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**Professional Preparation**

Ph.D. (Ceramics), Massachusetts Institute of Technology, 1989.  
M.S. (Geochemistry), University of California, Los Angeles, 1984.  
S.B. (Earth and Planetary Sciences), Massachusetts Institute of Technology, 1980.

**Professional Experience**

Associate Professor, School of Earth and Space Exploration, Arizona State University, since 2009.  
Assistant Professor, School of Earth and Space Exploration (formerly Department of Geological Sciences), Arizona State University, 2003-2009.  
Chair of Mathematics, Science, and Technology, Diné College, Navajo Nation, 2000-2003.  
Adjunct Professor of Earth Sciences, New Mexico Institute of Mining and Technology, 2002-2003.  
Visiting Associate Professor of Geochemistry, United States Air Force Academy, 1998.  
Associate Director, WERC, A Consortium for Environmental Education and Technology, 1991-2003.  
Geology and Chemistry Instructor, Diné College, Navajo Nation, 1988-2003.  
IBM Graduate Fellow in Materials Science, Massachusetts Institute of Technology, 1986-1989.  
Graduate Teaching Assistant, Massachusetts Institute of Technology, 1983-1986.  
Graduate Teaching Assistant, University of California, Los Angeles, 1980-1983.

**Academic Honors and Awards**

Visiting Professor, Hetao University, Inner Mongolia Autonomous Region, China, 2008.  
Institute for Humanities Research Fellow, Arizona State University, 2007-2008.  
Honors Disciplinary Faculty, Barrett Honors College, Arizona State University, 2006-2007.  
President (Elected), National Association of Geoscience Teachers, 2000-2001.  
Distinguished Speaker, National Association of Geoscience Teachers, 1996-2000.  
Meritorious Contributions to American Indian People, Northeastern State University, 1999.  
Outstanding Educational Papers, WERC Conference on the Environment, 1996 and 1999.  
Burlington Resources Foundation Teaching Award, Diné College, 1991 and 1992.  
Dean's Award for Outstanding Instruction, Diné College, 1990 and 1995.  
Goodwin Medal (Top Graduate Teaching Assistant of the Year), Massachusetts Institute of Technology, 1985.  
John Wulff Graduate Teaching Award, Department of Materials Science and Engineering, Massachusetts Institute of Technology, 1984.

**Professional Affiliations**

American Geophysical Union.  
American Indian Science and Engineering Society.  
Geological Society of America.  
National Association of Geoscience Teachers.

National Association for Research in Science Teaching.  
National Science Teachers Association.  
Sigma Xi.  
Society for Advancement of Chicanos and Native Americans in Science.  
Arizona Association for Environmental Education.  
Arizona Educational Research Organization.  
Arizona Geological Society.  
New Mexico Geological Society.  
Four Corners Geological Society.

## Research Interests

Situated teaching and learning in the Earth and space sciences.  
Sense of place in the practice and assessment of place-based science teaching.  
Role of the affective domain in geoscience learning.  
Southwestern American Indian and Chicano ethnogeology.  
K-12 science teacher preparation and enhancement.  
Informal science education in Southwestern National Parks.  
Mesozoic and Cenozoic volcanism and tectonics of the Colorado Plateau and Basin and Range.

Faculty collaborator in the ASU Center for Research on Education in Science, Mathematics, Engineering, and Technology (CRESMET) since 2003.

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## Bibliography

### Peer-Reviewed Publications

Notes:

\*denotes ASU student co-author; †denotes Diné College student co-author.

40. **Semken, S.**, Williams, D.\*, Ross, J., & Monhardt, R. (in revision). Design elements and learning outcomes of two place-based education programs situated in the Southwest United States. *Proceedings of the National Association for Research in Science Teaching*, Philadelphia, Pennsylvania.
39. Bueno Watts, N.\*, Baker, D. R., **Semken, S.**, & Lang, M. (in revision). Improving high school teachers' content knowledge of energy in systems through research-based professional development. *Proceedings of the National Association for Research in Science Teaching*, Philadelphia, Pennsylvania.
38. Luft, J., Wong Kavas, S.\*, & **Semken, S.** (in revision). Rethinking recruitment: Comprehensive and strategic recruitment of science teachers. *Journal of Science Teacher Education*.
37. **Semken, S.**, Butler Freeman, C.\*, Bueno Watts, N.\*, Neakrase, J.\*, Dial, R.\*, & Baker, D. (in press). Factors that influence sense of place as a learning outcome of place-based geoscience teaching. *Electronic Journal of Science Education*.
36. Gonzales, D., & **Semken, S.** (in press). A comparative study of field-inquiry in an undergraduate petrology course. In S. J. Whitmeyer, D. W. Mogk, & E. J. Pyle (Eds.), *Field geology education: Historical perspectives and modern approaches: GSA Special Paper 461*. Boulder, CO: Geological Society of America.
35. **Semken, S.** (in press, invited). Ship Rock and the Navajo volcanic field. In L. G. Price (Ed.), *The parks, monuments, and public lands of New Mexico: Geology and landscape: Vol. 1. Northern New Mexico*. Socorro, NM: New Mexico Bureau of Geology and Mineral Resources.

