

TAMMY M. RITTENOUR

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EDUCATION

Ph.D., University of Nebraska, Lincoln, 2004, Geomorphology and Geochronology
Dissertation title: Fluvial Evolution of the Lower Mississippi Valley over the Last Glacial Cycle.

M.S., University of Massachusetts, Amherst, 1999, Quaternary Geology and Geomorphology
Thesis title: Drainage History of Glacial Lake Hitchcock, Northeastern USA.

B.A., University of Minnesota, Morris, 1996, Geology and Biology major, Chemistry minor
Undergraduate Research title: Evidence for Glacial Lake Benson, west-central Minnesota.
Undergraduate Research title: Diatom analysis of late Pleistocene lake sediments in Edmunds Co., SD.

2011-12 HIGHLIGHTS

FUNDING: Two research grants awarded in 2011, totaling \$501,432
(includes NSF CAREER grant)

PUBLISHING: Four papers published; One accepted for publication; Three in review thus far in 2011
h-index=9

STUDENT ADVISING: Advisor for five MS students; committee member on four MS theses

OSL LAB: 156 samples completed, \$92k income thus far in 2011

PROFESSIONAL EXPERIENCE

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| <u>2008 – present</u> | Assistant Professor , Utah State University |
| <u>2008 – present</u> | USU Luminescence Laboratory Director , Utah State University |
| <u>2007 – 2008</u> | Research Assistant Professor , Utah State University |
| <u>2006 – 2008</u> | USU Luminescence Laboratory Manager , Utah State University |
| <u>2005 – 2006</u> | Post-Doctoral Associate , Utah State University |
| <u>2004 – 2005</u> | Post-Doctoral Associate , Lund University, Sweden |
| <u>1995-1996</u> | Assistant Field Geologist , Minnesota Geological Survey |

ADJUNCT AND ASSOCIATE FACULTY POSITIONS

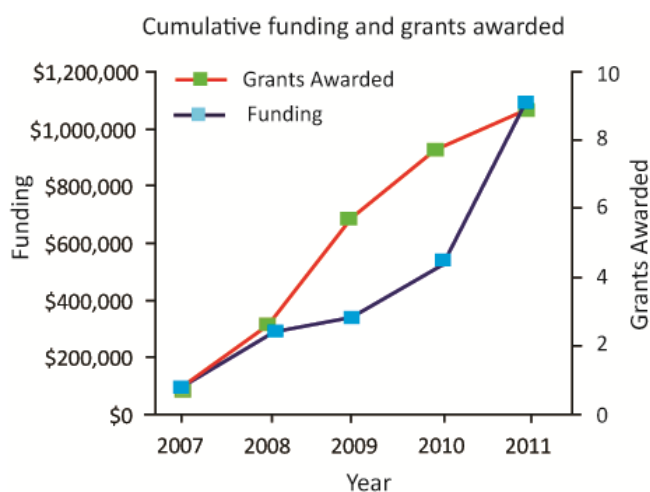
- Associate, Utah State University Ecology Center, 2011-present
- Adjunct, Idaho State University, Department of Geosciences, 2010-present
- Adjunct, Boise State University, Department of Geosciences, 2009-present

RESEARCH ACTIVITIES (50% Role Statement)

My research focuses on reconstructing past climates and landscape response to climate change from river, sand dune and biological records. I am the Director of the USU Luminescence Lab and use luminescence dating in my research to provide age control for the deposits I study. Due to my multi-disciplinary interests and research, my research commonly involves regional and international collaborations. I value the incorporation of student research into my research program and have advised six MS graduate students and five undergraduate students on research projects.

GRANT FUNDING SUMMARY

In the last three years I have had considerable success in funding my research and supporting my graduate students from external sources. The USU portion of the grants I have been awarded has totaled over \$1,009,000. In July 2011 I received an NSF CAREER grant, this is the most prestigious award given by NSF and is limited to young investigators.



GRANTS AND FUNDING -- Pending

2012-2013 NOAA (Kjelgren et al) "Climate Rhythms: Linking Past-Future Cycles for Agricultural and Urbanizing Northern Utah Water Planning" (\$148,788)

2012-2014 USGS-NIWR (Kjelgren et al) "Hydro-Climate Paleo Rhythms: Overlaying Annual and Intra-Annual Cycles to Assess and Manage Risk of Extreme Events in Urbanizing Eastern Great Basin" (\$362,029)

GRANTS AND FUNDING -- \$1.5M total, \$1M USU portion awarded

--- External Awards ---

2011-2016 NSF-EAR (Rittenour) "CAREER: Understanding Processes related to Arroyo systems, southern Utah" (\$497,932)

2010-2013 NSF-EAR 1024657 (Thackray and Rittenour) "Collaborative Research: Interhemispheric linkages of Late Pleistocene climate change in the circum-Pacific region" (**\$410,457 total, \$160,594 USU portion**)

2010-2011 ExxonMobil Research Grant (Rittenour), "Understanding the link between fluvial-geomorphic response to climate, sea level and tectonics and the resulting chronostratigraphic geometry of deepwater fans, Golo River, Corsica" (**\$29,996**)

2009-2010 USGS EDMAP G09AC00141 (Rittenour), "Surficial mapping along the upper Escalante River, southern Utah" (**\$13,802**)

2008-2011 NSF-EAR 744455, Instrumentation and Facilities (Pederson and Rittenour), "Technician Support: New Utah State University Luminescence Geochronology Laboratory" (**\$183,021**)

2008-2009 USGS EDMAP 08HQAG0041 (Rittenour), "Surficial mapping along the Kanab Creek alluvial corridor, southern Utah: Evidence for multiple cycles of arroyo cutting and filling" (**\$14,079**)

2007-2010 NSF-EAR 0720391 (Rittenour, J. Peirce, Boise State University and W. Sharp, UC Berkeley), "Collaborative Research: Assessing climatic controls on intervals of stability and deposition on alluvial fans" (**\$294,391 total, \$82,158 USU portion**)

--- *Internal Awards* ---

2012-2013 USU Research Catalyst (Kjelgren, Rittenour et al) "Tree ring chronologies: development for novel reconstruction of northern Utah paleoclimate to aid water managers and risk assessment under climate change" (**\$19,557**)

2011-2012 USU Ecology Center (Rittenour and Allen) "Northern Utah Douglas-fir climate sensitivity as evidenced by tree-rings" (**\$3500**)

2009-2012 USU Water Initiative Research Grant (Rittenour), "Extending the Record of Drought and Discharge Variations in the Bear River Drainage through Tree-ring Reconstructions: Collection of initial data from the Logan River basin" (**\$19,930**)

