



EGU

Media Tips

24 April 2005

EGU General Assembly 2005

What:

Atacama Desert, Chile: 25 m.y. old and hardly changed

Where:

Monday 25/4, 13:30 – 13:45 – Lecture Room 17 (M)

Who:

Tibor Dunai*, Gabriel A. González López, Joaquim Juez-Larré



Tibor Dunai

The Atacama Desert is the oldest desert on Earth, at least 25 million years of continuous aridity – older even than the Namib Desert and more than twice the age of Antarctic arid conditions. This is one of the outcomes of recent research by Tibor Dunai and co-workers. Their work shows that the Atacama landscapes have remained virtually intact due to the prevailing hyperarid conditions. Erosion has hardly touched this area: the team found a river bed that did not carry any water for more than 120,000 years. Their study also has important consequences for the uplift history of the adjacent Andes chain.

Tibor Dunai: 'Researchers assume that the elevation of the Andes is to a large extent determined by the arid conditions in our research area. In short, millions of years of aridity – no erosion – no sediments dumped into the Peru-Chile trench – more friction in the subduction zone – higher mountain uplift rates. So far, this has been a theoretical assumption. Our dating of old erosion surfaces and sediments actually confirms this theory of the uplift of the Andes.'

Dunai and colleagues use a technique called surface exposure dating that uses measurements of the cosmogenic isotope ^{21}Ne in quartz clasts. The concentrations of this isotope are a measure of the time these clasts had been exposed to cosmic radiation and therefore of the time they had remained untouched by erosion. The sediment surface sampled is by far the oldest continuously exposed geomorphologic surface on Earth.

'We took sediment samples from a river bed and these show that nothing much has changed there in 120,000 years. All this time, not a drop of water flowed in this river. We also found one quartz clast in our research area that was 37 million years old, suggesting that arid conditions are even older than 25 million years. There have been short moist intervals, coinciding with episodes of global climate change, but the overall picture is of long-term extreme aridity influencing the tectonic history.'

Contact:

Dick van der Wateren
EGU Press Officer

egu_press@copernicus.org

+31-20-4632559

Peter Vlam
assistant press officer
+31 (0)20 4632647

link

ORAL: EGU05-A-03201 Dunai, T.J.; Gonzalez Lopez, G.A.; Juez-Larre, J.; Carrizo, D. [Oligocene/Miocene age of aridity in the Atacama Desert revealed by exposure dating of erosion sensitive landforms.](#)

*) Faculty of Earth and Life Sciences, Vrije Universiteit Amsterdam, De Boelelaan 1085, 1081HV, Amsterdam, The Netherlands (tibor.dunai@falw.vu.nl)