

## Geology 101

- *Class Hours:* MW 1:00-2:15
- *Office:* MH 460, Phone (657) 278-7514
- *email:* wlaton@fullerton.edu
- *Office Hours:* MW 11:00-1:00 pm; W 2:30 to 6:00 pm
- *Textbook:* Reynolds, Johnson, Kelly, Morin and Carter. "Exploring Geology" 4rd Edition or 5th Edition

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## W. Richard Laton, PhD, PG, CHG

- Hydrogeologist
- See Titanium for office hours and announcements



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## What do geologists do?

- Search for energy resources
- Search for mineral resources
- Building/Construction
- Find clean water and cleanup contaminated water
- Research
- Drink BEER!



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## Energy Resources

- Oil, Natural Gas  
Coal and  
Geothermal Energy
- Geologists are  
involved in exploring  
by mapping, drilling  
and seismic  
techniques.



The Geysers geothermal energy field in Santa Rosa, California.

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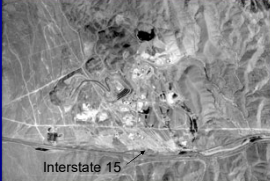
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## Mineral Resources



- Most materials that we use are extracted from the Earth through mining –
- Iron ore, copper, gold, diamonds, gravel, etc.
- Geologists identify areas where these deposits are found and then plan and assist with production.

Open pit mine at Mountain Pass, California where rare earth elements used in light bulbs, flat screen TVs and magnets.

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## Build



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- In California and many other areas, geologists are inspect and approve building sites and monitor construction for homes, repair landslides, dams and every other type of building.

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## Water



- Water is our most valuable resource. Plentiful, clean water is limited.
- Geologists explore for water, much like exploring for oil.
- Geologists also lead the work to cleanup contaminated water.



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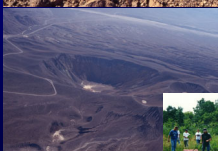
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## Research



- Geologists study
  - Global warming
  - Earthquake hazards
  - Flood hazards
  - Water Resources
  - Environmental Contamination
  - Volcanoes
  - Archeology
  - Other worlds



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## But I want to get rich!

- Typical starting salary for geologist in Southern California (BS only): **\$60,000+**
- BS/MS + 5 years experience: **\$100,000+**
- Geologists are Registered Professionals in CA



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## What do I get with a geology degree?

- With a B.S. in geology you are trained to begin work as a professional geologist.
- Lots of time outside the classroom and camping.
- Can be outside when you want and inside the rest of the time.
- Jobs
  - Corporate (oil mining, environmental, engineering)
  - Nonprofit (environmental, planning, educational)
  - Government (local and regional planning, state and Federal environmental regulation and protection (D.E.P. and E.P.A.), geological engineering (P.E.G.C.E.), state geological surveys, U.S. Geological Survey, National Park Service, state parks, E.P.A.)
  - Secondary education (Earth sciences)
  - Academic (community college, college, and university)



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## Possible Titles

• Geologist	• Hydrogeologist
• Economic Geologist	• Hydrologist
• Petroleum Geologist	• Geophysicist
• Engineering Geologist	• Volcanology
• Paleontologist	• Seismology
• Environmental Geologist	• Education
• Oceanography	• Law
• Geochemistry	• Structural
• Geotechnical	• Paleoclimatology
• Remote Sensing	• Petrology
• Geomorphology	• Mineralogist

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### Examples of famous geologists




Geologist  
Dr. Bert  
Kibbler




Geologist  
Harry Dalton




Geologist  
and artist  
Leonardo  
da Vinci




Geologist  
and  
Secretary  
of State  
Colin  
Powell



Geologist  
and U S  
President  
Herbert  
Hoover



Geologist  
and Apollo  
astronaut  
Harrison  
Schmidt



Paleontologist  
Ross Geller

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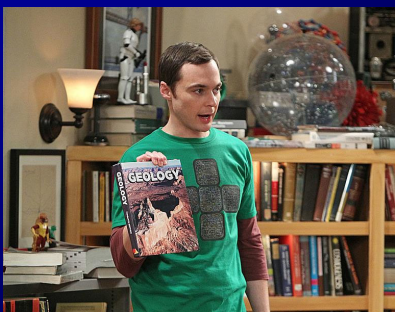
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### Even Physicists want to be Geologists




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### Atlas of a Geologist's Brain



Is that a rock?

Has anyone seen my rocks?

Hope I get a New rock hammer For Christmas


Greedy, a new rock Book!

I need a new rock

Oh Look, a rock!

Rock on!

Oh man, look at That beautiful Rock!



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## Scientific Process

- All geologists use the Scientific Process
  - Hypothesis
  - Observation or Experiment to test hypothesis
  - Conclusion
  - Conclusions confirmed many times over elevates the concept to **Theory**.
    - Theory of plate tectonics in geology.
    - This is not an idea, like we use it in every day conversation, but something with little doubt.
  - If a Theory is never refuted, it is elevated to a **Law**.
    - Law of Gravity in physics.

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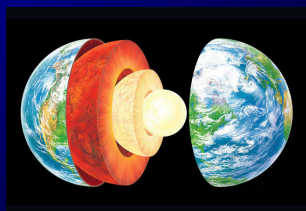
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## Geology Today

- The Earth is a system that includes:
  - Lithosphere
  - Biosphere
  - Hydrosphere
  - Atmosphere



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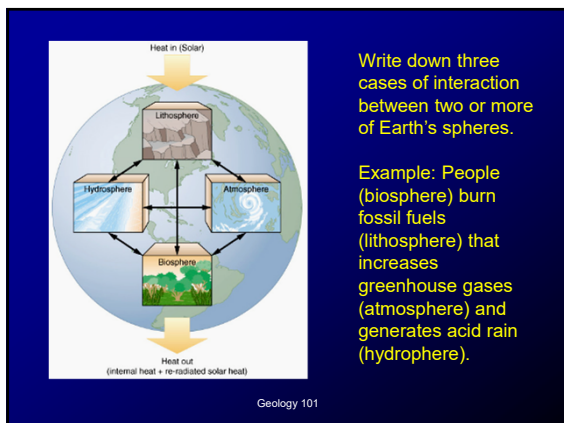
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## How Geologists think

- Geology has become process oriented.
- Uniformitarianism
  - Hutton thought that the present is the key to the past.
- Geologists examine extremely long periods of time.
  - Earth is 4.55 billion years old.
  - The dinosaurs died 65 million years ago.
  - Humans appeared 3 million years ago.

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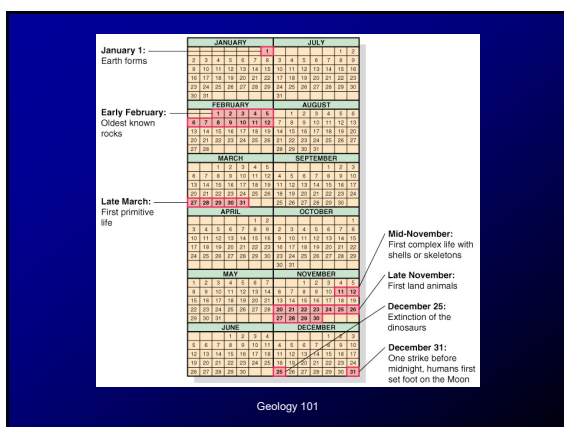
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•Sign up for Titanium



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*Freshman Pathway - Sustainability*

- Series of classes that contain topics on Sustainability
- Group of Students with similar interests




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