, and strike slip) and on rocks from a broad range of structural depths (from mantle to surface) and ages (from Precambrian to Quaternary).

GRANTS AND CONTRACTS

Active

- 2008-2010 Collaborative Research: Development of extensional systems in regions of hot, thick crust: insight from Tibet, (Kapp sole UA PI; Horton at UT Austin and Taylor and Stockli at U. Kansas), **NSF Tectonics**, \$88,030 (UA portion).
- 2008-2010 Wind Erosion in the Qaidam Basin: Records, Rates, and Broader Implications, (Kapp sole PI), **ACS Petroleum Research Fund** (New Directions), \$100,000.
- 2009 One Year Renewal Request: Investigation of Syncollisional Extension and Basin Development in the High Himalaya, (DeCelles PI, Kapp co-PI), **NSF Tectonics**, \$49,733.
- 2008-2010 Convergent Orogenic Systems Analysis, (DeCelles PI, many other co-PIs in Department of Geosciences), **ExxonMobil**, \$1,500,000.

Pending

- 2010-2014 Collaborative Research: The suturing process: Insight from the India-Asia collision zone, (Kapp lead PI), **NSF Continental Dynamics**, \$1,850,000 (UA portion).

Completed

- 2002-2003 Mechanisms for active rifting in Tibet: Insight from numerical modeling, (Kapp, sole PI), **UA Faculty Small Grant**, \$6,870.
- 2005-2008 Significance of underplated oceanic melange in the tectonic evolution and crustal structure of central Tibet, (Kapp, PI; Gehrels, co-PI), **NSF Tectonics**, \$224,886.
- 2005-2008 Collaborative Research: Investigation of Syncollisional Extension and Basin Development in the High Himalaya, (DeCelles and Murphy, PIs; Kapp and Quade, co-PIs), **NSF Tectonics**, \$290,708 (UA portion).
- 2003-2006 Cretaceous – earliest Tertiary basin development, deformation, and magmatism in southern Tibet: Implications for pre-Indo-Asian collision lithospheric structure, (Kapp, PI; DeCelles, co-PI), **NSF Tectonics**, \$247,731.
- 2005-2006 Geologic Mapping of the Southern Galiuro Mountains, Cochise County, Southeastern Arizona, (Kapp, sole PI), **USGS EDMAP Program**, \$25,212.
- 2005-2008 A Global Assessment of Fold-Thrust Belts and Foreland Basins, (DeCelles and Kapp), **ExxonMobil**, \$378,000.
- 2003-2005 Structural development of the petroleum-bearing Lunpola basin system in central Tibet, (Kapp, sole PI), **Petroleum Research Fund**, American Chemical Society, \$35,000.
- 2005-2007 Geologic Investigation of Cenozoic Volcanic Rocks in the Qiangtang Region of Northern Tibet, (Kapp, sole PI), **National Geographic Society**, \$20,000.
- 2008-2009 Sandblasting in Central Asia, (Kapp sole PI), **UA Faculty Small Grant**, \$7,246.

PUBLICATIONS *indicates student first author

- *Guynn, J., **Kapp, P.**, and Gehrels, G., accepted pending revision, Metamorphism and exhumation of the Amdo basement, Tibet: ***Journal of Metamorphic Geology***.
- Pullen, A., Kapp, P., Gehrels, G.E., Ding, L., and Zhang, Q.-H., in review, Metamorphic rocks in central Tibet: Lateral variations and tectonic implications: ***Geological Society of America Bulletin***.
- Dupont-Nivet, G., Lippert, P.C., van Hinsbergen, D.J.J., Meijers, M., and Kapp, P., in review, Paleolatitude and age of the Indo-Asian collision constrained by paleomagnetism of the Lhasa terrane: ***Geology***.

