

David A. McLennan

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EDUCATION

2013-2015	B.S. Earth & Environmental Sciences 2 Concentrations & Sustainability Minor [1] Geoscience [2] Atmosphere and Surface Processes	Indiana State University
Summer 2015	Geoscience Field Camp	Penn State University
2003-2005	United States Air Force	Active Duty US Air Force
1998-2002	Columbus, OH	The Ohio State University
1997-1998	Dayton, OH	Wright State University
1994-1998	Springfield, OH	Greenon High School

PROFESSIONAL EMPLOYMENT

- [Oak Ridge National Laboratory](#) – Lab Technician (May 2016 – Present)
- Paleooceanography & Biogeochemistry Laboratory (ISU) – Research/Lab Assistant (Fall 2013 – Fall 2015)
- Office of Information & Technology (ISU) - Technical Support Analyst (Fall 2013 – Fall 2015)
- Summer Undergraduate Research Experience (Summer 2014)
- Supplemental Instructor [Physics/Envi 360: Intro to Astronomy] – (Fall 2015)

INTERESTS

Planetary Geology, Oceanography, Astrobiology, Extreme Environments, Climate Change Science, Ecosystem Science, Ecophysiology, Hydrothermal Geochemistry/Ecology, Resource distributions, Stable Isotopes, Paleoclimatology, Paleooceanography, Planetary Science, Martian Hydrothermal Settings, Low Temperature Geochemistry, Aqueous Geochemistry.

ABSTRACTS AND PRESENTATIONS

Smith, Erika L., [McLennan, David A.](#), Stone, Jeffery R., Latimer, Jennifer C., (2016), Reconstructed Impacts Of Acid Mine Drainage On An Indiana Lake Using Diatom And Geochemical Sediment Records, Geological Society of America Annual Meeting, Denver, Colorado. (Poster)

[McLennan, D.](#), Smith, E, Latimer, J.C., Stone, J.R., (2016), Monitoring Increased Nutrient Loads on a Lake Acting as a Heavy Metal Reservoir, Posters on the Hill (CUR), Capitol Hill, Washington D.C.

Smith, E., Stone, J.R., [McLennan, D.](#), Latimer, J.C., (2016), Reconstructing the Impacts of Acid Mine Drainage on Nutrient Cycling in a Lake Using Diatom and Geochemical Analyses, Geological Society of America (North-Central Section Meeting), Champaign, Illinois.

[McLennan, D.](#), Smith, E, Latimer, J.C., Stone, J.R., (2015), The Potential Impact of Increased Phosphorus Loads in Lakes Acting as Heavy Metal Reservoirs: A case study from west-central Indiana, American Geophysical Fall Meeting, San Francisco.

McLennan, D., Smith, E, Latimer, J.C., Stone, J.R., (2015), Monitoring Biogeochemical Cycles In A Lake Impacted By Increasing Phosphorus And Heavy Metals, Geological Society of America Annual Meeting, Baltimore, Maryland. Oral Presentation.

Smith, E., McLennan, D., Stone, J.R., Latimer, J.C., (2015), Paleolimnology: Diatom Analysis of Reclaimed Scott Lake-Green Valley, Center for Student Research and Creativity Exposium: A Celebration of Student Research & Creativity, Indiana State University, Terre Haute, Indiana.

Smith, E., McLennan, D., Stone, J.R., Latimer, J.C., (2015), Diatom Analysis of Reclaimed Scott Lake-Green Valley, Symposium, 10th Annual SURE Symposium, Poster Presentation.

McLennan, D., Williams, T.M., Latimer, Jennifer C., Stone, J.R., Brake, S.S., (2015), Investigating The Effects Of Ongoing Acid Mine Drainage On Lake Nutrient And Metal Cycling In The Green Valley Public Fishing Area, National Conference on Undergraduate Research, Spokane, Washington.

McLennan, D., William T.M., Latimer J.C., Stone, J.R., (2015), Highlighting Undergraduate Student Research, Center for Student Research and Creativity Exposium: A Celebration of Student Research & Creativity, Indiana State University, Terre Haute, Indiana.

