

Houston, We Have Hydroxyl

Blog

With natural resources becoming scarcer by the day, scientists have searched far and wide for a way to replenish them. One place scientists have turned to is space, and their recent discovery, with respect to solar wind, could have far reaching implications for sustaining life on Earth. The new findings put NASA on the right track to creating water in space, rather than attempting to find it.

Essential to life as we know it, the importance of water is of little debate. A growing population is increasing demand for water in more ways than one. According to the World Economic Forum (WEF), water scarcity is one of the biggest risks facing mankind, and our research supports this view. Severe conditions in places like Capetown, South Africa tend to draw attention to emerging markets, but estimates^[1] suggest two-thirds of the world's population will face challenges related to water scarcity, including the US. Take California for example, where a severe drought starting in 2012 hindered water supply at the same time the state's agricultural industry fueled demand. Then there was the tap-water scandal in Flint, Michigan, where insufficient water treatment caused lead from the water pipes to leak into drinking water.

Harvesting water on the moon would help alleviate some of these issues here on Earth. The process starts with solar wind, which is a constant stream of plasma and particles emanating from the sun at incredibly high speeds. NASA's research shows that when this stream of protons hits the moon's surface, they combine with electrons and form hydrogen atoms. Then, the oxygen molecules contained in the lunar soil combine with the hydrogen atom and form the molecule hydroxyl, or OH.

You may have noticed there's an H missing from the ultimate goal of H₂O. The final step in the equation will take more time and research, but NASA's findings bring us one step closer to a solution for the imminent water shortages we are facing. This benefit alone should stoke the interests of scientists and environmentalists alike, but it's far from the only incentive for space exploration. The space economy is at an inflection point, driven by lower barriers to entry and increasing demand for space technology. To learn more about what's driving space exploration, the threat of water scarcity, and the inherent opportunities, see our reports *Longer Term Investments – Space*, and *Longer Term Investments – Water Scarcity*.

[1] Mekonnen & Hoekstra, 2016

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