

# SunRISE: Sun Radio Interferometer Space Experiment

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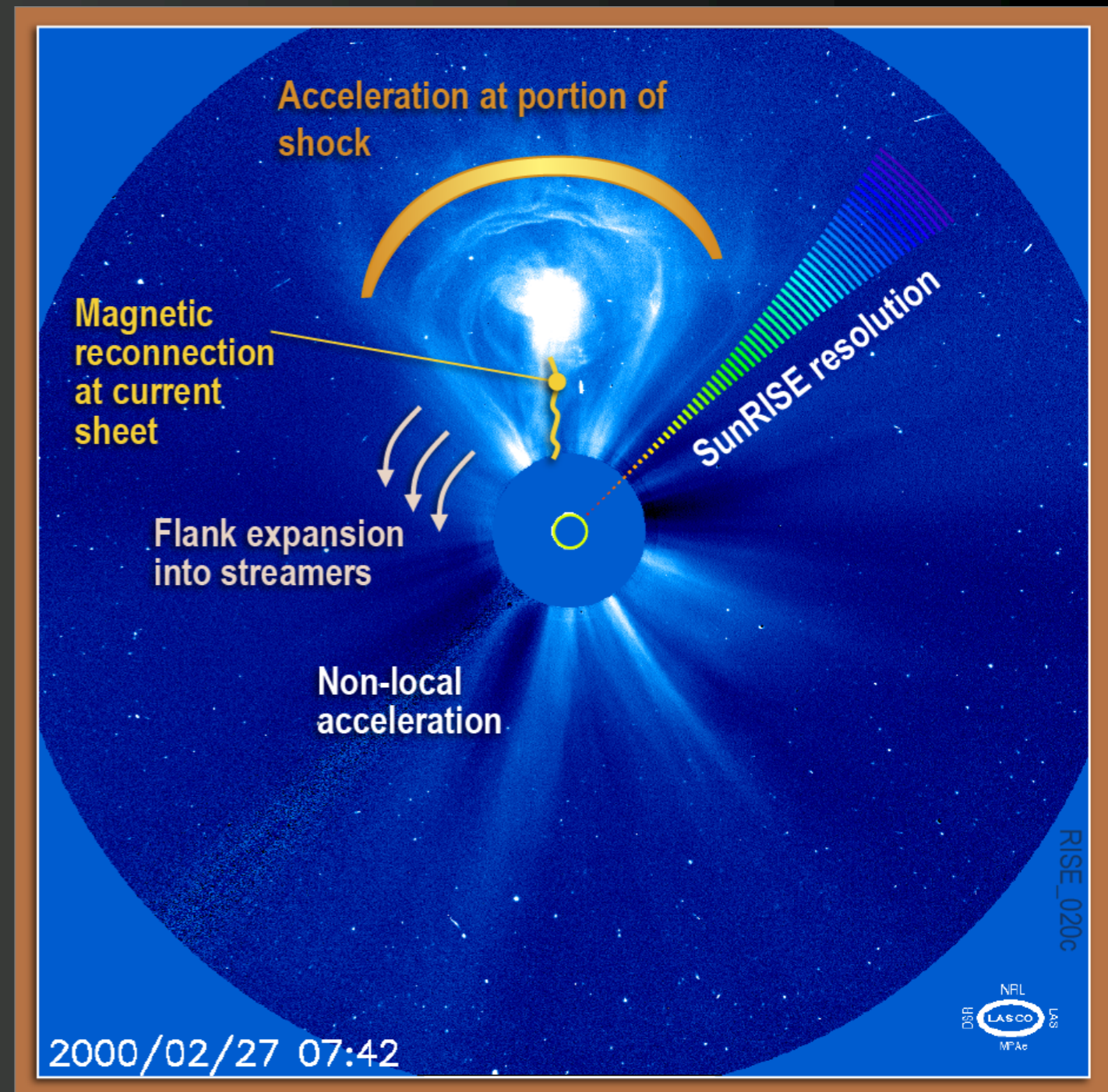
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Jet Propulsion Laboratory  
California Institute of Technology