McLennan, D., William T.M., Latimer J.C., Stone, J.R., Brake, S.S., (2015), Monitoring Heavy Metals and Phosphorus in Green Valley State Fishing Area, American Democracy Project – Greening the Capitol: ISU Day at the State House, Indianapolis, Indiana. **INVITED**.

Latimer, J.C., McLennan, D., Stone, J.R., Memmer, E., Foster, J., Hardin, K.J., Nickerson, Z., Portwood, C.A., **Williams, T., (2014), Short sediment cores as archives of urban pollution, American Geophysical Union Fall Meeting, San Francisco.

McLennan, D., Latimer, J.C., Williams, T., Brown, S.R., Stone, J.R., McCune, A., (2014), Phosphorus fluxes in the Beartooth Mountains: A record of P geochemistry from Island Lake, American Geophysical Fall Meeting, San Francisco.

Brown, S., Stone, J.R., McLennan, D., Williams, T., Latimer, J.C., (2014), Holocene climate and stratification of Island Lake, Wyoming, Geological Society of America Annual Meeting, Vancouver, British Columbia.

McLennan, D., Latimer, J.C., 2014, 31 Ma record of phosphorus burial and diagenesis from metalliferous sediments recovered from the South Pacific Ocean, Geological Society of America Annual Meeting, Vancouver, British Columbia, **INVITED**.

Williams TM, McLennan, DA, Latimer, J.C., Stone J.R. (2014), Anthropogenic Impacts Recorded in Lacustrine Environments: Examples from Green Valley Lake and Goose Pond Mid-America Prosperity and Security Conference, Terre Haute, IN. Poster Presentation.

McLennan, D., Williams, T.M., Latimer, J.C., 2014, 31 Ma record of phosphorus burial and diagenesis from metalliferous sediments recovered from the South Pacific Ocean, 9th Annual SURE Symposium, Poster Presentation.

Williams T.M., McLennan, DA, Latimer, J.C., Stone J.R. (2014), Anthropogenic Impacts Recorded in Lacustrine Environments: Examples from Green Valley Lake and Goose Pond, Symposium, 9th Annual SURE Symposium, Poster Presentation.

RESEARCH EXPERIENCE

Equipment: Hand-held Thermo Scientific Niton® XL3 Series XRF analyzer, Shimadzu UV-Vis Spectrophotometer, ThermoScientific Spectronic 20D+, Muffle Furnace, Standard equipment for sample analysis (centrifuge, analytical balances, convection ovens, pH meter, etc.), Millipore Milli-Q water purification system, Geno/Grinder, Fume and Laminar flow hoods, soil/sediment/water sampling equipment, Livingstone/Bolivia and Griffith sediment corers, HTH surface sediment corer, 5m² portable modular coring platform, YSI multiparameter instrument for analyzing (Salinity, DO, pH, ORP, Ammonium, Nitrate, Chloride, Temperature, etc.), Digital depth finder, Secchi disk, 2.2 liter vertical beta water sampler, 3-person inflatable Zodiac boat, Flowatch digital current/air velocity meters, Petrographic microscopes, Olympus transmitted light microscopes (100 - 1000x), Large diameter rock cutting saws, and Grinding wheels, Constant head & Falling head permeameters, Stream tables, LICOR-6400XT, Li-COR 6800, Greenhouse/headhouse, Costech Elemental Combustion System, BDW80 Walk in Growth Chamber & BDW80 Extreme Temperature Growth Chamber, Conviron CMP6050 & CMP4060 Control Systems, Model 610 Pressure Chamber, LI-6252 CO₂ Analyzer, SpectraMax Plus 384 Microplate Reader, High Flux Isotope Reactor - Cold Neutron Imaging Beam Line CG-ID,

PC: ArcGIS, SigmaPlot, C2, R, MS Office., WinRHIZO, LI6400 Software, Google Earth,