37. *Saylor, J., DeCelles, P.G., Gehrels, G., Murphy, M., Zhang, R., and **Kapp, P.**, accepted, Basin formation due to arc-parallel extension and tectonic damming: Zhada basin, SW Tibet: **Tectonics**.
36. **Kapp, P.**, Manning, C.E., and Tropper, P., 2009, Phase-equilibrium constraints on titanite and rutile activities in mafic epidote amphibolites and geobarometry using titanite-rutile equilibria: **Journal of Metamorphic Geology**, v. 27, p. 509-521, doi:10.1111/j.1525-1314.2009.00836.x.
35. DeCelles, P.G., Ducea, M., **Kapp, P.**, and Zandt, G., 2009, Cyclicity in Cordilleran orogenic systems: **Nature Geoscience**, v. 2, p. 251-257, doi:10.1038/NNGEO469.
34. *Leier, A., Quade, J., DeCelles, P., and **Kapp, P.**, 2009, Stable isotopic results from paleosol carbonate in south Asia: Paleoenvironmental reconstructions and selective alteration: **Earth and Planetary Science Letters**, v. 279, p. 242-254, doi:10.1016/j.epsl.2008.12.044.
33. *Saylor, J.E., Quade, J., Dettman, D., DeCelles, P.G., **Kapp, P.A.**, and Ding, L., 2009, The Late Miocene through present paleoelevation history of southwestern Tibet: **American Journal of Science**, v. 309, p. 1-42, doi:10.2475/01.2009.01.
32. *Pullen, A., **Kapp, P.**, Gehrels, G.E., DeCelles, P.G., Brown, E., Fabijanic, J.M., and Ding, L., 2008, Gangdese retroarc thrust belt and foreland basin deposits in the Damxung area, southern Tibet: **Journal of Asian Earth Sciences**, v. 33, p. 323-336, doi:10.1016/j.jseaes.2008.01.005.
31. *Pullen, A., **Kapp, P.**, Gehrels, G.E., Vervoort, J.D., and Ding, L., 2008, Triassic continental subduction in central Tibet and Mediterranean-style closure of the Paleo-Tethys Ocean: **Geology**, v. 36, p. 351-354, doi:10.1130/G24435A.1.
30. **Kapp, P.**, Taylor, M., Stockli, D., and Ding, L., 2008, Development of active low-angle normal fault systems during orogenic collapse: Insight from Tibet: **Geology**, v. 36, p. 7-10, doi:10.1130/G24054A.1.
29. *Leier, A.L., DeCelles, P.G., **Kapp, P.**, and Gehrels, G.E., 2007, Lower Cretaceous strata in the Lhasa terrane, Tibet, with implications for understanding the early tectonic history of the Tibetan plateau: **Journal of Sedimentary Research**, v. 77, 809-825, doi:10.2110/jsr.2007.078.
28. *Volkmer, J.E., **Kapp, P.**, Guynn, J.H., and Lai, Q., 2007, Cretaceous – Tertiary structural evolution of the north central Lhasa terrane, Tibet: **Tectonics**, v. 26, TC6007, doi:10.1029/2005TC001832.
27. *Leier, A.L., **Kapp, P.**, Gehrels, G.E., and DeCelles, P.G., 2007, Detrital zircon geochronology of Carboniferous-Cretaceous strata in the Lhasa terrane, Southern Tibet: **Basin Research**, v. 19, p. 361-378.
26. **Kapp, P.**, DeCelles, P.G., Gehrels, G.E., Heizler, M., and Ding, L., 2007, Geological records of the Cretaceous Lhasa-Qiangtang and Indo-Asian collisions in the Nima basin area, central Tibet, **Geological Society of America Bulletin**, v. 119, p. 917-932, doi:10.1130/B26033.
25. *He, S., **Kapp, P.**, DeCelles, P.G., Gehrels, G.E., Heizler, M., and Ding, L., 2007, Cretaceous – Tertiary geology of the Gangdese Arc in the Linzhou area, southern Tibet: **Tectonophysics**, v. 433, p. 15-37.
24. **Kapp, P.**, DeCelles, P.G., Leier, A.L., Fabijanic, J.M., He, S., Pullen, A., Gehrels, G.E., and Ding, L., 2007, The Gangdese retroarc thrust belt revealed: **GSA Today**, v. 17, no. 7, p. 4-9, doi: 10.1130/GSAT01707A.1.
23. DeCelles, P.G., **Kapp, P.**, Ding, L., and Gehrels, G.E., 2007, Late Cretaceous to mid-Tertiary basin evolution in the central Tibetan plateau: Changing environments in response to tectonic partitioning, aridification, and regional elevation gain, **Geological Society of America Bulletin**, v. 119, p. 654-580, doi:10.1130/B26074.1.