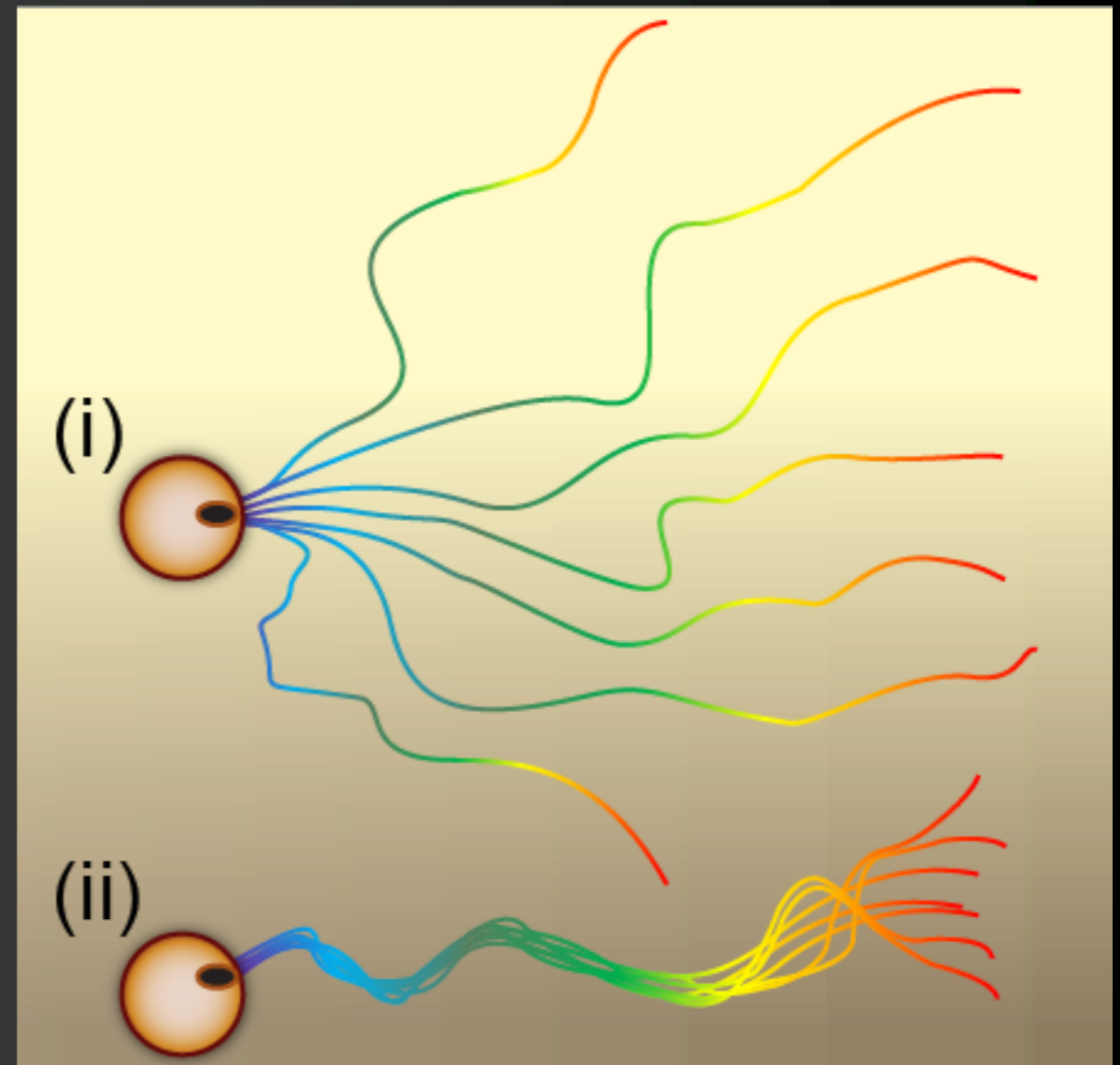
# How are energetic particles produced?

