Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemarkingsdepatement

Private Bag X3, Rondebosch 7701, South Africa
Welgelegen House, Chapel Road Extension, Rosebank, Cape Town
Tel: +27 (0) 21 650 5427/5428/5674 Fax: +27 (0) 21 650 5628

www.uct.ac.za

11 May 2012

Drier winters could be end for Cape fynbos, UCT researcher warns

West Coast sediment cores give international team hint of climate change to come

Geological evidence from as far back as 1800 years ago indicates that as the planet warms due to build-ups of heat-trapping greenhouse gases, winter rainfall in the Cape is likely to become scarcer as well. This is the conclusion of an international team, which includes Professor Michael Meadows of the Department of Environmental and Geographical Science at the University of Cape Town, after studying West Coast sediment cores and ice-core data from Antarctica.

Meadows added that drier conditions and the increased risk of fires could put fynbos at risk of extinction as a result of the expected climate change.

The team obtained sediment cores from Verlorenvlei, an elongated former estuary at Eland's Bay along the West Coast, and used evidence contained in them to reconstruct the history of lake level fluctuations over the past 1800 years that, in turn, illustrate past rainfall regimes in the region. Their work see http://www.uct.ac.za/dailynews/?id=8110) - funded by the National Science Foundation in the US - was published last week in the open-access journal *Climate of the Past*.

What they found supports an unsettling conclusion that sophisticated climate models have been suggesting for the future of the Cape. As the planet warms due to build-ups of heat-trapping greenhouse gases, winter rainfall is likely to become scarcer as well, primarily because of expected shifts in the meandering belt of westerly winds that circles Antarctica and brings rainstorms to the Cape in winter. The belt shifts its position closer to or farther from Antarctica with the seasons: cooler months drive it farther north over the Cape, carrying the life-giving rains with it, and warmer summer months draw it offshore where the rainstorms can no longer strike land.

Professor Meadows said that the unique, diverse fynbos flora of the Cape could be severely affected. "These plants are tough, and they are already used to dry conditions," he said. "But further aridity could make fires more frequent as well, which could damage the soils and make it even harder for the native plants to survive here."

Professor Meadows said: "Unfortunately, this is their only native habitat, so such a change here might eventually threaten their very existence."

The lake itself is a protected area and regarded as an extremely important site for nature conservation, not least for its prolific birdlife, added Meadows.

The team's research shows that rainfall increased dramatically at Verlorenvlei during a natural cool period observed globally and known as the Little Ice Age – roughly 700 to 200 years ago. This association of higher rainfall with cooling is consistent with an anticipated link between future temperatures and the position of the westerlies, in which models suggest that global warming can have the opposite effect on local rainfall and essentially drive it away from the African mainland.

American researcher Curt Stager, lead author on the paper, *Precipitation variability in the winter rainfall zone of South Africa during the last 1400 yr linked to the austral westerlies,* said: "A poleward retreat of the austral westerlies would have serious societal and ecological consequences for the winter rainfall region of South Africa. The same also appears to be true for the semi-arid winter rainfall regions of South America and Australia-New Zealand."

Such a poleward shift of the westerlies could also enhance the flow of the coastal Agulhas Current around the Cape and thereby disrupt sea surface temperatures and weather patterns in the Atlantic and Indian Ocean basins.

"There's a lot more to greenhouse gas build-ups than temperature alone," Stager said. "These drought-sensitive regions of the southern temperate zone are among the most vulnerable to global climate change, thanks to this link with the westerlies."

ENDS

Issued by: UCT Communication and Marketing Department

Patricia Lucas
Tel: (021) 650 5428 Fax (021) 650 5628
Cell: 076 292 8047
E-mail: pat.lucas@uct.ac.za
University of Cape Town
Rondebosch
Website: www.uct.ac.za