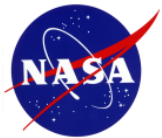


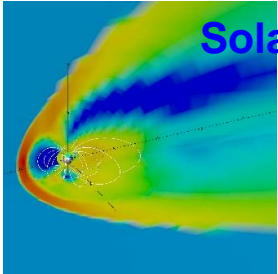
Global-scale Observations of the Limb and Disk (GOLD) Mission – an Unprecedented View of the Thermosphere-Ionosphere System

Richard Eastes
Principal Investigator
Florida Space Institute/UCF

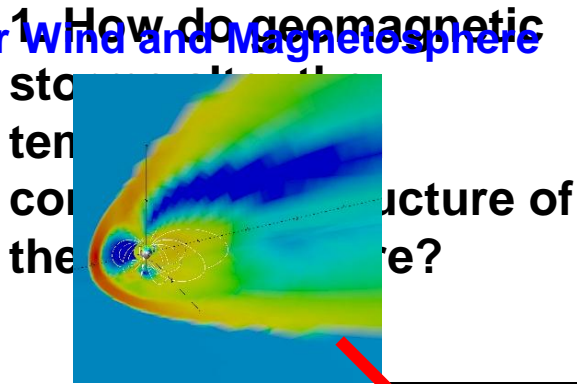


http://www.gold-mission.org/GOLD_EX_Factsheet.pdf

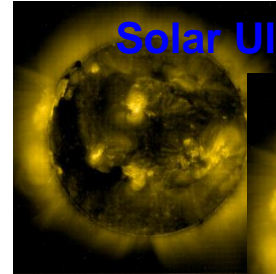
Forcing from Above



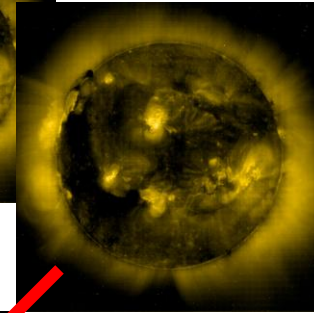
Solar Wind and Magnetosphere



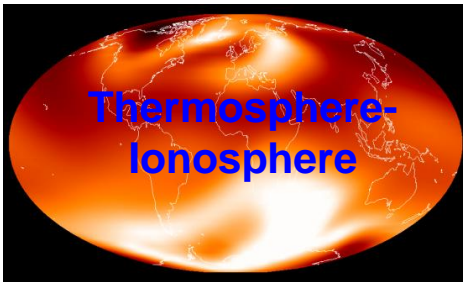
1. How do geomagnetic storms influence the structure of the magnetosphere?



Solar Ultraviolet and X-rays

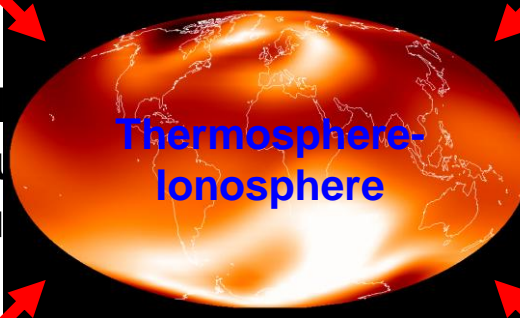


2. What is the global-scale response of the ionosphere to solar ultraviolet and X-rays?



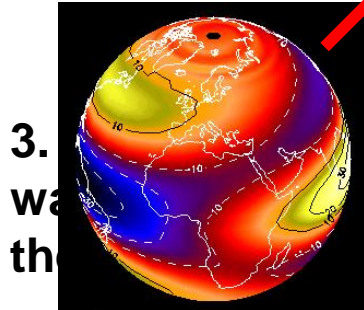
Thermosphere-Ionosphere

4. How do equatorial irregularities influence the thermosphere-ionosphere?



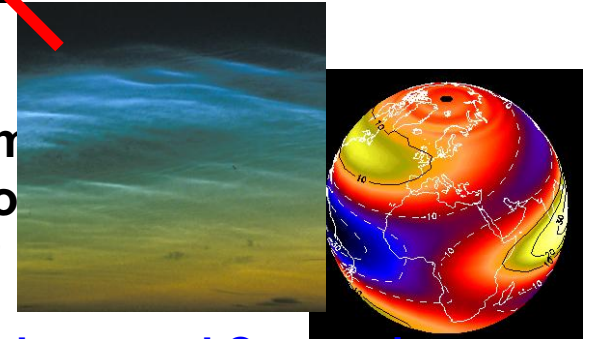
Thermosphere-Ionosphere

5. What is the evolution of equatorial irregularities?



3. What are the effects of atmospheric waves propagating from below on the thermosphere-ionosphere temperature structure?

