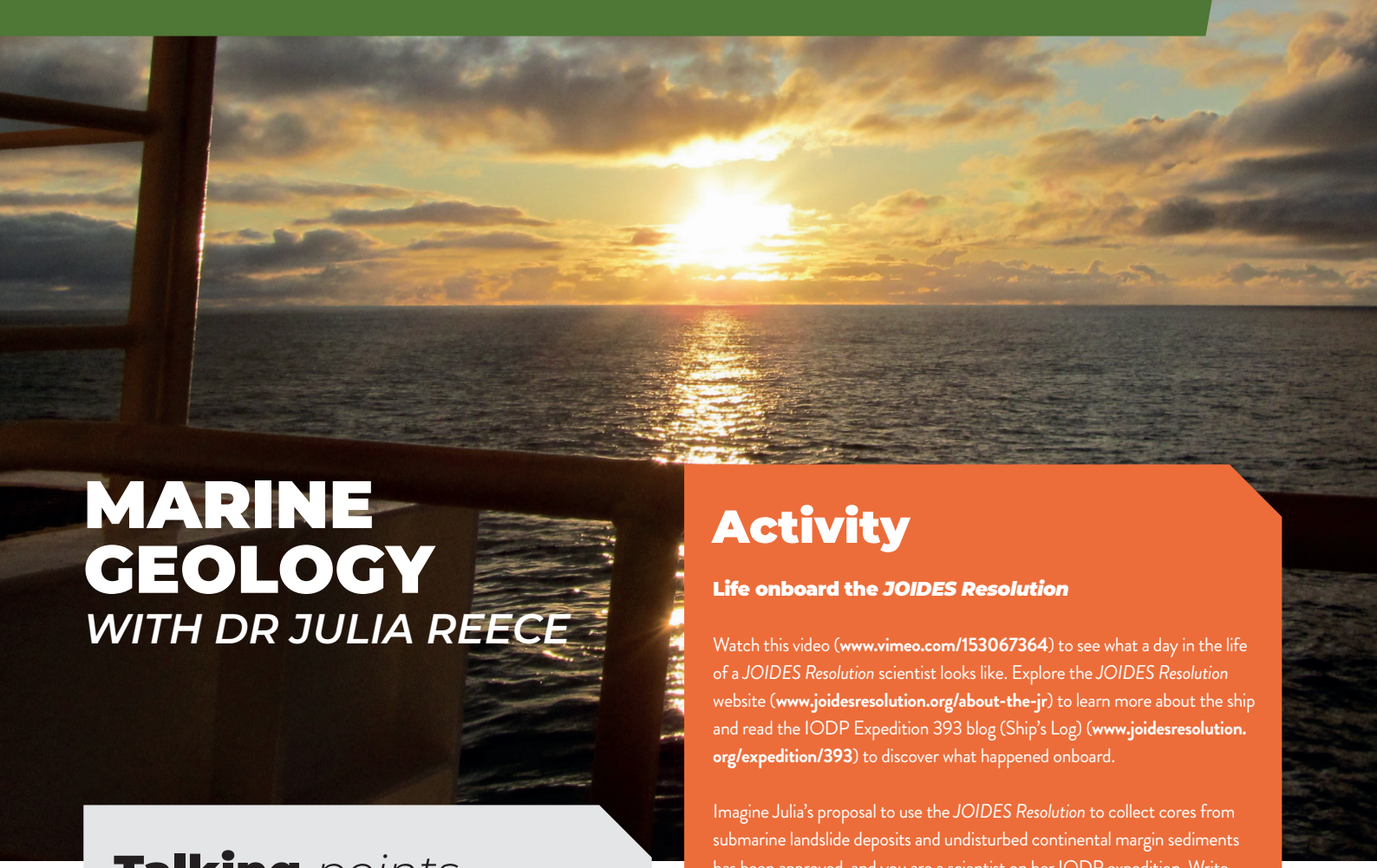

MARINE GEOLOGY
WITH DR JULIA REECE

Activity

Life onboard the *JOIDES Resolution*

Watch this video (**www.vimeo.com/153067364**) to see what a day in the life of a *JOIDES Resolution* scientist looks like. Explore the *JOIDES Resolution* website (**www.joidesresolution.org/about-the-jr**) to learn more about the ship and read the IODP Expedition 393 blog (Ship's Log) (**www.joidesresolution.org/expedition/393**) to discover what happened onboard.

Imagine Julia's proposal to use the *JOIDES Resolution* to collect cores from submarine landslide deposits and undisturbed continental margin sediments has been approved, and you are a scientist on her IODP expedition. Write three posts for the expedition blog to educate the public about the scientific mission and your personal experiences of the trip.

- **Post 1 (Written the day after you set sail):** What is your scientific role onboard? What sediment cores will the expedition collect, and what do you expect to discover from them, based on your knowledge of submarine landslides? What are your personal hopes and fears for the expedition ahead?
- **Post 2 (Written halfway through the expedition):** What is your daily routine on the ship? What does the process of drilling a sediment core involve? What is your role once the cores are brought onboard?
- **Post 3 (Written the day before your return to port):** What did you discover from your scientific analysis of the sediment cores? Was Julia's hypothesis about microfossils and submarine landslides correct? What were the highlights of the expedition?

Talking *points*

KNOWLEDGE

1. How much does it cost to operate the *JOIDES Resolution*?
2. Where in the ocean do submarine landslides occur?

COMPREHENSION

3. How do submarine landslides impact humans?
4. What is the difference between uniaxial consolidation and triaxial compression?
5. How do Julia's lab experiments influence her numerical models?
6. Why is it difficult to sample seafloor sediment?

ANALYSIS

7. What influence do microfossils have on the strength of seafloor sediments, and why?
8. Why does Julia conduct lab experiments on natural sediment samples created by resedimentation, rather than on intact samples collected from the seafloor?
9. Why is it important to combine experimental, numerical and field observations when trying to understand geological processes? What challenges do scientists face if they are missing any of these?

SYNTHESIS

10. If Julia's hypothesis is correct, what do you think she would observe in sediment cores of submarine landside deposits and undisturbed seafloor sediment?

EVALUATION

11. What role onboard the *JOIDES Resolution* most appeals to you, and why?
12. If you participated in a two-month long expedition at sea, what challenges do you think you would face and what do you think you would most enjoy about the experience?

More *resources*

- Learn more about the research conducted in Julia's Sediment Mechanics Lab: **www.reecesedimentmechanics.com**
- The IODP provides a wealth of educational resources and information about careers in marine geology, and offers live ship-to-shore broadcasts to connect students with scientists onboard: **www.iodp.tamu.edu/outreach/education.html**
- The *JOIDES Resolution* has a YouTube channel with videos about different expeditions: **www.youtube.com/user/theJOIDESResolution**