34. **Semken, S.**, Dodick, J., Ben-David, O., Pineda, M.\*, Bueno Watts, N.\*, & Karlstrom, K. (2009). Timeline and time scale cognition experiments for a geological interpretative exhibit at Grand Canyon. *Proceedings of the National Association for Research in Science Teaching*, Garden Grove, California.
33. Brand, B. D.\*, Clarke, A. B., & **Semken, S.** (2009). Eruptive dynamics and depositional processes of Narbona Pass maar volcano, Navajo volcanic field, Navajo Nation, New Mexico (USA). *Bulletin of Volcanology*, *71*, 49-77.
32. Karlstrom, K., **Semken, S.**, Crossey, L., Perry, D., Gyllenhaal, E. D., Dodick, J., Williams, M., Hellmich-Bryan, J., Crow, R., Bueno Watts, N.\*, & Ault, C. (2008). Informal geoscience education on a grand scale: the Trail of Time exhibition at Grand Canyon. *Journal of Geoscience Education*, *56*, 354-361.
31. **Semken, S.**, & Butler Freeman, C.\* (2008). Sense of place in the practice and assessment of place-based science teaching. *Science Education*, *92*, 1042-1057.
30. Bueno Watts, N. F.\*, **Semken, S.**, Pineda, M.\*, & Alvarado, C.\* (2008). Visitors' geological conceptions and meaning making at Petrified Forest National Park. *Proceedings of the National Association for Research in Science Teaching*, Baltimore, Maryland.
29. **Semken, S.**, Fouch, M., Garnero, E., Zah, P., & Lippert, D. (2007, invited). Meshing American Indian concerns with goals of EarthScope's USArray. *Eos, Transactions, American Geophysical Union*, *88*, 309-310.
28. **Semken, S.**, & Butler Freeman, C. L.\* (2007). Cognitive and affective outcomes of a Southwest place-based approach to teaching introductory geoscience. *Proceedings of the National Association for Research in Science Teaching*, New Orleans, Louisiana.
27. Butler Freeman, C. L.\*, **Semken, S.**, Lawson, A., Oehrtman, M., Schaufele, C., & Jensen, J.\* (2007). How old is the Earth: an exploration of geologic time through place-based inquiry. *Proceedings of the National Association for Research in Science Teaching*, New Orleans, Louisiana.
26. Gonzales, D., & **Semken, S.** (2006). Integrating undergraduate education and scientific discovery through field research in igneous petrology. *Journal of Geoscience Education*, *54*, 133-142.
25. Hahn, D.\*, Brem, S. K., & **Semken, S.** (2005). Exploring the social, moral, and temporal qualities of pre-service teachers' narratives of evolution. *Journal of Geoscience Education*, *53*, 456-461.
24. **Semken, S.** (2005). Sense of place and place-based introductory geoscience teaching for American Indian and Alaska Native undergraduates. *Journal of Geoscience Education*, *53*, 149-157.
23. Wilson, D., Aster, R., West, M., Ni, J., Grand, S., Gao, W., Baldrige, W. S., **Semken, S.**, & Patel, P. (2005). Lithospheric structure of the Río Grande Rift. *Nature*, *433*, 851-855.
22. Wilson, D., Aster, R., Ni, J., Grand, S., West, M., Gao, W., Baldrige, W. S., & **Semken, S.** (2005). Imaging the seismic structure of the crust and upper mantle beneath the Great Plains, Río Grande Rift, and Colorado Plateau using receiver functions. *Journal of Geophysical Research*, *110*, B05306, DOI: 10.1029/2004JB003492.
21. Lucas, S. G., **Semken, S. C.**, Berglof, W. R., & Ulmer-Scholle, D. S. (Eds.). (2003). *Geology of the Zuni Plateau: Guidebook 54*. Socorro, NM: New Mexico Geological Society.
20. **Semken, S.** (2003). Black rocks protruding up: the Navajo volcanic field. In S. G. Lucas, S. C. Semken, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: Guidebook 54* (pp. 133-138). Socorro, NM: New Mexico Geological Society.

19. Blackhorse, A.†, **Semken, S.**, & Charley, P. (2003). A Navajo-English thesaurus of geological terms. In S. G. Lucas, S. C. Semken, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: Guidebook 54* (pp. 103-108). Socorro, NM: New Mexico Geological Society.
18. Gok, R., Ni, J., West, M., Sandvol, E., Wilson, D., Aster, R., Baldrige, W.S., Grand, S., Gao, W., Tillman, F., & **Semken, S.** (2003). Shear-wave splitting and mantle flow beneath LA RISTRA. *Geophysical Research Letters*, 30(12), 1614, DOI: 10.1029/2002GL016616.
17. Wilson, D., Leon, J., Aster, R., Ni, J., Schlue, J., Grand, S., **Semken, S.**, Baldrige, S., & Gao, W. (2002). Broadband seismic background noise at temporary seismic stations observed on a regional scale in the southwestern United States. *Bulletin of the Seismological Society of America*, 92(8), 3335-3341.
16. Riggs, E. M., & **Semken, S. C.** (2001). Culture and science: Earth science for Native Americans. *Geotimes*, 46, 14-17.
15. **Semken, S. C.** (2001). The Navajo volcanic field. In L. S. Crumpler & S. G. Lucas (Eds.), *Volcanoes of New Mexico: Bulletin 18* (pp. 79-83), Albuquerque, NM: New Mexico Museum of Natural History and Science.
14. Reynolds, S. J., & **Semken, S. C.** (2000). Rocks before terms and tables—from the concrete to the abstract. *Journal of Geoscience Education*, 48, 572.
13. **Semken, S. C.** (Ed., invited). (2000). Some great ideas for geoscience teachers [special issue]. *Journal of Geoscience Education*, 48(5).
12. **Semken, S. C.** (1999, invited). Oxygen. In C. P. Marshall & R. W. Fairbridge (Eds.), *Encyclopedia of Geochemistry* (pp. 467-469): Dordrecht, Netherlands: Kluwer Academic Publishers.
11. Kelly, M., Ort, M., Tashiro, J., & **Semken, S.** (1999). *VR Excursions: Exploring Earth's Environment*. Upper Saddle River, NJ: Prentice-Hall.
10. Dubiel, R. F., Hasiotis, S. T., & **Semken, S. C.** (1997). Hands-on geology for Navajo Nation teachers. *Journal of Geoscience Education*, 45, 113-116.
9. **Semken, S. C.**, & Morgan, F. (1997). Navajo pedagogy and Earth systems. *Journal of Geoscience Education*, 45, 109-112.
8. **Semken, S. C.** (1997). NAGT/GSA symposium on geoscience education in Native American communities. *Journal of Geoscience Education*, 45, 104-105.
7. Tsosie, B.†, **Semken, S.**, & Harrison, B. (1997). The Shiprock uranium-mill tailings remedial action (UMTRA) site. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic Geology and Paleontology of the Four Corners Region: Guidebook 48* (pp. 279-281). Socorro, NM: New Mexico Geological Society.
6. **Semken, S. C.**, & McIntosh, W. C. (1997).  $^{40}\text{Ar}/^{39}\text{Ar}$  age determinations for the Carrizo Mountains laccolith, Navajo Nation, Arizona. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic Geology and Paleontology of the Four Corners Region: Guidebook 48* (pp. 75-80). Socorro, NM: New Mexico Geological Society.
5. **Semken, S. C.**, & Oversby, V. M. (1994). Coal ash as a naturally-occurring radioactive material—regulation before research? *Proceedings, 29th Intersociety Energy Conversion Engineering Conference*, 48-50.
4. Wuensch, B. J., **Semken, S. C.**, Uchikoba, F., & Yoo, H. I. (1991). The mechanisms for self-diffusion in magnesium oxide. *Ceramic Transactions*, 24, 79-89.
3. Farmer, G. L., Perry, F. V., **Semken, S.**, Crowe, B., Curtis, D., & DePaolo, D. J. (1989). Isotopic evidence on the structure and origin of subcontinental lithospheric mantle in southern Nevada. *Journal of Geophysical Research*, 94, 7885-7898.

