

ABRIDGED VITA 2012

EDWARD A. KELLER
Environmental Studies and
Department of Earth Science
University of California
Santa Barbara, California 93106

Keller, Edward A.
(1942-)

Earth Surface Processes, Engineering Geology, Environmental Geology
University of California, Santa Barbara, June 17, 2009. Statement by A. E. Gates (2003)¹

When an earthquake occurs in the eastern or central part of the United States there are seismic waves that shake buildings and other structures but rarely is there evidence on the surface as to where it occurred. Instead the only way to locate the earthquake is with seismographs and patterns of seismic activity are as uncommon as the surface features. For that reason, geomorphology is regarded as a rather gentle branch of geology there. In the western United States on the other hand, earthquakes and other tectonic movements leave scars, induce landslides and generally wreak havoc on buildings and people. In stark contrast to the east, tectonic geomorphology is a dynamic and dangerous study. Edward Keller is one of the foremost experts on tectonic geomorphology especially with regard to earthquake reduction and prevention. By studying relative uplift and subsidence both in terms of rates and elevation changes, tectonic movements and their extent and intensity may be revealed. The beautiful wave cut terraces of the California Pacific coast are excellent examples of the types of features that Keller studies. They reveal sequential tectonic uplift of the land surface with erosion during the quiet periods. Such studies can reveal information on recurrence intervals for earthquakes, potential for blind faults, as well as landslides and other hazards. They have great implications for building codes and disaster preparedness plans. Keller primarily studies the geomorphology and Quaternary deposits related to active faults and folds that result from faults.

Edward Keller also has a major interest in fluvial geomorphology. He studies the development of channels in streams as well as the controls on where pools and riffles develop and how they change with time. This research involves an attempt to explain and even quantify a process that is otherwise chaotic in appearance. In addition to determining location of the features of a stream, Keller studies the processes involved in to flood control. Currently, as an offshoot of this research, he has been studying the hydrologic processes in the chaparral ecosystem of southern California and role of wildfire in the recurrence of high magnitude flood deposits and debris flow deposits.

Edward Keller has over 20 years experience in public service and consulting in a variety of subjects and cases including: flood hazard; erosion; coastal processes; landslides; and landscape history. This work has provided real world experience to both undergraduate and graduate students.

Edward Keller was born on June 6, 1942 in Los Angeles, California. He attended California State University at Fresno where he earned a Bachelor of Science degree in Mathematics in 1965. However, he decided that he was really better suited to geology and returned to California State University to earn a Bachelor of Arts degree in Geology in 1968. He then earned a Master of Science degree in Geology from the University of California at Davis in 1969. He earned a Ph.D. from Purdue University, Indiana in Geology in 1973. He joined the faculty at the University of North Carolina the same year. In 1976, he accepted a position at the University of California at Santa Barbara (joint appointment with the Environmental Studies Program and the Department of Earth Science) and has remained there ever since. He has served as Chair of both the Environmental Studies and the Hydrologic Science programs several times. Edward Keller has had a very productive career. He is an author on some 100 articles in international journals, governmental reports and professional volumes. Many of these are seminal works on fluvial processes and tectonic geomorphology. Even more impressive are the books that he has written. He is the author of the most successful textbook on Environmental Geology (with the same name) now in its eighth edition. He also wrote the definitive textbook on tectonic geomorphology entitled Active Tectonics and is in its second printing. He is the author with Daniel Botkin of a very successful textbook on Environmental Science (with the same name). He is also an author on two other books on Environmental Science and Geology. Keller has received several honors and awards for his contributions to the profession. He received a Hartley Visiting Professor Award from The University of Southampton, England in 1982-1983 and the Quatercentenary Fellowship from Cambridge University, England in 2000. He two Outstanding Alumnus Awards from Purdue University, Indiana, one from the department (1994) and one from the School of Science (1996). He also received a Distinguished Alumnus Award from California State University at Fresno in 1998. He received the Outstanding Research Award from the Southern California Earthquake Center in 1999. Professor Keller received the Don J Easterbrook, Distinguished Scientist Award from the Geological Society of America in 2004.

