Earth Science For Everyone: Geology

With DJ Lake

Lesson 9

Blue Earth

We've probed the atom, seen the cosmic origin of our planet, and measured its age.

Advances in those domains required a lot of genius, deductive reasoning, equipment, and time. Let's regroup and take a look at some more tangible and familiar concepts (depending where you live.)

How did it all turn out the way it looks today?

There are various strange features on Earth's surface:

- Oceans in some places, mountain belts in others...why?
- Rocks dramatically folded and deformed
- Ocean fossils on mountaintops
- Continents that look they should fit together like a jigsaw puzzle
- Rocks formed by glaciers, found at the equator
- Old rocks found overlying young rocks (lower rock strata *should* be older)
- Identical fossils found across different continents.

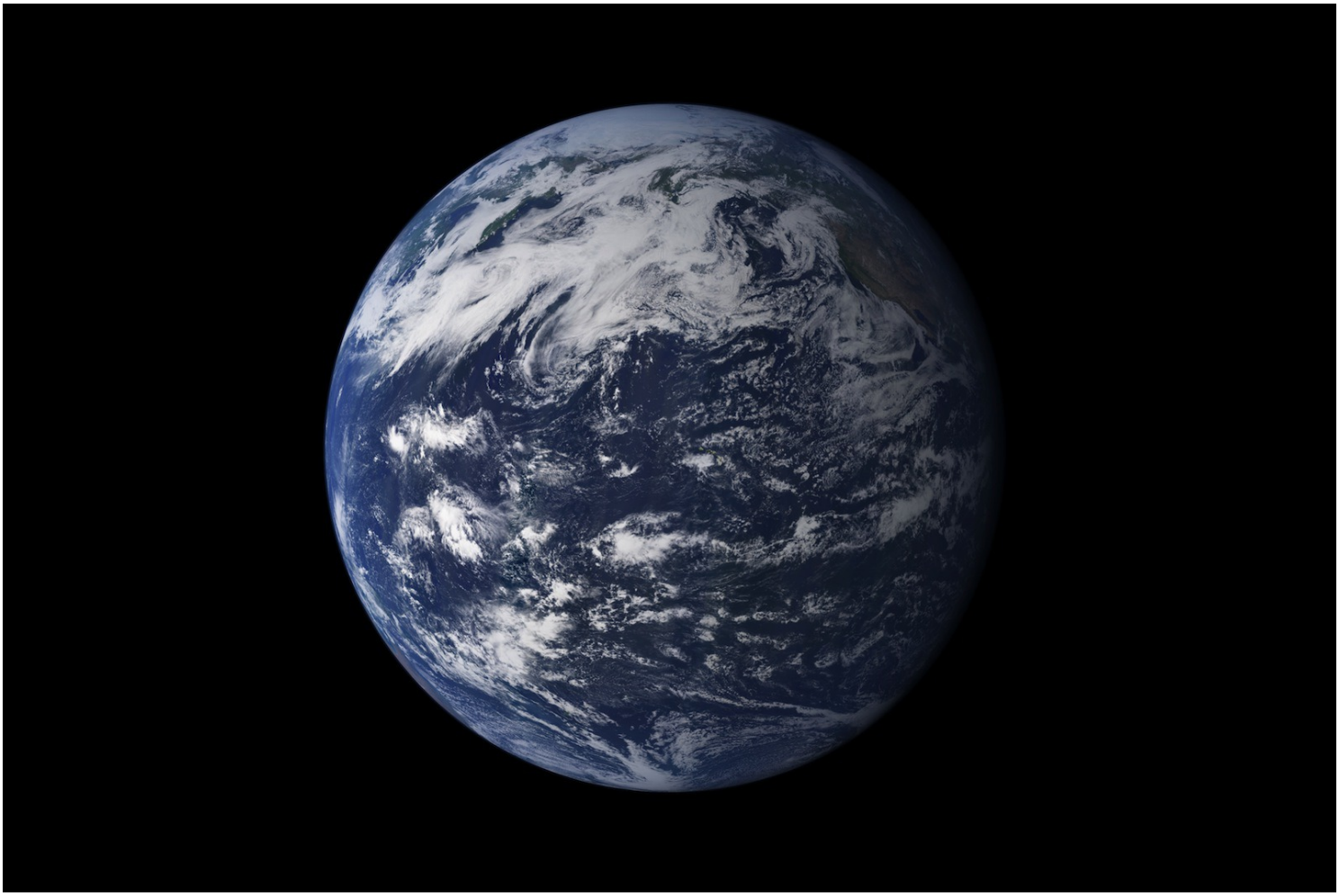
What's the Earth made of?

- We've known for two thousand years how big the Earth is (see Eratosthenes), but its no easy task to figure out what our big blue marble is actually made of! We'll explore what we do and do not know about the secrets of Earth's interior.

These are monumental topics, but we'll do our best.

First you'll have to forget everything you know from looking at anthropocentric (human-centred) maps of the world. Forget about political boundaries like Canada, Spain, or North America. We're interested in physical geographical boundaries. Where are the oceans? Where are the mountains?

Here is the Pacific Ocean.



The Blue Planet from Space: The Pacific Ocean. NASA/JPL

You can see there's a reasonable amount of ocean. This is our blue planet. Seeing the Earth from this perspective is a good reminder that ⅔ of the Earth's surface is covered with water.

Until the past 50 or 60 years, what lay beneath the oceans was almost complete mystery.
The ocean deeps were simply the birthplace of myth and monsters–a place beyond our realm of understanding.

Although we didn't know much of anything useful about the ocean floor until the 1950's, that's not to imply that geologists had been slacking off. The Swiss Alps were a focus great study for many years, partly because they were so confusing and slightly easier to access than the deep oceans.

Next lesson we'll talk about the importance of those pioneering studies of the Swiss Alps, and fascinating problems encountered by these early workers.

Readings

Further reading on this topic:

- *The Earth* by Richard Fortey
  - (See chapter three on *Oceans and Continents*)