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EDUCATION

Ph.D., Geological Sciences, Arizona State University May 2008
Dissertation: "Paleoecology of Jurassic Navajo Sandstone
Interdune Deposits.", 417p., directed by Jack Farmer
B.S., Geology, Summa Cum Laude, Arizona State University 2003

PROFESSIONAL APPOINTMENTS

Residential Faculty (One-year-only appointment), Mesa Community College, Mesa, Arizona 2008-2009
Adjunct Faculty, School of Earth and Space Exploration, Arizona State University, Tempe, AZ Fall 2008
Postdoctoral Research Associate, School of Earth and Space Exploration, Arizona State University, Tempe, Arizona May-Aug 2008
Adjunct Faculty, Mesa Community College, Mesa, Arizona 2006-2008

TEACHING EXPERIENCE

Faculty Lecturer, GLG101, Physical Geology 2006-2009
Dept. of Physical Science, Mesa Community College,
Mesa, Arizona
4 sections spring 2009; 3 sections fall 2008; 1 section, spring 2008; 2 sections fall 2007; 2 sections spring 2007; 1 section fall 2006

Faculty Lecturer, GLG103, Physical Geology Lab 2006-2009
Dept. of Physical Science, Mesa Community College,
Mesa, Arizona
1 section spring 2009; 1 section fall 2008; 2 sections spring 2008; 3 sections fall 2007; 2 sections spring 2007; 2 sections fall 2006

Faculty Lecturer, GLG102, Historical Geology 2009
Dept. of Physical Science, Mesa Community College,
Mesa, Arizona
1 section spring 2009

Faculty Lecturer, GLG104, Historical Geology Lab 2009
Dept. of Physical Science, Mesa Community College,
Mesa, Arizona
1 section spring 2009

Faculty Lecturer, GLG230AA, Field Geology of the Southwest, Moab UT Dept. of Physical Science, Mesa Community College, Mesa, Arizona Field based course on the geology of the Moab, Utah area. <i>1 section spring 2009</i>	2009
Adjunct Faculty Lecturer, GLG430/GLG598, Paleontology School of Earth and Space Exploration, Arizona State University, Tempe, Arizona <i>1 section fall 2008</i>	Fall 2008
Faculty Lecturer, GLG110, Geologic Disasters & Environment Dept. of Physical Science, Mesa Community College, Mesa, Arizona <i>1 section fall 2008; 1 section spring 2008</i>	2008
Faculty Lecturer, GLG111, Geologic Disasters & Environment Lab Dept. of Physical Science, Mesa Community College, Mesa, Arizona <i>1 section fall 2008</i>	2008
Teaching Assistant, GLG102, Historical Geology Dept. of Geological Sciences, Arizona State University <i>1 section fall 2007</i>	2007
Lecturer/Teaching Assistant, GLG435, Sedimentology Dept. of Geological Sciences, Arizona State University <i>1 section each spring 2008, spring 2007, spring 2006, and spring 2005</i>	2005-2008
Teaching Assistant, GLG452, Field Geology II Dept. of Geological Sciences, Arizona State University Camp Tontozona Research Station, Kohls Ranch, AZ <i>Summer 2008 (volunteer instructor), summer 2007 (TA), summer 2006 (TA), summer 2005 (volunteer instructor)</i>	2005-2008
Lecturer/Teaching Assistant, GLG430/GLG598, Paleontology Dept. of Geological Sciences, Arizona State University <i>1 section Fall 2005</i>	2005
Teaching Assistant, GLG598, Advanced Sedimentology Dept. of Geological Sciences, Arizona State University <i>1 section, fall 2004</i>	2004
Lecturer, GLG103, Physical Geology Lab Dept. of Geological Sciences, Arizona State University <i>2 sections fall 2003</i>	2003
Reader, GLG101, Physical Geology Dept. of Geological Sciences, Arizona State University <i>2 sections summer 2002</i>	2002

TEACHING INTERESTS

I have a strong interest in teaching the following courses:

Sedimentology and Stratigraphy (upper division)

Paleontology (upper division)

Field Geology / Field Camp

Terrestrial Paleoecology (graduate level)

Introductory Physical Geology (lower division)

Historical Geology (lower division)

