

Montana Tech Library

## Digital Commons @ Montana Tech

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National Lab Day

Lectures

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10-8-2019

### UM-Missoula

Scott L. Whittenburg

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# UM - Missoula



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# Demographics

<b>Students</b>	<b>Faculty</b>
Fall 2019 10,487 Total 2,773 Graduate/Professional 1,393 Missoula College	FY18 728 Total 521 Full-Time 207 Part-Time



## College of Humanities and Sciences

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- [African-American Studies](#)
- [Anthropology](#)
- [Biochemistry](#)
- [Biological Sciences](#)
- [Chemistry and Biochemistry](#)
- [Communication Studies](#)
- [Computer Science](#)
- [Economics](#)
- [English](#)
- [Environmental Studies](#)
- [Geosciences](#)
- [History](#)
- [Latin American Studies](#)
- [Linguistics](#)
- [Mathematical Sciences](#)
- [Military Science](#)
- [Native American Studies](#)
- [Philosophy](#)
- [Physics and Astronomy](#)
- [Political Science](#)
- [Psychology](#)
- [Sociology](#)
- [Women's, Gender, and Sexuality Studies](#)
- [World Languages and Cultures](#)

## College of Business

## Alexander Blewett III School of Law

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## Phyllis J. Washington College of Education

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- [Counseling](#)
- [Teaching & Learning](#)
- [Educational Leadership](#)

## W.A. Franke College of Forestry and Conservation

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- [Ecosystem and Conservation Sciences](#)
- [Forest Management](#)
- [Geography](#)
- [Resource Conservation](#)
- [Society and Conservation](#)
- [Wildlife Biology](#)

## College of Health Professions and Biomedical Sciences

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- [Family Medicine Residency of Western Montana](#)
- [Integrative Physiology and Athletic Training](#)
- [Pharmacy](#)
  - [Biomedical & Pharmaceutical Sciences](#)
  - [Pharmacy Practice](#)
- [Physical Therapy and Rehabilitation Science](#)
- [Public and Community Health Sciences](#)
- [Social Work](#)
- [Speech, Language, Hearing, and Occupational Sciences](#)

## College of the Arts and Media

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UNIVERSITY OF MONTANA

# Research by the Numbers

UM research highlights for  
fiscal year 2019 include:

TOTAL NUMBER OF  
PUBLICATIONS BY  
UM RESEARCHERS:

**801**

NUMBER OF  
PROPOSALS SUBMITTED:

**621**

TOTAL GRANT DOLLARS AWARDED:

**\$92 million**

TOTAL GRANT DOLLARS SPENT:

**\$84.8 million**

UM research and scholarship positively impacts our health, environment and economy. Through grants and contracts awarded to UM in fiscal year 2019, faculty members are developing a better influenza vaccine, researching and educating Montanans about our state's precious water resources, and nurturing a vibrant bioscience workforce in Montana, among many other highlights. The strength of UM research is reflected in nearly record-high grant volume and expenditures, faculty members publishing high-quality and highly cited research findings, and student and faculty success pursuing highly competitive research fellowships.

NUMBER OF ARTICLES  
BY UM FACULTY  
PUBLISHED IN THE  
WORLD'S TOP THREE

**GENERAL  
SCIENCE  
JOURNALS**  
IN 2017-18:

**28**

The highest number for  
any Montana and Big Sky  
Conference university

NUMBER OF  
UM STUDENTS  
AWARDED  
FULBRIGHTS  
FOR RESEARCH OR  
ENGLISH TEACHING

**6**

NUMBER OF  
2019 WESTERN  
MONTANA  
FAMILY  
MEDICINE  
RESIDENCY  
PROGRAM

**10**

7 of whom plan  
to continue  
practicing in

# Centers and Institutes

## 45 Centers/Institutes

Bureau of Business and Economic Research (1948)

Center for Environmental Health Sciences (2000)

Center for Integrated Research on the Environment (2015)

Mountain Water Institute (2019)

Center for Natural Resources and Environmental Policy (1987)

## NATURAL RESOURCES AND ENERGY



BBER's new Natural Resources and Energy Research Program. Measuring the impact of oil, natural gas, coal, renewables, minerals, and alternative energy in Montana. We provide impact analysis, feasibility studies, regional forecasting, market research and more.