2. Ingel, R. P., Lewis, D., III, Bender, B. A., & **Semken, S. C.** (1988). Properties and microstructures of rapidly solidified zirconia-based ceramic alloys. In S. Somiya (Ed.), *Science and Technology of Zirconia III, Advances in Ceramics 24* (pp. 385-396). Cincinnati, OH: American Ceramic Society.
1. Sclater, J. G., Royden, L., Horváth, F., Burchfiel, B. C., **Semken, S.**, & Stegena, L. (1980). The formation of the intra-Carpathian basins as determined from subsidence data. *Earth and Planetary Sciences Letters, 51*, 139-162.

### Manuscripts In Review or In Preparation

41. **Semken, S.**, & Brandt, E. (in review). Implications of sense of place and place-based education for ecological integrity and cultural sustainability in contested places.
42. Kraft, K., Srogi, L., **Semken, S.**, Husman, J., & Fuhrman, M. (in review). Engaging students to learn through the affective domain: A new framework for teaching in the geosciences. *Journal of Geoscience Education*.
43. Williams, D.\*, & **Semken, S.** (in review). Ethnographic analyses of place-based geoscience curriculum and pedagogy. *Geological Society of America Special Paper on Qualitative Research in Geoscience Education*.
44. Perkins, T.\*, & **Semken, S.** (in preparation). Psychometric measurements of place attachment in geology students and the general public.
45. Howe, M.\*, & **Semken, S.** (in preparation). Teaching geology to visually disabled students.

### Other Publications

- Semken, S.** (2009, April). Putting Earth science back in its place. *Arizona Geology*. Retrieved 08 April 2009 from [http://www.azgs.az.gov/arizona\\_geology/april09/article\\_earthscience%20.html](http://www.azgs.az.gov/arizona_geology/april09/article_earthscience%20.html).
- Semken, S.** (2008). A sense of the Southwest. *Newsletter, Bioregional Outdoor Education Project, 9*(1), 1-12.
- Heckert, A. B., Kues, B. S., & **Semken, S. C.** (2003). From Bear Spring to Fort Wingate. In S. G. Lucas, S. C. Semken, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: Guidebook 54* (pp. 37-40). Socorro, NM: New Mexico Geological Society.
- Lucas, S. G., Heckert, A. B., Berglof, W. R., Kues, B. S., Crumpler, L. S., Aubele, J. C., McLemore, V. T., Owen, D. E., & **Semken, S. C.** (2003). Second-day road log, from Gallup to Fort Wingate, Sixmile Canyon, Ciniza, Red Rock Park, Church Rock, White Mesa, Thoreau, and Grants. In S. G. Lucas, S. C. Semken, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: Guidebook 54* (pp. 35-68). Socorro, NM: New Mexico Geological Society.
- Lucas, S. G., **Semken, S. C.**, Heckert, A. B., Berglof, W. R., Hoffman, G., Kues, B. S., Crumpler, L. S., & Aubele, J. C. (2003). First-day road log, from Gallup to Gamerco, Yah-Ta-Hey, Window Rock, Fort Defiance, Navajo, Todilto Park, Crystal, Narbona Pass, Sheep Springs, Tohatchi, and Gallup. In S. G. Lucas, S. C. Semken, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: Guidebook 54* (pp. 1-34). Socorro, NM: New Mexico Geological Society.
- Riggs, E., & **Semken, S.** (2003). Earth science education for Native Americans. *Newsletter, Bioregional Outdoor Education Project, 4*(3), 1-10.
- Hall-Wallace, M., Benthien, M., Boyd, T., Marvinney, R., Meertens, C., **Semken, S.**, Taber, J., & Wald, L. (2002). *EarthScope Education and Outreach Program Plan*. Washington, DC: EarthScope.

- Semken, S.**, & Gonzales, D. (2002, October 15). Rainbows in the rocks. *Daily Times, Farmington, New Mexico*, pp. A1, A5.
- Semken, S. C.** (2002, *invited*). Citation: National Association of Geoscience Teachers 2001 Neil Miner Award. *Journal of Geoscience Education*, 50, 221-223.
- Semken, S. C.** (2002). *Ch'óoshgai doo Tsézhiiin 'íí 'áhi: the Chuska Mountains, Defiance Plateau, and Navajo Volcanic Field: Western Slope Intercollegiate Field Conference Guidebook 14*. Shiprock, NM: Diné College.
- Semken, S. C.** (2001). Comments on a list of references on science teaching and Native cultures. *Tribal College Journal*, 12, 7.
- Semken, S. C.**, Drummond, C., & Harder, V. (2001). The National Association of Geoscience Teachers: dedicated to geoscience education. *GSA (Geological Society of America) Today*, 11(10), 53.
- Semken, S. C.** (1999). Aboriginal cultures and Earth science. *GSA (Geological Society of America) Today*, 9(8), 18.
- Ridgway, K., Dowse, M., Geary, E. E., Maxson, J., **Semken, S.**, Stephenson-Hawk, D., & Winkler, J. (1997, *invited*). How can we increase diversity, recruitment, and retention of students in the Earth and space sciences? In M. F. W. Ireton, C. A. Manduca, & D. W. Mogk (Eds.). *Shaping the Future of Undergraduate Earth Science Education: Innovation and Change Using an Earth System Approach* (pp. 39-43). Washington, DC: American Geophysical Union.
- Anderson, O. J., Lucas, S. G., **Semken, S. C.**, Chenoweth, W. L., & Black, B. A. (1997). Third-day road log, from Durango, Colorado, to Aztec, Farmington, and Shiprock, New Mexico. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic Geology and Paleontology of the Four Corners Region: Guidebook 48* (pp. 35-56). Socorro, NM: New Mexico Geological Society.
- Lucas, S. G., Anderson, O. J., Leckie, R. M., Wright-Dunbar, R., & **Semken, S. C.** (1997). Second-day road log, from Cortez, Colorado, to Mesa Verde National Park, Mancos, and Durango. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic Geology and Paleontology of the Four Corners Region: Guidebook 48* (pp. 19-33). Socorro, NM: New Mexico Geological Society.
- Anderson, O. J., Lucas, S. G., Chenoweth, W. L., & **Semken, S. C.** (1997). First-day road log, from Cortez, Colorado, to Montezuma Creek, Bluff, Aneth, and Four Corners. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic Geology and Paleontology of the Four Corners Region: Guidebook 48* (pp. 1-18). Socorro, NM: New Mexico Geological Society.
- Brown, L. F., Hickmott, D. D., Currier, R. P., **Semken, S. C.**, Lameman, T.†, Martin, S.†, & Yazzie, S.† (1996). *Reducing adverse health effects and improving performance of stoves on the Navajo Reservation, a plan for action: Report LA-UR-96-4016*. Los Alamos, NM: Los Alamos National Laboratory.
- Semken, S. C.** (1996). Introduction to the geology and hydrogeology of northwestern New Mexico. *Proceedings, New Mexico Water Conference, New Mexico Water Resources Research Institute*, 13-21.
- Semken, S.** (1996, February 2). Creationist beliefs refuted. *Daily Times, Farmington, New Mexico*, p. B4.
- Semken, S.** (1996, January 12). Scientists are curious human beings. *Daily Times, Farmington, New Mexico*, p. B4.
- Semken, S. C.** (1992). Looking after the land. *Tribal College Journal*, 3, 11-12.
- Semken, S. C.**, Slate, C., & Crank, L., Jr.†. (1992). Geologic road log from Shiprock to Chinle, Navajo Nation. In S. C. Semken (Ed.), *Ti' Diné Bitsé' Dadiniil': Field Guide to a Geologic*

