



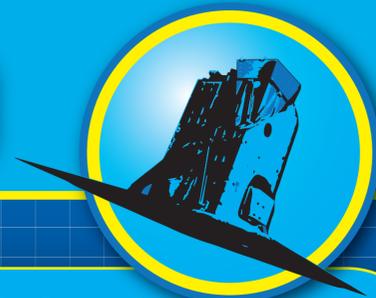
# THE OBJECTIVE: EXPLORE OUR INTERFACE TO SPACE

## THE MISSIONS: ICON + GOLD



### Ionospheric Connection Explorer

- **Orbit:** Low-Earth orbit (360-mile altitude), near the equator
- **Instruments:** Observing the nearest reaches of space from 50-400 miles above the surface, both remotely and *in situ*, allowing detailed snapshots of both neutral and ionized gases in the upper atmosphere.
- **Focus:** The interplay between terrestrial weather and space weather, based on recent discoveries that unexplained variations in Earth's space environment are connected to atmospheric conditions.



### Global-scale Observations of the Limb and Disk

- **Orbit:** Geostationary orbit (22,000-mile altitude) above the Western Hemisphere
- **Instrument:** Remotely tracking changes every 30 minutes in the upper atmosphere as they unfold across the globe—making it the first mission to monitor the region's true weather on a global scale.
- **Focus:** How Earth's upper atmosphere is affected by the Sun, Earth's magnetic field and the lower atmosphere.

## THE COLLABORATION:

Together ICON and GOLD provide the most comprehensive observations of Earth's upper atmosphere we've ever had. GOLD provides an overarching view of the entire Western Hemisphere, while ICON zooms in for close-up details. These missions help us understand an unpredictable area of near-Earth space that can affect how we live and explore.

ICON studies each of the many forces simultaneously affecting the upper atmosphere, searching for cause-and-effect relationships. During the day, GOLD studies how the thermosphere responds to solar activity. At night, GOLD examines disruptions in the ionosphere: unpredictable bubbles in the charged gas that appear over the equator and tropics, sometimes interfering with radio communications.

## THE LOCATION:

In the uppermost atmosphere, a layer of particles ionized by solar radiation—the ionosphere—coexists with the neutral atmosphere, called the thermosphere. This area is dynamic and constantly changing, caught in the push-and-pull between terrestrial weather below and space weather above. Solar radiation also sparks a phenomenon here called airglow—shining swathes of red and green light that ICON and GOLD use to measure changes in the region.

## NEAR-EARTH SPACE

Changes in near-Earth space can affect our lives on Earth by disrupting radio, cell phone and GPS communications.

They can also damage spacecraft and expose astronauts to health risks from radiation. The more we understand about the fundamental nature of our space environment, the better we can protect our interests.

### IONOSPHERE

