

Name of research institute or organization:

LBMPS, Université de Genève

Title of project:

Life in Darwin's Dust

Project leader and team:

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Project description:

Dust that blows from deserts across continents and oceans carries countless microorganisms with it. Our aim is to document the microbial populations that are present at the source (the deserts of the world) and in the sinks (the east coasts of North and South America, Europe, etc). Much of the dust that eventually settles in Europe and the Americas originates from the Republic of Chad. Since travel within the Republic of Chad is restricted by an ongoing war, we asked the International Red Cross (based in Geneva) to collect samples of desert soils for us. We received nine samples from various parts of the country and they have been analysed using classic microbiological techniques (culturing, sequencing the DNA of short, conserved loci). Winds tunnelled through mountains raise some of this sand into the air. Much of it falls quickly back to earth but some smaller particles (10 nm to 10 µm) continue upwards to the Planetary Boundary Layer and from there, they can be blown across continents and oceans. Some of this dust lands in Switzerland but what microbes it carries has not been properly documented. To study the transport and survival of microbes on intercontinental dust, we need to collect samples in an environment that is as much removed from ground-level contamination as possible. Ideally, an aeroplane that flew into a dust storm would be the best way to do this, but failing this collection dust at the High Altitude Research Station, Jungfrauoch is the best possibility. For this reason, we have installed a "Bertin" AirSampler in a heated box on a rail of the research station. Hopefully, dust will be collected during the next storm. It will be analysed using the same combination of microbiological methods used to study sand from Chad. Together, these sets of results will allow us to the answer the questions of what microbes are present at the source, which and how many survive intercontinental flight.

Key words:

Microbial hitch-hikers, Chad, bacteria, fungi, desert soils.

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