Graduate seminars in paleobiology, evolution, and paleoecology

PUBLICATIONS

- Wilkins, N.D and J. Farmer (2005). Paleoeology of the Navajo Sandstone interdune deposits. Canyon Legacy. R. Salmon. Moab, Utah, Dan O'Laurie Museum of Moab: 39-42. (invited paper in non-peer reviewed journal)
- Wilkins, N.D., M.L. DeVore, P. Howell, E. Barman, and K.B. Pigg. Permineralized caterpillar coprolites (Lepidoptera) from the middle Miocene of Washington State, U.S.A. *Palaios*, in review.
- Wilkins, N.D., and J. Farmer. "Depositional setting of interdune deposits within the Early Jurassic Navajo Sandstone." in progress.
- Wilkins, N.D., Pigg, K., and J. Farmer. "Paleobotanical remains preserved in interdune deposits within the Early Jurassic Navajo Sandstone." in progress.
- Wilkins, N.D., and J. Farmer. "Ostracodes in Navajo Sandstone interdune deposits." in progress.
- Wilkins, N.D., and J. Farmer. "Unionid clams of the Jurassic Navajo Sandstone." in progress.
- Wilkins, N.D., M.L. DeVore, K.B. Pigg, E. Barman. Cynipid wasp gall and fungal remains in silicified acorns (*Quercus hiholensis*, Fagaceae) from the middle Miocene of western North America. in progress.
- Wilkins, N.D., J. Farmer, and K.B. Pigg. "Evidence for Early Jurassic climate oscillations in the Navajo Sandstone." in progress.

ABSTRACTS

- Wilkins, N., K.B. Pigg, and J.D. Farmer. (2008). "Bennettitaleans (cycadeoids) of the Early Jurassic Navajo Sandstone." Geological Society of America Abstracts with Programs **40**(6), p. 478.
- Wilkins, N., J. Farmer, et al. (2007). "Paleoecology of Jurassic Navajo Sandstone interdune environments: An integrated view based on sedimentology, geochemistry, and paleontology." Geological Society of America Abstracts with Programs **39**(6), p. 434.
- Wilkins, N., M. DeVore, et al. (2007). "Anatomically preserved caterpillar coprolites from the middle Miocene Yakima Canyon Flora of central Washington State, USA." Geological Society of America Abstracts with Programs **39**(6), p. 402.
- Wilkins, N., J. Farmer, et al. (2005). "Exceptional paleobotanical remains preserved in Navajo Sandstone interdune deposits near Moab, Utah." Geological Society of America Abstracts with Programs **37**(7), p. 527.

CONFERENCE AND OTHER PUBLIC PRESENTATIONS

- Wilkins, Nathan D, Kathleen B. Pigg, and Jack D. Farmer. "Bennettitaleans (cycadeoids) of the Early Jurassic Navajo Sandstone." Annual meeting of the Geological Society of America, Houston, TX. 10/8/2008. *Poster presentation*
- Wilkins, Nathan D, Jack D. Farmer, and Kathleen B. Pigg. "Paleoecology of Jurassic Navajo Sandstone interdune environments: An integrated view based on sedimentology, geochemistry, and paleontology." Annual meeting of the Geological Society of America, Denver, CO. 10/30/2007. *Oral presentation*
- Wilkins, Nathan D., Melanie L. DeVore, Everette Barman, and Kathleen B. Pigg. "Anatomically preserved caterpillar coprolites from the middle Miocene Yakima Canyon flora of central Washington state, USA." Annual meeting of the Geological Society of America, Denver, CO. 10/30/2007. *Poster presentation*

- Wilkins, Nathan, Jack D. Farmer, and Kathleen B. Pigg. "Exceptional paleobotanical remains preserved in Navajo Sandstone interdune deposits near Moab, Utah." Annual meeting of the Geological Society of America, Salt Lake City, Utah. 10/19/2005. *Oral presentation*
- Wilkins, Nathan. "Desert Dinosaurs of Arizona and Utah." Earth Science Day invited lecture at Arizona State University. October 2005. *Oral presentation*