*Excursion in the Northeastern Navajo Nation: Western Slope Intercollegiate Field Conference Guidebook 4* (pp. 5-32). Shiprock, NM: Navajo Community College.

**Semken, S. C.** (Ed.). (1992). *Ti' Diné Bitsé' Dadínil': Field Guide to a Geologic Excursion in the Northeastern Navajo Nation: Western Slope Intercollegiate Field Conference Guidebook 4*. Shiprock, NM: Navajo Community College.

**Semken, S. C.** (1983, *invited*). Geology of Cima Dome, Cima Volcanic Field, Afton Canyon, and Manix Fault areas, California. In D. Casebier (Ed.), *Guide to the Mojave Road* (pp. 137, 173-174, 177, 216-219). Los Angeles: Mojave Road Publications.

## Dissertation and Thesis

**Semken, S. C.** (1989). *Epitaxial crystal growth and oxygen diffusion studies in MgO and CaO*. Unpublished doctoral dissertation, Department of Materials Science and Engineering, Massachusetts Institute of Technology.

**Semken, S. C.** (1984). *A neodymium and strontium isotopic study of late Cenozoic basaltic volcanism in the southwestern Basin and Range province*. Unpublished master's thesis, Department of Earth and Space Sciences, University of California, Los Angeles.

## Abstracts Published

*Note:*

These are abstracts published only since I joined the ASU faculty.

Gonzales, D., & **Semken, S.** (2009). Blending curriculum with research in an undergraduate petrology course: A recipe for success? [Abstract]. *Eos, Transactions, American Geophysical Union*, ED13A-0581.

**Semken, S.**, Reynolds, S., Johnson, J., Baker, D., Luft, J., & Middleton, J. (2009). Geoscience education research, development, and practice at Arizona State University [Abstract]. *Eos, Transactions, American Geophysical Union*, ED44A-07.

**Semken, S.** (2009, *invited*). After Bigfoot leaves Indian country, educational outreach must continue [Abstract]. *Geological Society of America Abstracts with Programs*, 41(7), 598.

Fuhrman, M., Kraft, K. J., **Semken, S.**, Srogi, L., & Husman, J. (2009). Along the path to a geoscience career: What we can do to turn barriers into bridges [Abstract]. *Geological Society of America Abstracts with Programs*, 41(7), 538.

**Semken, S.** (2009). An Arizona and Southwest place-based undergraduate Earth system science course [Abstract]. *Geological Society of America Abstracts with Programs*, 41(7), 488.

Frus, R.\*, **Semken, S.**, Dodick, J., McNeil, J.\*, Frus, A., & Bowles, Z. (2009). A preliminary study of public understanding of geologic time principles conducted at the Trail of Time interpretative exhibit in Grand Canyon National Park [Abstract]. *Geological Society of America Abstracts with Programs*, 41(7), 486.

Toke, N.\*, Benn, T.\*, Brian, J.\*, Cook, E.\*, Darby, K.\*, Mead, C.\*, Boone, C., Fisher, S., & **Semken, S.** (2009). Pedagogy in interdisciplinary higher education: An investigation of faculty and student perspectives [Abstract]. *Geological Society of America Abstracts with Programs*, 41(7), 95.

**Semken, S.** (2008, *invited*). Teaching geoscience in place for local diversity and sustainability [Abstract]. *Eos, Transactions, American Geophysical Union*, 89(52), ED42A-01.

