The CICERO Project

Community Initiative for Continuous Earth Remote Observation

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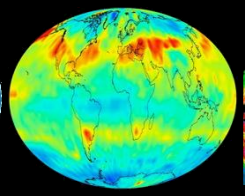
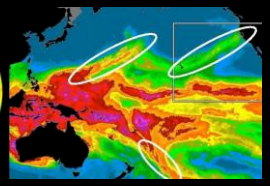
Planned CICERO Smallsat Constellation

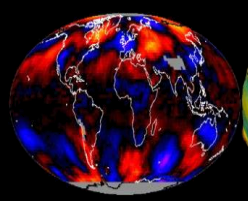
To Collect Diverse Types of Remote Sensing Data

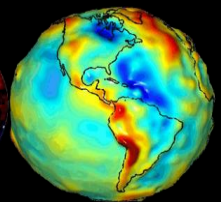
Weather & Climate
Earth Resources
Environment
Security


Ocean Circ.

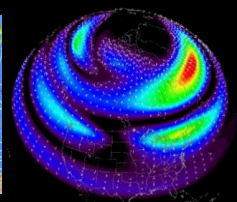

Carbon

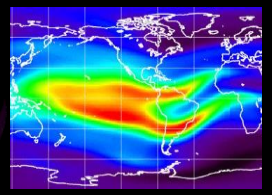

Atm. Moisture


Temperature


Gravity


Winds


Magnetics


Ionosphere

The CICERO Constellation
Today

GPS / Glonass / Galileo

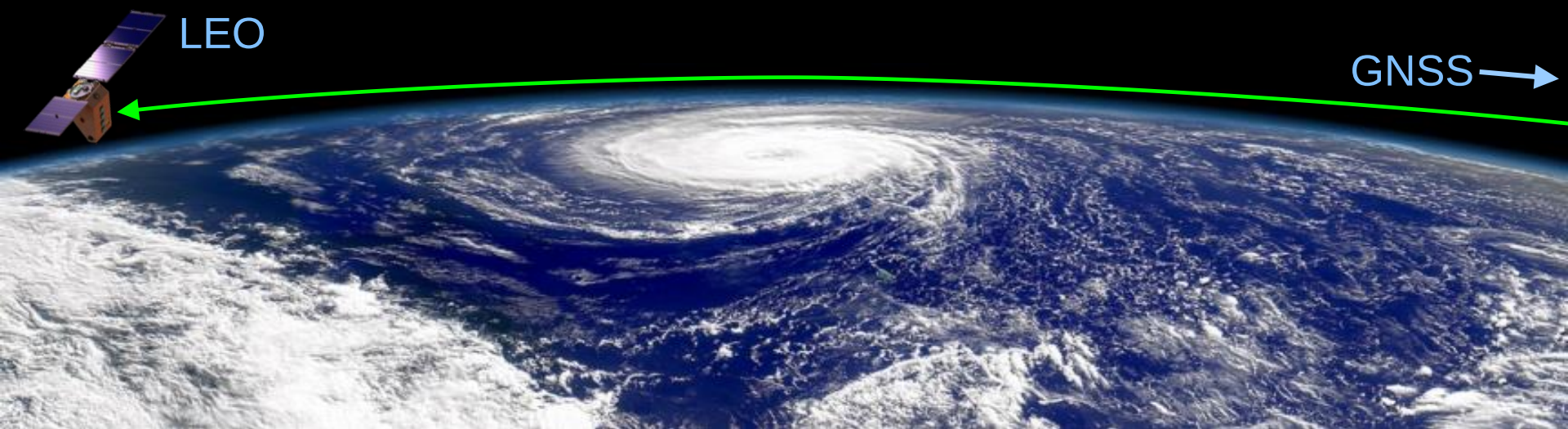
Radio Occultation

GNSS Radio Occultation

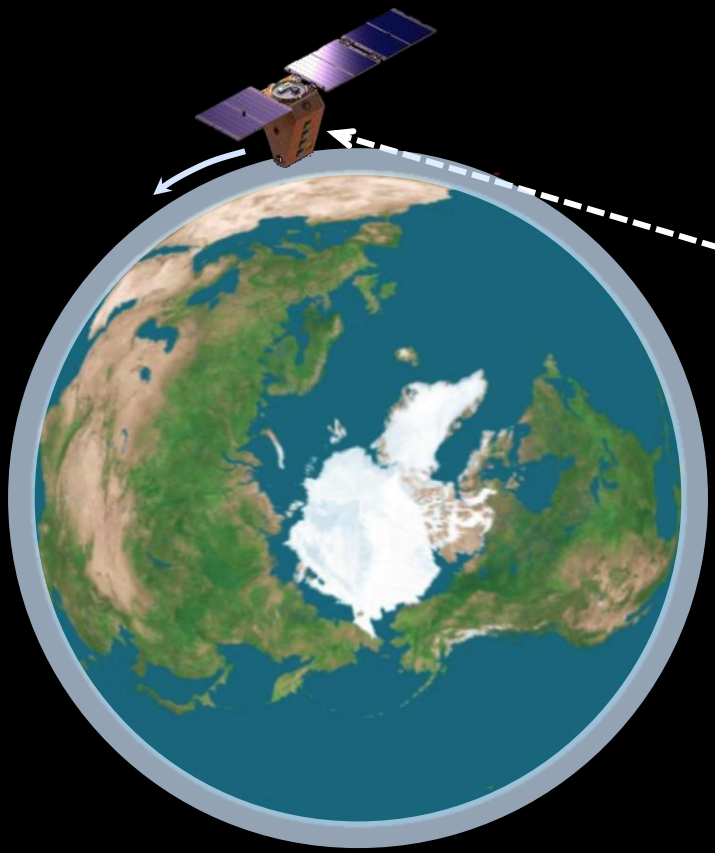
- High resolution profiles of:
  - Bending angle
  - Refractivity
  - Density
  - Pressure
  - Temperature / Moisture

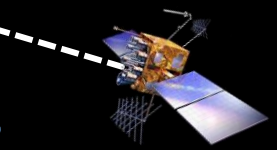
>10x the accuracy & vertical resolution of any other atmospheric remote sensing method

