

Stratospheric Operations and Observations Center (SOOC)

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Need/Problem

The stratosphere is the least observed and least operationalized atmospheric region, lying above the ceiling of most aircraft and below sustainable orbit, and sampled only intermittently.

- Sponsor demand is growing across High Altitude Platform Station (HAPS) telecommunications, wide-area Intelligence, Surveillance, and Reconnaissance (ISR), hypersonic corridors, and launch/reentry traffic, leading to solicitations requiring flights, payload development, and measurement in a single proposal.
- Nationally these three capabilities sit in separate institutions. At UND they sit in one college, but with no structure to present them as a single capability to a sponsor.
- Airspace, traffic management, and certification frameworks above Flight Level 60,000 ft (FL600) remain immature, which is an opening for institutions that move early.
- Without a coordinating entity, UND competes for these opportunities as individual investigators rather than as a unit.

Concept

Make stratospheric flight and measurement routine rather than exceptional. Neither capability is new; what is missing is the infrastructure that turns one-time campaigns into repeatable operations. The Center delivers a repeatable operations-and-payload cycle that supports sustained observation, testbed access, and student training on operational flights.

Apparatus/Facility

- **Operations:** Establish standing airspace access, launch and recovery procedures, and certification pathways above Flight Level 60,000 ft (FL600).
- **Instrumentation:** Develop standard payload interfaces — mechanical, power, and data — so instruments integrate onto airframes on a known timeline instead of as custom builds.

HAPS - Power Beaming Research



Objective

Establish an Aerospace College Center that opens new opportunities for research and education in the stratosphere for the College, University, and the State of North Dakota.

Advancement

Advance stratospheric access from campaign-scale to routine, so flights are scheduled rather than negotiated. Progress is measured by flights per year, days from payload delivery to flight, and cost per flight hour.

- **Airspace:** Moves from per-flight coordination measured in months to standing authorization and repeatable procedures above FL600.
- **Payloads:** Advances from custom one-off integration to a published interface with a known integration timeline.

End Users

- NASA TechFlights (Technology Advancement Utilizing Suborbital and Orbital Flight Opportunities).
- Department of War (DoW).