

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
In Orbit - Postgraduate Space Education (4)

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A STRATOSPHERIC BALLOON PROGRAM AS A SPACE MISSION ANALOGUE: AN
EDUCATIONAL ACTIVITY AT THE INTERNATIONAL SPACE UNIVERSITY**Abstract**

The International Space University (ISU), in cooperation with the University of South Australia

(UniSA), operates the Southern Hemisphere Space Studies Program (SHSSP) in Adelaide, Australia. During the 2023 program, in January and February, a stratospheric balloon mission was conducted where a group of 12 program participants, along with their faculty advisors, planned, designed, and conducted a stratospheric balloon mission which reached an altitude of over 35,000 meters. Five payloads were carried, including two imaging cameras (one nadir and one horizon), two radiation detectors, and a life science experiment, all within a payload mass of only 1.2 kg. The participants were organized into four teams: planning and launch operations, ground station and tracking, payloads and data, and data processing and analysis. The team, in one week, designed, built, tested, rehearsed, launched, and tracked the balloon and recovered the payloads and their data. Analysis of the data was conducted both in real time during the 2-hour 21-minute flight, and also immediately after the mission upon recovery of the payloads. The mission was conducted as an analogue to an orbital space mission, with participants playing various appropriate roles that would be required for an orbital mission. This paper will present an outline of the program, its structure and organization, and how such an activity was conducted within a single week. We will discuss the educational value and benefits of such a hands-on skill-building activity within the larger structure of our overall space education program. We will also discuss the project's direct costs, technical requirements, and regulatory permissions needed for such a launch. Finally, we will discuss future plans for the activity and how it could be modified to be used by other educational programs, including our plans to create an open-source course pack and instructional design document to facilitate its replication by other space educational programs around the world.