Experience: Cold Neutron Imaging ([HFIR](#)), Liquid Nitrogen Handling & Use, Soil & Sediment Sampling, Loss on Ignition (LOI), Sequential Phosphorus Extractions (SEDEX & Schenau), Total Phosphorus Digestion, Lake and Wetland Sample Collection, Potassium Chloride Extraction of Ion-Exchange Resins, Non Structural Carbohydrate Analysis, Leaf Water Potential, Fluorometric Measurement of Potential Soil Extracellular Enzyme Activities, Dimethyl-sulfoxide Chlorophyll and Carotenoids Extraction for Spectral Analysis, Plant Gas Exchange Field Sampling ([SPRUCE](#)), Leaf Disk Heat Sensitivity Assays (Chlorophyll a Fluorescence OKJIP),

Oak Ridge National Laboratory – Climate Change Science Institute (CCSI)

- As a Member of the Integrative Ecosystems Science group: provide ecophysiological field and laboratory support focused on the response of terrestrial ecosystems to climate change, including elevated atmospheric CO₂, increased temperature and shifts in precipitation patterns.
- Primary duties focus on direct measurements of mechanistic plant responses including foliar and woody gas exchange (photosynthesis and respiration), phenology, chemistry, anatomy and water relations. Travel to N. Minnesota for 1-2 week long measurement campaigns at our flagship experiment '[Spruce and Peatland Responses Under Climatic and Environmental Change](#)' ([SPRUCE](#)) & support other projects within the group as needed, including the Next Generation Ecosystem Experiments ([NGEE Arctic](#); [NGEE Tropics](#)) and The Impact of Extreme Weather Events on Plant Species, Competition, and Ecological Function.
- Experience with ecophysiology techniques and equipment, including use of the Li-COR 6400 and LiCOR 6800 photosynthesis and fluorescence systems, Picarro isotope analyzers, Scholander pressure chamber (leaf water potential), soil moisture sensors, sap flow sensors, Campbell dataloggers, pressure-volume curves, tissue sectioning and mounting, wet-chemistry lab techniques, and general lab experience. Written and oral communication skills, able to troubleshoot problems with equipment & some data processing and analysis

Office of Information Technology Student Admin (Indiana State)

- Provide training to faculty and students on the use of Blackboard, Tegrity, Turnitin, Collaborate, Respondus, and other instructional software. Implement thorough testing of instructional software in preparation for yearly upgrades. Test, research, and troubleshoot problems with software and other technology. Train and mentor new technicians in problem solving and office procedures including customer service, phone etiquette, procedures, etc. Collaborate with ISU Computer Programmers to implement testing and new features. Attend staff meetings when required

Supplemental Instructor (ISU)

- Intimately familiar with the content and learning objectives. Conduct study sessions/seminars in which students compare notes, discuss readings, develop organizational tools and predict test items. Employ interactive study techniques and a variety of learning strategies in sessions.

RELATED COURSEWORK

<p>Intro to Environmental Science Physical Geology General Astronomy Oceanography Environmental Geology Environmental Ethics Paleoecology Seminar - Extreme Aquatic Environments Seminar - Paleooceanography Structural Geology Lakes and Wetlands Process Geomorphology Geoscience Field Camp (Penn State) Sustainable Development (H)</p>	<p>Historical Geology Weather and Climate Quaternary Environments Intro to Hydrology Conservation and Sustainability Mineralogy Sedimentary and Stratigraphy Seminar - Early Life (Observer) Global Biogeochemical Cycles Igneous and Metamorphic Petrology Intro to Field Geology ISU Seminar Lecture Series (Multiple) Groundwater Hydrology (G) Remote Sensing / GIS: Comprehensive (G)</p>
<p>GSA 2015 – Short Course 502: Sequence Stratigraphy for Graduate Students</p> <p>LI-COR: LI-6400XT Training Course (LiCOR Biogeosciences)</p>	<p>ESRI Web Course – Building Models for GIS Analysis Using ArcGIS</p> <p>FERPA for Higher Education</p>

