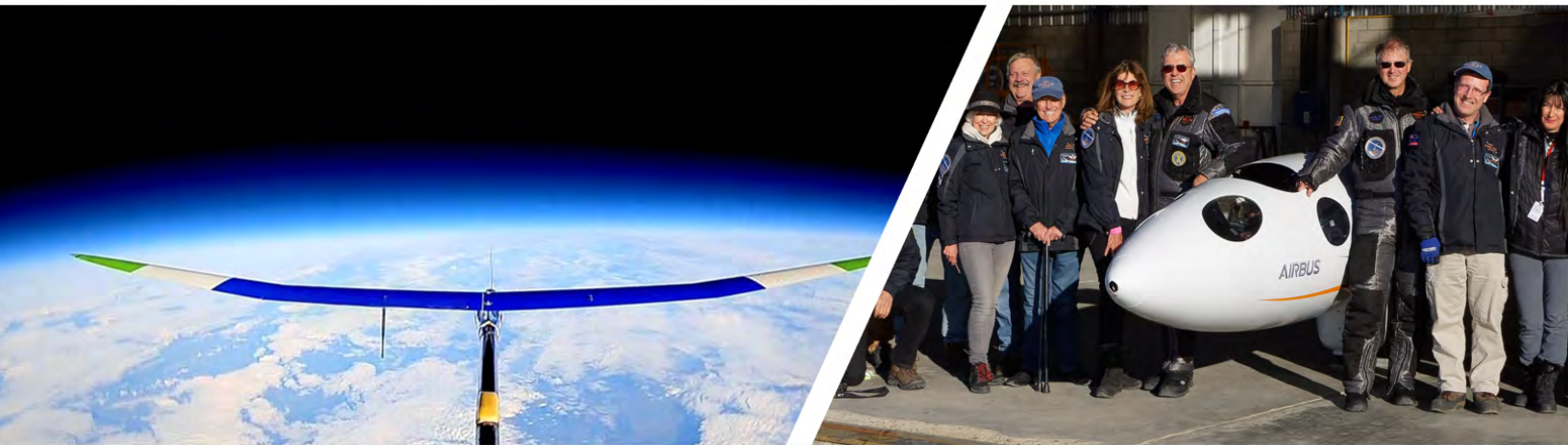


PARTners

PERLAN ATMOSPHERIC RESEARCH TEAM



Exploring the greatest mysteries of the atmosphere
from the ground to 30 Kilometers



WELCOME

PARTners is a consortium of scientists, meteorologists, and aviators dedicated to unlocking the most intriguing mysteries of the atmosphere.

The PARTners consortium has:

- Carried researchers to over 76,000 feet in a zero-emissions research glider.
- Launched autonomous controlled glider-based radiosondes from 130,000 feet.
- The ability to carry nearly one ton of scientific instruments to over 50,000 feet and supply them with electric power.
- Provided meteorological services and analysis for private and public organizations.

We are presently developing:

- The capacity to launch swarms of AI probes into atmospheric phenomenon of interest.
- An airborne internet connection for data transmission anywhere in the world.

The PARTners consortium has research collaborators in the Americas and Europe. We have operational experience from Canada to the southern tip of South America.

We would like to offer our combined capabilities and experience to you and other atmospheric researchers around the world. It is our belief that by working together nothing is too difficult to accomplish.

A handwritten signature in blue ink that reads "Ed Warnock".

Ed Warnock
CEO, Perlan Project



PERLAN PROJECT

We are an international team dedicated to exploring the stratospheric waves, energized by the Polar Vortex. Stratospheric waves help create the ozone hole and impact global weather and flight safety.

Our research has made the following contributions:

Aeronautics: Highest wing-borne, subsonic, human flight in history at 76,124 feet demonstrating flight in an environment similar to what is found on the planet Mars.

Meteorology: Better understanding of the sudden stratospheric warming event of 2019 that ushered in an extreme fire season in Australia.

Flight safety: Documented extreme horizontal temperature variations that will improve the design of autopilots and jet engine inlet controllers.

Reliability of high-altitude electronics: Very high-altitude radiation data gathered while flying in the ozone hole will help design airborne electronics that are less susceptible to interference from space radiation.

