

# CLIMATE SCIENCE WITH PROFESSOR DAVID THORNALLEY

## TALKING POINTS

### KNOWLEDGE & COMPREHENSION

1. What is the AMOC?
2. Why is it sometimes difficult to improve computer climate models?
3. What can researchers learn from mud samples?
4. Why is it important to have data that covers as long a time period as possible?

### APPLICATION

5. Why is looking at how things have changed in the past useful for the future?
6. How might David's samples help improve the accuracy of computer models?

### SYNTHESIS

7. David talks about working in a team – as well as lab scientists, who else do you think is important for his ocean-based fieldwork?
8. The oceans are just one part of the climate system – what other areas of research do you think climate science involves? Which areas would you like to study and why?

### EVALUATION

9. David believes that climate change solutions need to involve politics and social science, as well as climate science. To what extent do you agree with him and why?
10. What would you enjoy about going on a sampling fieldwork on a ship in the North Atlantic? What challenges do you think this type of work poses for researchers?

## MORE RESOURCES

- This video visually explains how the AMOC works, using a simple lab experiment: [www.youtube.com/watch?v=eZzpvLz4yAk](http://www.youtube.com/watch?v=eZzpvLz4yAk)
- You can learn more about David's work here: [theconversation.com/seabed-fossils-show-the-ocean-is-undergoing-a-change-not-seen-for-10-000-years-136804](http://theconversation.com/seabed-fossils-show-the-ocean-is-undergoing-a-change-not-seen-for-10-000-years-136804)
- Read this article from The Guardian about David's work: [www.theguardian.com/environment/2018/apr/11/critical-gulf-stream-current-weakest-for-1600-years-research-finds](http://www.theguardian.com/environment/2018/apr/11/critical-gulf-stream-current-weakest-for-1600-years-research-finds)
- David has also worked on two international projects that have useful websites for you to explore: [www.iatlantic.eu](http://www.iatlantic.eu) and [www.eu-atlas.org](http://www.eu-atlas.org)

## ACTIVITIES

### 1. THE WEAKENING OF THE AMOC IS JUST ONE ASPECT OF HOW OCEANS ARE BEING AFFECTED BY CLIMATE CHANGE.

If you are working in a group, assign each person an ocean – there are the Atlantic, Pacific, Indian, Arctic and Southern Oceans.

Research how your ocean is being affected by human activities and their consequences. You could focus on how climate change is altering the temperature and circulation in your chosen ocean, the impacts on the people and animals who live there, or the effects of plastic pollution.

Rejoin your group and compare and contrast the different information you found:

- Are the effects the same for each ocean?
- Are there specific issues for oceans in different parts of the world?

If you are working on your own, choose an ocean to become an 'expert' in – or, challenge yourself to compare and contrast at least three oceans. You could use a Venn diagram to help you compile your notes.

### 2. KEEP A RECORD OF RAINFALL AND OUTSIDE TEMPERATURE IN YOUR GARDEN AND SEE HOW IT IS CHANGING OVER TIME.

You can make a rain gauge using an old plastic bottle, with volumes marked on the side (fill it with 100 ml water at a time, and mark on the side where this reaches to, until you have a home-made measuring jug).

You can find daily temperature information online or on a weather app.

Is there a correlation between temperature and rainfall?

How might changes in precipitation and temperatures affect the AMOC in the future, and vice versa?

You can measure for as long as you like and then present your findings to your class.