G = graduate course; H = Honors Course

GRANTS & AWARDS

McBeth Talisman (Spring 2014)
 Summer Undergraduate Research Experience Full Time Scholarship (2014), \$3,500
 On To the Future (OTF) scholarship - 2014 Annual GSA Meeting (Vancouver, BC, Canada), \$275
 Center for Student Research and Creativity, \$500 (2013-2014), \$500 (2014-2015)
 Department of Earth and Environmental Systems Travel Grants (2014 & 2015)
 GSA (2) - \$600
 Center for Student Research and Creativity Travel Grants
 GSA (2)- \$1030
 AGU (2)- \$495
 Indiana State University College of Arts and Sciences Travel Grants (2014 & 2015)
 AGU (2) - \$600
 Center for Student Research and Creativity Grant
 National Conference for Undergraduate Research (2015) – Full Funding
 ISU at the Capitol (2015) – Full Funding
 Posters on the Hill (D.C.) *Honorarium* (2016) - \$1000
 Geology Field Camp Scholarship (2015), \$500
 Jerry and Joan Reel Scholarship (2015), \$1000
 Dwaine and Martha Woolsey - Charles and Phyllis Campbell Memorial Scholarship (2015), \$500
 Council on Undergraduate Research (CUR): [GeoCUR Award](#) for Excellence in Undergraduate Student Research (2015)
 ISU - Earth and Environmental Systems: Outstanding Undergraduate Research Award (2015)
 GSA North-Central Section Student Travel Grant (2015), \$100
GSA/ExxonMobil Bighorn Basin Field [Award](#) (August 2015)
 Posters on the Hill (CUR) *Honorarium* (2016) - \$1000

ACADEMIC HONORS

Dean's List (4.0) [Fall 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015] – All 5 Semesters at ISU

RESEARCH METHODOLOGY

- I am passionately curious -

FIELD OPERATIONS (Oak Ridge National Laboratory)

Spruce and Peatland Responses Under Climatic and Environmental Change [SPRUCE]
(Marcell Experimental Forest, MN)
- 2016: August [15-19], October [3-7]

FIELD EXCURSIONS

GSA/ExxonMobil Bighorn Basin (2–9 August 2015)
Geoscience Field Camp (Penn State; May 28, 2015 – July 12, 2015)
Allegheny County Soil Sampling (Spring 2016)
Wabashiki Wetland Terrestrial Soil Sample Collection (Fall 2013 & 2015, Spring 2015)
Vigo County / Terre Haute Soil Sample Collection (Summer & Fall 2013 & Spring 2015)
Walnut Creek data collection in order to conduct a stream flow analysis (Spring 2014)
Stream ecology assessment at East Fork Big Creek (Spring 2014)
Ordovician to Silurian paleontological outcrop investigation of fossils near Madison, IN (Spring 2014)
Geode extraction & Identification in shale & limestone outcrops near Bloomington, IN (Spring 2014)
Quaternary glacial landform investigations in Illinois and Indiana (Spring 2014)
Maple Pond, Goose Pond, & Green Valley Lake water & sediment core sampling (Summer 2014)
Sedimentary Paleo Environment Investigation at Indiana Dunes, IN (Fall 2014)
Sedimentary Paleo Environment Investigation at Shades State Park, IN (Fall 2014)
Sedimentary Paleo Environment Investigation at Sulfur, IN (Fall 2014)
Rock cutting, polishing, and petrographic slide creation (Fall 2014)
Kentland, IN Meteor Crater Field Trip with AIPG Illinois-Indiana Chapter (Fall 2014)
Wabash River & Maple Pond – Limnology Field Equipment Intro (Summer 2014 & Spring 2015)
Dobbs Park Frozen Lake Limnology Sampling (Spring 2015)
Core Logging – Cloverdale Core (Spring 2015)
Theodolite Surveying Introduction (Spring 2015)
Orienteering Field Exercise (Spring 2015)
Gravity Coring and Limnological sampling at Maple Pond (Spring 2015)
Geologic Mapping Field Experience – Paradox Valley Salt Anticline (Utah) (Spring 2015)
Arches National Park Field Excursion (Utah) (Spring 2015)
Mesalands College Dinosaur Museum and Natural Science Laboratory Visit (New Mexico) (Spring 2015)
Petrogenetic evaluation of the St Francois Caldera Complex (Mo) (Spring 2015)
Economic Geology - Gordonsville Zinc Mine (TN) (Spring 2015)
Limnology Coring and Lake Sampling – Jimmerson Lake (Spring 2015)
Proposed ISU Eco-Village Property Ground Assessment (Fall 2015)
ISU Campus Sustainability Walking Tour (Fall 2015)
Aquaponics Introduction (Greener Scenes Aquaponics) (Fall 2015)
ISU – RoseHulman Eco-Village Collaborative Meeting (Fall 2015)