1. Updated from Gates, A. E. 2003. Notable Scientists: A to Z of Earth Scientists. Facts on File Inc. NY, NY.

VITA

EDUCATIONAL BACKGROUND:

| <u>Degree</u> | <u>Institution</u> | <u>Date</u> | <u>Major</u> |
|---------------|-------------------------------------|----------------|--------------|
| B.S. | California State University, Fresno | June, 1965 | Mathematics |
| B.A. | California State University, Fresno | August, 1968 | Geology |
| M.S. | University of California | December, 1969 | Geology |
| Ph.D. | Purdue University | May, 1973 | Geology |

ACADEMIC EXPERIENCE:

| <u>Date</u> | <u>Title</u> | <u>Employer</u> | <u>Description</u> |
|--------------|--------------|-----------------|---|
| 1976-present | Professor | UCSB | Teaching and research in earth surface processes and landforms, fluvial processes, tectonic geomorphology, engineering geology, and |

environmental geology.

| | | | |
|-----------|---------------------|------------------------------|---|
| 1993-1997 | Chair | UCSB | Chair of the Environmental Studies Program and Hydrologic Science Program |
| 1989-1992 | | | |
| 1987-1988 | | | |
| 1985-1986 | | | |
| 1973-76 | Assistant Professor | University of North Carolina | Teaching and research in geomorphology, environmental studies, earth science. |

RESEARCH INTERESTS:

Earth Surface Processes

HONORS AND AWARDS:

Don J Easterbrook, Distinguished Scientist Award, Geological Society of America, 2004

Quatercentenary Fellowship, Michaelmas Term, Emmanuel College, Cambridge Univ., UK, 2000

Outstanding Outreach, Southern California Earthquake Center, 1999

Distinguished Alumni, California State University, Fresno, 1998

Distinguished Alumni Award, Purdue University School of Science, 1996

Outstanding Alumnus Award, Purdue University, Department of Earth and Atmospheric Sciences, 1994

Sigma Xi National Lecturer, 1983-85

Hartley Visiting Professor Award, The University of Southampton, England, 1982-83

Who's Who Among Students in American Universities and Colleges, 1965

Blue Key National Honor Fraternity

PROFESSIONAL MEMBERSHIPS:

The Society of Sigma Xi

The Geological Society of America (Fellow)

Phi Kappa Phi

National Association of Geology Teachers

American Geophysical Union (Hydrogeology Section)

GRANTS

- Water Resources Research Grant; “Use of Fluvial Processes to Minimize Adverse Effects of Stream Channelization,” 1975-78, \$69,000, N. C. Water Resources Research Institute and U. S. Office of Water Resources Research
- U. S. Geological Survey, Earthquake Hazards Reduction Grant, “Tectonic Geomorphology and Possible Future Seismic Activity of the Central Ventura Basin, California,” 1978-79, \$70,000
- Water Resources Research & U. S. Forest Service and U. S. Park Service, Contracts and Grants, “Effects of Large Organic Debris on Channel Form and Fluvial Processes,” 1978-80, \$33,000
- U. S. Geological Survey, Earthquake Hazards Reduction Program Grant, “Paleomagnetic Dating of Holocene Deposits Along the San Andreas Fault in Southern California,” 1979-80, \$46,000
- Water Resources Research Grant, “Large Organic Debris and Anadromous Fish Habitat in the Coastal Redwood Environment,” 1980-82, \$55,974
- U. S. Geological Survey, Earthquake Hazards Reduction Program Grant, “Soil Chronosequences as Instruments for Dating Holocene and Late Pleistocene Faulting, Western Transverse Ranges,” California, 1981-82, \$70,000
- Water Resources Research Grant, “Cold Pools and Their Importance for Enhancement of Anadromous Fish Habitat in Northern California Coastal Streams,” 1982-83, \$15,000
- Water Resources Research Grant (with Julia Allen), “Long Term Monitoring and Analysis of Water, Sediment, and Nutrient Budgets in Coastal Mountain Streams,” 1984-86, \$32,000
- U. S. Geological Survey, Earthquake Hazards Reduction Program Grant, “Late Pleistocene-Holocene Soil Chronology for Evaluating Tectonic Framework and Events,” 1984-85, \$50,000
- U. S. Geological Survey, Earthquake Hazards Reduction Program Grant, “Source and Seismic Potential Associated with Reverse Faulting and Related Folding,” 1986-87, \$60,000
- Water Resources Research Grant (with Frank Davis), “Recovery of the Riparian Zone Following Chaparral Wildfire,” 1986-88, \$30,000
- U. S. Geological Survey, Earthquake Hazards Reduction Program Grant, “Quaternary Tectonic Framework and Earthquake Hazard in Fold-and-Thrust Belts of the Western Transverse Ranges, California,” 1987-89, \$63,000
- Water Resources Center, “Hydrologic Response of Small Watersheds to Wildfire,” 1991-93, \$40,000

