

PHYSICAL OCEANOGRAPHY WITH DR XINAN LIU

TALKING POINTS

KNOWLEDGE

1. What is the water cycle?
2. How does Dr Liu work out what happens when raindrops hit the surface of the water?

COMPREHENSION

3. Summarise the effect of temperature on the ocean weather.

APPLICATION

4. What is happening when a metal paper clip floats on the surface of water? What other objects can float and why?

ANALYSIS

5. What are the motivations behind Xinan's work?
6. Why do you think physical oceanography is important?

SYNTHESIS

7. What would the world look like if sea levels rose by 1 metre? Research areas in your region or worldwide that would be most affected.

CREATIVITY

8. Imagine you are encouraging students to study physical oceanography. How would you design a poster or come up with a presentation that explains what physical oceanography is, how it differs from biological, chemical or geological oceanography and why it is an interesting subject to study.

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

Step in Xinan's shoes and make your own model of the rain and sea. You will need a syringe and a tank or glass bowl filled with water.

- Release a drop of water from the syringe and watch the drop carefully as it reaches the surface of the water.
- Try changing the distance between the syringe and water surface and see how the impact changes. What happens if you add a small amount of detergent to the bowl of water and repeat the experiment? Is the splash the same?
- Write a list of what makes the splashing hard to observe and some ideas for how you might design a new experiment to solve this.

MORE RESOURCES

When it is raining hard, raindrops will look like they are bouncing up and down on the pavement. But what are they really doing, and how does the size and height of each drop make it splash in different ways? Have a go at measuring raindrops in this simple experiment by Education.com.

https://www.education.com/science-fair/article/earth-science_measuring-raindrops/

Live Science lists three fun activities related to rain: Making your own balloon barometer, creating a cloud in a bottle and measuring relative humidity.

<https://www.livescience.com/40761-weather-experiments-science-fair-projects.html>

If you're based in Maryland, USA, keep an eye out for outreach opportunities at the university.

<https://enme.umd.edu/releases>