

FIRST ALERT

Putting planet Earth under glass

By Daniel Stolte, University Publications

Think you know everything about the planet you call home? Think again and prepare to be astounded in this two-hour film, *X-Ray Earth*. See the planet as you've never been seen before as we challenge all of your preconceived notions about the world in which we live. Planet Earth is home, a sanctuary and the cradle of civilization that suspends in the inky blackness of space. It has shaped evolution, history and everything that makes us human.

Making use of cutting-edge scientific tools, this programme travels over, across and deep into the Earth's crust to learn just what makes your world tick. The result is a comprehensive portrait of a planet that defies your idea of terra firma, and instead lives, breathes and even flexes its muscles.

"X-Ray Earth," a new National Geographic documentary airing May 15 and May 17, features UA scientists applying new technology to uncover complex processes and their interactions in the Earth's interior, the oceans, on the continents and in the atmosphere.

New technology gives researchers tools to study and simulate Earth processes in ways that would have seemed like science fiction only a few years ago. (Photo courtesy of the National Geographic Channel)

Miniature Earth: Biosphere 2 is a unique place as it allows scientists to manipulate conditions that can't be tinkered with in nature. For example, they can study the effects of different levels of carbon dioxide on rain forests while simulating a drier climate at the same time.

A new generation of scientists is using entirely new ways to study Earth as a system. Recent advances in technology and computers have opened up possibilities that seemed like science fiction only a few years ago.

Similar to the way doctors use X-rays to diagnose unseen medical problems, scientists are using an army of sensors located underground and in the sky, the ocean and our cities to monitor the Earth.

Collecting and interpreting vast amounts of data, they study the myriads of interconnected processes that form our world, from the innermost core no eyes have ever seen to the oceans, the global climate and the creatures that live in it.

A National Geographic documentary, "X-Ray Earth," will premiere Sunday, May 15 at 6 p.m. MST with repeated programming on Tuesday, May 17 at 6 p.m. MST.

Part of the program highlights how University of Arizona scientists are using the controlled environment at the UA's Biosphere 2 to help them crack nature's codes, including work being conducted in Biosphere 2's tropical rainforest.

The trailer for the two-hour documentary states: "For eons, we've thought of our planet as a giant chunk of dead rock floating through space; our little world was at the mercy of its cosmic environment. But as we're now finding out, this planet is more alive than we could have ever imagined.

When the systems at work on this planet are compared to a human's, the similarities are striking. Like us, Earth has systems to control temperature. It moderates salinity and acidity, adapts to change, cycles gasses and even has a metabolism. Like a living being, our planet is continually growing new skin and it can even heal after injury. But how resilient is our world? Are some changes too drastic to overcome?"

David Rajter, field producer for "X-Ray Earth," said: "When we were first developing the program, Biosphere 2 was at the top of the list as a location that we must shoot at. As far as technology goes, there is nothing else like Biosphere 2 in terms of scale, diversity and the type of science that is done here. After nearly 20 years, it is uniquely suited to help us better understand our changing planet."

"Biosphere 2 is a unique tool that UA researchers are using to better understand Earth and how its systems may change in the future," said Travis Huxman, director of Biosphere 2 and a professor in the department of ecology and evolutionary biology.

Additional UA science to be highlighted in the program includes research by Brian J. Enquist, a professor in the UA's department of ecology and evolutionary biology, who uses fractal geometry to understand how the Earth breathes.

