A Hole in the World

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At this very moment, twin satellites — part of the Gravity Recovery and Climate Experiment, or Grace — are in polar orbit above the earth. They were built in Germany, launched from Russia in March 2002, and their mission home is at the University of Texas. One purpose of the mission is to map fluctuations in earth's gravity.

Like so much of science, what sounds matter of fact takes a lot of imagination to grasp. Recently, researchers using data from Grace announced that they had found the possible remains of an enormous crater a mile below the East Antarctic ice sheet — the result of an impact that may have wiped out 90 percent of life on earth some 250 million years ago.

To look back to that catastrophe — called the Permian-Triassic extinction — you have to imagine all of earth's continents merged in a single great land mass surrounded by a single great ocean. It's possible that the collision that caused this newfound crater — four or five times as big as the crater from the impact that is believed to have extinguished the dinosaurs 65 million years ago — may have helped create a rift that began to drive the continents apart.

These findings are tentative. Thanks to tectonic activity — the gradual recycling of the planetary crust — earth has erased most signs of the devastating events that shaped its early history. To understand the history of life we have to understand the relation between the expanding, diversifying thrust of evolution and the cataclysmic events that have altered its direction.