

# Why Did Earth's Oceans Take 700 Million Years to Form?

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Abstract: Earth is 4.5 billion years old. Earth's oceans are 3.8 billion years old. Why did Earth's oceans take 700 million years to form? The most obvious reason is that Earth was far too hot when it was young. Any water formed would have been immediately broken back up into hydrogen and oxygen plasma. More reasons are listed.

Earth's oceans took 700 million years to form. This is because:

1. Earth was far too hot in its beginning and earlier stages of evolution to maintain any large quantity of dihydrogen monoxide (water). The water molecules would be broken apart as soon as they formed.
2. It takes hundreds of millions of years for large quantities of water to form on a star, from its own oxygen and hydrogen gas combining together.
3. It takes hundreds of millions of years for a star to cool down enough to make a solid boundary between itself and an "ocean of water". In other words, a crust needs to form, and that takes huge amounts of time, as is evidenced by the geological record.
4. The right pressures need to be on the star for the water to form. When the star is young, the internal pressures are too great. As the interior pressure loosens up, the hydrogen and oxygen can combine together in large quantities.
5. It takes extreme amounts of time to dissipate the heat of ocean water formation, esp. since the Earth when it was a gas giant was adiabatic. It had a huge thermal blanket of hydrogen to prevent heat loss during ocean water formation. You have to remove the blanket to let the reaction continue. Many chemical reactions only take place at the right temperature and pressure, and with specific physical and chemical catalysts. All of which the Earth possessed far before it took up its current physical state.

Most importantly in all of this, the only theory that gives an estimation for how long it took Earth's oceans to form is stellar metamorphosis. Otherwise, astronomers will go back to thinking comets just deposited water on specific objects, which is unreasonable. Earth's water is here because it is at a specific stage of metamorphosis, it had far more water in its past, and will eventually lose all of its water, with and without the Sun even being present.

Total heat released due to Earth's ocean water formation:

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