2009-2010 USU GEM Seed grant (Rittenour), "Reconstructing drought and fire activity on the high plateaus of southern Utah" (**\$4804**)

--- *Pre-USU* ---

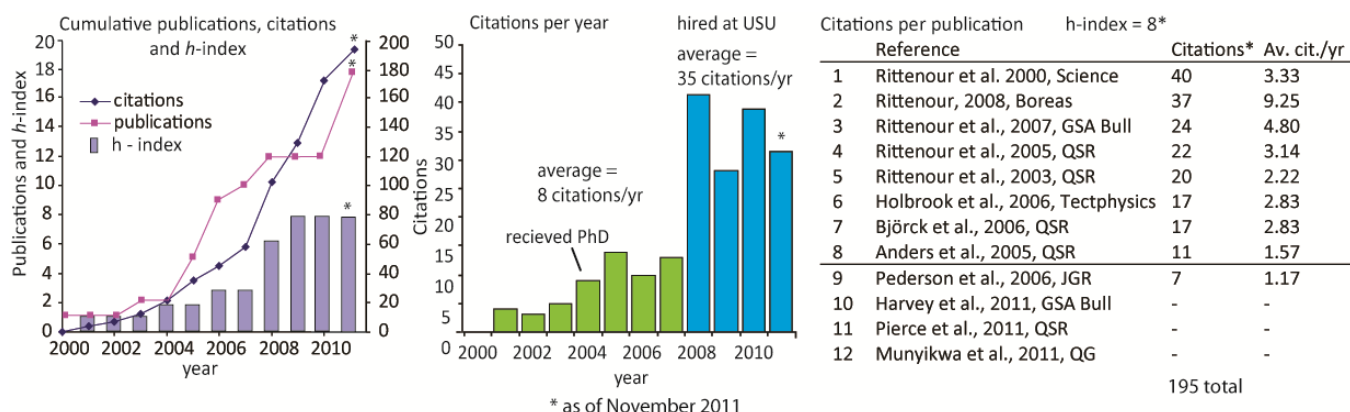
2000-2003 NASA Earth System Science Fellowship (Rittenour and Blum), "Landform Evolution of the Lower Mississippi River valley in Response to Deglaciation" (**\$66,000**)

2001-2003 NSF- SES 0082226 Dissertation Research Improvement Grant (Rittenour and Blum) "Late Pleistocene and Early Holocene Evolution of the Lower Mississippi Valley" (**\$10,000**)

HONORS AND AWARDS

- 2011 **NSF CAREER Award**, most prestigious award given by the National Science Foundation, limited to young investigators
- 2008 **Invited Review Paper** in special issue of *Boreas*
- 2003 **Myerly-Martin Outstanding Graduate Research Award for Ph.D Research**, Department of Geosciences, University of Nebraska, Lincoln, NE
- 2000 **J. Hoover Mackin Award**, Geological Society of America, Quaternary Geology and Geomorphology Division "Late-Pleistocene to Early-Holocene Evolution of the Lower Mississippi Valley: Insights into Fluvial Response to External Forces"
- 1999 **J.B. Coffman Graduate Fellowship**, Dept of Geosciences, University of Nebraska, Lincoln
- 1999 **Masters Thesis Defense with Honors**, University of Massachusetts, Amherst, MA
- 1998 **Arthur D. Howard Award, Honorable Mention**, Geological Society of America, Quaternary Geology and Geomorphology Division "Drainage History of Glacial Lake Hitchcock"
- 1996 **Scholar of the College**, University of Minnesota, Morris, MN

PUBLICATIONS



- **h-index = 9, i10-index = 9, 210 citations total*** (source Web of Science, Feb 2012)
*corrected for misspelling of name on Pederson et al. 2006
- A brief description of my involvement in each publication is provided for publications listed below.
- IF = 5-yr Impact Factor, * = Graduate student, ** = Undergraduate student

PEER-REVIEWED JOURNAL PUBLICATIONS – *In Review:* (4)

Pederson, J.L., *Cragun, W.S., *Hidy, A.J., **Rittenour, T.M.**, Gosse, J.C., *in review*, Colorado River chronostratigraphy at Lee's Ferry, Arizona and the central Colorado Plateau bullseye of incision. **Geology** (IF = 4.773) (Submitted April 2012)

- *Kenworthy, M.K., **Rittenour, T.M.**, Pierce, J.L., *in review*, Luminescence dating without sand lenses; An application to coarse-grained alluvial fan deposits of the Lost River Range, Idaho, USA. **Quaternary Geochronology** (IF= 3.128) (submitted January 2012)
- **Chapot, M.S, Sohbat, R., Murray, A.S., Pederson, J., **Rittenour, T.**, *in review*, Constraining the age of rock art by dating a rockfall event using single-grain and surface dating luminescence techniques. **Quaternary Geochronology** (IF= 3.128) (submitted January 2012)
- *Nelson, M.S., **Rittenour, T.M.**, *in review*, Investigating Arroyo cut-fill cycles using Optically Stimulated Luminescence dating to Kanab Creek Alluvial Deposits, Southern Utah, USA, **Quaternary Geochronology** (IF= 3.128) (submitted October 2011)
- Bartholomew, M.J., Bone, M.J., **Rittenour, T.M.**, Mickelson, A.M., Sticknew, M.C., *in review*, The passing of a hotspot: Changes in strain-accommodation in Yellowstone's wake, **Geological Society of America Bulletin** (IF= 4.324) (submitted March 2011)