- Semken, S.** (2008, *invited*). Empirical recommendations to help broaden Native American participation in the geosciences [Abstract]. *Eos, Transactions, American Geophysical Union*, 89(52), ED23A-0637.
- Srogi, L., Fuhrman, M., Husman, J., Kraft, K. J., & **Semken, S.** (2008). Using an achievement motivation model to understand the affective and cognitive benefits of cooperative mineralogy exams [Abstract]. *Geological Society of America Abstracts with Programs*, 40(6), 496.
- Semken, S.**, Williams, D.\*, Perkins, T.\*, Pineda, M.\*, Mills, V.\*, & Butler Freeman, C.\* (2008). Leveraging sense of place in geoscience teaching and assessment [Abstract]. *Geological Society of America Abstracts with Programs*, 40(6), 246.
- Semken, S.**, & Williams, D.\* (2008). Situating Earth and space sciences in Superior: Toward place-based K-12 education in a culturally and geologically diverse Southwestern region [Abstract]. *Geological Society of America Abstracts with Programs*, 40(1), 90.
- Perkins, T.\*, & **Semken, S.** (2008). Senses of place: Place attachment in geology students and the general public [Abstract]. *Geological Society of America Abstracts with Programs*, 40(1), 90.
- Brand, B.\*, Clarke, A. B., & **Semken, S.** (2008). Eruptive and depositional processes of Narbona Pass maar volcano, Navajo volcanic field, Navajo Nation, New Mexico [Abstract]. *Geological Society of America Abstracts with Programs*, 40(1), 33-34.
- Semken, S.**, Bueno Watts, N.\*, Ault, C., Dodick, J., Alvarado, C.\*, Pineda, M.\*, Dunbar, K., Karlstrom, K., Crossey, L., & Williams, M. (2007). Timeline interpretation and time scale cognition experiments for the Trail of Time at Grand Canyon National Park [Abstract]. *Geological Society of America Abstracts with Programs*, 39(6), 562.
- Bueno Watts, N.\*, **Semken, S.**, Alvarado, C.\*, & Pineda, M.\* (2007). Visitor preconceptions and meaning-making at Petrified Forest National Park [Abstract]. *Geological Society of America Abstracts with Programs*, 39(6), 562.
- Fuhrman, M., Husman, J., Kraft, K., **Semken, S.**, & Srogi, L. (2007). Achievement motivation in the geosciences: Bringing our joy to our students [Abstract]. *Geological Society of America Abstracts with Programs*, 39(6), 550.
- Crossey, L., Karlstrom, K., **Semken, S.**, Williams, M., & Crow, R. (2007). First stage installation of the Trail of Time at Grand Canyon [Abstract]. *Geological Society of America Abstracts with Programs*, 39(6), 460.
- Howe, M.\*, & **Semken, S.** (2007). Teaching physical geology to the visually disabled: A revised lab manual and teaching guide [Abstract]. *Geological Society of America Abstracts with Programs*, 39(6), 251.
- Semken, S.**, Fouch, M., Lippert, D., Martin, R., Garnero, E., Zah, P., & Parrish, J. (2007). EarthScope engages American Indian stakeholders in Arizona [Abstract]. *Proceedings, EarthScope National Meeting*, Monterey, CA.
- Semken, S.**, & Butler Freeman, C.\* (2006). Design, implementation, and cognitive and affective outcomes of Southwest place-based approaches to teaching introductory geoscience and Earth science for teachers [Abstract]. *Geological Society of America Abstracts with Programs*, 38(7), 498.
- Karlstrom, K., Crossey, L., Williams, M., Crow, R., & **Semken, S.** (2006). It's about time: plans for installation of Trail of Time at Grand Canyon and investigations of public cognition of deep time and Earth processes [Abstract]. *Geological Society of America Abstracts with Programs*, 38(7), 271.

- Semken, S.**, Fouch, M., Garnero, E., Zah, P., & Parrish, J. (2006). Native American perspectives and preferences bearing on EarthScope deployments in the Southwest [Abstract]. *Geological Society of America Abstracts with Programs*, 38(7), 251.
- Schaufele, C., Zumoff, N., Perkins, T.\*, **Semken, S.**, & Laval, P. (2006). Kéyah Math: place-based, culturally-responsive, technology-intensive, quantitative modules for introductory undergraduate geoscience [Abstract]. *Geological Society of America Abstracts with Programs*, 38(7), 80.
- Semken, S.**, Fouch, M., Garnero, E., Zah, P., & Parrish, J. (2006, *invited*). Engaging American Indian stakeholders in a national geoscientific research and education project [Abstract]. *Proceedings, Western Social Science Association 48th Annual Conference*, Phoenix, AZ, 12.
- Crossey, L. Karlstrom, K. E., **Semken, S.**, & Williams, M. (2006). The Trail of Time: developing educational outreach at Grand Canyon National Park [Abstract]. *Proceedings, New Mexico Geological Society Annual Meeting*, Socorro, NM, 14.
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- Semken, S.**, & Becenti, A. (2005, *invited*). American Indian sacred places as geoh heritage resources [Abstract]. *Geological Society of America Abstracts with Programs*, 37(7), 190.
- Howe, M.\*, & **Semken, S.** (2005). Teaching geology to the visually disabled: revising a lab manual [Abstract]. *Geological Society of America Abstracts with Programs*, 37(7), 156.
- Butler, C. L.\*, Bueno Watts, N.\*, Neakrase, J. J.\*, Escobar, R.\*, **Semken, S.**, & Baker, D. (2005). A pilot study of outcomes of a place-based activity in a large-enrollment introductory geology laboratory [Abstract]. *Geological Society of America Abstracts with Programs*, 37(7), 120.
- Semken, S.**, Fouch, M. J., & Garnero, E. (2005). Engaging Native American stakeholders in EarthScope [Abstract]. *Proceedings, EarthScope National Meeting*, Tamaya, NM, 227.
- Bueno, N.\*, **Semken, S.**, & Fouch, M. J. (2005). USArray: preparing Arizona for Bigfoot's deployment [Abstract]. *Proceedings, EarthScope National Meeting*, Tamaya, NM, 95.
- Semken, S.**, & Piburn, M. D. (2004). The meaning and measurement of sense of place for place-based geoscience teaching [Abstract]. *Geological Society of America Abstracts with Programs*, 36(5), 555.
- Semken, S.** (2004, *invited*). Promoting geoscience literacy for American Indian teachers: a practical long-term investment in diversity [Abstract]. *Geological Society of America Abstracts with Programs*, 36(5), 278.
- Semken, S.** (2004, *invited*). Frontiers in geoscience education research [Abstract]. *Proceedings, Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Annual Conference*, Austin, TX.
- Fouch, M. J., Cecil, J. L., Cecil, S., & **Semken, S.** (2004). Project SLAM: a flexible field seismology and earthquake studies teaching module [Abstract]. *Proceedings, Sixteenth Annual Incorporated Research Institutions for Seismology (IRIS) Workshop*, Tucson, AZ.

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- Gruen, E. M., McCarthy, L., Namingha, G.†, Bank, C., Noblett, J., & **Semken, S.** (2003). Preliminary geophysical investigations of the Ship Rock diatreme, Navajo Nation, New Mexico [Abstract]. *Eos, Transactions, American Geophysical Union*, 84(46), ED41B-1160.
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- Semken, S.**, Gonzales, D. A., & Graham, K. (2003). An academic partnership to map Tsé bit'á'í (Ship Rock) [Abstract]. *Geological Society of America Abstracts with Programs*, 35(5), 10.
- Semken, S.** (2003, *invited*). Place-based and culturally-responsive digital slides for introductory geoscience teaching [Abstract]. *Geological Society of America Abstracts with Programs*, 35(5), 9.
- Wilson, D., Aster, R., Ni, J., West, M., Grand, S., Gao, W., Baldrige, W. S., & **Semken, S.** (2003). Seismic structure of the lithosphere in the southwestern United States using receiver functions [Abstract]. *Seismological Research Letters*, 74(2), 202.

