













## Why did I become a geologist ?

### Curiosity...

- How do mountains and basins form ?
- Why do we have different landforms and rocks ?
- What are the processes that make rocks ?

Cool...being a geologist seemed like it would be a great combination of science and adventure

Color-blind...I could not be a commercial pilot !



EXIT

































# Shaping the future of energy

Earth Science Capital Day  
October 19, 2018







### Key figures



  
**208 million**  
Barrels of oil equivalent per day in 2017

  
**19 billion**  
Barrels of oil equivalent in resources

  
**22 000**  
Employees world wide

  
more than **35%**  
of oil and gas equity production took place outside Norway in 2017

  
**2<sup>nd</sup>**  
Second biggest gas producer in Europe

Generating offshore wind business supplying more than  
**650 000**  
UK homes 













A woman with dark curly hair, wearing a dark blue long-sleeved polo shirt and red pants, stands on a stage. She is facing left, looking towards a large projection screen. The screen displays the text "Science and YOU!" in red. A black podium is in the foreground on the right. The background is a light-colored wall.

Science and YOU!





































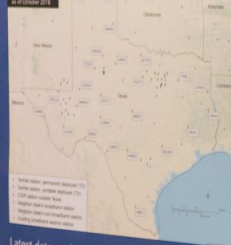




## TexNet CISR

### MONITORING AND RESEARCHING EARTHQUAKE ACTIVITY IN TEXAS

Seismic Stations  
as of October 2018



Latest data can be viewed at  
[beg.utexas.edu/texnet-cisr](http://beg.utexas.edu/texnet-cisr)



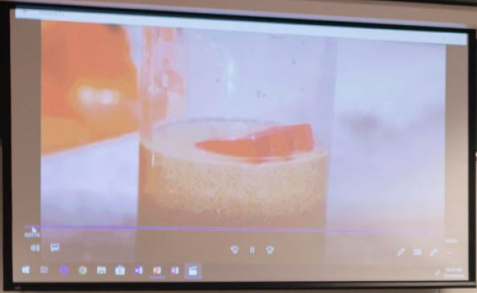
Funded by the State of Texas, the **TexNet Seismic Monitoring Program** operates and maintains Texas' statewide network of earthquake monitoring stations, gathering and interpreting vital seismic data. **Center for Integrated Seismicity Research on CISR** advances research the geologic and seismic data obtained by TexNet, TexNet and CISR work together toward determining the causes of earthquakes in Texas to lessen any future impact from these events to citizens and property.

#### RESEARCH GOALS AND THEMES

- Earthquake detection and cataloging
- Earthquake data dissemination
- Improvement of accurate understanding
- Classification of risk and hazard
- Development of mitigation strategies
- Improvements to protocols
- Broad fast based communication

