

EXTREME ENVIRONMENTS WITH DR SOLANGE DUHAMEL AND DR CHRISTOPHER HAMILTON

TALKING POINTS

KNOWLEDGE:

1. Where in Iceland did Christopher and Solange travel to on a research expedition?
2. Which systems were they investigating there?
3. Which forms of life might be among the oldest on our planet?

COMPREHENSION:

4. In what ways was the field study in Iceland analogous with Mars?
5. How did Solange's involvement in the expedition help improve the overall understanding of the team?

APPLICATION:

6. What could the presence of volcanoes on Mars suggest about the environment there?

ANALYSIS:

7. Why is collaboration particularly important to Christopher and Solange's research?
8. Can you think of some extreme environments around the world? What is it about these environments that makes them extreme? Does life exist there? If so, what enables those lifeforms to exist there?

EVALUATION:

9. Why do you think it is important for scientists to determine whether there is – or has been – life on Mars? Why is it important for scientists to explore the oceans?

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

THE UNIVERSITY OF ARIZONA RESOURCES

The University of Arizona has hundreds of programmes, events, seminars and classes available to the public:

<https://uaforyou.arizona.edu/content/outreach-extension>

- The university's science community has created a series of public lectures called the College of Science Café Series, with recordings available on YouTube:

<https://science.arizona.edu/community-engagement/science-caf%C3%A9>

<https://www.youtube.com/channel/UCT0K6H30gWR6-0sQKFrCsKA/playlists>

- How did life emerge? What is the likelihood that there is or has been life elsewhere in the universe? Find out more about how astrobiology is trying to answer these fascinating questions: <https://astrobiology.arizona.edu/>
- Solange's Molecular and Cellular Biology department offers an annual open house outreach event called Meet MCB! The event brings high school students from across Arizona to see the department's scientific research in action: <https://mcb.arizona.edu/outreach/meet-mcb>

RAVEN: ROVER – AERIAL VEHICLE EXPLORATION NETWORK

RAVEN, the project Christopher is the Principal Investigator of, has a dedicated webpage which includes tonnes of information on the project, including a page on Holuhraun – the place Christopher and Solange travelled to: <https://raven.lpl.arizona.edu/>

SOLANGE RECOMMENDS

There is a wealth of information on oceanography for you to explore. Solange recommends the following websites:

<https://www.nationalgeographic.org/encyclopedia/oceanography/>

<https://www.nsf.gov/div/index.jsp?div=OCE>

<https://oceanservice.noaa.gov/facts/oceanographer.html>

<https://www.marinecareers.net/site-overview>

<https://science.nasa.gov/earth-science/focus-areas/oceanography>

MORE RESOURCES

- You can read more about the Holuhraun expedition in an article Christopher wrote: <http://eos.org/meeting-reports/team-gets-firsthand-look-new-holuhraun-eruption-site>
- Here are some examples of extreme environments that might be of interest: <https://serc.carleton.edu/microbelife/extreme/environments.html>
- The American Astronomical Society is one of the best resources out there for those who want to learn more about planetary science: <https://aas.org/>