

Upward and Outward - Scientific Inquiry on the Tibetan Plateau: is a twenty-minute educational documentary film targeting high school and college science students. The film shows the process of science as seen through the work of an international team of scientists in action, in the field, lab, and computer room, students learn how science is a human process for building knowledge, not just a body of fact. The film aligns with national and state standards on scientific inquiry and the nature of science.

The Tibetan Plateau is the biggest region of high terrain in the world—as big as the entire western United States, with an average elevation higher than the tallest peaks of the Rocky Mountains. Its tallest mountains pierce the upper atmosphere, and its massive bulk alters patterns of wind and rainfall around the Earth.



The scientists seek to answer questions about the geology of the plateau: How did the Tibetan Plateau grow to be so large? Was it uplifted all at once or in stages? What geophysical processes deep underground caused the plateau to rise? The scientists are examining the rugged mountains at the northeast edge of the plateau in China. Because they suspect this area to be the last part of the plateau to form, they hope to find clues to the process of the plateau's growth.



The scientists also want to understand how the plateau interacts with the atmosphere: How has the growth of the Tibetan Plateau affected climate patterns in China and the rest of the world? Evidence shows that the plateau affects the location of giant dust storms, the timing of Asian monsoon rains, and circulation across North America.

A team of experts in geology, meteorology, geochemistry, geophysics, and paleoclimate has come together to answer these questions. They go into the field to map geologic structures and collect rock samples, analyze rock samples in the laboratory, and build computer models to simulate the plateau's impact on climate. They travel in remote regions of Asia, hike up mountainsides, and invent new instruments. They record observations in the field and in the lab, read and write scientific papers, and argue about their discoveries.

In this film, we follow their investigations to see the process through their eyes—posing questions, planning investigations, gathering and interpreting evidence. As a process of human discovery, science requires collaboration and persistence. It is messy, creative and fun.

The film aligns with state and national standards on science as inquiry and is suitable for high school and college science students and general adult audiences.

Photo credit: Richard Lease



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