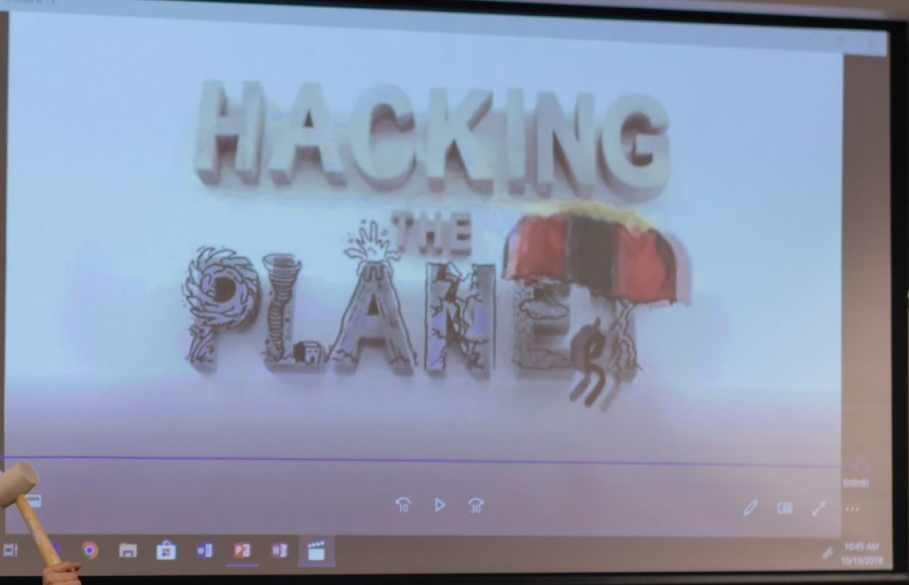


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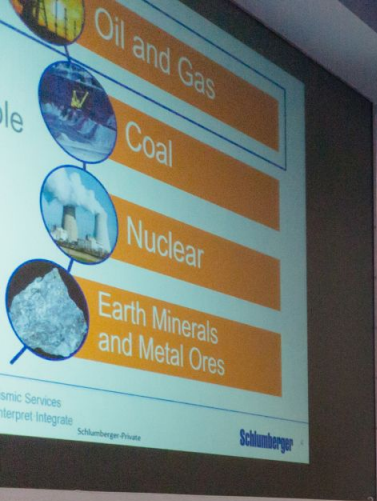






Big Tex Auditorium  
1.102





A presentation slide from Schlumberger, featuring a vertical list of four energy and resource categories, each with a corresponding circular image: Oil and Gas (oil rig), Coal (coal pile), Nuclear (nuclear power plant), and Earth Minerals and Metal Ores (rock sample). The slide also includes the Schlumberger logo and the tagline "Seismic Services Interpret Integrate" at the bottom.

Oil and Gas

Coal

Nuclear

Earth Minerals and Metal Ores

Seismic Services  
Interpret Integrate

Schlumberger





















| GROUND WATER                       | SURFACE WATER                                    | HYDROLOGIC GEOGRAPHY | HYDROLOGIC CYCLE/ WATER USE | GENERAL HYDROLOGY                        |
|------------------------------------|--------------------------------------------------|----------------------|-----------------------------|------------------------------------------|
| WATER IN THE GROUND IS CALLED THIS | WATER ON THE SURFACE OF THE EARTH IS CALLED THIS | 1 CUP                | 1 CUP                       | THIS IS THE BASIC PRINCIPLE OF WATER USE |
| 2 CUPS                             | 2 CUPS                                           | 2 CUPS               | 2 CUPS                      | 2 CUPS                                   |
| 3 CUPS                             | 3 CUPS                                           | 3 CUPS               | 3 CUPS                      | 3 CUPS                                   |
| 4 CUPS                             | 4 CUPS                                           | 4 CUPS               | 4 CUPS                      | 4 CUPS                                   |
| 5 CUPS                             | 5 CUPS                                           | 5 CUPS               | 5 CUPS                      | 5 CUPS                                   |







# What is a Meteorologist?

- A Person.. With Science Studies the Atmosphere Forecasts How the Atmosphere Change over Time
- Weather Forecasting Science!!!

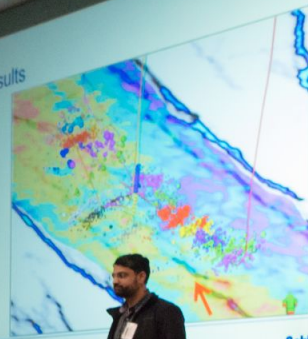








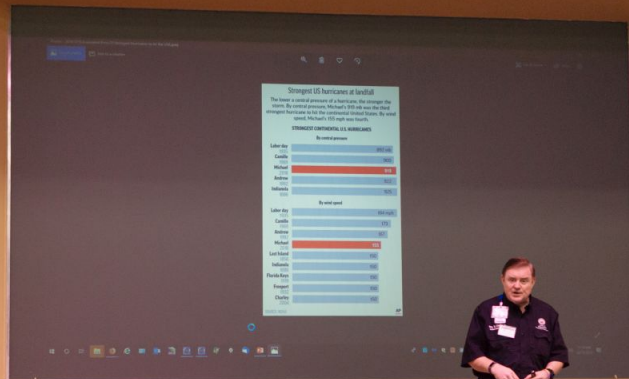
## Results



Microseismic, Seismic  
Image Interpretation

Schlumberger





EXIT









## Geophysics

For example:  
• Sound waves used to map the seafloor



Schlumberger















































...It has to be  
mined!