Goal #1: Discriminate competing hypothesis for generation of solar energetic particles (SEPs) by localizing radio emission generated by CME-accelerated electrons relative to expanding CMEs 2-20 solar radii from the Sun where the most intense acceleration occurs



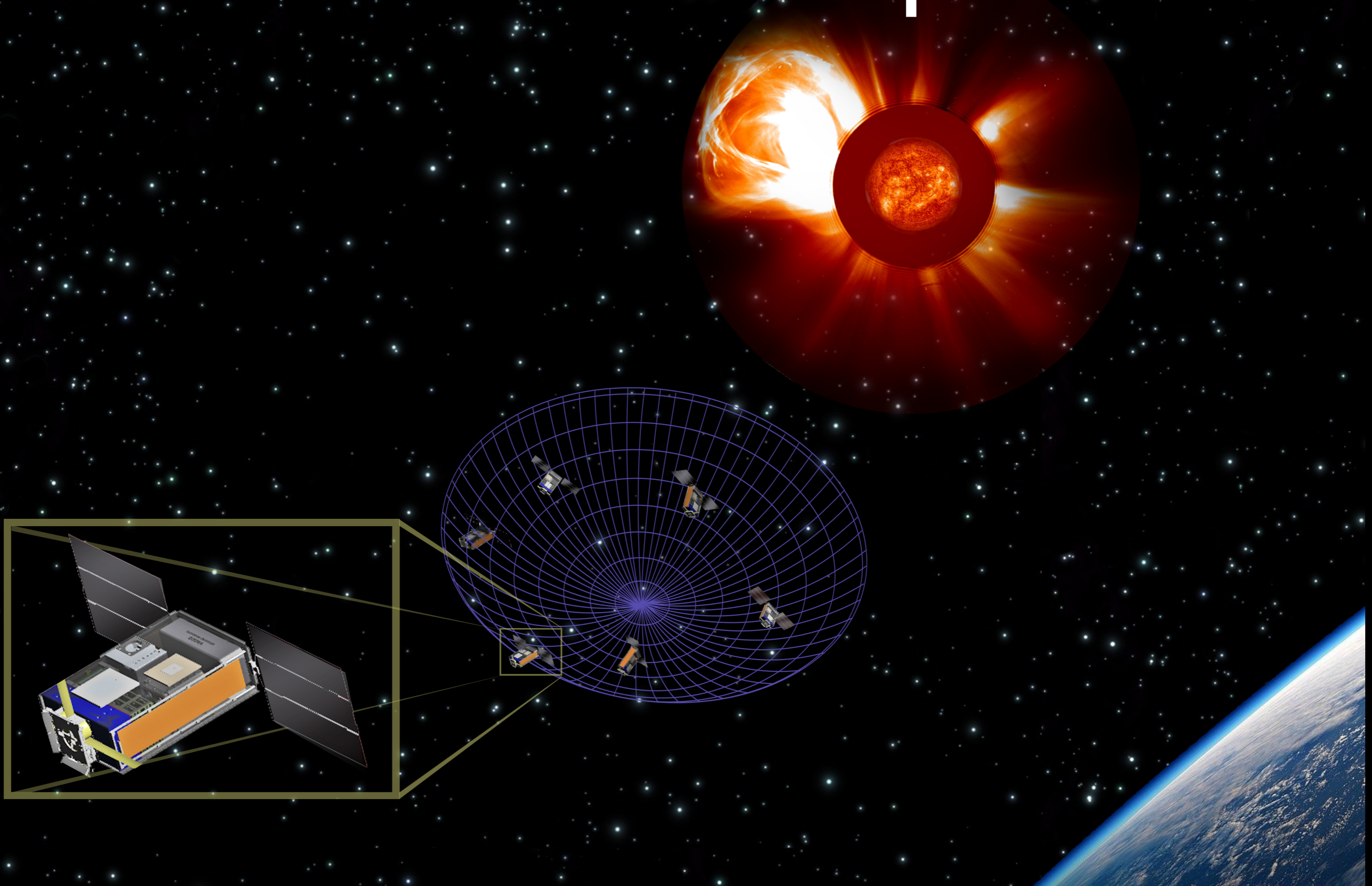
# What is the magnetic connection?

