



Geologists' Association - South Wales Group **Cymdeithas y Daearegwyr - Grŵp De Cymru** Newsletter - August 2020

A tale of two courses – Guy Moody

I am a bit of a sucker for on-line free courses. (Often referred to as MOOCs, Massive Online Open Courses) I have filled quite a lot of my retirement time exploring palaeontology, psychology, and various other topics. During 'lock down' I became aware of two courses covering geological subjects and so I joined both simultaneously.

The courses are 'Geoscience, the Earth and its Resources', on the edX platform and 'Our Earth its Climate, History and Processes' on the Coursera platform. Both courses are free in as much as it costs nothing to join them but both systems are keen for you to buy access and certificates. This continual reference to getting increased access to either platform can become a bit tedious.

I started Our Earth, its Climate, History and Processes a little before the edX course and I confess I nearly stopped again. The course has been created by the University of Manchester and is fronted for the most part by Professor David Schultz an American who heads up the Department of Synoptic Meteorology. The reason I nearly stopped was because a lot of his early talks were full of 'errs' and 'ums', somewhat ironic since he is the author of a book entitled '*Eloquent Science: A Practical Guide to Becoming a Better Writer, Speaker, & Atmospheric Scientist*'. However, I persevered (whilst muttering to myself practise, practise, practise your talk).

The presenter of the EdX course is Professor Dr G. Bertotti, Professor of Applied Geology at the Delft University of Technology. He is very comfortable in front of his material and his Anglo-Italian accent flows nicely. His course is a little different since it is a modified edition of an existing MOOC meet the needs of a special cohort of learners, namely the participant to GEMS, the Geoscience for Energy-ENI Master School.

Generally, in my experience free on-line course follow a standard pattern of short video lectures with some reading material and also some quizzes to test your understanding. The edX course is a little different from this pattern in as much as after each lecture there is a little 'quiz' before you move on to the next talk whereas the Coursera course more conventionally has a little test at the end of each week's set of lectures. The edX also invites you to do a little 'warm up' exercise before each talk.

Both courses are divided up into linked modules with the Coursera assuming each module is a week whilst the edX course is essentially do what you want, when, within the time allowed for the whole course. Both courses have cut off dates beyond which the materials are no longer available unless you want to pay a fee to get your access upgraded. If you have paid there are some further tests you take to get your certificate (not for me!).

The access to the course materials is quite different between the two courses.

The Coursera course offers the chance to down-load each talk as an mp4 file and for most of the talks a pdf of the slides. It also provides a what is called a 'student guide to the course'. Two enterprising students seem to have taken the transcripts from each talk and somehow added illustrations from the talks to create a 252-page pdf book. This is very useful, but it also contains some inconsistencies, I think because the course has been run several times and the content has changed over that time.

The edX course on the other hand only provides access to a pdf of the slides and a pdf of the subtitles which is essentially the same as the course transcript. I haven't discovered a way to down-



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load the talks themselves. Of course, there is no obligation for you to down-load anything you can just enjoy the courses as they come.

The scope of Professor Bertotti's course is to provide a general introduction to geological processes and depositional geology but then direct the learner to two end modules aimed at energy reserves in hydrocarbon deposits and geothermal energy systems.

In the table below I have tried to give an indication of the topics covered in each part of the course since the modules were not labelled themselves.

Geoscience: The Earth and its Resources

Part I	Rocks and Plate tectonics
Part II	Rock mechanics, folding, faulting and mountains
Part III	Water and weather
Part IV	Under the Sea, dynamics and carbonate deposition.
Part V	Hydrocarbons, deposits and extraction
Part VI	Geothermal Systems

His slides are excellent in quality, but you cannot get the animations that he shows when presenting them. Personally, I found his descriptions of hydrocarbon geology and hydrocarbon extraction fascinating since it was a subject I knew almost nothing about. The final section on geothermal systems was a little more complicated than I wanted.

The scope of Dr Schultz's course is to cover a lot of basic geology and geological processes leading up to the demonstration of the on-line tool the university has developed to look at climate on Earth, now and in the past and in some imagined alien Worlds. The weekly headings are given below in the table.

Our Earth, its Climate, History and Processes - Contents

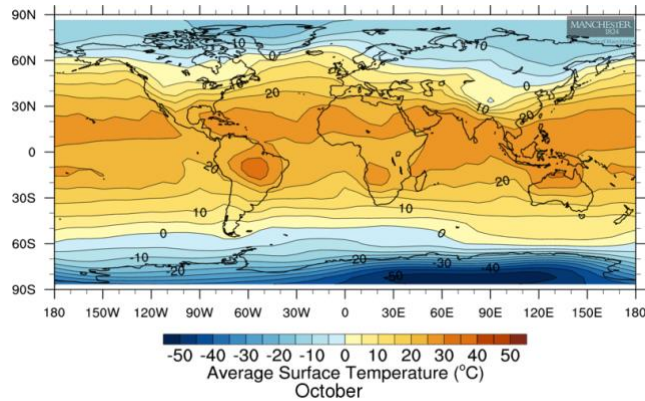
Week 1	Building blocks of Earth's Climate System
Week 2	Formation, Evolution and Processes of the Earth
Week 3	Water in Earth's Climate System, Ocean, Atmosphere and Cryosphere
Week 4	Life and its effect on Earth's Climate
Week 5	Build Your Own Earth

For the most part Dr Schultz is the main presenter of information, but unlike Professor Bertotti he also interviews a number of other scientists from the University of Manchester on a number of topics (it is some of these interviews that are, to my mind, a little 'scratchy' in delivery). Professor Phil Manning does most of the video clips on 'the animal kingdom' based on material in the Manchester University Museum and Jonathon Fairman does the majority of the presenting on Build Your Own Earth.



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Earth: Current Day 2015
Monthly Mean Temperature - surface

The Build Your Own Earth tool is certainly worth a visit in its own right, it is not difficult to use and is publicly available here. <http://www.buildyourownearth.com/>. It allows you to take 'screenshots' of the simulations you are working on as show here for Earth's surface temperatures.

Both courses contain a wealth of information on geology, albeit for the most part at an introductory sort of level. I am hard pressed to decide which one I prefer. I think it comes down to whether you want a course that leads to the understanding of the use of Earth's resources or a course that puts into context the role of weather and its effect on the Earth where we are now and into the future.

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