- Geopotential heights
- 3D geostrophic winds
- Global ionospheric imaging



GNSS Radio Occultation



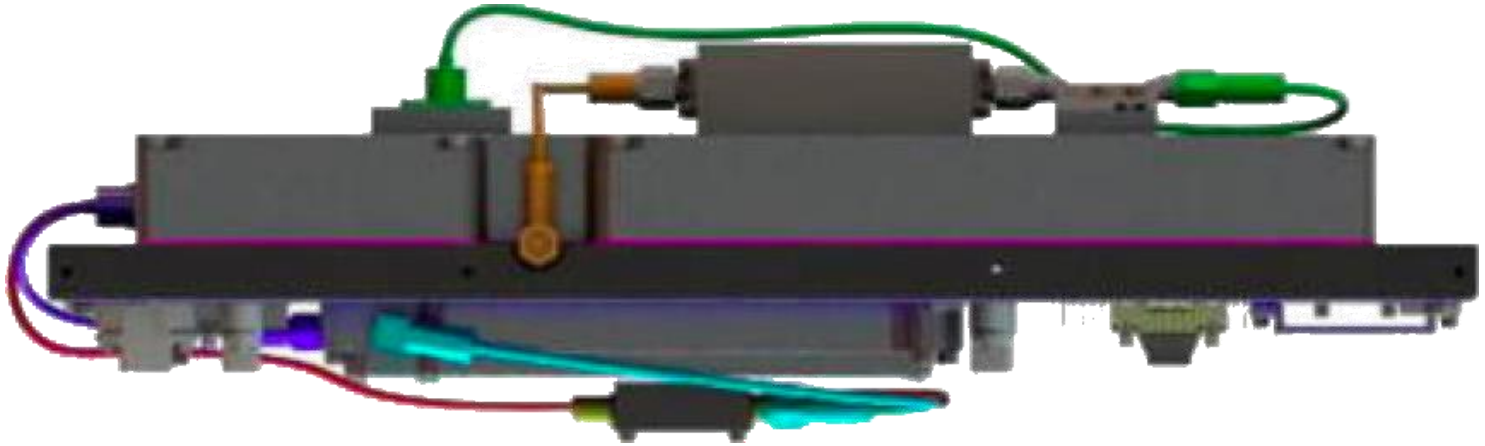


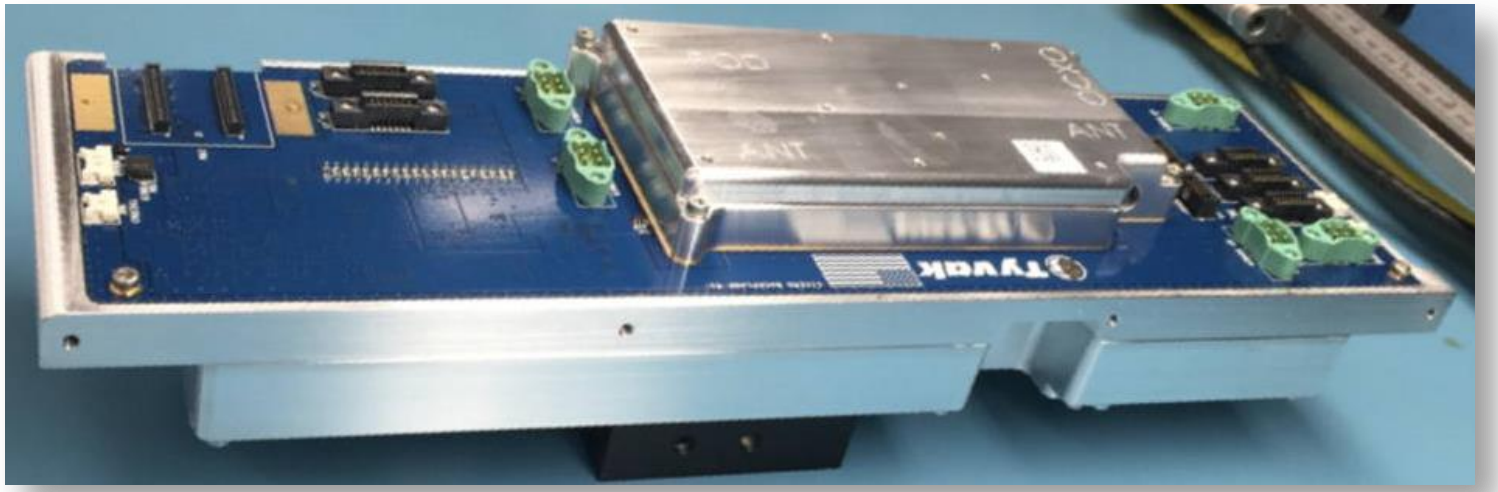
Key Mission & Instruments

• GGI Proposal (1988)	
• GPS-MET (1995)	TRSR
• CHAMP, SAC-C (2000)	BlackJack
• COSMIC-1 (2006)	BlackJack'
• COSMIC-2 (2019)	TriG
• CICERO (2017)	Cion

