

Water in Earth and planetary interiors

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Earth is one of the terrestrial planets that are made mostly of rocks and metallic Fe. However, although a small fraction of the total mass, there is ocean on Earth, and it is generally considered that the presence of the surface ocean is a key to the origin and evolution of life. More than a half century ago, it was recognized that the ocean (and the atmosphere) on Earth has been formed by the volatile elements provided by the volcanic activities throughout the geological history. However, the common view at these days was that water and other volatile elements are present only in the shallow regions in Earth. This view has changed completely based on recent studies that show evidence that a substantial amount of water is present in the deep interior of Earth. This finding implies that the global circulation of water throughout the geological time might affect the present of ocean and hence the origin and evolution of life on Earth. Similarly, recent studies showed that the Moon's interior has about the amount of water as Earth's interior. In this lecture, I will show how scientists study water in Earth and other planets.

Keywords: water, ocean, Earth's interior, life