CONTACT:

Ed Warnock

503-520-1155

ewarnock@perlanproject.com

www.perlan.org

CAPABILITIES

Pressurized, crew of two, pilot & science officer

Zero-emissions

Designed to operate at 90,000 feet

Instrumentation:

3U CubeSat rack vented to outside air

LX 9000

IMU

VectorNav VN300

Wing Accelerometers

Temperature

GPS-RO

RTD OAT

Digital OAT

Ozone POM

Science OAT

UVA/UVB

5-hole air data probe

ARMAS, space weather

Radio occultation humidity sensor

Nominated twice for the **Robert J. Collier Trophy** awarded by the National Aeronautic Association for "the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, and safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year."





AV EXPERTS LLC.

One of the world's premier providers of high-altitude research aircraft. We operate a Grob Egrett that can cruise at 50,000 feet and a Piper PA-42 Cheyenne with optical glass windows.

The AV Expert Egrett made the world's highest aerotow when it towed the Perlan 2 to 47,100 feet.

CONTACT:

Roberta Yuhas, Ph.D.

214-704-5709

yuhas@enviexperts.com



CAPABILITIES

Egrett:

Long endurance, high altitude performance

50,000 foot plus altitude capability

850 kg of mission equipment

Power:

115V @ 400 Hz, 110V @ 60Hz, 28 VDC

Cruise Speed:

153 kts

Stall Speed:

58 kts

Short runway capabilities

Full approval for all-weather IFR operations

12 compartments for reconfigurable payloads





STRATODYNAMICS AVIATION INC.

Stratodynamics provide clients with payload integration and high-altitude flight services utilizing unique, unmanned aerial platforms. Services include payload integration with customizable controls, obtaining flight approvals, and operating flight campaigns.

The **HiDRON** platform is a unique balloon-launched unmanned glider capable of high-altitude flight in the cold stratospheric environment (-60° C). Once the balloon reaches the target altitude, typically 98,000 ft (30 km), the HiDRON is released and returns home in a controlled descent.

New for 2021, Stratodynamics introduces a High-Altitude Platform Station (HAPS) ApusDuo with strategic collaborator and autopilot developer UAVOS. The **HAPS ApusDuo** is a solar electric powered stratospheric Unmanned Aerial System capable of long duration flights at altitudes between 40,000 to 65,000 ft. (12-20 km). During sunlight hours, the battery is charged by solar power enabling the aircraft to stay aloft multiple days depending on the latitude and season.



CONTACT:
Gary Pundsack
519-848-6662
gpundsack@stratodynam.ca
www.stratodynamics.ca

CAPABILITIES

Payload Integration, flight approvals, and flight campaign operations.

Applications: Earth observation and in-situ monitoring from near-space. Equipment testing, development, and validation.

Payload Capacities:

| | |
|--------|--------------|
| 800 gr | HiDRON |
| 5 kg | HiDRON SO |
| 2 kg | HAPS ApusDuo |

Payload data recorded at the ground station and compiled with 200+ flight data parameters.

Up to 256 bps real-time data transmission.

100 km range from a single ground station. Extended range with multiple ground stations or optional satellite modems.

Autonomous flight modes and flight plan can be adjusted in real-time by an operator at the ground station.





WEATHEREXTREME LTD.

WeatherExtreme Ltd. is a world-wide leader in providing meteorological and climatological research, atmospheric science, oceanography, climate & earth science, aviation, and Geographic Information System (GIS) and modeling.

We research fires, tornadoes, floods, avalanches, hurricanes, aviation, environmental events, climate change, avalanche mapping/modeling, severe weather, stratospheric wave systems, and natural disasters.

Over the Decades WeatherExtreme Ltd. has provided consulting, advising and research for government researchers, universities, distinguished companies around the world.

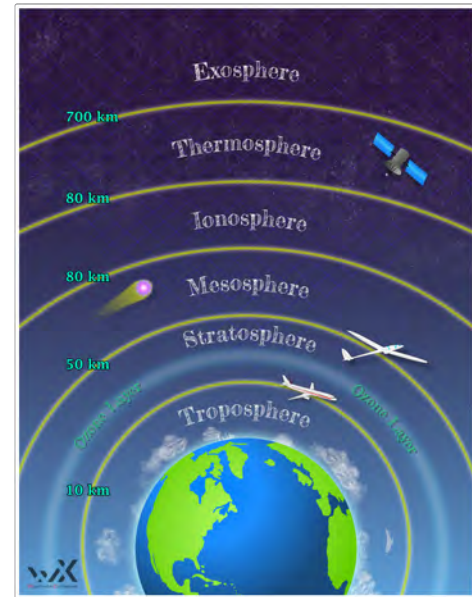
CONTACT:
Elizabeth Austin, Ph.D., CCM
775-636-8553
elizabeth@weatherextreme.com
www.weatherextreme.com

CAPABILITIES

Atmospheric / climate data collection and analysis during severe weather, tornadoes, hurricanes, polar vortex events, etc.

