

SEDIMENTARY GEOLOGY WITH PROFESSOR PETER CLIFT

TALKING POINTS

KNOWLEDGE

1. What is a sediment core?
2. When did the Asian monsoon increase in strength?

COMPREHENSION

3. How do geologists determine the age of sediment? Explain how each method can be used to date sediment.
4. How did Peter determine the cause of the Indus civilisation collapse?
5. How do mountains affect monsoons, and how do monsoons affect mountains?
6. Why are changes to monsoon patterns relevant to modern societies?

APPLICATION

7. Based on the interactions mentioned in the article, and bearing in mind the effects of climate change, what do you think the Tibetan Plateau might look like 30 million years from now?

EVALUATION

8. For decades, sedimentary geologists have enabled oil and gas exploration. It is now well-known that combustion of these fossil fuels has driven the global climate crisis. To what extent do you think scientists should be held responsible for the ethical implications of their work? Consider the influences of scientific funding, commercial interests and national interests in your answer.
9. Would you like to take part in an ocean drilling expedition, or conduct fieldwork in a remote mountainous region? What do you think you would most enjoy about these aspects of Peter's work, and what would you find most challenging?

MORE RESOURCES

- More information about Peter's work and research interests can be found here: www.geol.lsu.edu/pclift/index.html
- This video explains the geological and climatic origins of the Asian monsoon, and its impacts on communities: www.youtube.com/watch?v=Fo8nlearLZQ
- This article explains more about the Indus civilisation, how it helped define modern society, and what might have led to its collapse: www.khanacademy.org/humanities/world-history/world-history-beginnings/ancient-india/a/the-indus-river-valley-civilizations

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

There is a theory that monsoons may have helped ancient humans migrate out of Africa. While the Middle East is very arid today, monsoons may have created a fertile corridor in the region, around 125,000 years ago, providing a route for ancient humans to migrate from northeast Africa into Asia and beyond.

Read more about the theory here:

www.sciencedaily.com/releases/2019/11/191126091309.htm

Imagine you are a sedimentary geologist like Peter. You have been tasked with planning an expedition to gather evidence to test this theory. Using the internet to help you, devise a plan for your expedition to present to your funder.

LOGISTICAL PREPARATION

- Where will you go? Which region(s) will you conduct your investigation in? What climatic, political and cultural considerations need to be taken into account?
- Who will accompany you? What specialties (both scientific and non-scientific) will be useful for your expedition?
- How long will the expedition be?

SAMPLES, ANALYSIS AND DATA

- What samples do you intend to collect?
- What analysis will you perform on these samples?
- What will the data from these analyses tell you about the samples and the past climate?
- How will you ensure sample collection and analysis are cost effective and of maximum use?

RESULTS

- What results would allow you to confirm the theory?
- What results would allow you to disprove the theory?
- What conclusions do you hope to be able to make from your research?

HEAD TO PETER'S FUTURUM WEBPAGE FOR A POWERPOINT PRESENTATION ABOUT HIS RESEARCH:

www.futurumcareers.com/unpicking-the-sedimentary-geology-of-asia