PEER-REVIEWED JOURNAL PUBLICATIONS – *Published or in press: (18)*

- Rittenour, T.M.**, Riggs, N.R., **Hamlin, L.E., 2012, Application of single-grain OSL to date quartz xenocrysts within a basalt flow, San Francisco volcanic field, northern Arizona, USA, **Quaternary Geochronology** v. xx, p. xxx-xxx (available online February 7, 2012) (IF= 3.128)
Collaborative research with a colleague and undergraduate. Publication describes a novel application of OSL to date a cinder cone by dating quartz xenocrysts within the basalt flow.
- Connor, S., van Leeuwen, J., **Rittenour, T.M.**, Knapp, P., Ammann, B., Björck, S., 2012, The ecological impact of oceanic island colonisation - a palaeoecological perspective from the Azores, **Journal of Biogeography**, v. xx, p. xxx-xxx (available online Jan 23, 2012) (IF= 4.273)
Publication of Post-doctoral research with colleagues. I provided a significant portion of the pollen data analyzed in this publication.
- *Harvey, J.E., Pederson, J.L., **Rittenour, T.M.**, 2011, Exploring relations between arroyo cycles and canyon paleoflood records in Buckskin Wash, Utah: reconciling scientific paradigms, **Geological Society of America Bulletin** v.123, p.2266-2276. (IF= 4.324)
Graduate student publication. I was on Harvey's MS thesis committee and helped him with manuscript/thesis editing and OSL sample preparation and analysis.
- Pierce, J.L., Meyer, G.A., **Rittenour, T.M.**, 2011, The relation of Holocene fluvial terraces to changes in climate and sediment supply, South Fork Payette River, Idaho, **Quaternary Science Reviews** v.30, p. 628-645. (IF = 5.395)
Collaborative research with colleagues, publication represents combined field and laboratory research efforts of the authors.
- Munyikwa, K., Feathers, J., **Rittenour, T.M.**, Shrimpton, H., 2011, Constraining the chronology of the Late Wisconsinan retreat of the Laurentide Ice Sheet from western Canada using luminescence ages from postglacial aeolian dune sequences, **Quaternary Geochronology**, v. 6, p. 407-422. (IF= 3.128)
Collaborative research with colleagues. The OSL age control provided by Dr. Feathers and myself was critical to linking the formation of sand dunes to glacial retreat in this region.

Janecke, S.U., Dorsey, R.J., *Steely, A.N., Kirby, S.M., Lutz, A., Housen, B.A., *Belgarde, B., Langehein, V., *Forand, D., **Rittenour, T.**, 2011, High Geologic Slip Rates since Early Pleistocene initiation of the San Jacinto and San Felipe Fault Zones in the San Andreas fault systems: Southern California, USA. **GSA Special Paper** 475, 48 p.

Collaborative research with colleagues. My role was limited in this publication. I contributed OSL age control toward the results of this larger, multi-year research project.

Rittenour, T.M., 2008, Luminescence dating of fluvial deposits: applications to geomorphic, palaeoseismic and archaeological research. **Boreas**, v. 37, p. 613-635. (IF= 2.989)

Invited review paper for a special issue of Boreas that dealt with latest advances in luminescence dating. Invitation to publish this paper represents my stature as a specialist in luminescence dating of fluvial deposits within the community and was a great honor as a young researcher.

Pitblado, BL, **Jackson, MS, Pederson, JL, **Rittenour, TM**, 2008, OSL Dating the Paleoamerican Heath Site (5GN3418), Gunnison Basin, Colorado. **Current Research in the Pleistocene**, v. 25, p. 130-132.

Publication with an undergraduate student. I worked with Jackson in the USU Luminescence Lab with OSL sample preparation and analysis and served as her research mentor and co-advisor.

--- Pre-USU ---

Rittenour, T.M., Blum, M.D., Goble, R.J., 2007, Fluvial evolution of the lower Mississippi River valley during the last 100-kyr glacial cycle: Response to glaciation and sea-level change: **Geological Society of America Bulletin**, v. 119, p. 586-608. (IF= 4.324)

Summative publication of dissertation research. The Geological Society of America Bulletin is one of the highest respected journals that publishes a broad range of geologic research.

Björck, S., **Rittenour, T.M.**, Rosén, P., Bennike, O., Kromer, B., Möller, P., Sandgren, P., and Westegård, 2006, A Holocene lacustrine record in the central North Atlantic: proxies for volcanic activity, short-term NAO mode variability, and long-term precipitation changes: **Quaternary Science Reviews**, v. 25, p.9-32. (IF = 5.395)

Publication of Post-doctoral research with research advisor. This is the first publication of our research from the Azores, the second paper is currently in review.

Holbrook, J.M., Autin, W., **Rittenour, T.M.**, and Marshak, S., and Goble, R., 2006, Stratigraphic evidence for millennial-scale temporal clustering of earthquakes on a continental-interior fault: Holocene Mississippi River floodplain deposits, New Madrid seismic zone, USA: **Tectonophysics**, v.420, p. 431-454. (IF = 2.812)

Collaborative research, I worked with colleagues to map and describe sediments in the field and to collect and analyze samples for OSL dating.

Pederson, J.L., *Anders, M.D., **Rittenhour[#], T.M.**, Sharp, W.D., Gosse, J.C., Karlstrom, K.E., 2006 , Using fill terraces to understand incision rates and evolution of the Colorado River in eastern Grand Canyon, Arizona: **Journal of Geophysical Research**, v. 111, F02003, doi: 10.1029/2004JF000201. (IF= 3.475) ([#] note name misspelled)

Collaborative research, I worked with colleagues in the field to describe sediments and to collect and analyze samples for OSL dating.

Goble, R.J. and **Rittenour, T.M.**, 2006, A Linear Modulation OSL Study of the Unstable Ultrafast Component in Samples from Glacial Lake Hitchcock, Massachusetts, USA: **Ancient TL**, v. 24, p. 37-46.
Collaborative research, colleague and I worked together in lab to analyze samples and to develop experiments to test for and eliminate unwanted luminescence components.

Rittenour, T.M., Goble, R.J., and Blum, M.D., 2005, Development of an OSL chronology for late Pleistocene channel belts in the lower Mississippi valley: **Quaternary Science Reviews**, v. 24, p.2539-2554. (IF = 5.395)
Publication of dissertation research.

*Anders, M.D., Pederson, J.L., **Rittenour, T.M.**, Sharp, W.D., Gosse, J.C., Karlstrom, K.E., Crossey, R.C., Goble, R.J., Stockli, L., and Guang, Y., 2005, Pleistocene geomorphology and geochronology of eastern Grand Canyon: linkages of landscape components during climate changes: **Quaternary Science Reviews**, v. 24, p. 2428-2448. (IF = 5.395)
Graduate student research publication. I worked with Anders and colleagues in the field to describe sediments and to collect and analyze samples for OSL dating.

van Leeuwen, J.F.N., Schäfer, H., van der Knapp, W.O., **Rittenour, T.M.**, Björck, S., Ammann, B., 2005, Native or introduced? Fossil pollen and spores may say. An example from the Azores Islands: **NEOBIOTA**, v. 6, p. 27-34
Research involved collaborating with and sharing paleobotanical data.

Rittenour, T.M., Goble, R., and Blum, M. 2003, An Optical Age Chronology of Late Pleistocene Fluvial Deposits in the Northern Lower Mississippi Valley: **Quaternary Science Reviews** 22, 1105-1110. (IF = 5.395)
Publication of initial dissertation research results.