The Compact Cion GNSS-RO Instrument

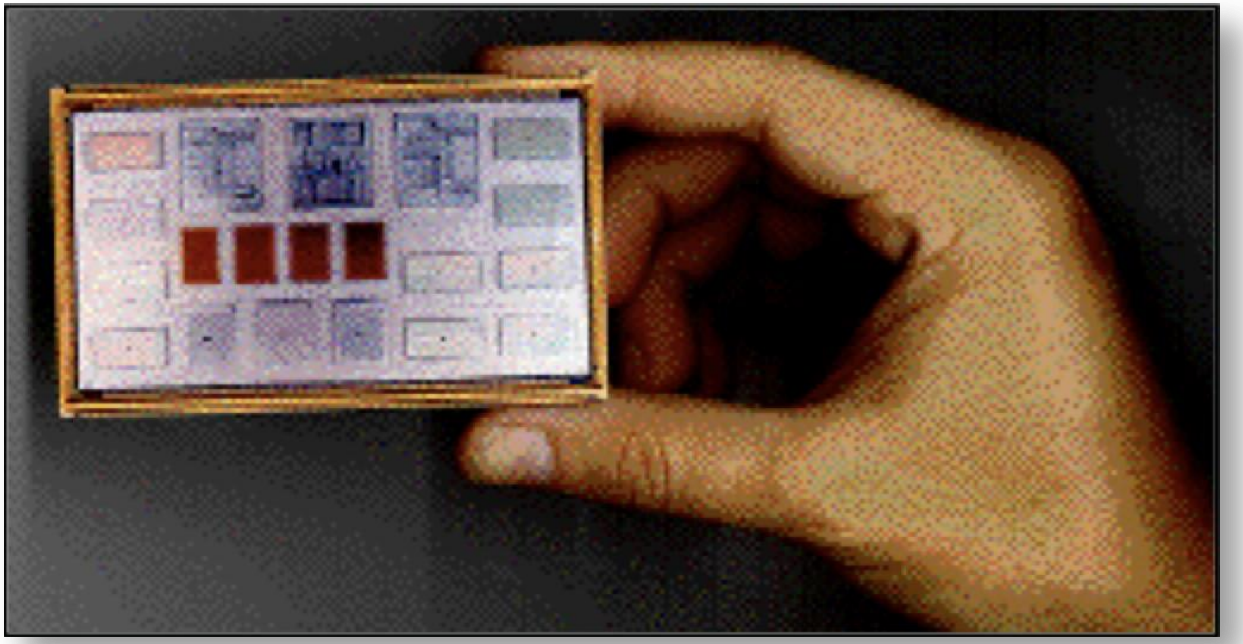
Miniaturized TriG: GPS, Glonass, Galileo





