Plenary Address

Sunday, April 18

7:00 p.m. PL-1 Understanding Volcanology May be the Key to Controlling Global Warming

P.L. Ward, Teton Tectonics, Jackson, WY

Invited 40 min. Talk

Our life-sustaining, oxygen-rich atmosphere was formed primarily by gases erupted from volcanoes. Without continued eruptions, most life on Earth would soon vanish. Yet moderate sequences of large volcanic eruptions have cooled the Earth incrementally into ice ages. High rates of eruptions have propelled the Earth out of ice ages, and massive eruptions of flood basalts covering areas as large as Washington, Oregon, California and Nevada combined have caused widespread extinctions of the majority of species. We live in a delicate balance and are dependent in a significant way on changes in the rates and types of volcanism. During the 20th century, man burning fossil fuels upset this balance. Man emitted as much sulfur dioxide as volcanoes emitted during the times of most-rapid warming at the end of the last ice age. The earth warmed rapidly. Between 1980 and 2000, man reduced sulfur emissions by 18% in an effort to reduce acid rain. The rapid rise in global temperatures ceased by 1998. Understanding how volcanoes have initiated an abrupt climate change over the eons suggests ways for man to mitigate global warming during the 21st century.