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Eyes on Earth–Teaching Earth Science from Space

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Choice Assignment

Current scientific events help students place the science concepts they are learning in a relevant context. Students may also feel more deeply connected to the science concepts they learn when those concepts connect to a personal experience. In April, I happened to be teaching about plate tectonics at the moment a minor earthquake occurred. It was a moment of great professional satisfaction: suddenly the lithosphere, a topic that had been boring and remote minutes before, was riveting. I felt like Miss Frizzle! Students had a personal interest in earthquakes–they had just lived through one–and they were eager to learn more about what they had just experienced.

Current events can also help with student engagement because they show the complexity and interdisciplinary nature of real-world science. One of my pedagogical goals is to break students of the habit of mind of seeing each topic as a discrete entity. To progress, students must begin to learn about the interconnections between scientific topics. This can also help with their overall academic engagement: students remember things better and find them more interesting when they begin to see science, humanities, and math as linked rather than separate. In Eyes on Earth, we've focused on studying the Lithosphere, Hydrosphere, Atmosphere, and Biosphere. In middle school, students refine their understanding of Earth's spheres and dive deeply into how Earth works as a system. Three recent current events provide possible entry points to rich and engaging middle school science learning.

The AP News article “US East Coast earthquake rattles millions, but region escapes sweeping damage,” involves Earth’s Lithosphere and contextualizes a minor (4.8 magnitude) earthquake. The article includes quotes from eyewitnesses both in NYC and closer to the quake’s epicenter. It also explains why earthquakes are less common on the East Coast of the United States compared to the West Coast. The NY Times article “Is the Northeast Entering Its Wildfire Era?” also compares New York and California through the lens of the Hydrosphere, Biosphere, and Atmosphere. The article summarizes the impact of an unusually dry autumn in the tri-state area: a historic number of brush and wildfires. The article humanizes the fires’ impact by opening and closing with how they have affected a family farm in West Milford, N.J. The final article, “Did climate change have an impact on Hurricane Helene?” is published by WCNC Charlotte, a local news affiliate of NBC. It explains how, while climate change was not the sole cause of Helene’s destructiveness, its effects on the Hydrosphere and Atmosphere intensified the storm. The article closes by explaining how Appalachia’s unique geography also shaped the storm’s impact. These three current events–earthquake, fire, and hurricane–provide entry points for rich student discourse about Earth’s spheres.

Both the NY Times wildfire article and WCNC article about Hurricane Helene discuss climate change. I think this is a topic that easily becomes abstract for students: line graphs of rising temperature can only concretize it so much. I like how these articles tie climate change to real, local, and immediate effects. My students smelled the wildfire smoke in the air. They experience hurricanes themselves every year; some have family and friends living closer to the equator where severe storms have become more frequent. Both articles make the point that wildfires and hurricanes are normal occurrences: climate change is making them worse. This is a helpful point, especially for climate change skeptics: we can expect ‘once in a lifetime’ weather

events with greater frequency. The atmosphere and the hydrosphere are connected in these two articles: hurricanes and wildfires couldn't happen without the wind and the rain. Climate change could not intensify both rain and drought without rising temperatures. An entry point for teaching both articles and topics could involve examining the changes over time; various NASA datasets provide a detailed historical record.

The NY Times article and the AP article also contextualizes the fires and the earthquake as human stories. I think this part of science is sometimes almost lost: it's a human endeavor done by people for people. Upsets in the lithosphere, hydrosphere, biosphere and atmosphere would still happen if we weren't around to narrate them–look at the history of Earth's Moon, or any other body in our solar system. But leaning into the storytelling aspect of science and of data can be a way to engage learners who otherwise find concepts dry or irrelevant. The more we can connect big picture ideas in science disciplines to students' lived experience, the more likely they are to remember and apply the science concepts we try to teach them. And as I teacher, I get to have more magic "Miss Frizzle moments!"

Works Cited

Howard, H. (2024, November 20). Is the northeast entering its wildfire era?. The New York Times. https://www.nytimes.com/2024/11/20/nyregion/new-york-wildfires-drought.html

Peltz, J., & Catalini, M. (2024, April 6). US East Coast earthquake rattles millions, but region escapes sweeping damage. AP News. https://apnews.com/article/east-coast-earthquake-7d03f7a44a6c1a1ea877820515808bee

Van Voorhees, B. (2024, November 22). How hurricane helene's devastation was impacted by climate change | wcnc.com. Weather IQ. https://www.wcnc.com/article/weather/weather-iq/did-climate-change-impact-hurricane-helene-western-north-carolina/275-c5856820-ad65-47d3-8f01-c009bb049c0a