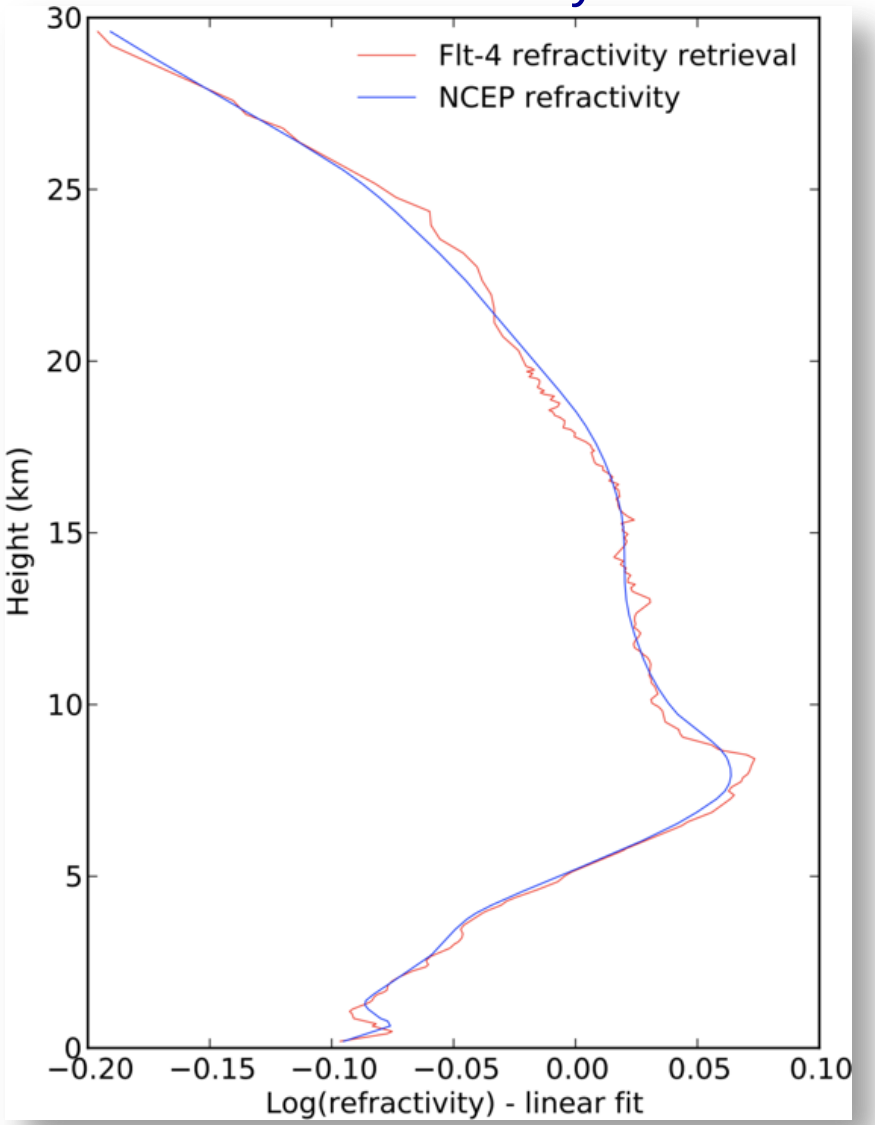
~1U and 6.5W

1998 Vision

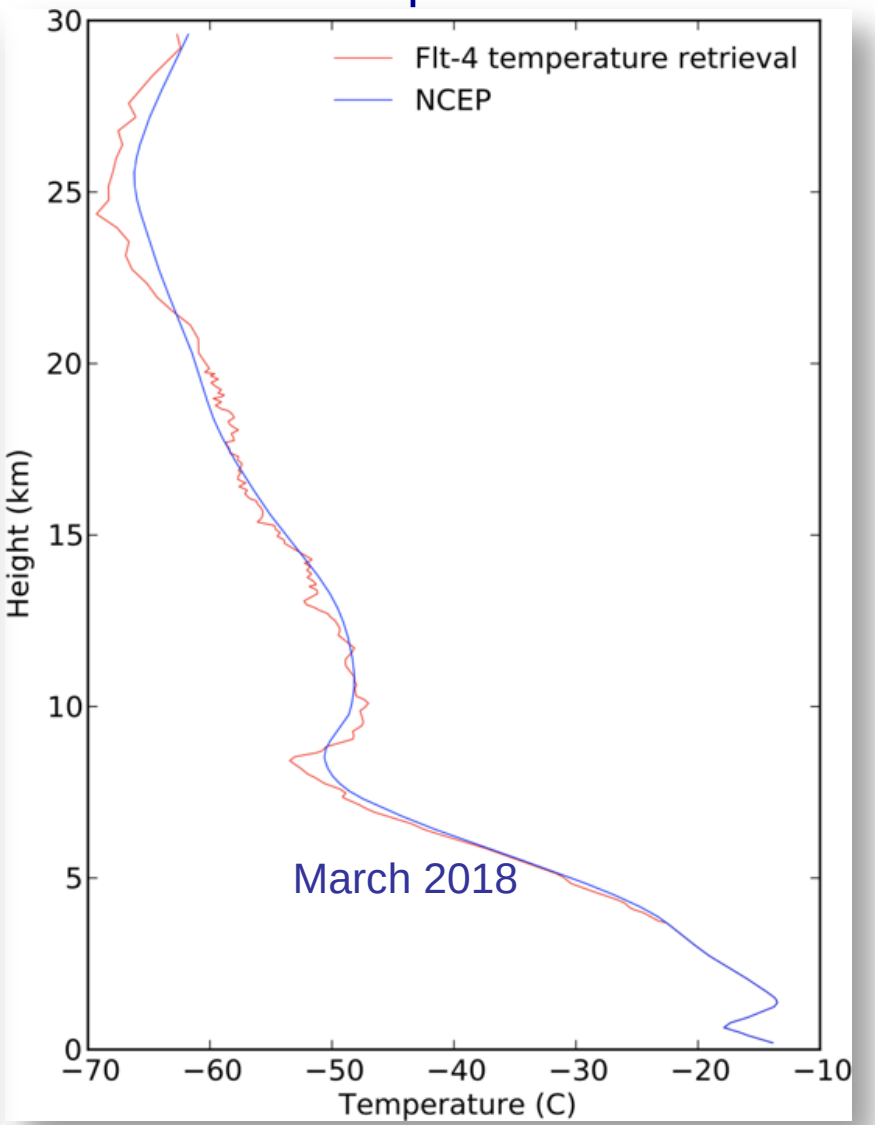