Rittenour, T.M., Brigham-Grette, J., and Mann, M.E., 2000, El Nino-like Climate Teleconnections in New England during the Late Pleistocene: **Science**, v. 288, p. 1039-1042. (IF = 31.052)
Publication of Masters results. Article received considerable attention and a News and Views piece was published in the same issue of Science to discuss long-term evidence for ENSO.

PEER-REVIEWED BOOK CHAPTERS (2)

*Harvey, J.E., Pederson, J.L., **Rittenour, T.M.**, 2010, The alluvial records of Buckskin Wash, Utah. In, **Geology of South-Central Utah**, Carney, S.M., Tabet, D.E. and Johnson, C.L. Eds, **Utah Geological Association Publication**, v. 39, p. 19-37.
Graduate student publication. I was on the Harvey's MS thesis committee and helped him with manuscript/thesis editing and OSL sample preparation and analysis.

Rittenour, T.M., Geiger, K.L., and Cotter, J.F.P., 1998, Glacial Lake Benson, west-central Minnesota; In: C.J. Patterson and H.E. Wright Jr. eds., **Contributions to Quaternary Studies in Minnesota**, Minnesota Geological Survey Reports of Investigations No. 49, p. 97-102.
Publication of undergraduate research with student colleague and advisor.

NON-PEER REVIEWED FIELD TRIP GUIDEBOOKS, MAPS AND OTHER PUBLICATIONS/REPORTS (9)

- Hall, S.A., **Rittenour, T.M.**, 2010, Optical Dating and New Mexico Prehistory. **Papers of the Archaeological Society of New Mexico**, v. 36, p. 101-110
- *Hayden, A., **Rittenour, T.M.**, 2010, Preliminary Geologic Map of a portion of the Escalante Quadrangle, Garfield County, Utah, 1:24,000 scale. USGS EDMAP project, Utah Geological Survey.
- *Hayden, A., **Rittenour, T.M.**, 2010, Preliminary Geologic Map of a portion of the Wide Hollow Reservoir Quadrangle, Garfield County, Utah, 1:24,000 scale. USGS EDMAP project, Utah Geological Survey.
- *Hayden, A., **Rittenour, T.M.**, 2010, Preliminary Geologic Map of a portion of the Canaan Creek Quadrangle, Garfield County, Utah, 1:24,000 scale. USGS EDMAP project, Utah Geological Survey.
- *Hayden, A., **Rittenour, T.M.**, 2010, Preliminary Geologic Map of a portion of the Upper Valley Quadrangle, Garfield County, Utah, 1:24,000 scale. USGS EDMAP project, Utah Geological Survey.
- *Summa, M.C. and **Rittenour, T.M.**, 2009, Surficial Geologic Map of part of the Kanab Quadrangle, Kane County, Utah. 1:12,000 scale. USGS EDMAP project, Utah Geological Survey.
- *Summa, M.C. and **Rittenour, T.M.**, 2009, Surficial Geologic Map of part of the White Tower Quadrangle, Kane County, Utah. 1:12,000 scale. USGS EDMAP project, Utah Geological Survey.
- Rittenour, T.M.** and Brigham-Grette, J., 2000, A Drainage History for Glacial Lake Hitchcock: Varves, Landforms, and Stratigraphy: *In*, J. Brigham-Grette Ed., North Eastern Friends of the Pleistocene Field Guidebook, Dept of Geosciences Contribution No. 7, University of Massachusetts, Amherst.
- Blum, M.D., **Rittenour, T.M.**, et al., 2001, The Lower Mississippi Valley and Texas Coastal Plain, Field Trip Guidebook: International Conference on Fluvial Sedimentology, Lincoln, NE.

PROFESSIONAL MEETING PRESENTATIONS/ABSTRACTS (* = Graduate, ** = Undergraduate student) 46 Abstracts presented since being hired at USU, 35 with student authors

2012 (5 abstracts, 4 with student authors) - *as of April 2012*

- Rittenour, T.M.**, Kjelgren, R., Bekker, M., DeRose, J., Buckley, B., Wang, S.-Y., Hipps, L., Gillies, R., *Allen, E.B., Sriladda, C., 2012. The WASatch Dendroclimatology Research (WADR) group: Multi-disciplinary investigations into the paleoclimatology of Northern Utah as recorded in tree-ring series. USU Spring Runoff Conference, Utah State University, April 3-4, Abstracts with Programs.
- Bekker, M., *Allen, E., Buckley, B., DeRose, J., Kjelgren, R., **Rittenour, T.**, 2012. Streamflow Reconstruction from Tree Rings for the Southern and Central Wasatch Front. USU Spring Runoff Conference, Utah State University, April 3-4, Abstracts with Programs.
- Rittenour, T.M.**, Stone, B., Mahan, S., 2012. Application of OSL dating to glacial deposits in southern Massachusetts: Refining the chronology and addressing questions related to solar resetting in glacial environments, Geological Society of America Abstracts with Programs v. 44, n. 2, p. 86.
- *Allen, E.B., **Rittenour, T.M.**, Bekker, M., DeRose, J., Buckley, B., Kjelgren, R., 2012. Reconstructed flows of the Logan River, Utah. USU Spring Runoff Conference, Utah State University, April 3-4, Abstracts with Programs.
- *Allen, E.B., **Rittenour, T.M.**, Bekker, M., DeRose, J., Buckley, B., Kjelgren, R., 2012. Reconstructed flows of the Logan River, Utah. American Association of Geographers, Abstracts with Programs.

2011 (10 abstracts, 10 with student authors)

- **Williams, M., Johnson, M.D., **Rittenour, T.M.**, Brugger, K.A., 2011. Constraining the history of Glacial Lake Grantsburg. Geological Society of America Abstracts with Programs Vol. 43, No. 5, p. 274.