Goal #2: Discriminate competing hypotheses for variable magnetic connection between active regions and inner heliosphere by reconstructing three dimensional magnetic field lines from 2-20 solar radii using emission from electron beams





# Science Implementation

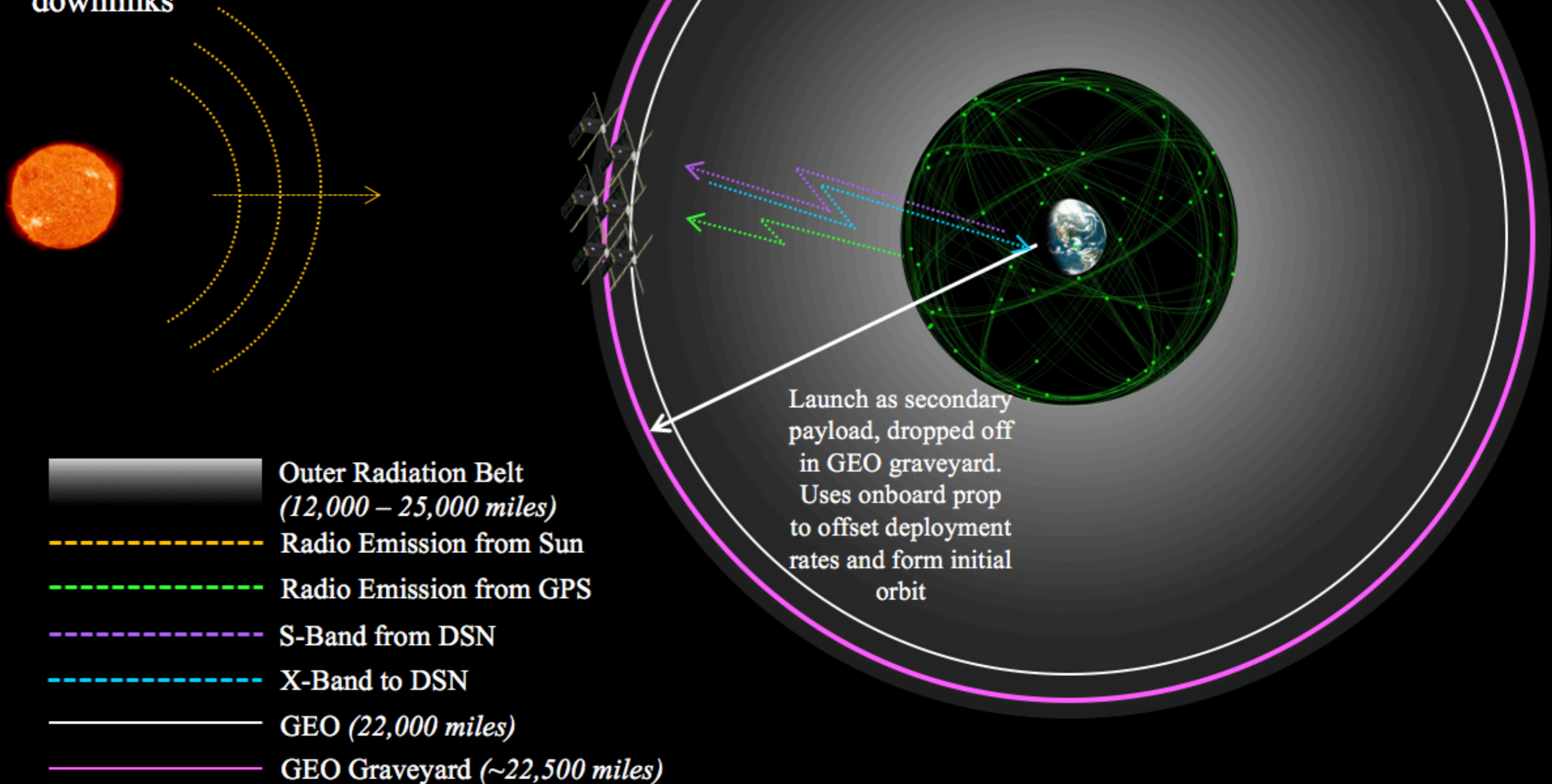




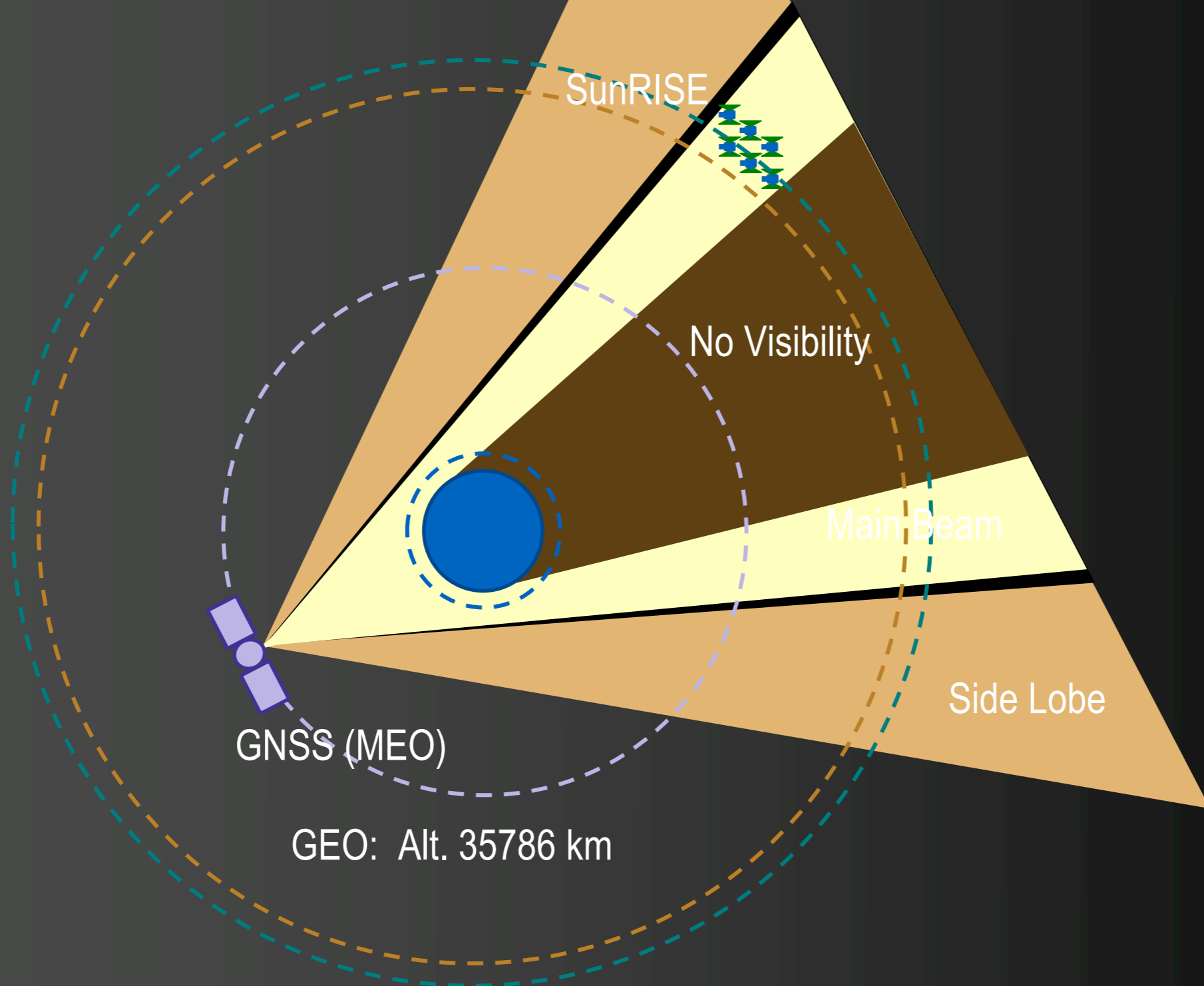
# Concept of Operations

## Spacecraft Activities:

- Arrays Sun Pointed, Instrument on at all times
- Desaturate reaction wheels twice per week
