

Report of Baylor University Geology Department, Faculty and Student Research Accomplishments, 2005 calendar year

Faculty Publications (underline = Baylor Geology Faculty)

- (1) *Allen, P.M., Harmel, R.D., Arnold, J.G., Plant, B., Yelderman, J., and King, K.W., 2005, Field data and flow system response in clay (vertisol) shale terrain, north central Texas, USA: *Hydrological Processes*, v. 19, p. 2719-2736.
- (2) **Allen, P.M., Arnold, J.G. and Skipwith, W., 2005, Methods to evaluate urban stream channel erosion with examples from central Texas: *Proceedings Paper, International Erosion Control Association*, Dallas, Texas.
- (3) **Allen, P.M., Arnold, J.G., Skipwith, W., and Berman, S., 2005, SWAT-DEG and channel restoration of urban streams: *Proceedings Paper, International SWAT Conference Zurich Switzerland*.
- (4) **Atchley, S. C., Johsson, E., and Kahmann, J., 2005, Production optimization of the Mississippian Pekisko Formation at Twining Field, Alberta, as guided by a detailed sequence stratigraphic framework: Sponsored by Pengrowth Corporation.
- (5) *Driese, S.G., Li, Z.-H., and Horn, S.P., 2005, Late Pleistocene to Holocene paleoclimate and paleogeomorphic history interpreted from 23,000 ¹⁴C yr B.P. paleosol and floodplain soils, southeastern West Virginia, USA: *Quaternary Research*, v. 63, p. 136-149.
- (6) *Driese, S.G., Nordt, L.C., Lynn, W.C., Stiles, C.A., Mora, C.I., and Wilding, L.P., 2005, Distinguishing climate in the soil record using chemical trends in a Vertisol climosequence from the Texas Coastal Prairie, and application to interpreting Paleozoic paleosols in the Appalachian basin: *Journal of Sedimentary Research*, v. 75, p. 339-349.
- (7) *Driese, S.G., and Ober, E.G., 2005, Paleopedologic and paleohydrologic records of precipitation seasonality from early Pennsylvanian "underclay" paleosols, U.S.A.: *Journal of Sedimentary Research*, v. 75, p. 999-1012.
- (8) ** Dunbar, J. A., Allen, P.M., and Hensen, H., 2005, Water and sediment survey of Lake Holdenville, Hughes County, Oklahoma, Report to the City of Holdenville.
- (9) **Dunbar, J. A., Allen, P.M., and Hensen, H., 2005, Water and sediment survey of Lake Abilene, Taylor County, Texas, Report to the NRCS and the City of Abilene.
- (10) *Dworkin, S. I., Nordt, L.C., and Atchley, S.C., 2005, Determining terrestrial paleotemperatures using the oxygen isotopic composition of pedogenic carbonate: *Earth and Planetary Science Letters*, v. 237, p. 56-68.
- (11) *McKay, L.D., Driese, S.G., Smith, K.H., and Vepraskas, M.J., 2005, Hydrogeology and pedology of saprolite formed from sedimentary rock, eastern Tennessee, USA: *Geoderma*, v. 126, p. 27-45.
- (12) *Parker, D.F., Ghosh, A., Price, C.W., Rinard, B.D., Cullers, R.L., and Ren, M., 2005*, Origin of rhyolite by crustal melting and the nature of parental magmas in the Oligocene Conejos Formation, east-central San Juan Mountains, Colorado, U.S.A.: *Journal of Volcanology and Geothermal Research*, v. 139, p. 185-210.

- (13) *Prochnow, S. J., **Nordt, L.C.**, **Atchley, S.C.**, Hudec, M., and Boucher, T., 2005, Triassic paleosol catenas associated with a salt-withdrawal minibasin in southeastern Utah, U.S.A.: *Rocky Mountain Geology*, v. 40, p. 35-59.
- (14) **Tracy, C. J., **Allen, P. M.**, and **Dunbar, J. A.**, 2005, Dredging *versus* New Reservoirs, Report to the Texas Water Development Board, TWDB Contract #2004-483-534, 91 p., Alan Plummer Associates, Inc.
- (15) Volk, M., **Allen, P.M.**, and Arnold, J., 2005, Towards a process-oriented HRU-concept in SWAT: Catchment-related control on baseflow and storage of landscape units in medium to large river basins: *Proceedings Paper, International SWAT Conference*, Zurich Switzerland.
- (16) *White, J.C., Ren, Minghua, and **Parker, D.F.**, 2005, Variation in mineralogy, temperature, and oxygen fugacity in a suite of strongly peralkaline lavas and tuffs, Pantelleria, Italy: *Canadian Mineralogist*, v. 43, p. 1331-1347.