- Pederson, J., **Jackson, M.S.**, **Sohbati, R.**, **Rittenour, T.M.**, Murray, A., 2011 Novel Applications of Luminescence Dating Constrain the Age of Barrier Canyon style rock art in Canyonlands National Park, Utah. Geological Society of America Abstracts with Programs Vol. 43, No. 5, p. 273.
- Rittenour, T.M.**, Riggs, N.R., **Hamlin, L.**, Ort, M., 2011. Application of single-grain quartz-SAR to date xenocrysts within a basalt flow from a cinder cone, northern Arizona, USA, 13th International Conference on Luminescence and Electron Spin Resonance Dating, 10-14 July 2011, Torun, Poland, Book of Abstracts p 170.
- *Nelson, M.S., **Rittenour, T.M.**, 2011. Investigating Arroyo cut-fill cycles using Optically Stimulated Luminescence dating to Kanab Creek Alluvial Deposits, Southern Utah, USA, 13th International Conference on Luminescence and Electron Spin Resonance Dating, 10-14 July 2011, Torun, Poland, Book of Abstracts p 146.
- Rittenour, T.M.**, Pearce, H.R., 2011. Dune activity in the Idaho Falls Dune field on the Snake River Plain, southeastern Idaho, Geological Society of America Abstracts with Programs Vol. 43, No. 4, p.7.
- *Hayden, A., **Rittenour, T.M.**, 2011. Linking the Holocene fluvial history of the upper Escalante River, S. Utah to regional records using OSL and radiocarbon, Geological Society of America Abstracts with Programs Vol. 43, No. 4, p. 7.
- *Skyles, E., **Rittenour, T.M.**, 2011. Quaternary alluvial history of the Golo River, Corsica, France: Using OSL to change a paradigm, Geological Society of America Abstracts with Programs Vol. 43, n. 4, p. 8.
- *Nelson, S.M., **Rittenour, T.M.**, 2011. Investigating arroyo cut-fill cycles and their link to Holocene climate change along Kanab Creek, southern Utah, GSA Abstracts with Programs Vol. 43, No. 4, p. 7.
- *Allen, E.B., **Rittenour, T.M.**, 2011. Applications of tree-ring series within the Bear River Range, northern Utah to reconstruct drought variability, GSA Abstracts with Programs Vol. 43, No. 4, p. 9.

2010 (7 abstracts, 3 with student authors)

- Rittenour, T.M.**, Pederson, J.L., 2010. Enhanced hillslope sediment supply to the Colorado River and its tributaries during MIS 5-3. Geological Society of America Abstracts with Programs Vol. 42, No. 5.
- *Hayden, A., **Rittenour, T.M.**, 2010, Extending the record of arroyo cycles for the upper Escalante River, S. Utah using OSL and radiocarbon dating. GSA Abstracts with Programs Vol. 42, No. 5.
- *Kenworthy, M., Pierce, J., **Rittenour, T.M.**, 2010. OSL chronology for alluvial fans of the Lost River Range, Idaho: large-scale deposition during OIS 3 and 4. GSA Abs with Programs Vol. 42, No. 5.
- Jackson, M.S.**, Pederson, J.L., **Rittenour, T.M.**, 2010. Multiple approaches of using OSL to constrain the age of Barrier Canyon style rock art in Horseshoe Canyon, Utah, USA. UK Luminescence and Electron-Spin Dosimetry Workshop, September 8-10, Oxford University, London, UK
- Pederson, J.L., O'Brien, G.R., **Rittenour, T.M.**, 2010. The Arroyo Grande site of western Grand Canyon—Archaic to Proto-historic cultural features in detailed sedimentary-chronostratigraphic context. Geological Society of America Abstracts with Programs Vol. 42, No. 5.
- Rhodes, E., **Rittenour, T.M.**, 2010. Using OSL dating to quantify rates of Earth surface processes. American Geophysical Union, Eos Abstracts vol x, no. x.
- Rogers, D.T., Kaufman, M., Murray, K.S., **Rittenour, T.M.**, 2010, Optical stimulated luminescence dating of glacial and glacial-lacustrine sediments in the rouge river watershed in southeastern Michigan USA. Geological Society of America Abstracts with Programs Vol. 42, No. 5.

2009 (23 abstracts, 17 with student authors)

- Rittenour, T.M.**, 2009. Application of a modified single-grain quartz SAR protocol to date xenoliths within basalt flows from a young cinder cone, northern Arizona, USA. New World Luminescence Dating and Dosimetry Workshop, Oct 22-23, Seattle, WA.

- *Summa, M., **Rittenour, T.M.**, 2009. The first application of optically stimulated luminescence dating and age model comparison to Kanab Creek alluvial deposits, southern Utah. New World Luminescence Dating and Dosimetry Workshop, Oct 22-23, Seattle, WA.
- *Hayden, A., **Rittenour, T.M.**, 2009. Arroyo cycles in the upper Escalante River drainage, southern Utah: utilizing OSL dating to extend regional fluvial chronologies, New World Luminescence Dating and Dosimetry Workshop, Oct 22-23, Seattle, WA.
- *Kenworthy, M., **Rittenour, T.M.**, 2009. OSL chronology for alluvial fan deposition in the Lost River Range, Idaho, New World Luminescence Dating and Dosimetry Workshop, Oct 22-23, Seattle, WA.
- Rittenour, T.M.**, **Pearce, H.R., 2009. Drought and dune activity in the Idaho falls dune field, Snake River Plain, southeastern Idaho, Geological Society of America *Abs with Programs*, v. 41, n. 7, p. 619.
- Phillips, WM, **Rittenour, T.M.**, Hoffmann, G, 2009 OSL Chronology of late Pleistocene glacial outwash and loess deposits near Idaho Falls, Idaho. Geological Society of America *Abs with Programs* v 41, 6 p 12.
- Pierce, J.L., Meyer, G.A., **Rittenour, T.M.**, 2009. Terrace records of Holocene incision, aggradation, and relationships between hillslope erosion and main channel processes in central Idaho, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 227.
- *Hayden, A., **Rittenour, T.M.**, 2009. Arroyo cycles in the upper Escalante River drainage, southern Utah: Utilizing OSL Dating to extend regional fluvial chronologies. Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 647.
- *Kenworthy, M.K., Pierce, J.L., **Rittenour, T.M.**, Pierce, K.L., 2009. Climate, sediment supply, and stream power: episodes of enhanced deposition on alluvial fans of the Lost River Range, Idaho, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 227.
- *Harvey, J.E., Pederson, J.L., **Rittenour, T.M.**, 2009. Influence of arroyo cycles on downstream paleoflood records - an example from Buckskin Wash, UT/AZ, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 228.
- *Cline, M.L., **Rittenour, T.M.**, 2009. Luminescence and AMS radiocarbon dating of middle-late Holocene slackwater flood deposits in the Delores Watershed, CO. Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 383.
- **Meixell, K.J., Wittkop, C., **Rittenour, T.M.**, Makocsky, K.A., 2009. Holocene stream capture of the Le Sueur River, Minnesota: Implications for modern sediment loading, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 648.
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- **Jackson, M., Pederson, J., **Rittenour, T.M.**, 2009. Preliminary OSL results constraining the age of Barrier Canyon Style rock art in Horseshoe Canyon, Utah, UK Luminescence and Electron-Spin Dosimetry Workshop, August 26-28, Royal Holloway University, London, UK
- *Luna, L.M., Yule, D., **Rittenour, T.M.**, 2009, Stratigraphy and OSL Dating of the Biskra Palms Alluvial Fan, Indio, CA: Implications for cross-correlating of age-dating methods and for the slip rate of the San Andreas Fault, SCEC Annual Meeting, Palm Springs, CA.
- Rittenour, T.M.**, Pederson, J., House, K., 2009. Clogging the Grand Wash and lower Colorado River with sediment: Tributary and mainstem river response to MIS 5-4 climate change: Geological Society of America *Abstracts with Programs*, Orem, UT. v. 41, n. 6.
- **Jackson, M., Pederson, J., **Rittenour, T.M.**, and Pitblado, B.. 2009. OSL Dating and Geoarchaeology at the Paleoindian Heath Site, San Juan Mountains, Colorado. Geological Society of America *Abstracts with Programs*, Orem, UT.. v. 41, n. 6.