National Science Foundation, Southern California Earthquake Center, "Tectonic Geomorphology of the Los Angeles Basin," 1991-92, \$35,000

U. S. Geological Survey, Earthquake Hazards Reduction Program, "Investigations in Areas of Subsidence in the Onshore Fold and Thrust Belt of the Cascadia Subduction Zone," 1991-92, \$41,000

U. S. Geological Survey, Earthquake Hazards Reduction Program, "Latest Pleistocene to Holocene Rupture History of the Santa Cruz Island Fault," 1992-93, \$40,000

University of California Santa Barbara, College of Letters and Science, "Undergraduate Research Initiation at Santa Cruz Island", 1994, \$14,000

University of California Santa Barbara, Office of the Executive Vice Chancellor and Office of the Associate Vice Chancellor for Research, outreach portion of the "South Coast Earthquake Project (SCEP)", 1995, \$10,000.

National Science Foundation, Southern California Earthquake Center, "Earthquake Hazard: Ventura-Santa Barbara", 1995, \$24,000.

National Science Foundation, Southern California Earthquake Center, "Correlation of Uplifted Marine Terraces, 1997, \$15,000

U. S. Geological Survey, Earthquake Hazards Reduction Program, "Earthquake Hazard of the Santa Barbara Fold Belt, 1996, \$76,000.

National Science Foundation, "Investigation of a very rapid tectonic process: Direction and rates of lateral propagation of reverse faulting and folding", 1998-2001, \$165,000.

Department of Interior, total Support \$50,000.00 "Earthquake Hazard of the Santa Barbara Fold Belt,

Cal Department of Parks and Recreation, total Support , 1999,\$8000 "Gaviota Creek Fish Passage Enhancement.

Department of Interior, total Support ,2000,\$7500 "Quaternary Geology of the Santa Barbara Urban Corridor: Santa Barbara Quadrangle.

University of California Energy Institute. Hydrocarbon emissions from natural seeps. \$30,000 2003-2004.

Southern California Earthquake Center (SCEC. Seismic Hazards Associated with active Deformation within the Camarillo Fold Belt, Western Transverse Ranges, Southern California. Funded at the amount \$25,000. 2006

USGS National Earthquake Reduction Program (NEHRP. Earthquake Hazard of the Camarillo Fold Belt: An Analysis of the Unstudied Fold Belt in the southern California "Hot Zone." Funded at the amount of \$60,000. 2007.

Southern California Earthquake Center (SCEC), Active Tectonics of the Camarillo Fold Belt: Establishing the Chronology. Funded at the amount of \$25,000. 2008

USGS National Earthquake Reduction Program (NEHRP. Earthquake Hazard of the Camarillo Fold Belt: An Analysis of the Unstudied Fold Belt in the southern California "Hot Zone. \$59,000.2008.

PUBLICATIONS

1970

- 1 Keller, E. A. Bed-load movement experiments: Dry Creek, California, *Journal of Sedimentary Petrology* 40(4): 1339-1344.