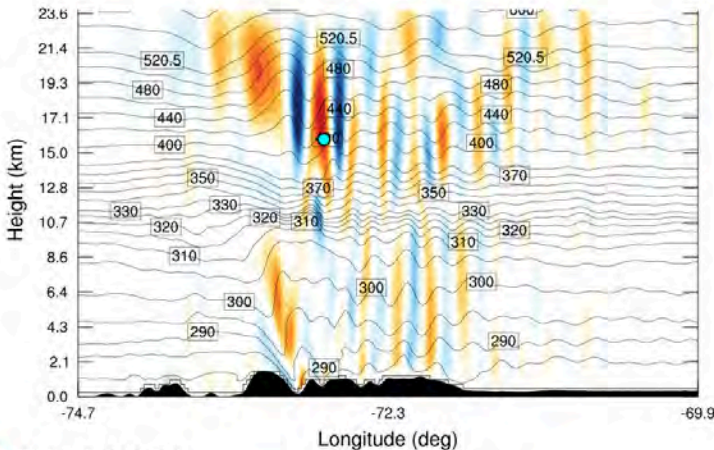
Stratospheric wave modeling, aviation efficiency and safety in the region of stratospheric waves.

We use software automation techniques to speed up data processing and deploy web-based application software toolsets employing Service Oriented Architecture.



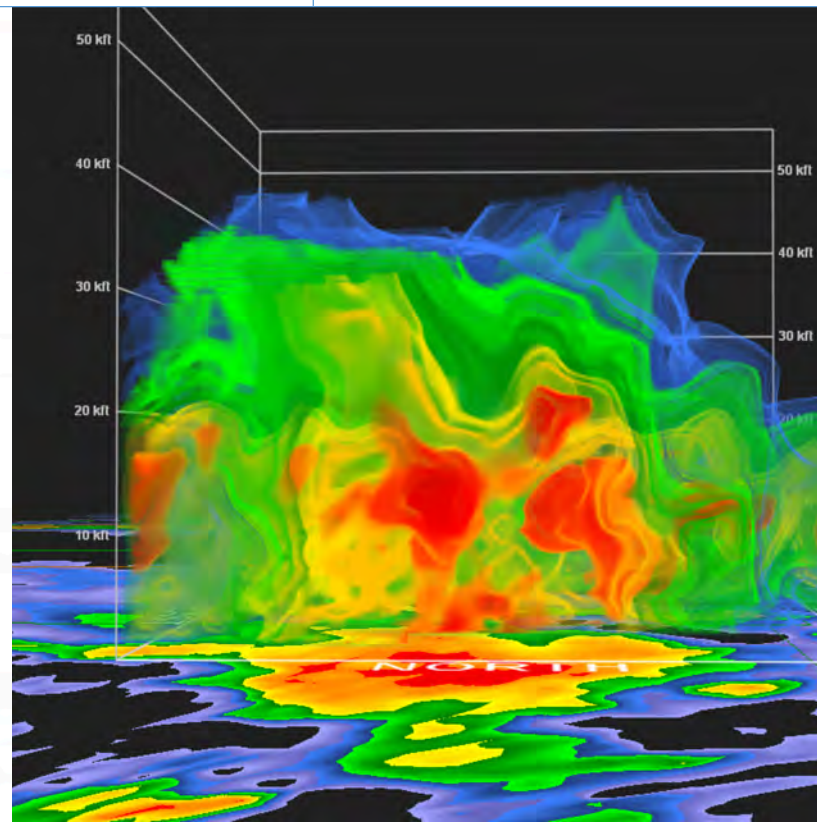
PERLAN WORLD RECORD FLIGHT

1800 UTC September 3, 2017



● Glider at 1730 UTC
52,172 Feet

Vertical Velocity (feet/min)





PARTners

“To unpath’d waters, undream’d shores”

THE WINTER’S TALE, WILLIAM SHAKESPEARE

PERLAN
PROJECT



STRATODYNAMICS
AVIATION INC.