**NEWS:** MONTANA ECONOMIC MINUTE | NEW ENERGY REPORT | LATEST MBQ

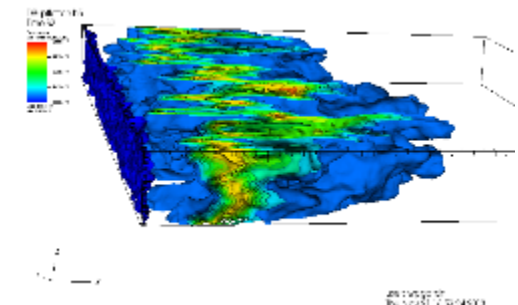
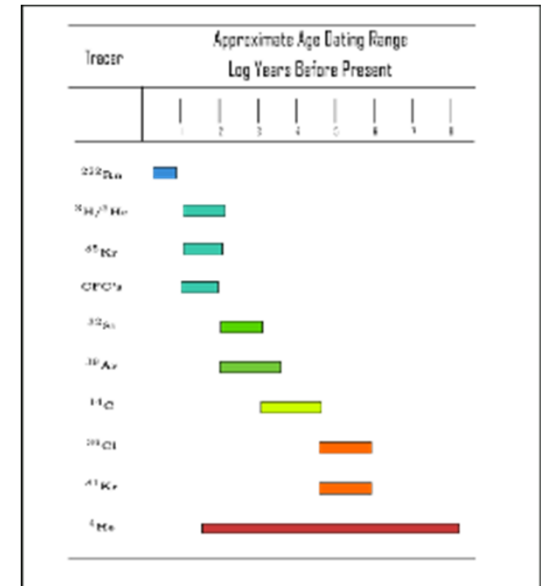
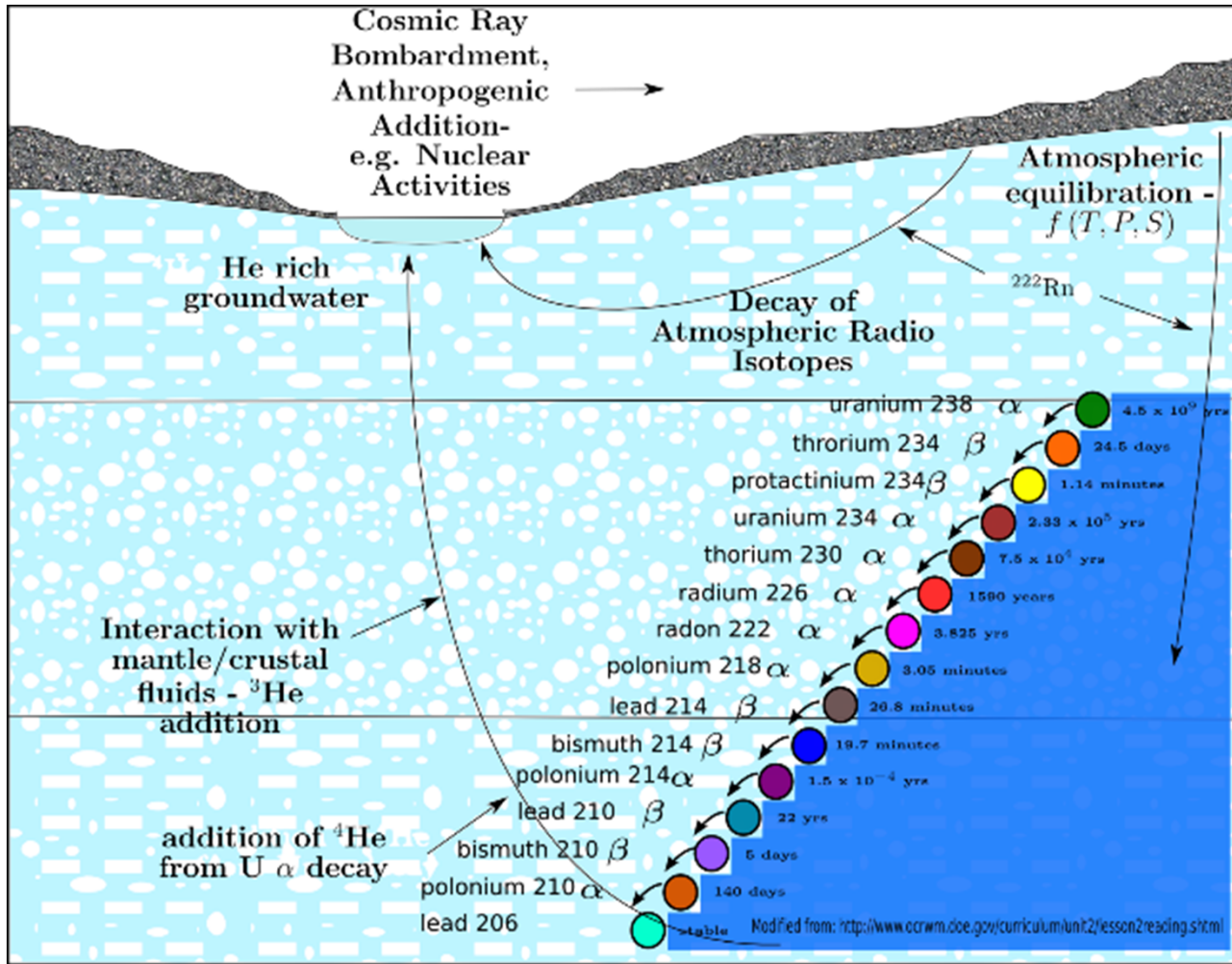
# Instrument CORES