1971

- 2 Keller, E. A. Areal sorting of bed-load material: the hypothesis of velocity reversal. *Geol. Soc. Amer. Bull.* 82: 753-756.
- 3 Keller, E. A. Pools, riffles, and meanders: discussion. *Geol. Soc. Amer. Bull.* 82: 279-280.

1972

- 4 Keller, E. A. Development of alluvial stream channels: a five stage model. *Geol. Soc. Amer. Bull.* 83: 1531-1536.
- 5 Keller, E. A. Areal sorting of bed-load material: the hypothesis of velocity reversal: reply. *Geol. Soc. Amer. Bull.* 83: 915-918.
- 6 Coffman, D. M., E. A. Keller, and W. N. Melhorn. A new topological relationship as an indicator of drainage network evolution. *Water Resources Research* 8(6): 1497-1505.

1973

- 7 Melhorn, W. N., and E. A. Keller. Landscape aesthetics numerically determined: applications in highway corridor selection. *Highway Research Record* 452: 1-9.
- 8 Keller, E. A., and W. N. Melhorn. Bedforms and fluvial processes in alluvial stream channels: selected observations. *Proceedings of the Fourth Annual Geomorphology Symposia Series, in Fluvial Geomorphology*, Morisawa, Marie (ed.), Publications in Geomorphology, State University of New York, Binghamton, New York, Chapter 11, pp. 253-284. (Invited contribution).

1974

- 9 Keller, E. A. Development of alluvial stream channels: a five stage model: reply. *Geol. Soc. Amer. Bull.* 84: 150-152.

- 10 Keller, E. A., and W. N. Melhorn. Form and fluvial processes in alluvial stream channels. Studies in Fluvial Geomorphology, No. 2, Purdue University, Water Resources Research Center, T.R. 47, 124 p.

1975

- 11 Melhorn, W. N., E. A. Keller, and R. A. McBane. Landscape aesthetics numerically defined. Studies in Fluvial Geomorphology, No. 1, Purdue University, Water Research Center, T.R. No. 37, 101 p.
- 12 Keller, E. A.. Channelization: a search for a better way. Geology 3(5): 246-248.

1976

- 13 Keller, E. A., and E. K. Hoffman. Channel restoration: a sensible alternative to channelization. Public Works, Oct.: 70-72.
- 14 Keller, E. A. Environmental Geology. Charles E. Merrill Publishing Co., Columbus, Ohio, 496 p.
- 15 Keller, E. A. Channelization: environmental, geomorphic and engineering aspects. Geomorphology and Engineering, Chapter 7, D. R. Coates (ed.), Dowden, Hutchinson and Ross, Inc., pp. 115-140.(Invited contribution).

1977

- 16 Keller, E. A. Fluvial systems: selected observations. In Riparian Forests in California: Their Ecology and Conservation, Anne Sands (ed.), University of California, Davis, Institute of Ecology, Publication No. 15, Chapter 5, pp. 39-46.
- 17 Keller, E. A., and E. K. Hoffman. Urban streams: sensual blight or amenity. Journal of Soil and Water Conservation 32(5): 237-240.

1978

- 18 Keller, E. A., and W. N. Melhorn,. Rhythmic spacing and origin of pools and riffles. Bulletin of the Geological Society of America 89: 723-730.
- 19 Keller, E. A. Pools, riffles and channelization. Environmental Geology 2(2): 119-127.

1979

- 20 Keller, E. A., and T. Tally. Effects of large organic debris on channel form and process in the coastal redwood environment. In Adjustments of the Fluvial System, D. D. Rhodes and G. P. Williams (eds.), Proceedings of the Tenth Annual Geomorphology Symposia. Kendall/Hunt Pub. Co., Dubuque, Iowa, pp. 169-98.
- 21 Nunnally, N. R., and E. A. Keller. Use of fluvial processes to minimize adverse effects of stream channelization. Water Resources Research Institute Report No. 144. The University of North Carolina, 115 p.
- 22 Keller, E. A. Environmental Geology, Second Ed. Charles E. Merrill Publishing Co., Columbus, Ohio, 547 p.