THE UNIVERSITY OF  
**JACKSON**  
SCHOOL OF GEOSCIENCES

### Tools of the trade



Hammer and Chisel

Notebook

Hat, Sun Screen, Camera



Microscope

le

|     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  |
| Li  | Be  | B   | C   | N   | O   | F   | Ne  | Na  | Mg  | Al  | Si  |
| K   | Ca  | Sc  | Ti  | V   | Cr  | Mn  | Fe  | Co  | Ni  | Cu  | Zn  |
| Rb  | Sr  | Y   | Zr  | Nb  | Mo  | Tc  | Ru  | Rh  | Pd  | Ag  | Cd  |
| Cs  | Ba  | La  | Hf  | Ta  | W   | Re  | Os  | Ir  | Pt  | Au  | Hg  |
| Fr  | Ra  | Ac  | Th  | Pa  | U   | Np  | Pu  | Am  | Cm  | Bk  | Cf  |
| 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |
| Al  | Si  | P   | S   | Cl  | Ar  | K   | Ca  | Sc  | Ti  | V   | Cr  |
| Ga  | Ge  | As  | Se  | Br  | Kr  | Rb  | Sr  | Y   | Zr  | Nb  | Mo  |
| In  | Sn  | Sb  | Te  | I   | Xe  | Ba  | La  | Ce  | Pr  | Nd  | Pm  |
| Tl  | Pb  | Bi  | Po  | At  | Rn  | Ra  | Ac  | Th  | Pa  | U   | Np  |
| 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  | 89  | 90  | 91  | 92  |
| Tl  | Pb  | Bi  | Po  | At  | Rn  | Fr  | Ra  | Ac  | Th  | Pa  | U   |
| 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 |
| Uue | Uub | Uut | Uuq | Uur | Uus | Uuh | Uu  | Uu  | Uu  | Uu  | Uu  |



Rudists

Rudists

## Cretaceous

Reptiles, amphibians, and birds were common in the Cretaceous. Dinosaurs, like a dromaeosaurid, were also present. Some researchers think that birds may have had a common ancestor with dinosaurs.



Hammes and  
Crisell  
Notebook  
Vol. 5, June 19, 1911  
Cretaceous

Guise  
Notebook  
Vol. 5, June 19, 1911  
Cretaceous

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## Petroleum Geologist?

PARSLEY ENERGY

What is a geologist?

A scientist that studies some aspect of the earth



What is a petroleum geologist?

A scientist that studies oil and gas bearing rock formations to **search** for and **discover** new oil and gas deposits

























| GROUND WATER                                                    | SURFACE WATER                      | HYDROLOGIC GEOGRAPHY                        | HYDROLOGIC CYCLE/ WATER USE | GENERAL HYDROLOGY |
|-----------------------------------------------------------------|------------------------------------|---------------------------------------------|-----------------------------|-------------------|
| WATER IN THE GROUND IS CALLED THIS                              | WATER IN POONOLAS, LAKES OR RIVERS | 1 CUP                                       | 1 CUP                       | 1 CUP             |
| SOIL OR ROCK CONTAINING USABLE QUANTITIES OF WATER              | 2 CUPS                             | THE SPRING-FED SWAMPING POOL IN ZILBER PARK | 2 CUPS                      |                   |
| A HOLE DRILLED IN THE GROUND TO BRING WATER TO THE LAND SURFACE | 3 CUPS                             | 3 CUPS                                      | 3 CUPS                      |                   |
| 4 CUPS                                                          | 4 CUPS                             | 4 CUPS                                      | 4 CUPS                      |                   |
| 5 CUPS                                                          | 5 CUPS                             | 5 CUPS                                      | 5 CUPS                      |                   |





new opportunities



Energy system  
transitioning



Liquids resource  
replacement challenge



Market

7.1 Corporate presentation