- [Biospectroscopy Core Research Facility](#)
- [Core Laboratory in Neuromolecular Production](#)
- [Earth Materials Instrumentation Facility](#)
- [EMtrix Electron Microscope Facility](#)
- [Environmental Biogeochemistry Laboratory](#)
- [Fluorescence Cytometry Core](#)
- [Freshwater Research Laboratory \(FRL\)](#)
- [Inhalation & Pulmonary Physiology Core](#)
- [Macromolecular X-Ray Diffraction Facility](#)
- [Mass Spectrometry Core Facility](#)
- [Molecular Computational Core Facility](#)
- [Molecular Histology & Fluorescence Imaging Core](#)
- [Murdock DNA Sequencing Facility/Genomics Core](#)
- [Nuclear Magnetic Resonance Facility](#)
- [Statistics and Applied Mathematics Core \(SAMC\)](#)



# Groundwater characterization - isotope hydrology

Payton Gardner, Geosciences



# Applied Remote Sensing – Spatial Analysis Lab

Jessica Mitchell, MNHP

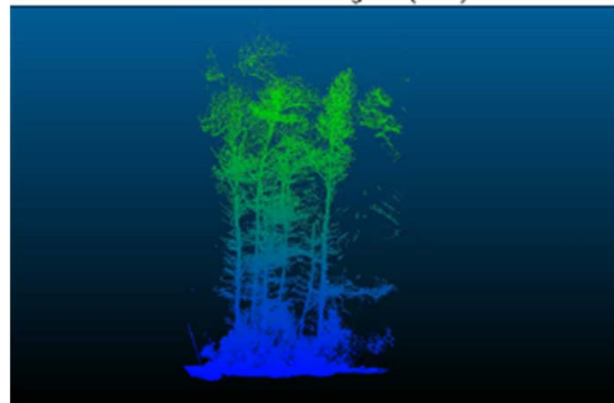
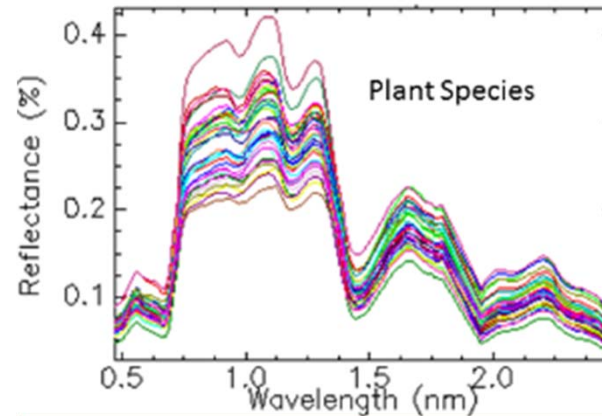
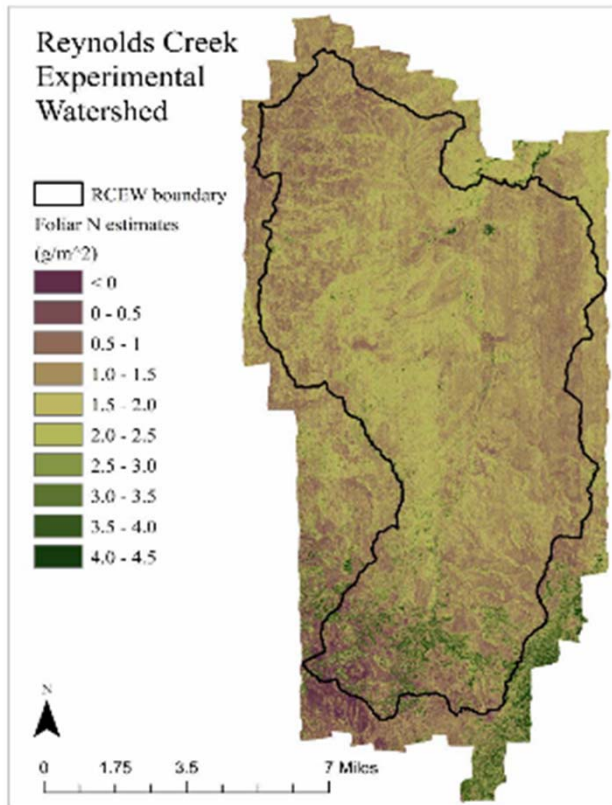
Vegetation Spectroscopy & Lidar Scaling

sensor detection limits

Training and Student Opportunities

## Applications

- Biomass and agriculture
  - productivity, quality
- Water provisioning
- Natural hazards and disasters
- Resiliency in complex systems
- Carbon Cycle Modeling
- Large dataset workflows



# Critical Materials

Cody Youngbull, FLBS

The University of Montana (UM) Flathead Lake Biological Station (FLBS) has been developing medical, industrial, and environmental applications for rare-earth optical nanomaterials. In particular the use of Erbium, Gadolinium, Ytterbium, and Yttrium in optical upconverting nanocrystals (UNCs) have been recognized for their benefit in the following areas: ultra-trace chemical and biological sensors, transdermal photoactivated medicine and wound care, anti-counterfeiting and supply chain tracking, high-energy dispersed tangents, rapid bulk cure resins and optically cured adhesives, surface, air and water decontamination, and efficiency enhanced solar cells.

