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Four billion people affected by severe water scarcity

Date: February 15, 2016
Source: University of Twente
Summary: There are four billion people worldwide who are affected by severe water scarcity for at least one month a year. That is the conclusion after many years' extensive research. This alarming figure is much higher than was previously thought.
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FULL STORY

There are four billion people worldwide who are affected by severe water scarcity for at least one month a year. That is the conclusion of University of Twente Professor of Water Management, Arjen Hoekstra, after many years' extensive research. This alarming figure is much higher than was previously thought. His ground-breaking research was published in *Science Advances*.

Professor Hoekstra's team is the first research group in the world to identify people's water footprint from month to month and to compare it to the monthly availability of water. "Up to now, this type of research concentrated solely on the scarcity of water on an annual basis, and had only been carried out in the largest river basins," says Hoekstra.

He defines severe water scarcity as the depletion of water in a certain area. "Groundwater levels are falling, lakes are drying up, less water is flowing in rivers, and water supplies for industry and farmers are threatened. In this research, we established the maximum sustainable 'water footprint' for every location on earth, and then looked at actual water consumption. If the latter is much greater than what is sustainable, then there can be said to be severe water scarcity."

More than previously thought

Until now, it had always been assumed in the scientific community that 2 to 3 billion people were affected by severe water scarcity. "Previous research looked at the availability of water on an annual basis, but that paints a more rosy and misleading picture, because water scarcity occurs during the dry period of the year," explains Hoekstra. In his research, he describes for each place the number of months in a year that people are affected by severe water scarcity. That varies from zero to twelve months per year.

Problem areas Of the four billion people referred to, a large proportion feel the effects of water scarcity directly. Particularly in Mexico, the western US, northern and southern Africa, southern Europe, the Middle East, India, China, and Australia, households, industries and farmers regularly experience water shortages. In other areas, water supplies are still fine but at risk in the long-term.

Alarming

Hoekstra describes the figures as alarming and notes that the subject of water scarcity is climbing higher and higher on the global agenda. "The fact that the scarcity of water is being regarded as a global problem is confirmed by our research. For some time now, the World Economic Forum has placed the world water crisis in the top three of global problems, alongside climate change and terrorism." Professor Hoekstra continues, "All over the world, it is clear that the risks associated with high water consumption are being increasingly recognized. The growing world population, changes in consumer behaviour, and climate change are having a significant impact on the scarcity and quality of water."

Milestone

Hoekstra started his research in 2010, together with his University of Twente colleague and post-doc researcher Mesfin Mekonnen, from Ethiopia. They fully immersed themselves in modelling and in gathering input data on climate, use of land, soils, crop growth, irrigation, population densities, and industry. Hoekstra says, "This publication is a milestone for us, something to be proud of, but at the same time, it is just the beginning. Water is 'hot' in the scientific world, with many research groups currently working on the subject. The relevant knowledge is becoming more robust and that is a good thing. We are continuing with the next phase of our research, where the models are even more advanced, where we will understand the problem with even greater precision, and where we will be putting forward solutions."

Story Source:

The above post is reprinted from materials provided by **University of Twente**. Note: Materials may be edited for content and length.

Journal Reference:

1. M. M. Mekonnen, A. Y. Hoekstra. **Four billion people facing severe water scarcity**. *Science Advances*, 2016; 2 (2): e1500323 DOI: 10.1126/sciadv.1500323

Cite This Page:

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University of Twente. "Four billion people affected by severe water scarcity." ScienceDaily. ScienceDaily, 15 February 2016. <www.sciencedaily.com/releases/2016/02/160215090552.htm>.

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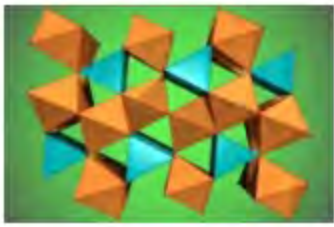
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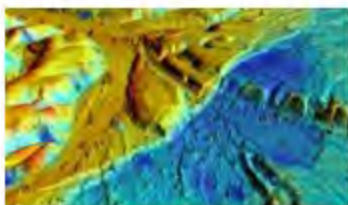
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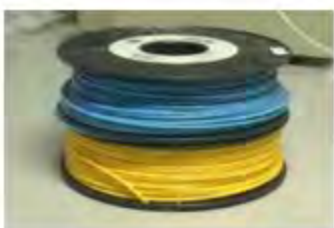
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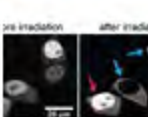
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