RESEARCH EXPERIENCE

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| Navajo Sandstone Interdune Paleoecology | 2002-present |
| My dissertation research was an integrative paleoecology of Jurassic Navajo Sandstone interdune Deposits near Moab, Utah. Research was focused on sedimentology, geochemistry, invertebrate paleontology, and paleobotany. Research assisted by Jack Farmer. | |
| The Search for Mesoproterozoic Meiofauna | 2005 |
| This research project was designed to search for the oldest metazoan (animal) life in the fossil record by focusing on phosphatic fossilization. Candidate locations were identified within well-constrained acritarch biostratigraphic zones. Extraction techniques were developed to maximize the effectiveness of the search. | |
| Silicified late Paleocene plants from Almont, North Dakota | 2004 |
| I have worked with Kathleen Pigg and Melonie DeVore (GC&SU) at the Almont, ND Paleocene plant locality. The Almont flora has plants with preserved anatomical structure and includes hazelnuts (coryloid Betulaceae), maples (<i>Acer</i>), dogwoods (<i>Cornus</i>) and buttercups (Ranunculaceae) | |
| Characterization of Diurnal Meiofaunal Migrations in Microbial Mat Communities, Guerrero Negro, Mexico. | 2002 |
| Research was performed to statistically measure the diurnal movements of microbial mat community members to changes in the chemocline. These communities included diatoms, sulfide tolerant nematodes, <i>Beggiotoa</i> sp. (sulfide oxidizing bacteria), and <i>Microcoleus</i> sp. (cyanobacteria). Research assisted by Jack Farmer | |
| Predator Prey Escalation in Naticid Gastropods | 1994 |
| I identified Miocene mollusc fines in a vertical section to create a database showing the affects of predation in a population over time. Further work was done to characterize and quantify Naticid drill damage. Research directed by Patricia H. Kelley. | |

RESEARCH INTERESTS

My current research interests span a wide range of topics including:

Early Jurassic Climate Oscillations

Evidence of severe climate oscillations exists within the Navajo Sandstone. These events may be linked to widespread changes in oceanic circulation recorded in marine sediments in Spain likely caused by intense volcanic degassing in the Karoo-Ferrar province of southern Africa and Antarctica (Suan et al., 2008). This hypothesis can be tested by the presence (or absence) of similar climate

oscillation evidence in the Clarens Formation of the Tuli Basin (Botswana, Zimbabwe, and South Africa) which is contemporaneous with the lower half of the Navajo Sandstone and is covered by Karoo-Ferrar flood basalts.

Techniques for estimating primary productivity in the fossil record

Existing energy flow models of the Navajo Sandstone ecosystem are based on poorly constrained levels of primary productivity that were calculated 'top-down' using fossil trackways of carnivores (Shibata et al., 2006). By linking the well established literature of below-ground primary productivity, time averaging of modern and recent root systems, and paleosols in the rock record, it should be possible to derive much more accurate representations of primary productivity in fossil environments to create more robust ecosystem models that would be applicable to any terrestrial paleoecological modeling in the fossil record.

Fossilization and taphonomy of Columbia River Basalt Group (CRBG) silicified plant fossils

There are many fossil sites within the CRBG that contain anatomically preserved fossils within a glass-like matrix that are believed to represent Miocene 'bog' deposits. It is important to understand the source and timing of silicification in these and similar deposits in the western United States.

Sedimentology and stratigraphy of Colorado Plateau ergs

Other Glen Canyon Group units also deserve further study to understand the interactions of humid and arid climate changes. For example, sand lenses and apparent interdune deposits occur within the Kayenta Formation fluvial system during oscillations of arid climates. It would be useful to understand similarities and differences between the paleoecology of these Kayenta arid environments and the interdune paleoecology of the Navajo Sandstone.

Paleogeography of the southwestern United States and its interaction with paleoclimate

Current paleoclimatic models do not fit well with paleogeography of the southwestern U.S., especially as Pangaea broke apart. In particular, the large Triassic and Jurassic ergs do not appear in the expected latitudinal desert zones. Large scale temporal paleoclimate changes in the late Paleozoic and the Mesozoic define terrestrial sedimentation on the Colorado Plateau. It should be possible to create a detailed timeline of both large and small scale climate oscillations that may be globally correlative or at least provide important input data for paleoclimate modeling.

Evolution of the earliest metazoans

Genomic clock data suggest an animal origin ranging from 700 to 1000 million years ago, yet the fossil record currently has animal origins at only 600 Ma. It is likely that the earliest animal fossils have not been found due to differences in preservation prior to the Cambrian. Understanding these taphonomic differences is key to understanding the earliest animal life.

Microbial mat communities and stromatolites in the fossil record

By understanding the nature of microbial mat recyclers, it may be possible to target specific, isolated preservation zones in Precambrian microbial mats. Stromatolites may have also harbored the meiofauna-scale multicellular animals that may have evolved initially in the oxygenic upper mat zones.