22. DeCelles, P.G., Quade, J., **Kapp, P.**, Fan, M., Dettman, D.L., and Ding, L., 2007, High and dry in central Tibet during the Late Oligocene: ***Earth and Planetary Science Letters***, v. 253, p. 389-401.
21. Ding, L., **Kapp, P.**, Yue, Y., and Lai, Q., 2007, Postcollisional calc-alkaline lavas and xenoliths from the southern Qiangtang terrane, central Tibet, ***Earth and Planetary Science Letters***, v. 254, p. 28-38.
20. *Leier, A.L., DeCelles, P.G., **Kapp, P.**, and Ding, L., 2007, Tackling the Formation of the Lhasa terrane, southern Tibet: The record of a Late Cretaceous retroarc foreland basin: ***Geological Society of America Bulletin***, v. 119, p. 31-48.
19. *Guynn, J.H., **Kapp, P.**, Pullen, A., Heizler, M., Gehrels, G.E., and Ding, L., 2006, Tibetan basement rocks near Amdo reveal "missing" Mesozoic tectonism along the Bangong suture, central Tibet: ***Geology***, v. 34, p. 505-508.
18. **Kapp, P.**, Yin, A., Harrison, T.M., and Ding, L., 2005, Cretaceous-Tertiary shortening, basin development, and volcanism in central Tibet: ***Geological Society of America Bulletin***, v. 117, p. 865-878.
17. Kapp, J.L.D., Harrison, T.M., **Kapp, P.**, Grove, M., Lovera, O.M., and Ding, L., 2005, The Nyainqentanglha Shan: A window into the tectonic, thermal and geochemical evolution of the Lhasa block, southern Tibet: ***Journal of Geophysical Research***, v. 110, B08413, doi:10.1029/2004JB003330.
16. Ding, L., **Kapp, P.**, and Wan, X., 2005, Paleocene–Eocene record of ophiolite obduction and initial India-Asia collision, south-central Tibet: ***Tectonics***, v. 24, TC3001, doi:10.1029/2004TC001729.
15. **Kapp, P.**, and Guynn, J.H., 2004, Indian Punch Rifts Tibet: ***Geology***, v. 32, p. 993-996.
14. **Kapp, P.**, Murphy, M.A., Yin, A., Harrison, T.M., Ding, L., and Guo, J., 2003, Mesozoic and Cenozoic tectonic evolution of the Shiquanhe area of western Tibet: ***Tectonics***, v. 22, 1029, doi:10.1029/2001TC001332.
13. **Kapp, P.**, Yin, A., Manning, C.E., Harrison, T.M., Taylor, M.H., and Ding, L., 2003, Tectonic evolution of the early Mesozoic blueschist-bearing Qiangtang metamorphic belt, central Tibet: ***Tectonics***, v. 22, 1043, doi:10.1029/2002TC001383.
12. Taylor, M., Yin, A., Ryerson, F.J., **Kapp, P.**, and Ding, L., 2003, Conjugate strike-slip faulting along the Bangong-Nujiang suture zone accommodates coeval east-west extension and north-south shortening in the interior of the Tibetan Plateau: ***Tectonics***, v. 22, 1044, doi:10.1029/2002TC001361.
11. Ding, L., **Kapp, P.**, Zhong, D., and Deng, W., 2003, Cenozoic volcanism in Tibet: evidence for a transition from oceanic to continental subduction: ***Journal of Petrology***, v.44, p. 1833-1865.
10. Deng, X.G., Ding, L., Liu, X.H., Yin, A., **Kapp, P.A.**, Murphy, M.A., and Manning, C.E., 2002, Geochemical characteristics of the blueschists and its tectonic significance in the central Qiangtang area, Tibet: ***Acta Petrologica Sinica***, v. 18, p. 517-525.
9. Murphy, M.A., Yin, A., **Kapp, P.**, Harrison, T.M., Manning, C.E., Ryerson, F.J., Ding, L., and Guo, J., 2002, Structural evolution of the Gurla Mandhata detachment system, southwest Tibet: Implications for the eastward extent of the Karakoram fault system: ***Geological Society of America Bulletin***, v. 114, p. 428-447.
8. Ding, L., Zhong, D., Yin, A., **Kapp, P.A.**, and Harrison, T.M., 2001, Cenozoic structural and metamorphic evolution of the eastern Himalayan syntaxis (Namche Barwa): ***Earth and Planetary Science Letters***, v. 192, p. 423-438.
7. **Kapp, P.A.**, Yin, A., Manning, C.E., Murphy, M., Harrison, T.M., Spurlin, M., Ding, L., Deng, X.-G., and Wu, C.-M., 2000, Blueschist-bearing metamorphic core complexes in the Qiangtang block reveal deep crustal structure of northern Tibet: ***Geology***, v. 28, p. 19-22.

