

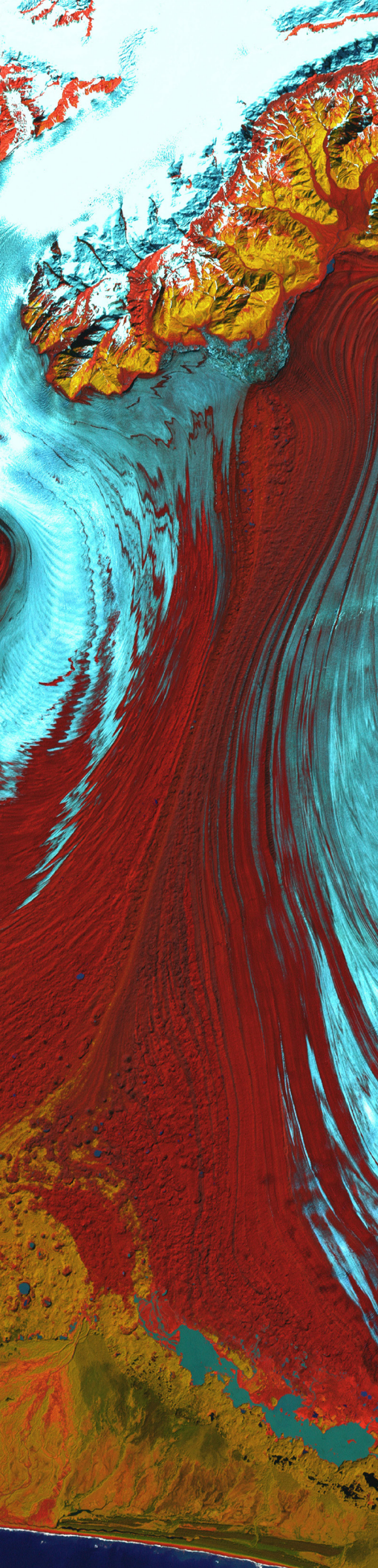


LESSON SERIES  
COMPANION  
TO HOW WE  
KNOW HUMAN  
CO<sub>2</sub> EMISSIONS  
ARE CAUSING  
CLIMATE  
CHANGE

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Ralph Keeling’s work highlights the important role humans play in climate change, a core concept included in both the Next Generation Science Standards and California’s Environmental Principles and Concepts. A team of educators from the San Diego County Office of Education created an example high school lesson series based on Ralph Keeling’s paper in an effort to provide support to teachers who will take their adult-level learning about climate change and develop or modify lessons for their students. Specifically, the lesson series has students explore the chemistry of climate change by making sense of the phenomenon that modern changes in climate are the result of human carbon dioxide emissions. Students gather



evidence from each source of data described by Keeling in his paper to explain how humans impact the climate of the Earth system. Each student then applies their understanding of human impacts to better understand how our individual and collective choices, responsibilities, and actions impact the health of our community and commit to action to lessen those impacts.

Materials created for this include a [Project Phenomena Resource](#) which gives a high level view of the translation from scientific paper to the high school classroom. The student explanation highlighted in the resource

demonstrates how a primary article from a scientist connects to the Next Generation Science Standards and California's Environmental Principles and Concepts and can be utilized in the instruction of a specific grade or course. The accompanying [lesson series](#) focuses on two key driving questions: 1) How do scientists know that climate change is the result of human CO<sub>2</sub> emissions? and 2) What can humans do to mitigate their negative impact on the atmosphere? Throughout this lesson series, students deepen their understanding and ability to utilize the three dimensions of the NGSS to support their explanation of the phenomenon, apply that understanding to identify how their community is impacted, and are empowered to take action to improve their community.



#### BIOGRAPHY

Crystal is an Environmental Literacy Coordinator at San Diego County office of Education. She believes in using science instruction based on local, environmental phenomena to build cultural relevance for students.

#### PHOTO CREDITS - UNSPLASH

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