- *Summa, M., **Rittenour, T.M.**, 2009, Surficial Geologic map along the Kanab Creek corridor, southern Utah: Evidence for multiple cycles of arroyo cutting and filling: GSA Abs with programs, v 41, n. 6.
- *Summa, M., **Rittenour, T.M.**, 2009, Arroyo cut and fill record from Kanab Creek, southern Utah: GSA Rocky Mountain meeting, Orem, UT. v. 41, n. 6.
- *Kenworthy, M.K., **Rittenour, T.M.**, Pierce, J., 2009, OSL age estimates for alluvial fan deposition in the Lost River Range, ID: Understanding links between climate change and hillslope processes: GSA Rocky Mountain meeting, Orem, UT. v. 41, n. 6.
- **Jackson, M.S., Pederson, J.L., **Rittenour, T.M.**, Pitblado, B.L., 2009, OSL dating and geoarchaeology at the Paleoindian Heath Site, San Juan Mountains, Colorado: GSA Abs with Programs, v. 41 n. 6.
- **Pearce, H.R., **Rittenour, T.M.**, 2009, A record of drought and dune activation in the Snake River Plain in southeastern Idaho: Results from testing a hypothesis regarding the potential Bonneville-flood source of the dune sand: : GSA Rocky Mountain meeting, Orem, UT. v. 41, n. 6.

2008 (5 abstracts, 4 with student authors)

- *Summa, M., **Rittenour, T.M.**, 2008, Arroyo cutting and filling history of Kanab Creek, southern Utah: AGU Fall meeting.
- Rittenour, T.M.**, 2008, Application of OSL Dating to Fault Slip Rate/Recurrence Studies: SCEC Fault System History/SoSAFE Workshop, Jan 31-Feb 2.
- *Kenworthy, M.K., **Rittenour, T.M.**, Pierce, J., 2008, Using OSL to assess the role of climate and glaciation in sediment delivery to alluvial fans of the Lost River Range, Idaho: Abstracts with Programs, Geological Society of America v. 40, n. 6, pp. 162.
- *Harvey, J.E., Pederson, J.L., **Rittenour, T.M.**, 2008. Paleofloods or arroyo cycles? Reconciling alluvial records in the greater buckskin drainage, Colorado Plateau: Abstracts with Programs, Geological Society of America v. 40, n. 6, pp. 195.
- **Kennedy, L.E., Riggs, N., **Rittenour, T.M.**, 2008, OSL dating of xenoliths in the SP flow, San Francisco volcanic field, northern Arizona: Abs with Programs, Geological Society of America v 40, n 1, p 67.

Prior to 2008 (30 abstracts, 2 with student authors) - *available upon request*

TEACHING AND EDUCATIONAL ACTIVITIES (30% Role Statement)

I enjoy teaching and I find that keeping my lectures up-to-date with new material and innovative formats is one of the most interesting parts of teaching. My teaching schedule affords me the pleasure of interacting with students from a number of different levels (undergraduate and graduate) and backgrounds (geology and non-science majors). Below I have tabulated my teaching schedule, the courses I have taught, enrolment and student assessment scores for course quality and instructor effectiveness.

Table 1. Courses taught, semester, enrolment and student assessment scores for myself and the Department of Geology and College of Science.

| Term | Course | Enrollment (% reporting) /credits | Course Quality/ Instructor's Effectiveness* | Department Average* | College Average* |
|-------------|--|---|---|------------------------|---------------------|
| Fall 2008 | Geol 6100 Grad. Sem. in Geomorphology | 7 (86%) 1 credit | 4.7 / 5.0 | 4.8 / 4.8 | 4.8 / 4.9 |
| Spring 2009 | USU 1360 sec 3 Planet Earth | 136 (40%) 3 credits | 4.4 / 4.5 | 4.1 / 4.2** | |
| Fall 2009 | Geol 6100 Grad. Sem. in Geomorphology | 3 (100%) 1 credits | 6.0 / 6.0 | 4.5 / 4.5 | 4.8 / 4.8 |
| Summer 2009 | OSL Short Course | 9 (100%) Not for credit | 6.0 / 5.8 | NA | NA |
| Spring 2010 | Geol 2500 Geology Field Trip | 19 (95%) 1 credit | 5.8 / 5.7 | 4.8 / 4.9 | 4.8 / 4.9 |
| Spring 2010 | Geol 6800 Luminescence Geochronology | 3 (100%) 2 credits | 6.0 / 6.0 | 4.8 / 4.9 | 4.8 / 4.9 |
| Spring 2010 | Geol 5680/6680 Paleoclimatology | 17 (94%) 3 credits | 4.7 / 4.5 | 4.8 / 4.9 | 4.8 / 4.9 |
| Fall 2010 | Geol 6100 Grad. Sem. in Geomorphology | 4 (100%) 1 credit | 5.5 / 6.0 | 4.7 / 4.8 | 4.9 / 4.9 |
| Spring 2011 | USU 1360 sec 1 Planet Earth | 90 (78%) 3 credits | 4.4 / 4.5 | 4.6 / 4.7** | |
| Summer 2011 | Geol 6800 OSL Short Course | 8 (100%) 3 credits | 5.9 / 5.8 | 5.1 / 5.3 | 5.0 / 5.1 |

* Average of score with 6 = excellent, 5= very good, 4 = good, 3 = fair, 2 = poor and 1 = very poor

** Average for all sections of USU 1360 that semester

SPONSORSHIP OF A FULBRIGHT SCHOLAR

During the 2009-2010 academic school year I sponsored a visiting researcher from the United Arab of Emirates. While here Asma worked with me on a project investigating sand dunes in central Utah and learned about luminescence dating techniques.

| year | Name | Country of Origin | Funding |
|-----------|-------------------------|-------------------------|-----------|
| 2009-2010 | Asma Al-Farraj Al-Ketbi | United Arab of Emirates | Fulbright |

STUDENT MENTORING

I believe that educating the next generation of citizens and scientists is one of the most important aspects of my job as a faculty member at USU. While education of students within the classroom setting is important, hands on involvement and research experience are invaluable to the growth and development of students.

