Report to Baylor University Director of Assessment and Compliance: First-Year Assessment of Baylor University Major Strategic Proposal “Research Initiative in Terrestrial Paleoclimatology”: Faculty and Student Research Accomplishments, 2007-2008 (partial) calendar years

Participating Baylor Faculty: The following five current Baylor Geology faculty members currently conduct research in Terrestrial Paleoclimatology:

Dr. Stacy C. Atchley
Professor (Ph.D., University of Nebraska – Lincoln). Research Interests: Petroleum Geology, Applied Sequence Stratigraphy, Paleopedologic Applications to Sequence Stratigraphy. (5% administrative load as Associate Chair of Geology, starting fall semester 2008)

Dr. Steven G. Driese
Professor and Chair (Ph.D., University of Wisconsin – Madison). Research Interests: Paleopedology, Clastic Sedimentology, Environmental Sedimentology. (50% administrative load as Chair of Geology, appointment through spring semester 2010)

Dr. Stephen I. Dworkin
Professor and Graduate Program Director (Ph.D., University of Texas – Austin). Research Interests: Sedimentary Petrology, Low Temperature Geochemistry, Geochemical Applications to Paleopedology. (10% administrative load as Graduate Program Director of Geology, starting fall semester 2007)

Dr. Zhaodong (Jordan) Feng
Associate Professor (Ph.D., University of Kansas). Research Interests: Geomorphology, Quaternary Paleoclimatology, GIS/RS Applications in Physical Geography.

Dr. Lee C. Nordt
Professor and Dean of College of Arts and Sciences (Ph.D., Texas A&M University). Research Interests: Paleoclimatology and paleoecology, soils and paleosols, and Quaternary Geology. (100% administrative load as Dean of College of Arts and Sciences, starting fall semester 2007)

Full curriculum vitae for the above-listed faculty are available upon request, or from our Geology Department website at: http://www.baylor.edu/Geology/ under each Faculty member’s name.

Sabbatical Faculty (arriving in August of 2008)

Dr. Julia Sankey, Associate Professor
Coordinator of Geology Program, Department of Physics and Geology
California State University, Stanislaus
One University Circle
Turlock, CA 95382
NEW Faculty Member: Daniel J. Peppe, ABD, Department of Geology and Geophysics, Yale University: 3 peer-reviewed publications, 3 submitted papers, and 2 in preparation. Deferred hire start date to commence in August of 2009.


2003 – 2005: Yale University, Department of Geology and Geophysics, M.Phil.

RESEARCH INTERESTS: Geochronology, paleomagnetism, magnetostratigraphy, paleobotany, plant systematics, taxonomy, paleoclimatology, paleoecology, biostratigraphy, palynology, lithostratigraphy, global change

Faculty Awards:

Dr. Steven G. Driese elected President-Elect of the Society for Sedimentary Geology (SEPM), a 4,000 member international Society based in Tulsa, OK. Term of office began in April, 2008 at the AAPG-SEPM Annual Meeting in San Antonio, TX.

Participating Students: The following 19 Baylor Geology students conducted research in Terrestrial Paleoclimatology in 2007-2008:

Completed Theses and Dissertations:


Graduate Student Theses – Currently in Progress

1) Ahr, Steven W., “Geoarchaeology, Texas sandy mantle”: Ph.D. dissertation, Lee C. Nordt, Primary Director


4) Gotcher, Christopher J., “Establishing interrelationships between sequence stratigraphy, paleosol development, and fossil assemblages: A holistic approach to paleolandscape reconstruction, Petrified Forest National Park, Arizona”: M.S. or Ph.D., Co-supervised by Stacy C. Atchley and Lee C. Nordt

5) Jennings, Debra S., “Differentiating paleoclimate and volcanogenic signatures of the Morrison Formation depositional basin, USA”: Ph.D. dissertation, Steven G. Driese, Director.


9) Shunk, Aaron J., “Interpreting the Late Tertiary climate of the eastern United States using paleosinkhole deposits at the Gray Fossil Site and the Pipe Creek Jr. Sinkhole”: Ph.D. dissertation, Steven G. Driese, Primary Director, assisted by Stephen I. Dworkin.


11) Trendell, Aislyn M., “Sequence stratigraphy and paleopedology of the Sonsela Member of the Chinle Formation within the Blue Mesa area of Petrified Forest National Park: implications to production-scale reservoir heterogeneity and paleolandscape reconstruction”: M.S. or Ph.D., Co-supervised by Stacy C. Atchley and Lee C. Nordt

12) Zahler, Michael A., “Paleogene paleosols, sequence stratigraphy, and the Paleocene-Eocene Thermal Maximum (PETM) near Farmington, New Mexico”: Ph.D., Co-supervised by Stacy C. Atchley, Lee C. Nordt, and Steven G. Driese

Undergraduate Senior Honors Theses – Currently in Progress

1) Dixon, Alex, “Provenance and the early diagenetic alteration of volcaniclastic material incorporated in fluvial channel sandstone deposits, Morrison Fm. near Capitol Reef National Park, Utah”: Senior Thesis, S.G. Driese, Director

3) **Keeton, Gabby**, “Grain size analysis of paleosols across the K-T boundary, Big Bend, Texas”: *Senior Thesis, directed by Stephen I. Dworkin*