Community Service and Selected Synergistic Activities

Geode Collection for Earth Day Give Away (Spring 2014)
Institute of Community and Sustainability – Community Gardens: Site maintenance including pathway mulching, soil and compost addition to plots, creation of a community strawberry patch, and assisting gardeners with plot maintenance. (Spring 2014)
Earth Day (Indiana State University): Communication regarding the Department of Earth and Environmental Systems, Geode giveaway, plaster fossil creation and fossil dig for kids, and coloring and painting of discovered fossils. (Spring 2014)
Earth Day Vigo County Library: Set up of events and equipment, litter and recycling hands on kids table, and bubble station (Spring 2014)
Lead(Pb) testing in Terre Haute yards: Community Outreach & Education. (Summer 2015 – Fall 2015)
Earth Science Club Member (Spring 2014 – Fall 2015)
Authorized Driver for Field Trips & Class Exercises (12 Passenger Van) (Spring 2015 – Fall 2015)
TuBiShevat Gardening Resource Fair – Safe Urban Gardening and Pb Initiative Volunteer (Spring 2015)
Mentor new student lab workers (Summer 2014 – Fall 2015)
Wabashiki Wetland Assistant (Fall 2015)
Geological Society of America Student Volunteer (15 hours), Baltimore MD (2015)
American Geophysical Union Student Volunteer (8 Hours; Press Room), (Fall Meeting, 2015)
Eco Village Soil Sampling Prep & Analysis (Fall 2015)
Indiana State University Democracy Project –RIFRA- (Spring 2015)

Oak Ridge National Lab Seminars Attended

A gradient of nutrient enrichment reveals contrasting non-linear impacts of nutrient addition on Arctic plant diversity and ecosystem function (Case M. Prager)
New Insights on Territoriality of Fine Roots (Caroline Farrior)
A Comprehensive Framework for Modeling Emissions from Tropical Soils and Wetland (Melanie Mayes, Environmental Sciences Division)
Host genetic features mediating symbiotic plant-microbe interactions in the bioenergy crop Salix (Wellington Muchero, Biosciences Division)
Linking Climate Vulnerability and Urban Environment (Binita KC)
Evaluating the Uncertainties in Hydrologic Response under Changing Climate through the Choice of Different Hydrologic Models [BrownBag Presentation] (Sudershan Gangrade)
Analysis, Management, and Visualization of geospatial and time-series data: Research using MODIS Subsetting Tools (Makhan Viridi)
NGEE Arctic Presentation (Stan Wullschleger)
Overview: USDA Forest Service Marcell Experimental Forest (MEF) & Spruce and Peatland Responses Under Climatic and Environmental Changes [SPRUCE] (Randy Kolka)
Climate Change and Peatland Mercury Cycling (Carl Mitchell)
¹³C PLFA, S Isotopes, S Reduction Assay at SPRUCE (Jessica Gutknecht)
The Effect of Climate Change on Coupled Biogeochemistry of Sulfur and Mercury in Organic Soils (Brandy Toner)
Multi-scale analysis of relationships between solar induced chlorophyll fluorescence and terrestrial gross primary productivity (Jeff Wood)
Modeling Urban Environmental Risks Under Future Climate Change (Fei Chen)
A New Hybrid-technique to Estimate PBL-depths Using the SURF-2015 Doppler Lidar for Beijing (Meng Huang)
Sustainable Energy Transitions (Charles O. Holliday)
Are Longitudinal Patterns of Bacterial Community Composition and Dissolved Organic Matter Composition Linked Across a River Continuum? (Jennifer Mosher)

Oak Ridge National Lab Workshops Attended

- Workshop on Human Activity at Scale in Earth Systems Models

Oak Ridge National Lab Training

- Radiological Worker HFIR and SNS
- Basic Radiological Worker Training
- Scientific Laboratory Access Training for Neutron Sciences Users
- Heat Stress Training
- Local Building Emergency Squad Training