- 23 Keller, E. A. and F. J. Swanson. Effects of large organic material on channel form and fluvial process. *Earth Surface Processes* 4(4): 361-380.
- 24 Norris, R. M., E. A. Keller and G. L. Meyer. Geomorphology of the Salton Basin, California: selected observations. (In) Abbott, P. L. (ed.), Geological Excursions in the Southern California Area. Geol. Society of Amer., Field Guide. National Meeting, Department of Geology, San Diego State University, pp. 19-46.
- 1980**
- 25 Keller, E. A., D. L. Johnson, M. N. Clark, and T. K. Rockwell. Tectonic geomorphology and earthquake hazard, north flank central Ventura basin, California. Final Report, U. S. Geol. Survey Contract 14-08-0001-17678.
- 26 Keller, E. A., A. MacDonald, and T. Tally. Effect of large organic debris on channel morphology and process in the streams of Redwood National Park. Proceedings of the Second Conference on Scientific Research in the National Parks, Amer. Institute of Biological Sciences and National Park Service. NPS 1st-80/02-S (NTIS) U.S.P. 254-273.
- 1981**
- 27 Yeats, R. S., M. N. Clark, E. A. Keller and T. K. Rockwell. Active fault hazard in southern California: Ground rupture vs. seismic shaking. *Geol. Soc. Amer. Bull.* 92: 189-196.
- 1982**
- 28 Keller, E. A., M. S. Bonkowski, R. J. Korsch, and R. J. Shlemon. Tectonic geomorphology of the San Andreas fault zone in the southern Indio Hills, Coachella Valley, California. *Geol. Soc. Amer. Bull.* 93: 46-56.
- 29 Keller, E. A. Environmental Geology, Third Ed. Charles E. Merrill Publishing Co., Columbus, Ohio, 526 p.
- 30 Burchfield, B. C., R. J. Foster, E. A. Keller, W. N. Melhorn, D. B. Brookins, L. W. Mintz and H. U. Thurman. Physical Geology. Charles E. Merrill Publishing Co., Columbus, Ohio, 501 p.
- 31 Botkin, D. B. and E. A. Keller. Environmental Studies: The Earth as a Living Planet. Charles E. Merrill Publishing Co., Columbus, Ohio, 506 p.
- 32 Keller, E. A., D. L. Johnson, T. K. Rockwell, M. N. Clark, and G. R. Dembroff. Tectonic geomorphology of the Ventura, Ojai and Santa Paula areas, western Transverse Ranges, California. (In) Cooper, J. D. (ed.), Neotectonics in Southern California. Geol. Soc. Amer., Guidebook. 78th Annual Meeting of the Cordilleran Section, pp. 25-42.
- 33 MacDonald, A., E. Keller and T. Tally. The role of large organic debris on stream channels draining redwood forests, northwestern California. In Friends of the Pleistocene Guidebook, Late Cenozoic History and Forest Geomorphology of Humboldt County, California, pp. 226-245.

34 Keller, E. A. and T. D. Hofstra. Summer “cold pools” in Redwood Creek near Orick, California. In Friends of the Pleistocene guidebook, Late Cenozoic History and Forest Geomorphology of Humboldt County, California, pp. 205-211.

35 Dembroff, G. R., D. L. Johnson, E. A. Keller and T. K. Rockwell. The Soil Geomorphology and Neotectonics of the Ventura River and Central Ventura Basin, California: A Fieldguide. (Prepared for the Soil Geomorph. Tour (Div. S-5), Dec. 2-3, 1982 Ann. Meetings Am. Soc. Agron., Crop Sci. Soc. Am., and Soil Sci. Soc. Am.).

1983

36 Keller, E. A. Bed material sorting in pools and riffles: discussion. Amer. Soc. Civil Engineers, Journal of Hydraulics 109: 1243-1245.

37 Keller, E. A., and Hofstra, T. D. Summer “cold pools” in Redwood Creek near Orick, California and their importance as habitat for anadromous salmonids. In Van Riper, III, C., Whittig, L. D., and Murphy, M. L. (eds.), Proceedings of the First Biennial Conference of Research in California’s National Parks, University of California, Davis (1982), p. 221-225.

