Dusty forests

SEMHUR

Global Biogeochem. Cycles **22,** GB1027 (2008)

Tropical montane rainforests are among the most species-rich ecosystems in the world. Often found in nutrient-poor soils, we know little about how these forests derive their nutrition. A recent study suggests that Andean montane rainforests obtain a considerable part of their nourishment from Saharan dust.

Jens Boy and Wolfgang Wilcke of the Johannes Gutenberg University Mainz, Germany, compared atmospheric nutrient inputs into these ecosystems with temporal changes in dust transport from the Sahara over a five-year period. They found that nutrient-rich Saharan dust is being deposited in, and taken up by, Andean forests. The extent of this deposition is increased during the La Niña phase of the El Niño–Southern Oscillation.

If the frequency of El Niño–Southern Oscillation events increases as a result of global warming, it could lead to changes in dust deposition and consequently the nutrient budgets of the Andean tropical forests.

Glacial Florida flow

Paleoceanography **23,** PA1217 (2008)

The Florida Current is part of the return flow of the Atlantic meridional overturning circulation, carrying South Atlantic waters at intermediate depth towards the North Atlantic Ocean. A new study suggests that this flow broke down during the last glacial termination.

Rosemarie Came at Woods Hole Oceanographic Institution, Massachusetts, USA, and colleagues used benthic foraminifera to reconstruct the nutrient content in the intermediate waters of the Florida Current during the last glacial termination. The team found a dramatic decrease in nutrient content for over 1,000 years from the beginning of the Younger Dryas cold reversal, reflecting increased influence of northern-source water at the sites.

These changes are associated with a decrease in meridional overturning circulation and North Atlantic Deep Water production during the Younger Dryas event.

Scottish impact

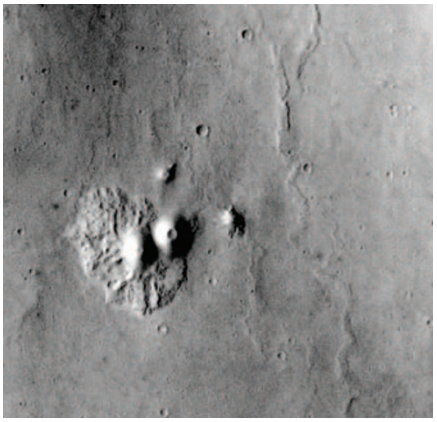
Geology **36,** 303–306 (2008)

A new study suggests that a rock layer in Scotland that was previously interpreted to be volcanic in origin was instead formed during an ancient meteorite impact.

Kenneth Amor from the University of Oxford, UK and his colleagues undertook a detailed investigation of this rock layer, which formed over a billion years ago in what is now northwestern Scotland. The structure of minerals within this layer indicates that they experienced high pressures in the past. This, as well as elevated concentrations of nickel, chromium and iridium in the layer relative to the surrounding rocks, is strongly suggestive of a meteorite impact. The layer was probably caused by a meteorite impact into wet sediments that resulted in the fragmentation of rocks and vaporization of water in the sediments.

This feature might serve as an analogue for similar deposits on Mars that are thought to have resulted from impacts into fluid-rich rocks.

Volcanoes in chaos



NASA/JPL/ARIZONA STATE UNIVERSITY

Icarus **194,** 487–500 (2008)

Deep, extensive depressions on the surface of Mars, called chaotic terrains, are generally believed to have formed when magma intruded into frozen ground or water-bearing rocks, causing a collapse. A recent study reports the presence of numerous small volcanoes within one such chaotic terrain and provides direct evidence for magmatic activity.

Sandrine Meresse from the IDES, Université Paris-Sud, France and her colleagues studied various types of spacecraft-derived images of the Hydraotes Chaos terrain on Mars. They identified and documented the morphological traits of several scattered conical features with pits on their summits. Although they do resemble some non-volcanic features as well, the overall morphology of the cones is very similar to volcanic cones on Earth, suggesting a volcanic origin of these features.

The relationship of the cones to other features in the Hydraotes Chaos terrain indicates that the cones formed late in the developmental history of these terrains, after most of the collapse had occurred.

Ephemeral oasis

Geosphere **4**, 375–386 (2008)

In 1998, Lake Nasser — the immense artificial reservoir created by the Aswan High Dam — overflowed its banks, leading to the formation of five new lakes in the Sahara Desert region of western Egypt. A new study suggests that these lakes, which at one point covered over 1,500 square kilometres, may soon be just a salty memory.

Mohamed Abdelsalam of the Missouri University of Science and Technology, USA and colleagues used satellite images to track the formation and evolution of these lakes. Beginning in August 2003, water stopped flowing in from Lake Nasser; however, evaporation of the lake water continued. As a result, the lakes have been continuously shrinking. If the rate of evaporation remains the same, the lakes will cease to exist by March 2011. Moreover, the underlying Nubian aquifer was not replenished because the lakes formed over impermeable rock.

The extensive layer of salt that might be left behind does not bode well for plans for increased agriculture in this area.