* = peer-reviewed, ** = proprietary reports or proceedings (not peer-reviewed), *** = text or lab book

Faculty and Student Presentations (underline = Baylor Geology Faculty)

- (1) **Allen, P.M.**, 2005, Methods to evaluate urban stream channel erosion with examples from central Texas (with W. Skipwith and others): International Erosion Control Association Annual Meeting in Dallas, Texas.
- (2) **Allen, P.M.**, 2005, Channel stability assessment: TRRMS invited symposium talk at Baylor University.
- (3) **Allen, P.M.**, 2005, SWAT-DEG and channel restoration of urban streams: Talk at International SWAT Conference in Zurich, Switzerland.
- (4) **Allen, P.M.**, 2005, Laboratory presentation on environmental geology: Applications in urban landscapes: Environmental stratigraphy (ForSed): Invited Presentation at NSF workshop Minneapolis Minn., University of Minnesota St. Anthony Falls.
- (5) **Allen, P.M.**, and Dreyer, B., 2005, Field trip for Texas section Association of Environmental and Engineering Geologists for 60 geologists at Canyon Lake, on geology and spillway erosion.
- (6) **Atchley, S.C.**, 2005, University of Nebraska, Lincoln, Schramm Chair short-course instructor on the topic of "Applied Carbonate Sequence Stratigraphy", in Canmore, Alberta, Canada, June 23, 2005.
- (7) **Atchley, S.C.**, **Nordt, L.C.**, and **Dworkin, S.I.**, 2005, Composite mechanisms for terrestrial environmental variability and their relationship to alluvial sequence stratigraphy: the K/T succession in west Texas, USA, and south-central Alberta, Canada: 2005 GSA Annual Meeting.
- (8) **Atchley, S.C.**, West, L.W., and Sluggett, J.R., 2005, Rejuvenation of a mature oil field: the Devonian Leduc Formation at Innisfail Field, south-central Alberta, Canada: American Association of Petroleum Geologists, v. 89, p. A7.
- (8) Bayliss, B., and **Cronin, V.S.**, 2005, Test of a method for recognizing previously unmapped seismogenic faults: Poster presentation at the GSA Annual Meeting.
- (9) **Bonem, R.M.**, 2005, Caribbean Reef Change: Bottom Time Dive Club, Waco, Texas.

- (10) Bongino, J., **Nordt, L.**, Benedict, A., and Forman, S., 2005, Pleistocene stratigraphy for interpreting the timing and cause of death at the Waco Mammoth site: Second International Congress, The World of elephants, Hot Springs, South Dakota.
- (11) Bruner, M.R., Prochnow, S.J., **Bonem, R.M.**, Cawthorn, T.M., Ryan, J.D., and Zygo, L.M., 2005, Spatial analysis and visualization of Lower Cretaceous trackways in Dinosaur Valley State Park, Central Texas: South-Central GSA Meeting.
- (12) **Cronin, V.S.**, 2005, Code in *Mathematica* to account for the horizontal and vertical errors in hypocenter location, when projecting an earthquake focal mechanism solution to the ground surface, as represented by a DEM.
- (13) **Cronin, V.S.**, 2005, Beginning the hunt for active faults along the Malibu coastline: invited colloquium presentation at the Department of Geology, Texas A&M University, spring 2005.
- (14) **Cronin, V.S.**, 2005, Geochronology lab for an introductory physical geology course: Poster presentation at the GSA Annual Meeting.
- (15) **Cronin, V.S.**, Bayliss, B., Zygo, L., and Byars, B.W., 2005, Progress report on development of methods for recognition of seismogenic faults: GSA Annual Meeting.
- (16) **Driese, S.G.**, 2005, Distinguishing climate and time in the soil record using modern Vertisol climo- and chronosequences from Texas, and application to interpreting Paleozoic paleosols in the Appalachian basin: (talk presented at 42nd Annual Soil Survey and Land Resource Workshop in College Station, TX).
- (17) **Driese, S.G.**, 2005, Distinguishing climate and time in the soil record using modern Vertisol climo- and chronosequences from Texas, and application to interpreting Paleozoic paleosols in the Appalachian basin: (talk presented at Miami University of Ohio, Department of Geology).
- (18) **Driese, S.G.**, 2005, Distinguishing climate and time in the soil record using modern Vertisol climo- and chronosequences from Texas, and application to interpreting Paleozoic paleosols in the Appalachian basin: (talk presented at University of Texas-Dallas, Department of Geological Sciences).
- (19) **Driese, S.G.**, Orvis, K.H., Horn, S.P., Li, Z.-H., and **Dworkin, S.I.**, 2005, Paleosol evidence for uplift and for climate and ecosystem changes in the Cordillera Talamanca, Costa Rica: GSA Annual Meeting.
- (20) **Dworkin, S.I.**, 2005, Origin of radiogenic Sr in surface waters in of central Texas, *Geochimica et Cosmochimica Acta*, Goldschmidt Conference Abstracts, v. 69, p. A603 suppl.
- (21) **Dworkin, S.I.**, 2005, "Oxygen isotopes in pedogenic carbonates" and "The impact of dust on near surface geochemical processes": talks presented at Indiana University, Bloomington, IN.
- (22) **Dworkin, S.I.** and Mack, L.E., 2005, Cycling of calcium by dust: GSA Annual Meeting.
- (23) Garcia, S., Clubbs, R.L., Scheffe, B.L., **Yelderman, J.C. Jr.**, and Brooks, B.W., 2005, Wastewater effluent quality: a comparative analysis of municipal and on-site systems, Texas Academy of Science, Edinburgh, Texas, Abstract.
- (24) Geary, J. R., and **Atchley, S.C.**, 2005, Controls on hydrocarbon entrapment and reservoir distribution: the Pennsylvanian Oswego Limestone and Big Lime Limestone in the Putnam Field Area, Anadarko Basin, Oklahoma: *American Association of Petroleum Geologists*, v. 89, p. A50.