1984

38 Keller, E. A. and T. K. Rockwell. Tectonic geomorphology, Quaternary chronology, and paleoseismicity. In Costa, J. E. and Fleisher, P. J. (eds.) Developments and Applications of Geomorphology. Springer-Verlag, New York, pp. 203-239 (invited contribution).

39 Rockwell, T. K., E. A. Keller, M. N. Clark and D. L. Johnson. Chronology and rates of faulting of Ventura River terraces, California. Geol. Soc. Amer. Bull. 95: 1466-1474.

40 Keller, E. A. and A. Brooks. Consideration of meandering in channelization projects: selected observations and judgments. Proceedings of the Conference Rivers 1983, American Society of Civil Engineers, pp. 384-397 (invited contribution).

1985

41 Keller, E. A. Environmental Geology, Fourth Ed., Charles E. Merrill Publishing Co., Columbus, Ohio, 480 p.

42 Keller, E. A., D. L. Johnson and T. K. Rockwell. Late Pleistocene-Holocene soil chronology for evaluating tectonic framework and events. U. S. Geological Survey Open-File Report 85-464, p. 538-546.

43 Rockwell, T. K., E. A. Keller and D. L. Johnson. Tectonic geomorphology of alluvial fans and mountain fronts near Ventura, California. In M. Morisawa and J. T. Hack (eds.) Tectonic Geomorphology. Proceedings of the 15th Annual Geomorphology Symposium, Allen & Unwin Publishers, Boston, Ch. 8, p. 183-207 (invited contribution).

44 Rockwell, T. K., D. L. Johnson, E. A. Keller and G. R. Dembroff. A late Pleistocene-Holocene soil chronosequence in the Ventura basin, southern California, USA. In

- Richards, K. S., Arnett, R. R. and Ellis, S. (eds.) Geomorphology and Soils. George Allen and Unwin, Boston, Ch. 16, p. 309-327 (invited contribution).
- 45 Keller, E. A., R. L. Zepeda, D. M. Laduzinsky, D. B. Seaver and E. X. Zhao. Late Pleistocene-Holocene soil chronology for evaluating tectonic framework and events, Transverse Ranges, California. U. S. Geological Survey Open-File Report 86-31, p. 630-640.
- 1986**
- 46 Keller, E. A. Investigations of active tectonics: Use of surficial earth processes. In Active Tectonics, National Academy Press, Washington, D. C., p. 136-147 (invited contribution).
- 47 Keller, E. A. Source and seismic potential associated with reverse faulting and related folding. J. S. Geological Survey Open-File Report 86-383, p. 180-181.
- 48 Best, D. W. and E. A. Keller. Sediment storage and routing in a steep boulder-bed rock-controlled channel. In DeVries, J. J. (ed.) Proceedings of the 1985 Chaparral Ecosystems Research Symposium, Santa Barbara, California, pp. 45-55.
- 1987**
- 49 Keller, E. A. Source and seismic potential associated with reverse faulting and related folding. U. S. Geological Survey Open-File Report 87-374, p. 182-183.
- 50 Botkin, D. B. and E. A. Keller. Environmental Studies: Earth as a Living Planet, Second Ed., Charles E. Merrill Publishing Co., Columbus, Ohio, 685 p.
- 51 MacDonald, A. and E. A. Keller. Stream channel response to the removal of large woody debris, Larry Damm Creek, northwestern California. In Erosion and Sedimentation in the Pacific Rim. Proceedings of the Corvallis Symposium, August, IAHS Publ. No. 165, p. 405-406.
- 52 Florsheim, J. L. and E. A. Keller. Relationships between channel morphology, unit stream power, and sediment routing and storage in a steep, bedrock controlled channel. In Erosion and Sedimentation in the Pacific Rim. Proceedings of the Corvallis Symposium, August, IAHS Publ. No. 165, p. 279-280.
- 1988**
- 53 Keller, E. A. Environmental Geology, Fifth Ed., Charles E. Merrill Publishing Co., Columbus, Ohio, 540 p.
- 54 Keller, E. A. Quaternary tectonic framework and earthquake hazard in fold-and-thrust belts of the western Transverse Ranges, California. U. S. Geological Survey Open-File Report 88-673, p. 153.
- 55 Rockwell, T. K., E. A. Keller, and G. R. Dembroff. Quaternary rate of folding of the Ventura River anticline, western Transverse Ranges, southern California. Geol. Soc. Amer. Bull. 100, 850-858.