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## Invited Lectures, Colloquia, and Workshops at Other Institutions

Note:

¶ denotes presentation as *National Association of Geoscience Teachers Distinguished Speaker*.

- 2009 NAGT Cutting Edge Workshop on the Affective Domain, Mesa Community College.
- 2008 Ningxia University and Northwest University for Nationalities (Yinchuan, China).
- 2008 University of Northern Colorado
- 2006 University of Oklahoma
- 2006 New Mexico State University
- 2006 New Mexico Institute of Mining and Technology
- 2005 Diné College
- 2004 Mesa Community College
- 2004 Southwestern Indian Polytechnic Institute
- 2004 Fort Lewis College
- 2003 New Mexico Bureau of Geology and Mineral Resources
- 2003 University of North Dakota
- 2002 Navajo Nation Department of Health
- 2002 University of Arizona
- 2002 University of New Mexico
- 2000 Prescott College¶
- 2000 San Juan College
- 2000 Monument Valley Navajo Tribal Park
- 2000 Navajo Nation Department of Emergency Management
- 2000 Northwest Indian College¶
- 1999 Snow College¶
- 1999 University of California, Riverside¶
- 1999 Northeastern State University (Oklahoma)¶
- 1998 Colorado College¶
- 1998 Mount Holyoke College¶
- 1998 Northern Arizona University
- 1997 Cerritos College¶
- 1997 Michigan Technological University¶
- 1997 Hamilton College¶
- 1997 University of Delaware¶
- 1997 University of British Columbia¶
- 1997 Arizona State University

## Other Noteworthy Invited Presentations

- 2008 International Yin Shan Rock Art Scientific Inspection, Inner Mongolia A.R., China.
- 2008 Yinchuan Middle School #1, Yinchuan, Ningxia Hui A.R., China
- 2008 McDowell Sonoran Conservancy, Scottsdale
- 2005 ASU President Crow's *Community Enrichment Program*, Heard Museum, Phoenix
- 2005 Pueblo Grande Museum, Phoenix
- 2004 Society for Advancement of Chicanos and Native Americans in Science, Austin, TX
- 2004 Four Corners Geological Society, Farmington, NM
- 2000 American Indian Science and Engineering Society, Gallup, NM
- 1997 Society of Mining and Metallurgical Engineers, Albuquerque, NM

### Active Funded Grants at ASU

#	Title	Agency	Funds	Duration	Semken Percentage and Role
14	Follow the Elements	NASA Astrobiology Institute	\$7,517,437	01/01/09 to 12/31/13	4%  <b>Co-PI</b> <i>PI:</i> A. Anbar, ASU
13	Science Teachers in Arizona: Recruitment and Retention (STARR)	NSF-DUE Robert Noyce Scholarship Program DUE-0833311	\$750,000	09/01/08 to 08/31/13	25%  <b>Co-PI</b> <i>PI:</i> J. Luft, ASU
12	Communication in English and Science Inquiry Project for High Schools (CESIP-HS)	Arizona Board of Regents Improving Teacher Quality Program	\$238,184	01/03/08 to 06/30/10	25%  <b>Co-PI</b> <i>PI:</i> M. Lang, MCCCD
11	Collaborative Research: Evaluating Student Learning in Geoscience Curricula that Employ Conceptests Using Electronic Student Response Systems	NSF-DUE Course, Curriculum, and Lab Improvement DUE-0716296	\$ 64,889	08/01/07 to 07/31/11	100%  <b>Sole ASU PI</b> <i>Lead PI:</i> D. Steer, Univ. Akron
10	Collaborative Research: The Trail of Time: Integrated Geoscience Education at Grand Canyon National Park	NSF-EHR Informal Science Education ISE-0610345	\$272,909	08/01/06 to 07/31/10	100%  <b>Sole ASU PI</b> <i>Lead PI:</i> K. Karlstrom, UNM
9	CRESMET Project Pathways MSP: Opening Routes to Math and Science Success for All Students	NSF-EHR Math/Science Partnerships EHR-0412537	\$12,500,000	08/01/04 to 07/31/10	4%  <b>Collaborator</b> <i>PI:</i> M. Carlson, ASU

### Completed Grant Projects at ASU

#	Title	Agency	Funds	Duration	Semken Percentage and Role
8	Situating Earth Science and Mathematics in Superior: Outcomes and Applications of Place-Based Earth Science Teaching	NSF-GEO Small Grants for Exploratory Research GEO-0706653	\$ 49,821	11/15/06 to 01/31/09	100%  <b>Sole PI</b>
7	Sustainability and Sense of Place in Cultural Landscapes	ASU Institute for Humanities Research Fellows Program	\$ 36,828	05/01/07 to 08/15/08	33%  <b>Co-PI</b> <i>PI:</i> B. Brandt, ASU
6	Kéyah Math: Place-Based, Culturally- Responsive, Technology- Intensive, Quantitative Modules for Introductory Undergraduate Geoscience	NSF-GEO Opportunities for Enhancing Diversity in the Geosciences GEO-0355224	\$429,629	09/01/03 to 04/30/08	25%  <b>Lead PI</b> <i>Co-PIs:</i> C. Schaufele, Diné Coll., et al.

5	Native American Perspectives and Preferences Bearing on EarthScope Deployments in the Southwest	NSF-EAR EarthScope EAR-0454502	\$ 29,998	03/01/05 to 12/31/07	25%	<b>Lead PI</b> Co-PIs: M. Fouch, ASU, et al.
4	Technology Assistance with Implementation and Operation of Transportable Array Element of USArray and EarthScope	EarthScope USArray Program	\$105,552	04/01/05 to 06/30/06	50%	<b>Co-PI</b> PI: M. Fouch, ASU
3	USArray Transportable Array Siting Outreach	IRIS Education and Outreach Program	\$ 30,179	01/01/05 to 06/30/06	50%	<b>Lead PI</b> Co-PI: M. Fouch, ASU
2	Indigenous Geology: Development and Assessment of a Culturally-Resonant, Place-Based Model of Geology Education for American Indian Pre-Service Teachers	Arizona Board of Regents Learner-Centered Education Program	\$ 25,000	01/01/04 to 03/31/06	25%	<b>Lead PI</b> Co-PIs: D. Baker, ASU, et al.
1	Enhancing Large-Enrollment Geology Lecture Classes with Technology-Assisted, Real-Time Peer Interaction	ASU CLAS Quality of Undergraduate Education Program	\$ 10,340	07/01/04 to 06/30/05	100%	<b>Sole PI</b>

## Teaching History

### Courses Taught at Arizona State University

(In the School of Earth and Space Exploration and the Mary Lou Fulton College of Education)

*Introduction to Physical Geology* (GLG 101): Spring 2004, Fall 2005 and 2006.

