



Credit: S. Hildner, M. Duerdemiller, and P. Aniol



Credit: Rick Fienberg, TravelQuest International and Wilderness Travel



ECLIPSE BALLOONING PROJECT



Exposing Microorganisms to the Stratospheric Conditions

With the deployment of 57 autonomous balloons during the eclipse, this science payload will expose microorganisms to stratospheric conditions. The Earth's stratosphere (20 to 50 km above sea level) may be one of the best analogs to the harsh surface conditions on Mars – ultralow pressure and temperature paired with ultrahigh radiation and dryness. Unlike Mars, the Earth's stratosphere is accessible and affordable to reach via high altitude scientific balloon flights.

Each balloon flight will carry a highly-resilient, bacteria to the stratosphere for long duration exposures. Since we know bacteria can travel to the Red Planet onboard spacecraft, their persistence and response in a Mars-analog environment provides valuable information for mission planners. In addition, preliminary results provide insight on how the Earth's stratosphere can be used to cost-effectively address other open questions in planetary protection.

This test is designed to study the survivability of space-relevant bacteria, prepared in identical concentrations, exposed to the stratosphere on the same day at launch sites spanning across the entire continental US. Is there a latitudinal influence on stratosphere survival? That's a unique, unanswered question in the field of space biology that we hope to answer!

