Science Time

Program Content for January 11, 2017

Read the special insert tracking Vendée Globe 2016 "Week 7 Climate Change" on page A2 of the Wednesday, January 4, 2017 edition of The Seattle Times.

Vendée Globe is a solo, non-stop, around-the-world sailing race, 28,000 miles, ~100 days at sea, in 60' boats. These paired essays highlight the experience of one sailor, Rich Wilson, and a team of experts he has recruited to write about different topics from week-to-week. In addition to completing this Science Time, learn more about Vendée Globe and follow Rich's journey, as well as access a number of other resources for both educators and students at http://sitesalive.com/ and in the Seattle Times every Wednesday.

Objective

- I can explain how climate change is being measured
- I can explain how climate change is influencing the ocean's temperature and wind speeds.

Next Generation Science Standards (NGSS) connection MS-ESS3-5. (DCI: ESS3.D)

Disciplinary Core Ideas - Global Climate Change

- Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.

Pre-reading and Vocabulary: Define each term and then use it in a sentence to demonstrate your understanding.

1. receding
2. atmosphere
3. sub-tropical
4. climate

Comprehension Questions

Essay 1 - Rich Wilson, *Skipper Great American IV*

1. What was the purpose of the course restrictions enacted by Vendée Globe when Rich Wilson recently sailed past Marion Island?
2. How much further north did Rich sail this year than he did during Vendée Globe in 2008?
3. How do researchers in Greenland know that glaciers are melting and receding?
4. Besides Greenland, where else in the world is the amount of ice on earth getting smaller?

Essay 2 - Dr. Jan Witting, *Professor of Oceanography*

1. What has been the biggest factor in human-caused climate change?
2. How much has this factor increased in our atmosphere since 2008?

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3. What measurements were used to determine that the change that has taken place since 2008 is much greater than 2000 years before the industrial age?
4. As climate change occurs, what causes some parts of the earth's oceans to cool and others to heat up?
5. What makes the wind blow?
6. Why are winds in the ocean around Antarctica getting stronger?

Prompts and Extensions

1. Follow the daily travel of Rich Wilson as he circumnavigates the globe. Explore past reports, read the ship's log, listen to podcast updates, view photos, post a question to Rich Wilson, and more at www.sitesalive.com
2. Examine this graph of CO2 levels in the atmosphere 1880. If the trend you notice continues, predict the level of CO2 in the year 2050.
    - Based on the article you read, write down what actions people could take to alter your prediction?
3. Explore this Seattle Times special feature (Sea Change: The Pacific's Perilous Turn) on climate change and ocean acidification in our region.
4. Want to catch up on climate change basics? Review this series of animations and articles that detail how climate change occurs and its impacts the earth.

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