Graduate Advisor (6 students, expected defense date in parentheses)

- Cianna Wysnytzsky, MS Geology, 2011-in progress (Spring 2013) "Interhemispheric comparison of OIS 4-4 glacial records from the Olympic Mountains of Washington and the Southern Alps of New Zealand"
- William Huff, MS Geology, 2011-in progress (Spring 2013) "Investigating Arroyo cycles in southern Utah"
- Eric Allen, MS Geology, 2010-in progress (Spring 2012) "Extending the Record of Drought and Discharge Variations in the Bear River Drainage through Tree-ring Reconstructions"
- Emilee Skyles, MS Geology, 2009-in progress (Summer 2012) "Linking source to sink within the Golo River drainage basin, Corsica, France"
- Anne Hayden, MS Geology, 2008-2011, "Arroyo cutting history of the upper Escalante River, southern Utah."
- Michelle Summa, MS Geology 2007-2009, "Geologic mapping, alluvial stratigraphy and optically stimulated luminescence dating of the Kanab Creek area, southern Utah "

Undergraduate Mentor (5 students)

- Benjamin Lariviere, 2012, "Reconstructing the environmental setting on the central Snake River Plain: Analysis of the sediment intervals in the Kimama HotSpot Drilling Core, ID"
- Michelle Williams, 2011, " Constraining the History of Glacial Lake Grantsburg, WI"
- Melissa Jackson, 2007-2010, "Senior Honors Thesis: Bracketing the age of the Great Gallery Rock Art panel in Horseshoe Canyon, Utah by OSL dating of associated alluvial terraces"
- Heidi Koonz-Pearce, 2008-2009, "Senior Thesis: Study of the sand dunes on the Snake River Plain"
- Robyn Krohn, 2009, "Independent Research Report: Study of Pleistocene alluvial fans within the Sevier River valley, south-western Utah"

Graduate Committee Member (10 students)

- Cody Dalpra, MS Archaeology, 2012-in progress
- Elijah Protugal, MS Watershed Science, 2011-in progress
- Andy Jochems, MS Geology, 2011-in progress
- Natalie Bursztyn, PhD-candidate Geology, 2011-in progress
- Benjamin Fowler, MS Archaeology, 2010-in progress
- Justin Stout, MS WATS, 2010-in progress
- Christopher Tressler, MS Geology, 2008-2010
- Megan Kenworthy, MS Geology Boise State University, 2008-2010
- Jon Harvey, MS Geology, 2007-2009
- Erin Tainer, MS Geology, 2007-2009

Pre-USU

- Kevin Hadder, 2005-2007
- Ben DeJong, MS Geology, 2005-2007
- Scott Cragun, MS Geology, 2005-2007
- Jessica Oster, 2004, MS Quaternary Science, Lund University, Lund Sweden

Research mentor, graduate and undergraduate students– 19 students

As a specialist in Luminescence dating I have mentored a number of students on a non-committee member basis who have worked with me in the USU Luminescence Lab on projects related to their graduate theses/dissertations or undergraduate research projects. Many of these students have participated in the annual OSL Short Course I teach.

Research mentor: (non-committee basis) * = undergraduate student

| Student | Degree | University | Years advised |
|--------------------|--------|---------------------------------------|---------------|
| Jay Chapman | MS | University of Texas, El Paso | 2007-2008 |
| Sara Maloney | MS | Northern Arizona University | 2007-2009 |
| Nathan Nelson | MS | Boise State University | 2007-2008 |
| *Laura Kennedy | BS | Northern Arizona University | 2007-2008 |
| Erin DiMaggio | PhD | Arizona State University | 2008-2009 |
| Lorena Medina | MS | University of California, Northridge | 2008-2009 |
| Lyman Persico | PhD | University of New Mexico | 2008 |
| Mike Cline | PhD | University of Arizona | 2008-2010 |
| David Dean | MS | Utah State University | 2008-2009 |
| *Mike Badding | BS | State University of New York, Geneseo | 2009 |
| Joe Manning | MS | Northern Arizona University | 2009-2010 |
| Chris Madden | PhD | Oregon State University | 2009-present |
| Jill Onkin | PhD | University of Arizona | 2009-present |
| Yann Gavilloy | PhD | Oregon State University | 2009-present |
| Audrey Dawson | PhD | University of South Carolina | 2011-present |
| Lee McAuliffe | PhD | University of Southern California | 2011-present |
| Steve Thornock | MS | Utah State University | 2011-present |
| *Michelle Williams | BS | University of Minnesota, Morris | 2011-present |
| Jon Perkins | PhD | University of California Santa Cruz | 2011-present |

SERVICE ACTIVITIES: (20% Role Statement)

My primary service role within the Department of Geology is to be the Director of the USU Luminescence Laboratory. I am responsible for all activities of the Lab including maintaining the fiscal health and scientific vigor of the lab, supervising employees, maintaining equipment and promoting the growth and development of the Lab by obtaining and fulfilling contracts for dating analysis and attending professional meetings. Other service roles include University and Department service.

DIRECTOR OF THE USU LUMINESCENCE LAB

The USU Luminescence Lab was established in January 2007 through support of the University and the Browning Foundation to purchase an automated OSL/TL Risø DA-20 instrument and to furnish and remodel lab space at the USU Innovation Campus. At the time of lab construction I was a research faculty member in the Department of Geology and I worked with Dr. Joel Pederson (Geology) to design and establish the Lab. I have managed all aspects of the Lab since its establishment and have directed its growth and development.

The USU Luminescence Lab has maintained a high level of productivity over the last three years and has grown to now include two automated OSL/TL Risø DA-20 readers and I have hired a full-time Lab Manager in July 2010. Laboratory generated income from sediment dating services has exceeded \$400k and has matched or exceeded operating expenses each year.

