

Hailstones reveal life in a storm cloud

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This image shows a storm cloud building up in Namibia. Storm clouds often contain hailstones, which in temperate regions can reach the ground. Credit: Nina Ral^oen

It isn't life on Mars, but researchers have found a rich diversity of microbial life and chemicals in the ephemeral habitat of a storm cloud, according to a study published January 23 in the open access journal *PLOS ONE* by Tina Šantl Temkiv and colleagues from Aarhus

University, Denmark.

The researchers analyzed hailstones recovered after a storm in May 2009 and found that they carried several [species of bacteria](#) typically found on plants and almost 3000 different compounds usually found in soil. However, the hailstones had very few soil-associated bacteria or chemicals that would usually occur in plants. Three of the [bacterial species](#) discovered were found in most of the hailstones studied, and may represent 'typical' cloud inhabitants, the study reports.

According to the authors, this selective enrichment of certain plant bacteria and soil chemicals in the hailstones reveals how specific processes during the lifetime of a cloud may impact certain bacteria more than others. They suggest that these processes could affect the long-distance transport and geographical distribution of microbes on Earth.

"When we started these analyses, we were hoping to arrive at a merely descriptive characterization of the bacterial community in an unexplored habitat. But what we found was indirect evidence for life processes in the atmosphere, such as bacterial selection and growth," says Ulrich Gosewinkel Karlson, leader of the aeromicrobiology research group at Aarhus University.

More information: Santl-Temkiv T, Finster K, Dittmar T, Hansen BM, Thyraug R, et al. (2013) Hailstones: A Window into the Microbial and Chemical Inventory of a Storm Cloud. PLOS ONE 8(1): e53550. [doi:10.1371/journal.pone.0053550](https://doi.org/10.1371/journal.pone.0053550)

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