

Models show Earth's heat loss is higher on one side of the planet

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A team of researchers at the University of Oslo has found evidence that shows Earth's heat loss is more pronounced on one side of the planet than the other. In their paper published in the journal *Geophysical Research Letters*, the group describes creating models that represent Earth's heat loss over the past 400 million years and what they showed.

Prior research has shown that heat inside of the Earth makes its way to

the surface, where it dissipates. Heat inside the Earth comes about from the degradation of radioactive elements and is also left over from the collisions that occurred between asteroids that led to the creation of the planet. In this new effort, the researchers have found that the heat inside the planet does not escape uniformly across the surface.

Prior research efforts looking into Earth's heat loss were only able to go back in time approximately 240 million years. In this new effort, the researchers were able to create models showing the geography of the Earth going back 400 million years ago. Over that time, the continents have shifted quite dramatically, from supercontinents to the arrangement that exists today. To make their model, the researchers started by calculating how much heat has been lost over their period of study. They found it to be approximately 149 Kelvin per billion years of cooling. They also added data that described how much heat is able to move through different types of surface areas and data describing the movement of the continents. Heat is able to move much more efficiently through the crust beneath the oceans, they note, than through the crust below continents.

The [model](#) showed that more heat was escaping from the parts of the planet that were covered with large oceans, specifically the Pacific Ocean. They found that if they cut the planet in half at the 60 degree longitude line, the half of the planet that consists mainly of the Pacific Ocean allowed much more [heat](#) to escape than the hemisphere that includes Africa, Europe and Asia. Calculations showed that the Pacific Hemisphere has cooled approximately 50 degrees more than the African hemisphere over the past 400 million years.

More information: Krister S. Karlsen et al. Spatiotemporal Variations in Surface Heat Loss Imply a Heterogeneous Mantle Cooling History, *Geophysical Research Letters* (2021). [DOI: 10.1029/2020GL092119](https://doi.org/10.1029/2020GL092119)

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