4) **Lisa Turpin**, “Environmental significance of a thick mudrock deposit in the Blue Mesa Member of the Chinle Formation, Petrified Forest National Park, Arizona”: *Senior Thesis, directed by Stephen I. Dworkin*

5) **Seitz, Jenny**, “Characterization of pedogenic minerals across the K-T boundary, Big Bend Texas”: *Senior Thesis, directed by Stephen I. Dworkin*

2007-dated Faculty Publications (underline = Baylor MSP Geology Faculty) (* = peer-reviewed journal article)


2008-dated Faculty Publications as of July 14, 2008


2007-dated Faculty and Student Presentations *(underline = Baylor Geology Faculty)*


(2) Dixon, A.H., Driese, S.G., and Jennings, D.S., 2007, Provenance and the early diagenetic alteration of volcanioclastic material incorporated in fluvial channel sandstone deposits, Morrison Fm. near Capitol Reef National Park, Utah: GSA Annual Meeting in Denver, CO.

(3) Driese, S.G., Multi-proxy approaches to interpreting time in the geologic record using soils: (talk presented at 44th Annual Soil Survey and Land Resource Workshop in College Station, TX, February 1, 2007).


**Grants and Contracts AWARDED and in force in 2007 (note: these are not prorated on an annual basis) (underline = Baylor Geology Faculty)**


(4) **Dworkin, S.I.,** 2007-2008, University Research Council (URC) grant, $3,000.

(5) **Feng, Z.-D.,** 2006-2009, (Lead PI): Collaborative research (with Dr. K.-B Liu at LSU): Bioclimatic reconstruction of the past 50,000 years from eolian sequences in the westerlies-dominated Central Asia: National Science Foundation, Geography and Regional Sciences Program, (Feng’s portion = $150,000).

(6) **Feng, Z.-D.,** 2007, Summer Faculty Research Incentive Program (FRIP) grant from Office of the Vice Provost for Research as ‘seed” money to develop a new NSF grant for research in Kazakhstan, $25,000.

**Grants, Contracts and Software Patents SUBMITTED in 2007, but not funded or pending (underline = Baylor Geology Faculty)**

(1) **Driese, S.G.,** 2007, with Baylor University as the lead institution and S.P. Horn from the University of Tennessee as co-PI, Collaborative research: Differentiating paleoclimate and volcanogenic signatures in the Morrison Formation depositional basin, USA: submitted to NSF Sedimentary Geology and Paleobiology program ($185,659 requested for two years, commencing June 1, 2007). NOT FUNDED.
(2) **Driese, S.G.**, 2007, with the University of Tennessee-Knoxville as the lead institution (with Z.-H. Li as PI/PD, and C.I. Mora and S.P. Horn as co-PIs), Collaborative research: Pleistocene-Holocene climate variability of the southern Appalachian region, southeastern U.S.: submitted to NSF Sedimentary Geology and Paleobiology program ($56,794 requested for three years, commencing June 1, 2008). NOT FUNDED.

(3) **Dworkin, S.I.**, with R. Doyle (Biology), **Z. Feng** (Geology), **S.G. Driese**, R.S. King (Biology) MRI: Acquisition of a stable isotope mass spectrometer for paleoclimate and ecology research and training: submitted to NSF Major Research Instrumentation (MRI) program ($342,185 for one year, commencing July 1, 2007). NOT FUNDED.

(4) **Nordt, L.C.**, 2007, Late Pleistocene adaptations and behavioral transformations in the South African Highveld Grassland. Co-Principal investigators Britt Bousman and David Brink; L. Nordt is a paid collaborator. NOT FUNDED.

**Grants, Contracts and Software Patents SUBMITTED in 2008 and pending**

(underline = Baylor Geology Faculty)

(1) **Feng, Z.-D.**, 2008, Collaborative Research: Reconstructing the Temporal and Spatial Patterns of MIS 3 Bioclimatic Changes from Eolian and Lacustrine Sequences in the Chinese Loess Plateau: National Science Foundation, Earth Sciences, Sedimentary Geology and Paleobiology program ($185,750) (07/01/08 to 06/30/10) PENDING.

(2) **Feng, Z.-D.**, 2008, Collaborative Research: Mid-Holocene Bioclimatic Changes in the Central Plain of China and Their Cultural Implications: National Science Foundation, SEB: Geography and Regional Science ($254,270) (07/01/08 to 06/30/11) PENDING.

(3) **Feng, Z.-D.**, 2008, High-Resolution Reconstruction of Holocene Bioclimatic Changes in Central Asian Arid Zone: National Science Foundation Paleo Perspectives on Climate Change (P2C2) program ($507,428) (07/01/08 to 06/30/11) PENDING.

(4) **Driese, S.G.**, 2008, with the University of Tennessee-Knoxville as the lead institution (with Z.-H. Li as PI/PD, and S.P. Horn as co-PIs), Collaborative research: Pleistocene-Holocene climate variability of the southern Appalachian region, southeastern U.S.: submitted to NSF Paleo Perspectives on Climate Change (P2C2) program ($61,057 requested for three years, commencing December 1, 2008). NOT FUNDED.

(5) **Driese, S.G.**, and **Atchley, S.C.**, 2008, Global implications for the rise of the Givetian (375 Ma) forests, Manorkill Formation, Catskill State Park, New York, USA: submitted to NSF Paleo Perspectives on Climate Change (P2C2) program ($225,865 requested for three years, commencing July 1, 2008). NOT FUNDED.