Tides and Planetary Waves



Turbulence and Convection

Forcing from Below

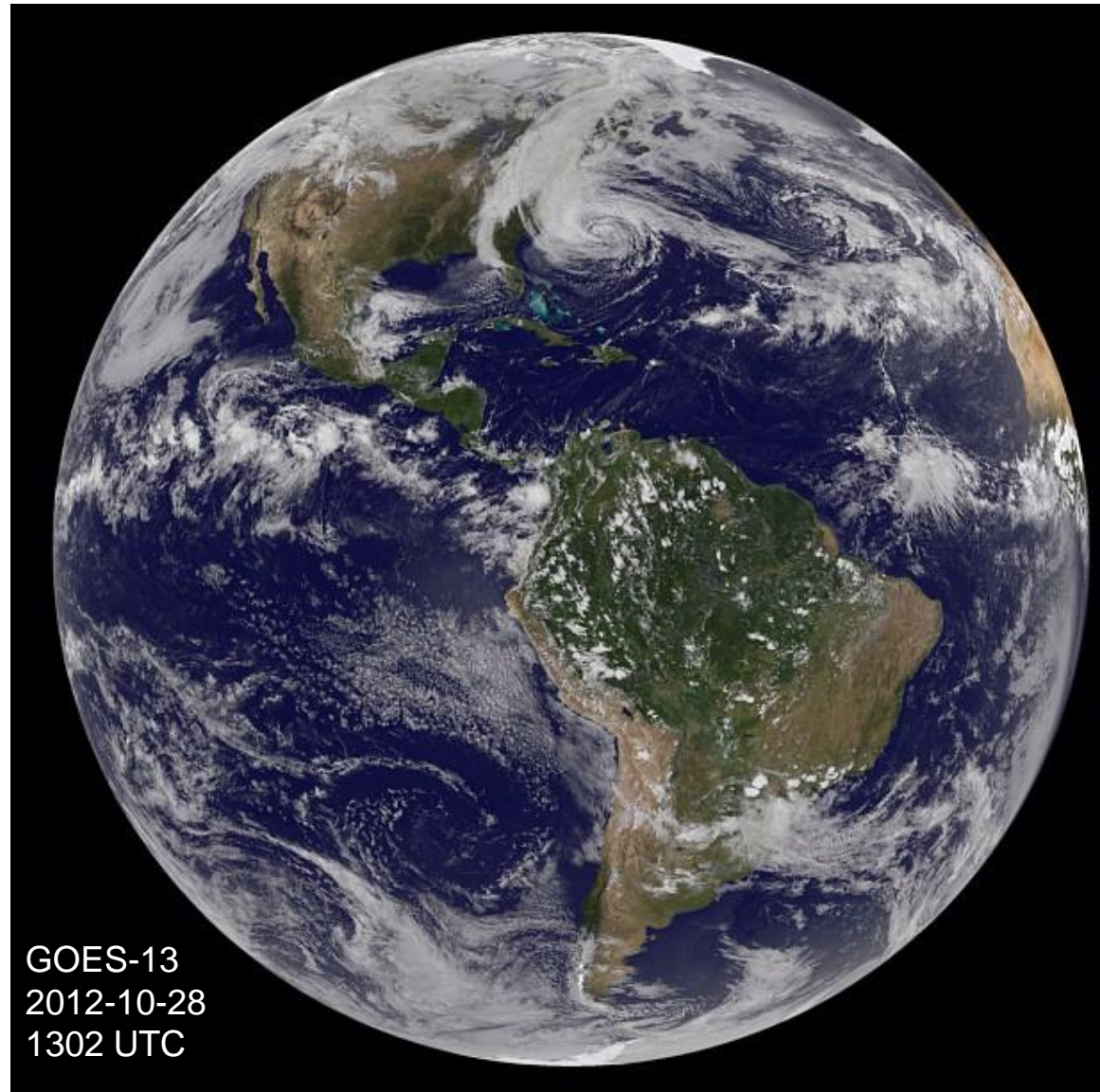
The View from Geostationary Orbit

GOLD

**GOLD images the
disk and limb from
geostationary orbit**

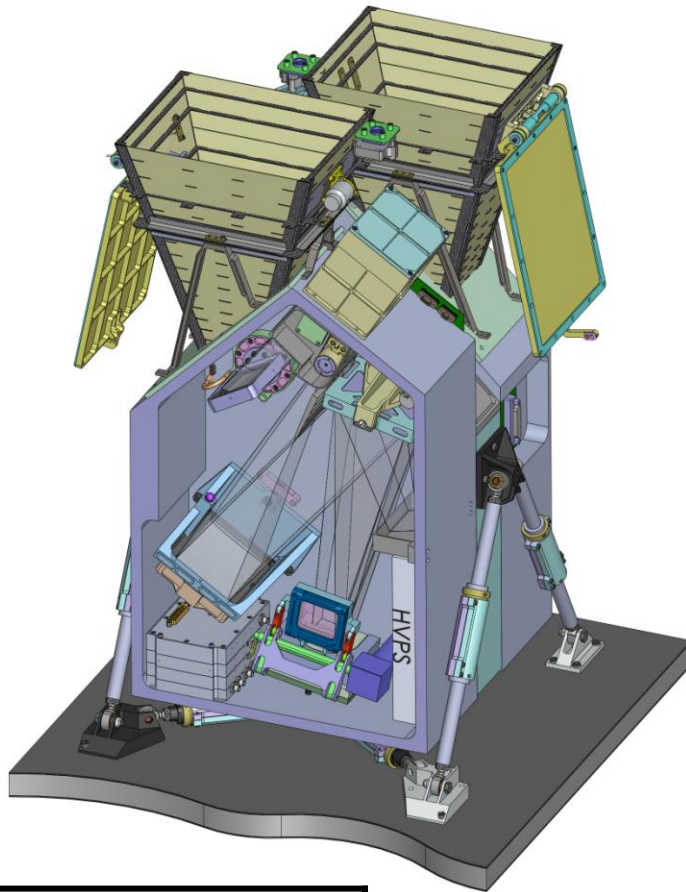
**Full images at
30-minute cadence**

**GOLD measures the
composition and
temperature of the
thermosphere**



GOES-13
2012-10-28
1302 UTC

GOLD UV Imaging Spectrograph



Instrument Summary	
Mass	30 kg
Power	24 W
Size	42 x 42 x 70 cm

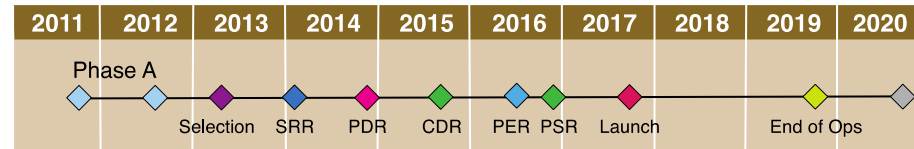
Imaging Spectrograph:

- Two independent, identical channels
- Microchannel plate, 2-D detectors
- Individual photon events recorded
- Spectral resolution: high (~0.3 nm), low and occultation (~3 nm)

Heritage:

- Cassini UVIS
- MESSENGER MASCS
- MAVEN IUVS (launched Nov., 2013)

Schedule:



Observations:

- Disk maps of T_{neutral} and O/N_2 density ratio (dayside)
- T_{exo} from limb scans (dayside)
- Disk maps of N_e maximum (nightside)
- O_2 density by occultations

- **GOLD imager will be hosted payload on a commercial communications satellite in geostationary orbit**
- **University of Colorado's Laboratory for Atmospheric and Space Physics will build the ultraviolet imager for the mission**
- **University of Central Florida is lead for the mission and home of Science Data Center for the mission**
- **Launches in 2017 for a two-year mission**
- **Coincident with ground based and LEO missions, ICON**

GOLD provides a new view of T-I system

