Geysers on Enceladus and Europa prompt water rich Earth's interior idea

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keywords: low density Earth, water rich Earth, giant-impact Moon origin concept critique

Discovery of geysers on Jovial moons Enceladus and Europa raised many eyebrows. First, planetary scientists cannot really explain cryovolcanism on such a small bodies. Second, Enceladus and Europa are losing vapors to outer space. And third, process hardly had started yesterday. By official data, tiny moon Europa has more internal water than the Earth, what is absurd. The oceans represent only about 0.025% of the Earth's mass- geophysics sees this as a problem (Jacobsen and Van der Lee, 2013) because it has been thought, that here was more water in geological past of the Earth.

In latest decades surprising data about natural underground water reservoirs have been occasionally published (Coghlan, 2016, 2016A). Lake has been found even under volcano. Scientists, however, tend to speak only about water circulation in deep Earth in this connection (see for example fig.1), what is nonsense due to several reasons.

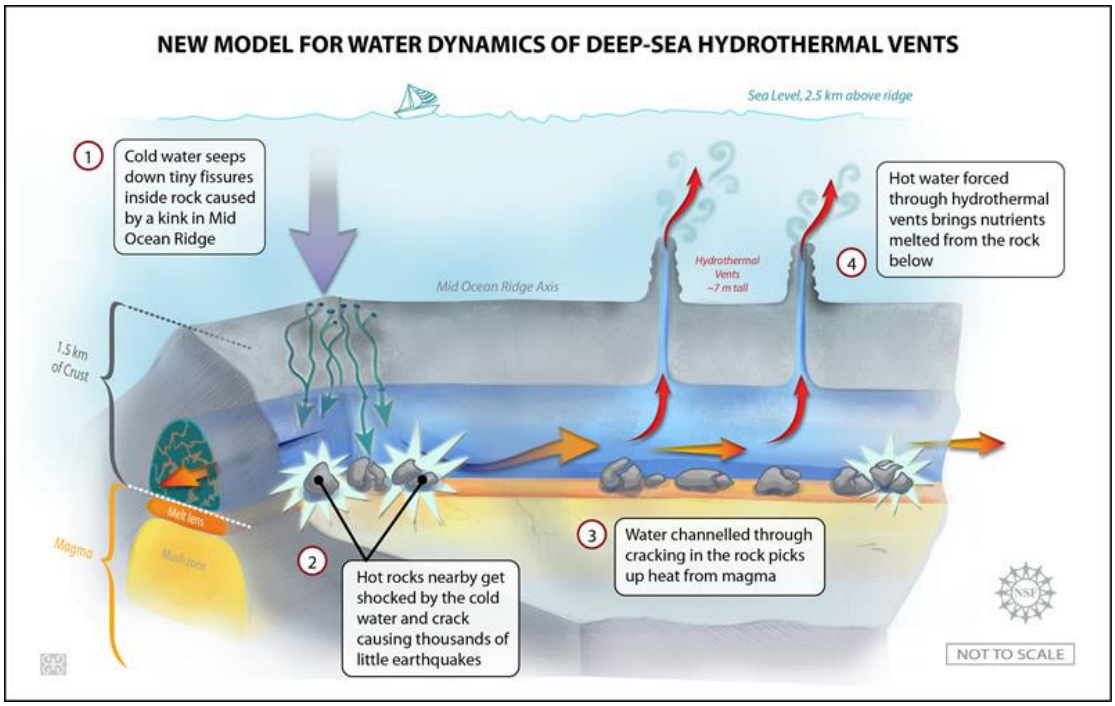

Fig.1 Proposed deep Earth water circulation model. *Credit: The Earth Institute at Columbia University.*

First, they considered water content in Earth's mantle and lithosphere as very small (Peslier, 2016). Second, by evaporation water expands 1244 times (for normal conditions, more for hot vapor). Thus normal result for interaction of cold water with hot magma (fig.1) is an explosion (what we do not normally observe on seafloors). Third, deep underground water is under pressure from below. Thus ocean water should find a very special place to go into

lithosphere. By contact with hot rocks pressure at place of contact will raise, preventing ocean water to go further. In short, fig.1 presents teleological tale.

Understanding, that Earth's mass should be seriously overestimated (Alksnis, 2018) brings a possibility to revisit basics of geophysics and trash out bad physics in its core- like huge piece of iron in the centre of the Earth, "geomagnetic" field or plate tectonics. More logical alternative to mainstream is water-rich Earth with colder and hotter zones in lithosphere and lower. Earth interior had been discharging water for billions of years (cf. Fisher and Wheat, 2010) - some points for Expanding Earth, Hollow Earth and Hydrogen rich Earth concepts. This path of reasoning adds voice also to giant-impact Moon origin concept critique (cf.Ringwood, 1989, Wogan, 2012).

References

Alksnis E. (2018) Earth's mass overestimated. *viXra*
Coghlan A. (2016) Deepest water found 1000km down, a third of way to Earth's core. *New Scientist*.
Coghlan A. (2016A) Huge lake discovered 15 kilometres under a volcano. *New Scientist*.
Fisher A., Wheat G. (2010) Seamounts as conduits for massive fluid, heat, and solute fluxes on ridge flanks. *Oceanography*, **23**, 75.
Jacobsen S., Van Der Lee, S. (2013) *Earth's Deep Water Cycle*. AGU
Peslier A. (2016) Earth total water content. *NASA*.
Ringwood A. (1989) Flaws in the giant impact hypothesis of lunar origin. *Earth and Planetary Science Letters*, **95**, 208-214.
Wogan T. (2012) Findings Cast Doubt on Moon Origins. *Science*. Mar. 25, 2012

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Earthquakes Under Pacific Ocean Floor Reveal Surprising Flow of Water

News story originally written on January 11, 2008

A group of scientists have been studying an area of the ocean floor called the East Pacific Rise, which is about 565 miles southwest of Acapulco, Mexico. The East Pacific Rise is a ridge along the ocean floor where the sea floor is spreading.

These scientists have learned that tiny earthquakes along this ridge are being created when the cold ocean water passes through hot rocks and picks up their heat. This process shrinks the rocks and cracks them, creating small earthquakes. Then the seawater is forced down into the new spaces made by the earthquakes. This water gets heated by the hot magma and rises back to the seafloor and bubbles through vents in the sea floor back up into the ocean. Maya Tolstoy, a geologist studying this area, says this process is very similar to what happens in a pot of boiling water.

This is a very large system, and the scientists think a billion gallons of water flow through it each year! When the water rises back up into the ocean through the seafloor, it brings up minerals that were dissolved in the hot water below. Some rare animals feed off this "stew" of minerals and hot water, and scientists have been studying these vents to see how some animals can live in such a harsh environment!

Last modified April 29, 2008 by Becca Hatheway.