*Introduction to Historical Geology* (GLG 102): Fall 2008.

*Geological Sciences Colloquium* (GLG 400/500): Spring 2006.

*Computers in Geology* (GLG 410/598): Fall 2004.

*Field Geology I* (GLG 451): Spring 2008 and 2009.

*Field Geology II* (GLG 452): Summer 2007, 2008, and 2009 (co-taught with Thomas Sharp).

*Advanced Field Geology* (GLG 455/598): Spring 2007.

*Cordilleran Regional Geology* (GLG 456/598); Spring 2006 (co-taught with Stephen Reynolds).

*Teaching Earth and Space Sciences* (GLG 490/598): Fall 2005 (expanded the course to 3 units).

*Methods in Geoscience Teaching* (GLG 490/598): Fall 2003.

*Connecting Biology, Geology, and Mathematics* (GLG 593/598): Spring 2006 (co-created the course; co-taught with Anton Lawson).

*Situating Earth and Space Sciences* (GLG 598): Spring 2007 and 2008 (created the course).

*Exploration of Science Teaching* (SES/SED 111): Spring 2007, Fall 2007 and 2008, Spring 2009 (co-taught with Julie Luft and Sissy Wong Kavvas).

*Patterns in Nature* (BLE 498, ASU-Diné College Teacher Education Program): Fall 1997.

### Courses Taught at United States Air Force Academy, 1998

(In the Department of Chemistry)

*General Chemistry I Lecture and Lab* (Chem 141).

*General Chemistry II Lecture and Lab* (Chem 142).

*Space Chemistry: Inner Solar System* (Chem 325).

### Courses Taught at Diné College, 1988-2003

(In the Division of Mathematics, Science, and Technology)

*Indigenous Physical Geology Lecture and Lab* (GLG 101).

*Historical Geology Lecture and Lab* (GLG 102).

*Environmental Geology* (GLG 203).

*Field and Lab Geology for Navajo Nation Teachers* (GLG 229).

*Practicum in Earth and Environmental Sciences* (ENV 297).

*Fundamental Chemistry Lecture and Lab* (CHM 100).

*General Chemistry I Lecture and Lab* (CHM 151).

*General Chemistry II Lecture and Lab* (CHM 152).

*Introduction to Physics I Lecture and Lab* (PHY 101).

*College Algebra* (MTH 110).

### Other ASU Teaching Activities

*Physics of Earth and Planetary Surfaces and Interiors (PEPSI) Seminar Series*: Organized and ran this weekly seminar series in the School of Earth and Space Exploration during Spring 2007.

### Noteworthy Teaching Contributions

- Directed the design and 2006-07 implementation of the new *Bachelor of Arts in Education/Initial Teacher Certification degree program in Secondary Earth and Space Sciences Education* (a joint degree with the Mary Lou Fulton College of Education).
- Developed and piloted new CRESMET courses *Exploration of Science Teaching, Teaching Earth and Space Sciences, Situating Earth and Space Sciences in the Southwest, and Connecting Biology, Geology, and Mathematics*. The latter two courses are specifically aimed at in-service middle-school and high-school teachers.
- Taught the two courses for in-service teachers described above off-campus, serving school districts in Chandler, Mesa, Superior, and San Carlos Apache Nation, AZ. The latter two are high-need, minority-majority school districts.
- Infused Southwestern place-based teaching and learning approach into large-lecture *Introduction to Physical Geology* course.
- Collaborator in the ASU *College of Liberal Arts and Sciences Information Infusion Initiative (CLAS I<sup>3</sup>)* during 2003 and 2004, helping to develop Information Literacy standards for CLAS curricula and disseminating Information Literacy resources to colleagues.
- Guided implementation of *Blackboard course management software* and *student response systems* (“clickers”) by School of Earth and Space Exploration faculty, under the auspices of the CLAS I<sup>3</sup>. Presented several day-long Blackboard training sessions for faculty colleagues. Installed response-system receivers in lecture rooms with funding from a CLAS *Quality of Undergraduate Instruction* grant.

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## Mentoring

### Graduate Students Supervised or Co-Supervised

*Carol Butler Freeman*, Ph.D. 2010 candidate, Effectiveness of inquiry teaching of geologic time and Quaternary landslides in the Chuska Mountains, NM-AZ, School of Earth and Space Exploration.

*Emily Habinck*, Ph.D. 2013 candidate, Research-based enhancement of informal geoscience learning in National Parks, Mary Lou Fulton Institute and Graduate School of Education.

*Kathleen Hill*, Ph.D. 2013 candidate, Research-based geoscience teacher preparation, Mary Lou Fulton Institute and Graduate School of Education.

*Rebecca Mathews Frus*, M.S. 2010 candidate, Visitor cognition of geologic time principles at Grand Canyon National Park, School of Earth and Space Exploration.

### (Degrees Completed)

*Brittany Brand*, Ph.D., 2008, Mafic phreatomagmatic volcanism and density current dynamics, School of Earth and Space Exploration.

*Tracy Perkins*, M.S. 2008, Place attachment in geology students and the general public, School of Earth and Space Exploration.

*Megan O'Shea*, M.S. 2008, Hydropolitics: Examining the role of science in Arizona's Groundwater Management Act of 1980, School of Earth and Space Exploration and Center for Science, Policy, and Outcomes.

*Nievita Bueno Watts*, M.S., 2007, Visitor preconceptions and meaning-making at Petrified Forest National Park, School of Earth and Space Exploration.

*Leslie Ann Field*, M.N.S., 2004, A model 400-level Field Hydrogeology course, Department of Geological Sciences.

### **Honors Undergraduate Students Supervised**

*Jennifer McNeil*, Honors B.A. 2010 candidate, Visitor cognition of geologic time principles at Grand Canyon National Park, Barrett Honors College and School of Earth and Space Exploration.

### **(Degrees Completed)**

*Kara Gasperone*, Honors B.A., 2009, Family outdoor experiences and student's selection of an introductory science course, Barrett Honors College and School of Social and Family Dynamics.