- 56 Keller, E. A. Estimating timing of fault activity on uplifted wave-cut platforms. *Bulletin of the Association of Engineering Geologists*, v. XXV, No. 4, p. 505-507.
- 57 Higgins, C. G., Coats, D. R., Baker, V. B., Dietrich, W. E., Dunne, T., Keller, E. A., Norris, R. M., Parker, G. G. Sr., Pavich, M., Pewe, T. L., Robb, J. M., Rogers, J. D. and Sloan, C. E. Landform development. *In Hydrogeology*, Back, W., Rosenhein, J. S. and Seaber, P. R. (eds.), *The Geology of North America*, Vol. 0-2. The Geological Society of America, Ch. 42, pp. 383-401.

1989

- 58 Faber, P. M., E. A. Keller, A. Sanda and B. M. Massey. The ecology of riparian habitats of the southern California coastal region: A community profile. *Biological Report 85 (7.27)*. U. S. Department of Interior, Fish and Wildlife Service, 152 p.
- 59 Keller, E. A., Johnson, D. L., Laduzinsky, D. M., Rockwell, T. K., Seaver, D. B., Zepeda, R. L. and Zhao, X. Tectonic geomorphology and late Pleistocene soil chronology of the Wheeler Ridge, San Emigdio Mountains and Frazier Mountain areas. *Pacific Cell, Friends of the Pleistocene Guidebook*, 125 p.
- 60 Davis, F. W., Keller, E. A., Parikh, A., and Florsheim, J. Recovery of the chaparral riparian zone after wildfire. *In: Proceedings of the California Riparian Systems Conference*, Sept. 22-24, 1988, Davis, California. USDA Forest Service Technical Report PSW-110, pp. 194-203.

1990

- 61 Johnson, D. L., E. A. Keller, and T. K. Rockwell. Dynamic pedogenesis: New views on some key soil concepts, and a model for interpreting Quaternary soils. *Quaternary Research* 33: 306-319.
- 62 Keller, E. A., and G. M. Kondolf. Groundwater and fluvial processes; Selected observations, with case studies by Hagerty, D. J., and Kondolf, G. M., *In Higgins, C. G., and Coates, D. R., Groundwater geomorphology; The role of subsurface water in Earth-surface processes and landforms: Boulder, Colorado, Geological Society of America Special Paper 252*.

1991

- 63 Florsheim, J. L., E. A. Keller, and D. W. Best. Fluvial sediment transport in response to moderate storm flows following chaparral wildfire, Ventura County, southern California. *The Geological Society of America Bulletin*. 103: 504-511.
- 64 Springer, D. S., E. A. Keller, Everett, L. G., and A. E. Lawrence. Laboratory demonstration of hydrocarbon migration in the Vadose Zone: effectiveness of the U-tube design for underground storage tank leak detection monitoring. *Ground Water Monitoring Review* 11 (4): 133-138.