- (25) **Goforth, T.W.**, 2005, “Characteristic of regional seismograms produced by delay-fired explosions at the Minntac Iron Mine, Minnesota”: talk presented at Southern Methodist University.
- (26) **Greene, D.M.**, 2005, “The Fifth Season”, a severe weather special for KXXV – TV: completed taping on April 8, 2005.
- (27) Hover, V.C., Ashley, G.M., **Driese, S.G.**, Owen, R.B., and McBrearty, S., 2005, Authigenic Mg-rich smectite and 10-A clay minerals in East African Rift –Valley lacustrine sediments: What do compositions tell you about geochemical depositional environments?: Clay Mineral Society Annual Meeting.
- (28) Kahmann, J.A., and **Driese, S.G.**, 2005, Late Mississippian climate changes recorded in the Pennington Formation, Pound Gap outcrop section, Kentucky, USA: GSA Annual Meeting.
- (29) Koenig, J., Kahmann, J., **Atchley, S.C.**, Sluggett, J.R., and West, L., 2005, Geological risk assessment of development opportunities within the Devonian Leduc Formation at Sturgeon Lake South Field, Alberta, Western Canada Sedimentary Basin: American Association of Petroleum Geologists, v. 89, p. A75.
- (30) **Nordt, L.C.**, Orosz, M.T., and **Driese, S.G.**, 2005, Depth-to-carbonate (DTC) from modern soils and estimations of mean annual precipitation (MAP) from paleosols: One size does not fit all!: GSA Annual Meeting.
- (31) Prochnow, S. J., **Nordt, L.C.**, **Atchley, S.C.**, and Hudec, M., 2005, Multi-proxy paleosol evidence for Triassic climates in eastern Utah: 2005 GSA Annual Meeting.
- (32) Scheffe, B., and **Yelderman, J.C. Jr.**, 2005, PET Plastics as an alternative substrate material in subsurface flow constructed wetlands for on-site treatment of septic tank effluent, Ground Water Summit, National Ground Water Association, San Antonio, Texas.
- (33) Scheffe, B., and **Yelderman, J.C. Jr.**, 2005, PET Plastics as an alternative substrate material in subsurface flow constructed wetlands for on-site treatment of septic tank effluent, Soil Survey and Land Resource Workshop, Texas A&M University, College Station, Texas.
- (34) Walker, W.M, Sralla, B., and **Cronin, V.S.**, 2005, A reassessment of the possible activity of the Criner Hills fault, south-central Oklahoma: Poster presentation at the GSA Annual Meeting.
- (35) **Yelderman, J.C. Jr.**, 2005, Teaching hydrogeology at outcrops: Road cuts and gravel pits seen differently: Workshop on teaching hydrogeology in the 21st Century, Lincoln, Nebraska.
- (36) **Yelderman, J.C. Jr.**, 2005, Installing mini-piezometers: with and without seepage meters: Workshop on teaching hydrogeology in the 21st Century, Lincoln, Nebraska, demonstration (presented twice).
- (37) **Yelderman, Joe C., Jr.**, and Clark, Brian, 2005, The effect of recharge pulses on ground water flow rates and travel distances in shallow fractured flow systems: National Groundwater Association Focus Conference on eastern Regional Ground water Issues, Portland, Maine.
- (38) **Yelderman, Joe C. Jr.**, and Ali Al-Nahari, 2005, Subsurface dams as a wastewater treatment polishing process, Soil Survey and Land Resource Workshop, Texas A&M University, College Station, Texas.