Sample CICERO Profiles

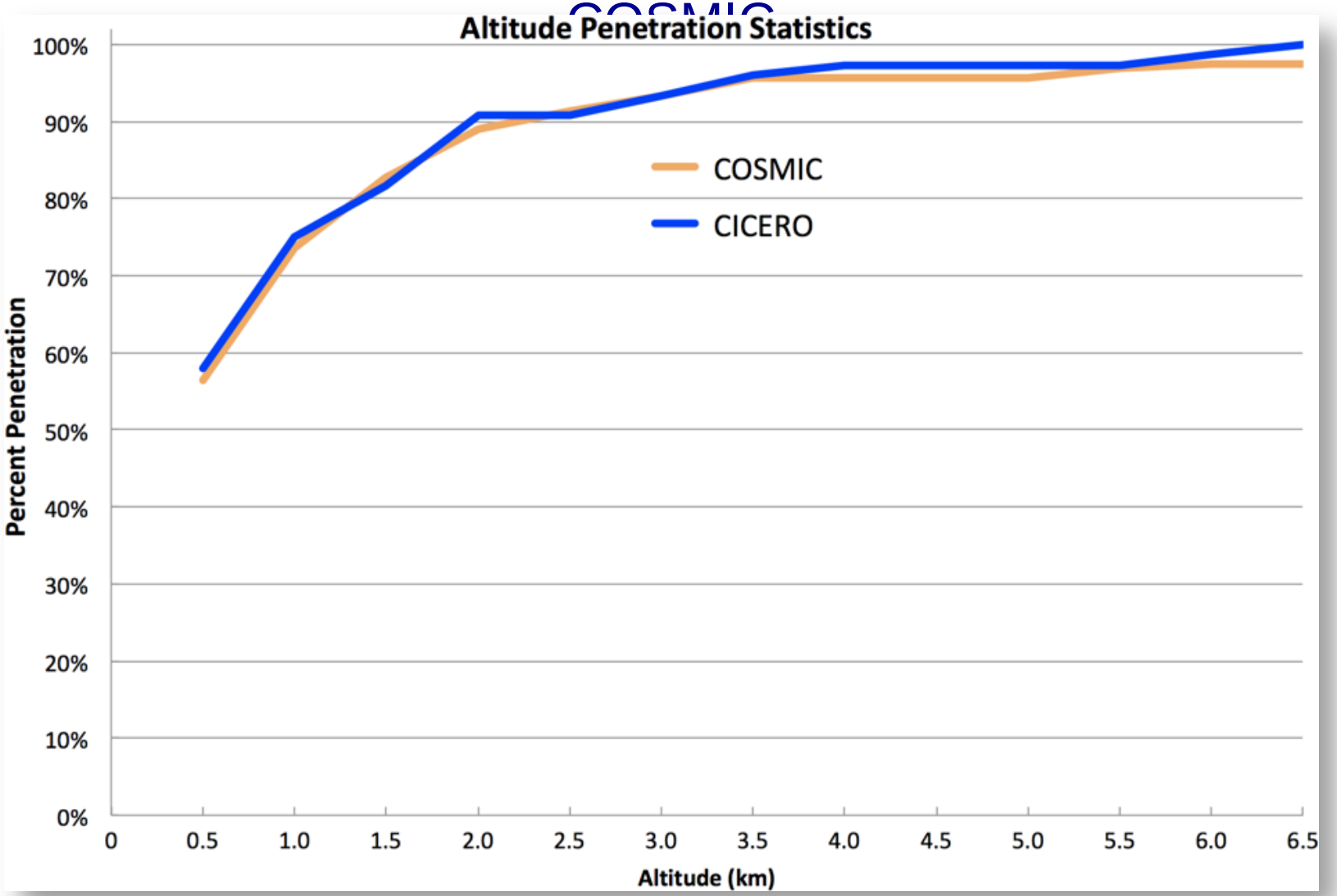
