Abstract Submitted
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Stratospheric Organism and Radiation Analyzer SAMUEL A. GARCIA MORELOS, FRE'ETTA BROOKS, STEVEN OLIVER, ALEJANDRA CRUZ, DIEGO HERNANDEZ, JAIME JUAREZ, REED MASEK, DEBORA MROCZEK, DORIAN PENA, KEVIN PORTILLO, ANDREW RENSHAW, ANDREW WALKER, University of Houston — SORA was selected to fly with HASP on a NASA high-altitude balloon mission on December 2016. The High Altitude Student Platform is designed to carry twelve payloads to an altitude of about 30 km for a flight duration of 15 to 20 hours. The University of Houston team consists of 12 students and a faculty advisor. SORA successfully completed its mission on September 2017, sampling for extremophiles and analyzing distinct aspects of the surrounding environment such as radiation exposure, temperature, pressure and humidity. The student designed and built payload had three main scientific objectives: isolate surrounding air, analyze for radiation, and monitor environmental conditions. To isolate surrounding air and sample for cells, the team designed and built a novel system using commercial vacuum pumps. A MiniPIX device analyzed cosmic radiation, while UV sensors collected data for the duration of the flight. Lastly, an onboard flight computer monitored environmental conditions, such as temperature, pressure, and humidity. This same computer also controlled all aspects of the payload, such as serial commands to control pump operation. Overall, the payload design employed additive manufacturing and hobby electronics in its construction to provide an accessible basis for future missions. The preliminary results from the biological sampling analysis, MiniPIX data, and environmental monitoring will be presented.

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