Objective: Complete description of the Major Constituents of the Thermosphere and Ionosphere
- Thermospheric temperature profiles
- Neutral density, composition day & night
- Minor species chemistry and abundance
- Electron density profiles

Approach: UV & Visible Remote Sensing of Airglow
- Limb radiances from EUV (55nm) to NIR (870nm) covering 90–350 km altitude
- Atmospheric composition retrieved by inverting limb radiances using state-of-the-art science algorithms
- Monitor dynamic variability in response to space weather and forcing from lower atmosphere

Sensor Description
- 2 Spectrographs, 3 Spectrometers, 3 Photometers
- NUV, MUV, FUV, EUV, NIR spectra
- Passband 55–870 nm, varying spectral resolution
- Scan 90–350 km, 3-km altitude resolution
- ISS Orbit: 325–425 km, 51.6° inclination

Airglow Remote Sensing
The Earth’s upper atmosphere and ionosphere glow day and night due to processes driven by sunlight, solar wind, and chemistry. Naturally occurring airglow can be passively measured by ultraviolet and visible remote sensors to study the density, composition, and temperature of the ionosphere, thermosphere, and mesosphere.

RAIDS measures the atmosphere and transmits data continuously
- Data is down-linked from the ISS and piped to NRL in near-real-time
- NRL processes, stores, and distributes RAIDS data

RAIDS views the atmospheric limb in the anti-RAM direction from the open end of the HICO-RAIDS Experiment Payload (HREP)
- HREP will be installed to the Japanese Experiment Module Exposed Facility (JEM-EF) aboard the ISS
- HREP will be the first US payload on the JEM-EF
- Expected RAIDS mission lifetime is 1-3 years

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