

## Press Release



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### **The Red Sea - An Ocean Like All Others, After All GEOMAR researchers specify models for the birth of the youngest world ocean**

**06 May 2014/Kiel.** Actually, the Red Sea is an ideal study object for marine geologists. There they can observe the formation of an ocean in its early phase. However, the Red Sea seemed to go through a different birthing process than the other oceans. Now, Scientists at the GEOMAR Helmholtz Centre for Ocean Research Kiel and the King Abdulaziz University in Jeddah were able to show that salt glaciers have distorted the previous models. The study was just published in the international journal "*Earth and Planetary Science Letters*".

Pacific, Atlantic and Indian Ocean, with the land masses of the Americas, Europe, Asia, Africa and Australia in between – that's how we know our earth. From a geologist's point of view, however, this is only a snapshot. Over the course of the earth's history, many different continents have formed and split again. In between oceans were created, new seafloor was formed and disappeared again: Plate tectonics is the generic term for these processes.

The Red Sea, where currently the Arabian Peninsula separates from Africa, is one of the few places on earth where the splitting of a continent and the emergence of the ocean can be observed. During a three-

crust. Over geologic time periods, salt shows tar-like behavior and begins to flow. "Our new high-resolution seabed maps and magnetic modeling show that the kilometer-thick salt deposits, after the break-up of the Arabian Plate from Africa, flowed like glaciers toward the newly created trench and thus over the oceanic crust due to gravity," says Augustin. Since these submarine salt glaciers do not cover the rifting zone uniformly over the entire length, the impression of several small fracture zones was created.

The consequences of this discovery are profound: For one, there really seems to be only one single mechanism worldwide for the dispersal of a continent. And secondly, is not yet known how much ocean crust is covered by salt. This questions the previous dating of the opening of the Red Sea. In addition, the volcanically active trench rift zone of the Red Sea, surrounded by salt glaciers, is host of a giant sink filled with a very hot and very salty solution. "Since the sediment in the salt solution is rich in metals, this so-called Atlantis II Deep is also of economic interest," says co-author Devey. It is quite conceivable that over the course of the earth's history similar deposits associated with volcanism and salt deposits were created during the opening phase of other oceans. "Thus, our studies help to clarify older research questions. But they also provide starting points for new investigations in all of the oceans," says Augustin.

**Original publication:**

Augustin, N., C. W. Devey, F. M. van der Zwan, Peter Feldens, M. Tominaga, R. A. Bantan, T. Kwasnitschka (2014): The rifting to spreading transition in the Red Sea. *Earth and Planetary Science Letters*, 395, <http://dx.doi.org/10.1016/j.epsl.2014.03.047>

**Links:**

[www.geomar.de](http://www.geomar.de) GEOMAR Helmholtz Centre for Ocean Research Kiel

**Images:**

Images are available for download at [www.geomar.de/n1894-e](http://www.geomar.de/n1894-e)

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