### **Graduate Students Advised**

*Jennifer Neakrase*, Ph.D. 2010 candidate, A characterization of the knowledge and practices of beginning secondary physics teachers, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.

*Shawn Wright*, Ph.D. 2010 candidate, Terrestrial fieldwork and laboratory thermal infrared spectroscopy of basaltic impactites from the Earth and Mars, School of Earth and Space Exploration.

*Melanie Busch*, Ph.D. 2010 candidate, Eye-tracking studies of effectiveness of image and text placement in geoscience textbooks, School of Earth and Space Exploration.

*Joshua Coyan*, Ph.D. 2010 candidate, Eye-tracking studies of student use of geological images, School of Earth and Space Exploration.

*Deborah Williams*, Ph.D. 2011 candidate, Cultural diversity, negotiating place, and public discourse, School of Human Evolution and Social Change.

*Sissy Wong Kavas*, Ph.D. 2011 candidate, Strategic science teacher preparation, Mary Lou Fulton Institute and Graduate School of Education

### **(Degrees Completed)**

*Elizabeth Lewis*, Ph.D., 2009, Secondary science teachers' views toward and classroom translation of sustained professional development, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.

*Kevin Goldman*, M.S., 2009, Diabase alteration and relation to low-temperature mineral deposits, Salt River Canyon area, Arizona, School of Earth and Space Exploration.

*Sharon Schleigh*, Ed.D., 2008, The interaction of assessment format and sex in assessing the knowledge structure coherence of middle school students' understanding of the concept of force, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.

*Nathan Wilkens*, Ph.D., 2008, Paleocology of Early Jurassic Navajo Sandstone interdune deposits, School of Earth and Space Exploration.

*Sian Proctor*, Ph.D., 2006, Student visual-spatial abilities in map use, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.

*Rebecca Escobar Dial*, M.S., 2006, The origin and modification of the Medusae Fossae Formation (MFF), Mars, Department of Geological Sciences.

*Deirdre Hahn*, Ph.D., 2005, Psychological, moral, and intellectual dimensions of pre-service teachers' attitudes toward teaching evolution, Division of Psychology in Education, Mary Lou Fulton College of Education.

*Joshua Coyan*, M.S., 2005, Subsurface geology of a groundwater remediation site, eastern Phoenix basin, Arizona, Department of Geological Sciences.

*Anthony Salem*, M.S., 2005, Structural geology and stratigraphy of Paleozoic rocks of the Big Maria syncline, southeastern California, Department of Geological Sciences.

*Kathleen McFadden*, M.S., 2004, End-Permian karst stratigraphy and geochemistry at the Kaibab-Moenkopi contact and its relationship to the Permian-Triassic boundary for northern Arizona, Department of Geological Sciences.

*Bernadette Tsosie*, M.S., 1997, Hydrogeologic characterization of the floodplain that lies below the Uranium-Mill Tailings Remedial Action Site at Shiprock, New Mexico, Department of Earth and Environmental Sciences, New Mexico Institute of Mining and Technology.

*Edward Henry*, M.S., 1994, Groundwater modeling at the Shiprock Uranium-Mill Tailings Remedial Action Site, Department of Civil Engineering, University of New Mexico.

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## Service History

### Service to the Profession

Associate Editor, *Journal of Geoscience Education* (National Association of Geoscience Teachers), since 2002.

Associate Editor, *Geosphere* (Geological Society of America), since 2004.

*Geological Society of America*, Education Standing Committee Member, since 2006.

*American Geophysical Union*, 2010 Smith Medal Committee Chair.

Co-Leader, *EarthScope Colorado Plateau-Rio Grande Rift Interpretative Workshop* for Park professionals and K-12 teachers, Albuquerque, NM, October 2009.

Co-Leader, Topical Session on “Place-based Education in Earth Science,” *Geological Society of America 2009 Annual Meeting*, Portland, OR.

Co-Leader, *EarthScope Geoscience Professional Development Workshop* for Native American K-12 teachers, Flagstaff, September 2009.

*Incorporated Research Institutions for Seismology* (IRIS), Education and Outreach Program Review Panel, Invited Member, 2009.

*EarthScope*, Education and Outreach Steering Committee Member, 2005-2008.

*Incorporated Research Institutions for Seismology* (IRIS), Education and Outreach Committee Member, 2002-2005.

*National Science Foundation*, *Geoscience Education Working Group II*, Invited Member, 2004.

*National Association of Geoscience Teachers*, President (Elected), 2000-2001.

*Haskell Indian Nations University*, Environmental Research Studies Board Member, 1996-2001.

*American Geophysical Union*, Committee on Education and Human Resources Member, 1996-2000.

*National Association of Geoscience Teachers*, *Southwest Section*, Treasurer, since 1996.

*Geological Society of America*, Committee on Women and Minorities in Geology Member, 1995-1996.

*Western Partnership for Environmental Technology Education* (Western PETE), Chair, 1995-1996.

*National Association of Geoscience Teachers*, *Southwest Section*, President, 1993-1996.

*Four Corners Geological Society*, President, 1993-1994.

### Service to the Community

*Arizona State Parks*, Volunteer Geological Guide, since 2009.

*New Mexico EPSCoR Climate Change Project*, Advisory Committee Member, since 2009.

*Salt River Project/WESTCARB Carbon Sequestration Project*, Advisory Board Member, since 2006.

*Four Corners School of Outdoor Education*, NSF Bioregional Outdoor Education Program, Advisory Board Member, since 2002.

*Superior, Arizona, Community Education Committee*, Advisor, 2006-2008.

*Navajo Nation Environmental Protection Agency, Committee on Water Quality, Advisor, 2001-2003.*  
*Navajo Uranium Education Program, Advisory Panel Member, 2001-2003.*

**Service to Arizona State University and the School of Earth and Space Exploration**

*Initial Teacher Certification Council, SESE Representative, since 2006.*

*School of Earth and Space Exploration Student GeoClub, Faculty Advisor, since 2006.*

*Arizona Geology Articulation Task Force, Alternate SESE Representative, since 2005.*

*Interdisciplinary Ph.D. Committee in Curriculum and Instruction, Mentor, since 2003.*

*University-wide American Indian Academic Council, Member, since 2003.*

*School of Earth and Space Exploration, Vision and Curriculum Subcommittee Member, 2004-2006.*

*College of Liberal Arts and Sciences, Information Technology Committee Member, 2003-2005.*