



- ✚ **An introduction to Geology.** *Open Learn*, part of the *Open University* is offering a free geology course. The course is estimated to take 12hrs, spread over 4 weeks. I have completed the first 2 weeks in a few hours spread over 4 days. It is good revision of some of the geology basics and clarified a few things in my own mind. An outline of the course follows:

Free course

### An introduction to geology



*'You will be introduced to some key geological processes that impact everyday life, as you discover the link between volcanoes and your mobile phone, and find out why tiny marine wildlife is at the core of the plastics industry. You will learn about the various types of rock and explore how, where and why different rocks and natural resources form across the Earth. You will also look at some of the environmental and sustainability considerations that geologists need to take into account when extracting and processing these resources.'*

[An Introduction to Geology - Free Course](#)

- ✚ **Mars Geology.** At the time of writing, the Mars Perseverance Rover is 22 days away from 'attempting' to land on Mars. The planned landing date is February 18<sup>th</sup> 2021, at the site of the ancient river delta of a lake that once filled the Jezero Crater. The Mars 2020 Perseverance rover is designed to better understand the geology of Mars and seek signs of ancient life. The mission will collect and store a set of rock and soil samples that could be returned to Earth in the future. Also onboard is a Mars helicopter. [Mars 2020/Perseverance Fact Sheet](#)



- ✚ **Scientists propose new evolutionary system of mineral classification!** Researchers are proposing a new system of mineral categorisation that includes the historical data reflecting changes in the diversity and distribution of minerals through more than four billion years of Earth's history. Diamonds are all classified the same by the International Mineralogical



Diamond crystal in kimberlite matrix. (Image by James St. John, Wikimedia Commons).

Association, even though many of them have different composition and origins. So no classification distinction is made diamonds that formed in space from the carbon-rich atmospheres of dying stars or diamonds that formed 5,000 years ago when a large meteorite struck carbon-rich sediment on Earth. An alternative view (mine) is that due to amateur geologists learning the ‘secret geology language’ – they are going to change it?? [New Mineral Classification](#)

✚ **Swedish Bronze Age axes made with copper from Cyprus** -Isotope analysis shows that



The so called “Axe god” is a carving of a male with a bronze axe.

around 70 bronze daggers and axes from Sweden were made from copper originating in Cyprus. Archeologists also believe that the copper was probably traded for amber, which along with copper, was so important to the Bronze Age economy. Copper produced in Cypriot mines was smelted into “oxhide ingots” – copper slabs with four extruding corners. [Swedish Bronze Age axes made with copper from Cyprus](#)

✚ **What is a Mineral?** – A 5 minute video that examines the 5 criteria that makes a substance a mineral.



- Being inorganic
- Occur naturally
- Must be in solid form
- Have a definite chemical composition
- Have an ordered internal structure

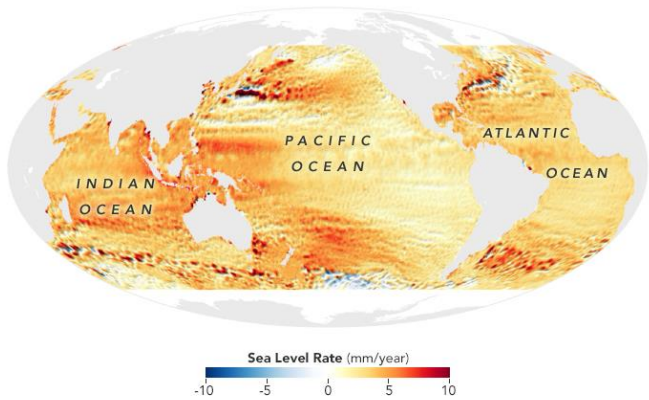
[Introduction to Minerals](#)

✚ **Magnetism of Himalayan rocks reveals the mountains' complex tectonic history** - rocks that erupted as lava more than 60 million years ago have the magnetic records at that time preserved inside them. By examining these records, scientists propose that the India–Eurasia collision was a multistage process involving at least two subduction systems rather than a single-stage event. [Himalayan Mountains formation](#)





**✚ Taking a Measure of Sea Level Rise: Ocean Altimetry** – The surface of the oceans are



1993 - 2018

lumpier in some areas than others. The friction between winds and water causes waves to build up. The tug of gravity from the Moon and Sun causes tides to rise and fall. The rotation of Earth ([Coriolis effects](#)) and the flow of currents also amass water in vast streams. Atmospheric pressure pushes and pulls on the water surface. Continents, islands, and even underwater seamounts exert a gravitational tug that draws water up around them. Difference in temperatures and

salinities result in the sea level in the Pacific being generally about 20 centimeters (8 inches) higher than that in the Atlantic because Pacific waters are less dense. For more than four decades, scientists have used satellite-based instruments known as radar altimeters to monitor ocean surface topography—the shape and height of the ocean’s peaks and valleys. Examining these records, scientists can closely monitor the changes in sea levels with time and better relate these changes to global environmental changes.

- [Article – Ocean Altimetry](#)
- [Video – Satellite Tracking Sea Level Rise](#)

**✚ Geologists Solve Puzzle That Could Pinpoint Valuable Rare Earth Element Deposits** -

**Rare Earth Elements**  
by Geology.com

H																	He	
Li	Be											B	C	N	O	F	Ne	
Na	Mg											Al	Si	P	S	Cl	Ar	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La-Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac-Lr	Rf	Db	Sg	Bh	Hs	Mt										
Lanthanides																		
La			Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu		
Actinides																		
Ac			Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		

New research could help geologists pinpoint new, untapped concentrations of some of the most valuable rare earth deposits. A team of geologists, from the Camborne School of Mines, have discovered a new hypothesis to predict where rare earth elements neodymium and dysprosium could be found. The elements are among the most sought after, because they are an essential part of digital and clean energy manufacturing, including magnets in large wind turbines and electric cars motors.

[Rare Earth Element Deposits – where are they?](#)

## Quiz – What is a plate

- + You can first read the article from The Geological Society on [Plate Tectonics](#).
- + The quiz can be found here [What is a Plate](#)

## Acknowledgements