6. Murphy, M. A., Yin, A., **Kapp, P.A.**, Harrison, T.M., Ding Lin, and Guo, J., 2000, Southward propagation of the Karakoram fault system, southwest Tibet: timing and magnitude of slip: **Geology**, v. 28, p. 451-454.
5. Yin, A., **Kapp, P.A.**, Murphy, M.A., Harrison, T.M., Grove, M., Ding, L., Deng, X., and Wu, C., 1999, Significant late Neogene east-west extension in northern Tibet: **Geology**, v. 27, p. 787-790.
4. Axen, G.J., Fletcher, J.M., Cowgill, E., Murphy, M., **Kapp, P.**, MacMillan, I., and Ramos-Velazquez, E., 1999, Range-front fault scarps of the Sierra El Mayor, Baja California: Formed above an active low-angle normal fault?: **Geology**, v. 27, p. 247-250.
3. **Kapp, P.A.**, and Gehrels, G.E., 1998, Detrital zircon constraints on the tectonic evolution of the Gravina belt, southeastern Alaska: **Canadian Journal of Earth Sciences**, v. 35, p. 253-268.
2. Gehrels, G.E., and **Kapp, P.A.**, 1998, Detrital zircon geochronology and regional correlation of metasedimentary rocks in the Coast Mountains, southeastern Alaska: **Canadian Journal of Earth Sciences**, v. 35, p. 269-279.
1. DeCelles, P.G., Gehrels, G.E., Quade, J., Ojha, T.P., **Kapp, P.A.**, and Upreti, B.N., 1998, Neogene foreland basin deposits, erosional unroofing, and the kinematic history of the Himalayan fold-thrust belt, western Nepal: **Geological Society of America Bulletin**, v. 110, p. 2-21.

Not Peer Reviewed

- Kapp, P.**, 2001, Blueschist-bearing metamorphic core complexes in the Qiangtang block reveal deep crustal structure of northern Tibet, **Reply: Geology**, v. 29, p. 91.
- Kapp, P.**, Manning, C.E., and Yin, A., 2001: Blueschist-bearing metamorphic core complexes in the Qiangtang block reveal deep crustal structure of northern Tibet, **Reply: Geology**, v. 29, p. 664.

Conference Abstracts >47 since 2002; >21 first-authored by students

Professional Affiliations

American Geophysical Union, Geological Society of America, Arizona Geological Society

SERVICE/OUTREACH

2009 - : Associate Editor, Tectonics

2009: Session Chair, Himalaya-Karakoram-Tibet conference, Beijing

2002-Present: Faculty supervisor for undergraduate geology club (Society of Earth Science Students)

2002-: Research advisor for 13 undergraduate students; of the 10 who have graduated, all continued on to graduate school in the geosciences.

2002-: Led numerous field trips to the Catalina-Rincon metamorphic core complex that have included local high school students, non-academic citizens of the Tucson community, visiting students and scholars, and scientists in industry

2006-2007: Academic Program Review Committee

2006, 2004: Position Search Committees

2006-: Graduate Policy Committee (Chair)

2005-: Field Camp Committee

2002-2003: Annual Faculty Performance Review Committee

2002-Present: **Undergraduate Research Advisees = 10**

2002; 2007: Session Co-Chair at National GSA Meeting

2002-: Provided structural geology teaching materials to faculty at >10 institutions

Media:

Kapp and Guynn, 2004, Indian Punch Rifts Tibet, *Geology*: Press Coverage
Astronomy.com, November 2004
The Geological Society of London
ECPlanet.com (France)
University of Arizona News

DeCelles et al., 2007, *GSA Bulletin*: Press Coverage
Discovery.com News

Science Reporter Interviews:
Robyn Williams (Australia ABC)

<http://www.abc.net.au/rn/scienceshow/stories/2007/1984079.htm>

Wired Magazine

Science News

http://www.sciencenews.org/view/generic/id/9552/title/Tibetan_Plateau_history_gets_a_lift

COURSES TAUGHT

Undergraduate: Structural Geology

Graduate/Upper-Division: Regional Structural Geology, Geo/Thermochronology, Seminars in Tectonics

CURRENT GRADUATE ADVISEES = 3:

D. Pearson (PhD), A. Pullen (PhD), J. Volkmer (PhD)

Co-advisees = 1:

K. Umlauf (PhD)

Degrees awarded = 9:

S. He (MS'04; now at ChevronTexaco), J. Volkmer (MS'05), M. Fabijanac (MS'05; co-advised w/ DeCelles; now at ExxonMobil), A. Leier (PhD'05; co-advised w/ DeCelles; now Assistant Professor at U. Calgary), A. Pullen (MS'06), J. Guynn (PhD'06; now at ExxonMobil), R. Waldrip (MS'08; now holds joint instructor position at UA/Pima Community College), S. McBride (MS'08), A. Rohrmann (MS'09; now doing PhD at Potsdam, Germany).