Grants, Contracts and Software Patents AWARDED (underline = Baylor Geology Faculty)

- (1) Atchley, S.C., 2005, Production optimization of the Mississippian Pekisko Formation at Twining Field, Alberta, as guided by a detailed sequence stratigraphic framework. Pengrowth Corporation, June-August 2005, \$41,000.
- (2) Dunbar, J.A., and Allen, P.M., 2005, Sediment Survey, Lake Abilene, Taylor County, Texas, City of Abilene, award funded in September 2005, \$9,629.
- (3) Dunbar, J. A., and Allen, P.M., 2005, Sediment Survey, Texas Flood Control Reservoirs, NRCS, Funded, September, 20005, \$20,000.
- (4) Allen, P.M., Dunbar, J.A., 2005, Sedimentation Study of Cedar Creek Watershed, Texas Water Resources Institute, Subcontract through Specialty Devices, Inc., Funded December, Funded, December 2005, \$20,000.
- (5) Allen, P.M., and Dunbar, J.A., 2005, 3rd year of three year grant with USDA (\$203,000)
- (6) Allen, P.M., and Dunbar, J.A. (and others), Contract with federal government on Lake Whitney (\$1.1M)
- (7) Dworkin, S.I., 2005, The impact of dust on water chemistry in Central Texas, Baylor URC, funded October 1, 2005 through May 31, 2006, \$2,990.
- (8) Goforth, T.W., 2005, URC grant of \$1660 to support sabbatical.
- (9) Parker, D.F., 2005, Geochemistry of Forearc Volcanic Rocks, Oregon Coast Range, URC, awarded 20 April 2005, project period 1 June 2005- 31 May 2006, \$1300
- (10) Yelderman, J.C., Jr., 2005, Study to test constructed wetlands under ANSI/NSF Standard 40 criteria: Texas On-site Wastewater Treatment Research Council, awarded October 2005, \$100,190
- (11) Yelderman, J.C., Jr., 2005, Awarded extension of the nutrient reduction study for OSSF aerobic systems: Murphy Cormier, Inc., awarded December 2004 through May 2005, \$10,000
- (12) Yelderman, J.C., Jr., 2005, Awarded extension of the nutrient reduction study for OSSF aerobic systems: Murphy Cormier, Inc., awarded July 2005 through June 2006, \$25,594
- (13) Yelderman, J.C., Jr., 2005, Texas in situ uranium: The early boom years: Institute for Oral History: January 2005 through fall 2005, \$2,500
- (14) Yelderman, J.C., Jr., 2005, Awarded a mid-level URC grant for the study entitled "A comparison of whole effluent toxicity among aerobic, septic and submerged-bed wetland OSSFs.", \$5,840

Grants, Contracts and Software Patents SUBMITTED (underline = Baylor Geology Faculty)

- (1) Atchley, S.C., and Nordt, L.C., 2005, The interrelationship of sequence stratigraphy, paleoclimatology, and terrestrial ichnology in Triassic paleosol-bearing alluvial successions, Moenkopi and Chinle Formations, southwestern United States: submitted to American Chemical Society, Petroleum Research Fund, submitted in December and pending, \$80,000.

(2) Driese, S.G., and Parker, D.F., 2005, Acquisition of a wavelength-dispersive XRF instrument for Department of Geology, Baylor University: submitted to NSF Instrumentation and Facilities program (\$114,189 requested for one year, commencing January 1, 2006). **NOT FUNDED**

(3) Driese, S.G., 2005, Technician support: XRF and other analytical instrumentation for Department of Geology, Baylor University: submitted to NSF Instrumentation and Facilities program (\$166,262 requested for three years, commencing January 1, 2006). **NOT FUNDED**

(4) Dunbar, J.A., Allen, P.M., Driese, S.G., and Dworkin, S.I., 2005, Sediment and nutrient trapping by aging flood control reservoirs: submitted to USDA-NRI, Watersheds Program (\$440,332 requested for 3 years, commencing September 1, 2005) **NOT FUNDED**

(5) Dunbar, J.A. and Allen, P.M., 2005, Sediment coring water reservoirs within the Lower Colorado River basin: Palo Pinto, Buchanan, and Travis, Texas Water Development Board, \$18,000, pending, December, 2005.

(6) Dworkin, S.I., 2005, Improving environmental quality for residents of Waco and the central Texas Region, Rapoport Foundation, (submitted September 10, 2005, \$335,126 requested) **NOT FUNDED**