Soil beneath ocean found to harbor long lived bacteria, fungi and viruses

August 29 2013, by Bob Yirka

(Phys.org) —Researchers with the Integrated Ocean Drilling Program (IODP) have presented findings at this year's Goldschmidt conference. They report having found bacteria, fungi and viruses living a mile and a half beneath the ocean floor—such specimens, they report, appear to be millions of years old and reproduce only every 10,000 years.

The IODP is an international effort with participants from 22 countries. Its goal is to study the history of the ocean basins, which it does by drilling (from the scientific drill ship JOIDES) deep into the ocean floor and retrieving samples of what is found.

In addition to being old, the specimens found in the soil are also sparse, at least when compared to microorganisms found in soil on the surface of the planet. The team reports that they found just 10,000 bacteria

specimens in a teaspoon-sized sample of dirt retrieved from deep below the ocean floor. That contrasts with the billions or even trillions of bacteria normally found when looking at soil found on land. The team also reports finding fungi and viruses, which were less sparse (they found ten times as many viruses as bacteria) but still well below what is found in normal soil.

The researchers report that they've found many interesting characteristics of the microorganisms. Not only are they able to somehow find an energy source so far below ground level, but their metabolism is extremely slow—likely accounting for their longevity. Some of the researchers on the team aren't sure they're even willing to classify the organisms as live creatures—suggesting they exist in a sort of zombie-like state. All of the specimens found, the team reports, exist in sediment that is approximately 100 million years old, which suggests that they too may be nearly the same age.

In addition to wondering how the microbes find an energy source, the researchers also appear perplexed as to how they reproduce with such great distances between others of their kind. The team plans to dig deeper, clearly unsure how far down they will have to go to find the limits to where life exists.

Other researchers at the conference, which attracts approximately 4,000 geochemists each year, wondered whether microorganisms living at such depths might be having an impact on the amount of carbon sequestrated and if as a result they may have a bigger impact on the carbon life cycle than scientists have realized.

More information: Goldschmidt conference: goldschmidt.info/2013/index

via BBC