- 65 Kondolf, E. M., and E. A. Keller. Management of urbanizing watersheds. In J. J. DeVrier (ed.) California Watersheds at the Urban Interface. Proceedings of the Third Biennial Watershed Conference. California Water Resources Center: 27-39.
- 66 Pinter, N., and E. A. Keller. Comment on surface uplift, uplift of rocks and exhumation of rocks. Geology 19(10): 1053.
- 67 Keller, E. A., R. S. Yeats, T. K. Rockwell, and D. L. Johnson. Overview of active tectonics. In E. A. Keller (ed.) Active Folding and Reverse Faulting in the western Transverse Ranges, southern California. Geol. Soc. Amer. Guidebook. 1991 Annual Meeting, pp. 1-12.
- 68 Zepeda, R. L., E. A. Keller, and T. K. Rockwell. Tectonic geomorphology of Wheeler Ridge. In E. A. Keller (ed.) Active Folding and Reverse Faulting in the western Transverse Ranges, southern California. Geol. Soc. Amer. Guidebook. 1991 Annual Meeting, pp. 37-45.
- 69 Zhao, X., E. A. Keller, and D. L. Johnson. Tectonic geomorphology of the Frazier Mountain area. In E. A. Keller (ed.) Active Folding and Reverse Faulting in the western Transverse Ranges, southern California. Geol. Soc. Amer. Guidebook. 1991 Annual Meeting, pp. 50-60.
- 70 E. A. Keller (ed.) Active Folding and Reverse Faulting in the western Transverse Ranges, southern California. Geol. Soc. Amer. Guidebook. October 1991.
- 1992**
- 71 Keller, E. A. Environmental Geology, Sixth Ed., Macmillan Publishing Co., New York, New York, 521 p.
- 72 Keller, E.A. and M.H. Capelli. Ventura River flood of February 1992: A lesson ignored? Water Resources Bulletin 28(5):813-832.
- 1993**
- 73 Pinter, N. and E.A. Keller. Quaternary tectonic and topographic evolution of the northern Owens Valley. In the history of water: eastern Sierra Nevada, Owens Valley, White-Inno Mountains. White Mountain Research Station Symposium 4:32-39.
- 74 Keller, E.A. and H.A. Loaiciga. Fluid-pressure induced seismicity at regional scales. Geophysical Research Letters 20(16):1683-1686.
- 75 Keller, E.A. and M.H. Capelli. Reply to discussion Ventura River flood of February 1992: A lesson ignored? Water Resources Bulletin 29(5):1.
- 76 Keller, E.A. and J.L. Florsheim. Velocity - reversal hypothesis: A model approach. Earth Surface Processes and Landforms 18:733-748.

1994

- 77 Pinter, N., E.A. Keller and R.B. West. Relative dating of terraces of the Owens River, northern Owens Valley, California, and correlation with moraines of the Sierra Nevada. *Quaternary Research* 42:266-276.

1995

- 78 Botkin, D. B. and E. A. Keller. *Environmental Science*, New York, John Wiley and Sons, 627 p.
- 79 Pinter, N. and E. A. Keller. Geomorphological analysis of neotectonic deformation, northern Owens Valley, California. *Geol. Rundsch* 84:200-212.
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STATEMENT OF RESEARCH

My research efforts are divided into two areas of surface processes: 1) study of stream and river form and process 2) studies of Quaternary stratigraphy and tectonics as they relate to earthquake hazard, landslides, active folding and mountain building. River studies focus on: 1) Basic river processes associated with channel form, sediment sorting and routing, and sediment budgets; 2) The role of wildfire and the recurrence intervals of high magnitude flood deposits and debris flow deposits; 3) Role of large woody debris and other large roughness elements on channel form and process; 4) Environmental effects of channelization; 5) River restoration and management; 6) flood hazard evaluation; and 7) Understanding of ecologic factors associated with the habitat for the endangered southern California steelhead trout. This work has been mostly funded by the Water Resources Center at the University of California, Riverside. My research in active tectonics has centered on the western Transverse Ranges of southern California. The objectives of that research are: 1) Establish the late Pleistocene through Holocene chronology; 2) Estimate rates of recent tectonic activity; 3) Determine the basic tectonic framework of the western Transverse Ranges; 4) Provide a better understanding of mountain-building processes in active fold-and-thrust belts; 5) Understand fault and fold growth, particularly lateral propagation 6) Understand the earthquake hazard of the Santa Barbara area; and Understand the La Conchita landslide hazard. Funding for active tectonic studies has come from the U. S. Geological Survey's Earthquakes Reduction Program, the Southern California Earthquake Center, and the National Science Foundation.