Refractivity



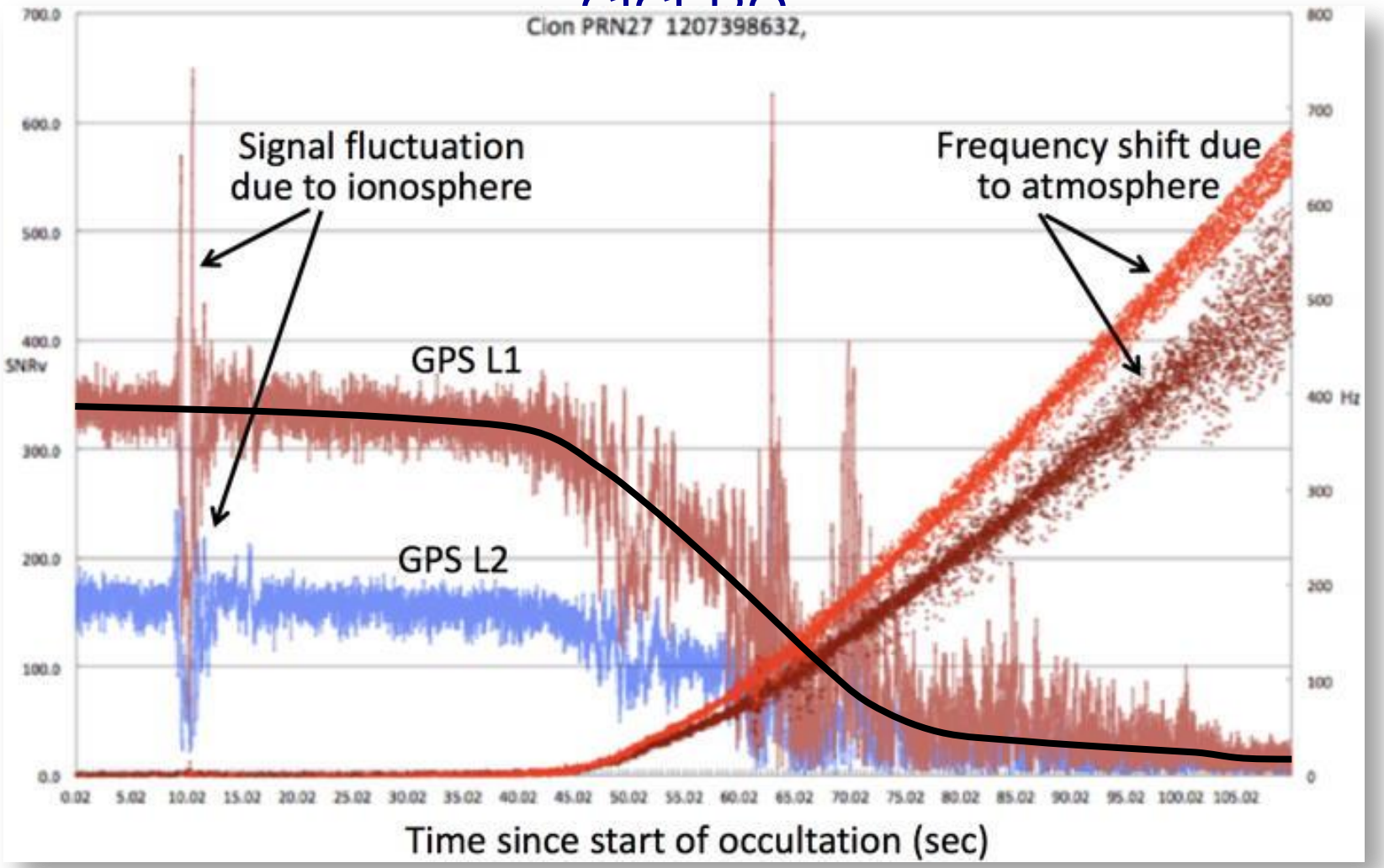
Temperature



Depth of Penetration: CICERO v COSMIC



Ionospheric Scintillation Event from CICERO



Ionospheric Structure