The growth and evolution of Archaean and Proterozoic biospheres

It is important to understand the transition from an early abiotic atmosphere to the oxygen rich biosphere if we are to understand the role of life in transforming planets into hospitable environments for more advanced life.

Exopaleontology of Mars

It is likely that life is common in the universe everywhere that liquid water and carbon chemistry exist. Involvement in continued robotic science missions will likely find primitive life on Mars. An understanding of life from other planets will provide deep insight into the most primitive life-forms on Earth.

SERVICE

Geology Expert, School of Life Sciences, ASU I was a geology guide for the annual 'SOLS Takes a Hike' public outreach program in 2008, 2007 and 2006.	2006-2008
Geology Expert, Agua Fria Days, Bureau of Land Management I served as a geology expert for the BLM's Agua Fria Day event in central Arizona.	2006
Diversity Facilitator, Division of Graduate Studies, ASU I conducted a diversity training session for incoming graduate teaching assistants.	2006
Immigration and Customs Enforcement Specialist, Dept of Homeland Security, Tucson, AZ I participated in an INTERPOL investigation of illegal Araucarian fossil cones confiscated from the Tucson Gem and Mineral Show	2006
Geoclub President I restarted the defunct student geoscience club at Arizona State University and was president of that club for two years.	2003-2005
Supervolcano Advanced Screening, Dept of Geological Sciences, ASU I coordinated an advanced public screening of the Discovery Channel/BBC film 'Supervolcano' that was attended by 200+ viewers.	2005
Earth Science Day, Dept of Geological Sciences, ASU I have worked at three annual Earth Science Day outreach days where approximately 1000 middle school children learn about geology.	2002-2005
Faculty Search Committee, Dept of Geological Sciences, ASU I was selected to participate in a faculty search committee (as a student representative) for the position of Sedimentologist at Arizona State University.	2005

OTHER PROFESSIONAL EXPERIENCE

Production Supervisor, Motorola RF Semiconductor Manufacturing Group, Phoenix, AZ I was responsible for managing 100 employees in a test and manufacturing semiconductor facility.	1998-2000
Production Supervisor, Motorola Computer Group, Tempe, AZ Responsible for managing a production team that operated equipment to create computer motherboards.	2000-2001
Quality Manager, Motorola Computer Group, Tempe, AZ I implemented QS9000 quality system and managed a team of inspectors and auditors to ensure that all shipped products were of the highest standard.	2001-2002
Army MOS 63B, 1-188 th Air Defense Artillery, North Dakota Army National Guard	1992-1998
Army MOS 31U, 1-180 th Field Artillery, Arizona Army National Guard From 1992-1995, I was a wheeled-vehicle mechanic for the North Dakota Army National Guard. I retrained, and became a Signal-Support System Specialist from 1996-1998 for the Arizona Army National Guard where I setup and repaired radio communications systems.	

HONORS AND AWARDS

2008 Phi Theta Kappa Student Mentor Award – Mesa Community College
Award for encouraging students to go above and beyond their academic studies and inspiring students by making a positive impact on their lives

2006 Preparing Future Faculty - Faculty Emeriti Fellow
Awarded to two students annually who have a demonstrated record of excellent research and creative activities, as well as a commitment to a career in higher education.

2006 Research Enhancement Grant from the School of Earth and Space Exploration and the Division of Graduate Studies, Arizona State University

2006 Department of Geological Sciences, ASU – Outstanding Teaching Assistant of the Year Award, Upper Division Courses

Nominated for 2005 College of Liberal Arts and Sciences Distinguished Teaching Award (TA category)

2001 Field Camp Scholarship, Dept. of Geological Sciences, ASU

Sigma Gamma Epsilon, Geoscience Honor Society member

PROFESSIONAL DEVELOPMENT

New Faculty Experience, Mesa Community College
Teaching workshops aimed at developing and improving teaching excellence.

Preparing Future Faculty Program, Arizona State University
Workshops focused on job search preparation, new faculty expectations, and understanding the roles of different university institutions.

Center for Teaching and Learning Excellence, Arizona State University
I have attended several teaching workshops, including “Responding to Writing”, “Effective Writing Assignments”, and “Preventing Plagiarism.”

PROFESSIONAL MEMBERSHIPS

Geologic Society of America (GSA)
Paleontological Society (PS)
Society of Sedimentary Geology (SEPM)
Society of Vertebrate Paleontology (SVP)
American Association of Petroleum Geology (AAPG)