

“Planet Earth gets a Cat Scan”

INTRO

Welcome to Earth Matters...field notes on the geology of New Mexico's Enchanting Landscapes. I'm Rick Aster.

October 12 to 18 is Earth Science Week ... so join me ... in uncovering the mysteries of our planet and its dynamic history.

What would you find if you could look through solid rock hundreds of miles beneath New Mexico?

Seismologists, studying seismic waves traveling through the Earth, are beginning to answer this question, and the results are surprising! Processes up to hundreds of miles deep within the Earth create mountains, valleys, volcanoes and other features of the Land of Enchantment.

Earth's crust is around 30 miles thick beneath eastern and western New Mexico. However, it's as little as 20 miles thick along the Rio Grande Rift, a region of relentless geological stretching that is home to the Rio Grande valley.

The geological significance of our rift extends down over 150 miles into the Earth's mantle as a broad region that is largely solid, but contains a few percent of molten rock. Portions of the mantle underneath the rift are slowly convecting and overturning over millions of years like sticky oatmeal atop a stove. Magma has percolated upwards and created volcanoes, such as those near Los Lunas and the west side of Albuquerque. Beneath Socorro, uprising magma has ponded into the Socorro magma body, a lens of molten rock just 12 miles beneath the surface.

Earth scientists are learning more about these grand processes every day. This year, the EarthScope project of the National Science Foundation, in association with New Mexico Tech, has installed over 50 state-of-the art seismic recorders across New Mexico. Data being collected now will be used to produce dramatic new CAT-scan like 3-dimensional images of the Earth that will tell us still more about the frontier beneath our feet and its surprising links to our landscape.

OUTRO

Celebrating Earth Science Week, I am Professor Rick Aster of the Department of Earth and Environmental Science at New Mexico Tech.