OTSL Logger Mission at Chacaltaya Observatory

The Ovante Time Study Logger (OTSL) project measures precision timing drift across a global network of synchronized logging units. Each unit uses a Raspberry Pi 5 with a Waveshare GNSS Timing HAT (NMEA + PPS), a barometric sensor (BME280), and a 3-axis magnetometer (AK8963 inside an MPU9250), logging one row every 90 seconds indefinitely.

Why Chacaltaya?

Chacaltaya Observatory in Bolivia (~5,200 m / 17,060 ft) is one of the highest, continuously staffed research facilities on Earth. Historically central to cosmic-ray physics, it offers exceptional exposure to space-weather and geomagnetic variability, making it an ideal site for time-drift studies and environmental correlation.

Purpose of This Deployment

- Collect continuous GNSS-anchored timing data (system vs GNSS drift).
- Record barometric pressure, temperature, and humidity.
- Record local magnetic field (Bx, By, Bz, and |B|).
- Contribute to a distributed temporal-coherence experiment alongside a DigitalOcean reference logger, enabling cross-site correlation analyses.

How the Chacaltaya Node Fits the Network

This high-altitude node is a critical point in evaluating whether timing-drift behavior correlates with altitude, geomagnetic conditions, and space-weather events. Data from Chacaltaya will be compared against other sites to probe temporal-coherence signatures.

Contact & Stewardship

Primary contact: Jon H. Brasher (Ovante / Stelleo Scientific). Operational goal: multi-month to continuous logging with remote health checks.