USU Luminescence Lab Income, number of active projects and samples completed by year

| Year | # active projects | # samples completed* | Lab Income |
|-------------------|-------------------|----------------------|------------|
| 2007 | 29 | 63 | \$110k |
| 2008 | 53 | 132 | \$52k |
| 2009 | 72 | 115 | \$67k |
| 2010 | 67 | 181 | \$82k |
| 2011 [#] | 58 | 156 | \$92k |

[#] as of November 2011

* Due to the lengthy process of sample processing and analysis, luminescence labs have typical lab output of one sample/week/instrument, or only ~50 samples a year/instrument. The USU Luminescence Lab has been able to exceed this average by maintaining 24 hour/day, 7 days/week instrument productivity and by hiring a full-time Lab Manager.

USU Luminescence Lab productivity can also be measured by the number of students that have worked in the lab and the number of student publications and theses that have come out of the lab. One of the primary objectives of the USU Luminescence Lab is to encourage student involvement and research within the Lab. There are only a few luminescence labs in the US and most of these labs are closed to external students and researches, making the USU Luminescence Lab a unique resource.

USU Luminescence Lab Student Involvement and resultant publication per year

| Year | USU Grad. researchers | USU UG. researchers | MS or PhD theses* | UG theses/ reports* | Student abstracts at prof. meeting* | Publications from Lab |
|-------------------|-----------------------|---------------------|-------------------|---------------------|-------------------------------------|-----------------------|
| 2007 | 3 | 1 | | | 1 | 1 |
| 2008 | 3 | 2 | 2 | 2 | 4 (1 UG) | 2 |
| 2009 | 4 | 3 | 6 | 2 | 17 (5 UG) | |
| 2010 | 2 | 2 | 2 | 1 | 3 (1 UG) | |
| 2011 [#] | 6 | 1* | 1 | 1 | 9 (2 UG) | 4 |

*Includes non-USU students in tally [#] As of November 2011.

Other Service Activities:

USU Ecology Center Ad Hoc Review Committee

2012, served on a committee to develop a new Introductory course for Ecology Graduate Program

USU VPR-Grad Studies NSF Discussion Panel

2012, invited to participate on a panel to present and discuss aspects of NSF during Research Week

USU Scholars Day lecture

2012, invited to give a presentation to potential incoming undergraduate Research Scholars

USU URCO Science Review Team

2011, reviewed student proposals for Fall 2011 URCO submission

USU Scholars Day, Undergraduate Research Fellowship Interviewer

2011, interviewed prospective Research Scholars from the College of Science

Department of Geology, Distinguished Lecture Series Coordinator

2010-present, coordinate the weekly Department of Geology Distinguished Lecture Series

USU Climate Minor Committee Member

2008-2009, Participate in discussions to develop a new 'Climate Change and Energy' minor

Conference Session Chair, Invited Speaker and Professional Field Trips

2012, **Invited Speaker, Symposium**, Geological Society of America Meeting, Northeastern Section, March 18-20, Hartford CT " Application of OSL dating to glacial deposits in southern Massachusetts: Refining the chronology and addressing questions related to solar resetting in glacial environments"

2010, **Invited Speaker**, Society of American Foresters-Intermountain Section, April 23-24, Logan UT "Records of Past Climate Change from Tree-rings"

2010, **Invited Speaker**, USU College of Science, Science Unwrapped, February 25, Logan UT "Records of Past Climate Change"

2010, **Invited Speaker**, USU Department of Physics Student Seminar Series, Oct 21, Logan UT "How Glowing Sand Grains can Unlock the Age of Dirt: Applications and Theory behind Luminescence Dating"

2010, **Session Chair**, GSA National Meeting, Oct 31-Nov 4, Denver, CO "OIS 4 and 3 were bigger than you think. Geomorphic evidence from Glacial, Fluvial, Coastal, Lacustrine and Eolian Records"

2009, **Session Chair**, New World Luminescence Dating Workshop, Oct 22-23, Seattle, WA, "Luminescence Applications and Methodology"

2009, **Session Chair**, GSA National Meeting, Oct 19-21, Portland, OR, "Alluvial Records: Numerical Dating and Archives of Climatic, Environmental, and Neotectonic Change"

2009, **Session Chair**, GSA Rocky Mountain Meeting, Orem, UT May 13-15, 2009, "Getting a Better Handle on the Dirt Covering the Bedrock – Mapping and Dating Surficial Deposits"

2008, **Invited Speaker**, SCEC Fault System History/SoSAFE Workshop, Jan 31-Feb 2, "Application of OSL Dating to Fault Slip Rate/Recurrence Studies"

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2007, **Session Chair**, GSA National Meeting, Denver, Oct 28-31, 2007, "Using Geochronology to Build Better Records and Solve Geomorphic and Paleoclimate Questions - Recent Advances and Findings"

2007, **Session Chair**, GSA National Meeting, Denver, Oct 28-31, 2007, "Evidence of Climatic and Tectonic Change Recorded in Alluvial Fans"

2007, **Session Chair**, 5th New World Luminescence Dating and Dosimetry Workshop, Chicago, IL

2007, **Invited Speaker**, Alluvial Fans 2007 meeting, Banff Alberta, June 18-22, 2007, "New geochronologic applications for alluvial fans"
2007, **Session Chair**, Alluvial Fans 2007 meeting, Banff Alberta, June 18-22, 2007,
2006, **Session Chair**, 4th New World Luminescence Dating and Dosimetry Workshop, Denver, CO, "Archeological Applications of Luminescence Dating"
2006, **Session Chair**, 4th New World Luminescence Dating and Dosimetry Workshop, Denver, CO, "Applications to Dating Sediments (Mid-west US to Colorado)"
2005, **Session Chair**, North-Central GSA meeting, Minneapolis, MN, 19-20 May, 2005, "Geologic Development of the Mississippi River"
2003, **Plenary Address**, co-presenter, Third International Limnology Congress, Tucson, AZ
2001, **Field Trip Leader**, International Conference on Fluvial Sedimentology: Quaternary History of the Lower Mississippi Valley and Texas Coastal Plain
2000, **Field Trip Leader**, North Eastern Friends of the Pleistocene: A Drainage History for Glacial Lake Hitchcock: Varves, Landforms, and Stratigraphy

Reviewer: Professional Journals : 3-5/yr (IF = Impact Factor)

Aeolian Research (IF =)
Quaternary Science Reviews (IF = 4.245)
Quaternary Geochronology (IF= 2.853)
Geomorphology (IF = 2.683)
American Journal of Science (IF = 3.607)
Journal of Sedimentary Research (IF = 2.302)
Current Research in the Pleistocene (IF = NA)

Reviewer: Granting and Funding Agencies: 1-3/yr

National Science Foundation (3 Programs within the Division of Earth Science Research)
ACS Petroleum Research Fund