

The Volcanic Dating Game (Matt Zimmerer)

Welcome to Earth Matters: Field notes on the geology of New Mexico's enchanting landscapes. Celebrating Earth Science Week, I'm Andy Jochems.

There have been thousands of volcanic eruptions in the southwestern United States during the past several hundred thousand years. Many geologists believe that volcanism in the region has not stopped and there will be more eruptions sometime in the future. Geologists are studying New Mexico's most recent volcanic history so that we can determine when and where to expect future eruptions.

We can measure the ages of the volcanic rocks to understand how frequently volcanoes erupt. First, we collect the volcanic rocks to analyze. This involves traveling to some amazing places. Some volcanoes are at remote locations, but many of the national monuments in our state showcase young volcanoes, such as Capulin, Rio del Norte, and El Malpais. We collect samples by hiking up and down the volcanoes looking for pristine rocks, then break off a couple kilograms of rock with a small sledge hammer. These rocks are then taken to the laboratory for analysis.

New Mexico Tech is home to one of the best research laboratories in the country for determining the ages of volcanic rocks. At the New Mexico Geochronology Research Laboratory, the ages of volcanic rocks are measured using the principle of radioactive decay, the decay of Potassium-40 to Argon-40 specifically.

The newly determined ages for young volcanoes are very important for assessing volcanic hazards. For example, the new data show that vent locations are slowly migrating eastward and at each volcanic field, the next volcano is likely to erupt to the east of each previous volcano. The ages also indicate that the rate of eruptions in some New Mexico volcanic fields has increased during the last 100,000 yrs. Maybe the next eruption in the southwest will be right here in New Mexico!

Celebrating Earth Science Week, I'm Andy Jochems with the New Mexico Bureau of Geology at New Mexico Tech.