Volcanic eruptions during mass extinction produced same amount of CO2 as predicted to be emitted over 21st century

April 8 2020, by Bob Yirka

Lava piles of the CAMP in Morocco (Central High Atlas). Credit: Andrea Marzoli

An international team of researchers has found evidence that suggests atmospheric CO_2 levels at the end of the Triassic era were nearly the same as those predicted for the 21st century. In their paper published in the journal *Nature Communications*, the group describes their study of basalt rocks from the Central Atlantic Magmatic Province (CAMP) and what they learned from them.

The Triassic period describes the time on Earth from approximately 252 million years ago to 201 million years ago—it was also a period that began and ended with major extinction events. In this new effort, the researchers were studying the events that led to the extinction event that ended the Triassic. To that end, they studied basalt rocks that have been associated with CAMP—a continental large igneous province composed mostly of basalt that was formed prior to the breakup of Pangaea near the end of the Triassic period.

In studying the rocks (which were formed from magma), the researchers found they were pock-marked with bubbles created by pockets of CO_2. In all, the team analyzed 200 such rocks, which included scanning. After determining that the bubbles were formed due to CO_2 in the atmosphere, the researchers compared bubbles sizes as a way to measure the amount of CO_2 in the air at the time of bubble formation.

They found that the amount of CO_2 was roughly equivalent to the levels that have been predicted for the 21st century. They suggest that a single pulse produced by an eruption would have pumped enough CO_2 into the

atmosphere to raise global temperatures by an average of 2 degrees Celsius. One eruption would not have been enough to warm the Earth for very long, however, but the basalt rocks showed a long string of eruptions happening over millions of years, raising CO_2 levels for the whole period—long enough to create major changes, such as ocean acidification, which together led to a massive extinction—approximately 75 percent of all land and sea species disappeared. It has also been theorized that the mass die-off was what led to dinosaurs becoming the dominant species.

Lava piles of the CAMP in Morocco (Midelt). Credit: Andrea Marzoli

More information: Manfredo Capriolo et al. Deep CO2 in the end-Triassic Central Atlantic Magmatic Province, *Nature Communications* (2020). DOI: 10.1038/s41467-020-15325-6