- Downlink to DSN in X-band for 5 hours, once a week
- All spacecraft at same S-band frequency, receive uplink all at once from DSN during downlinks

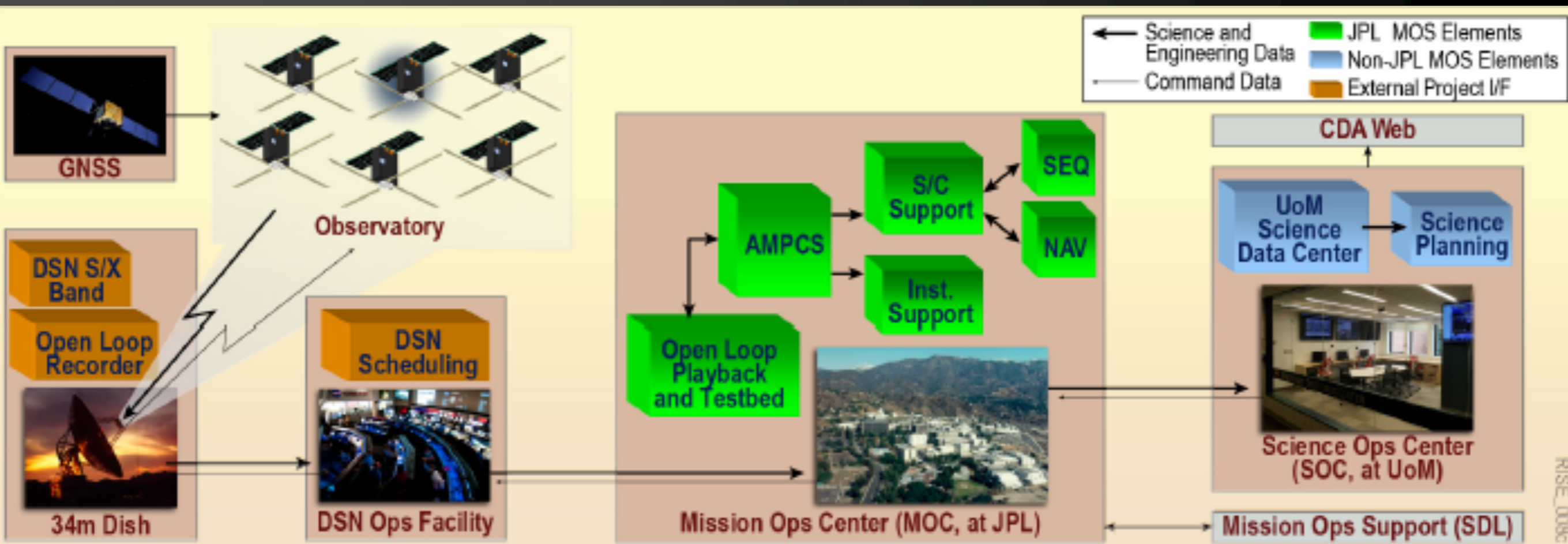


# Position Determination

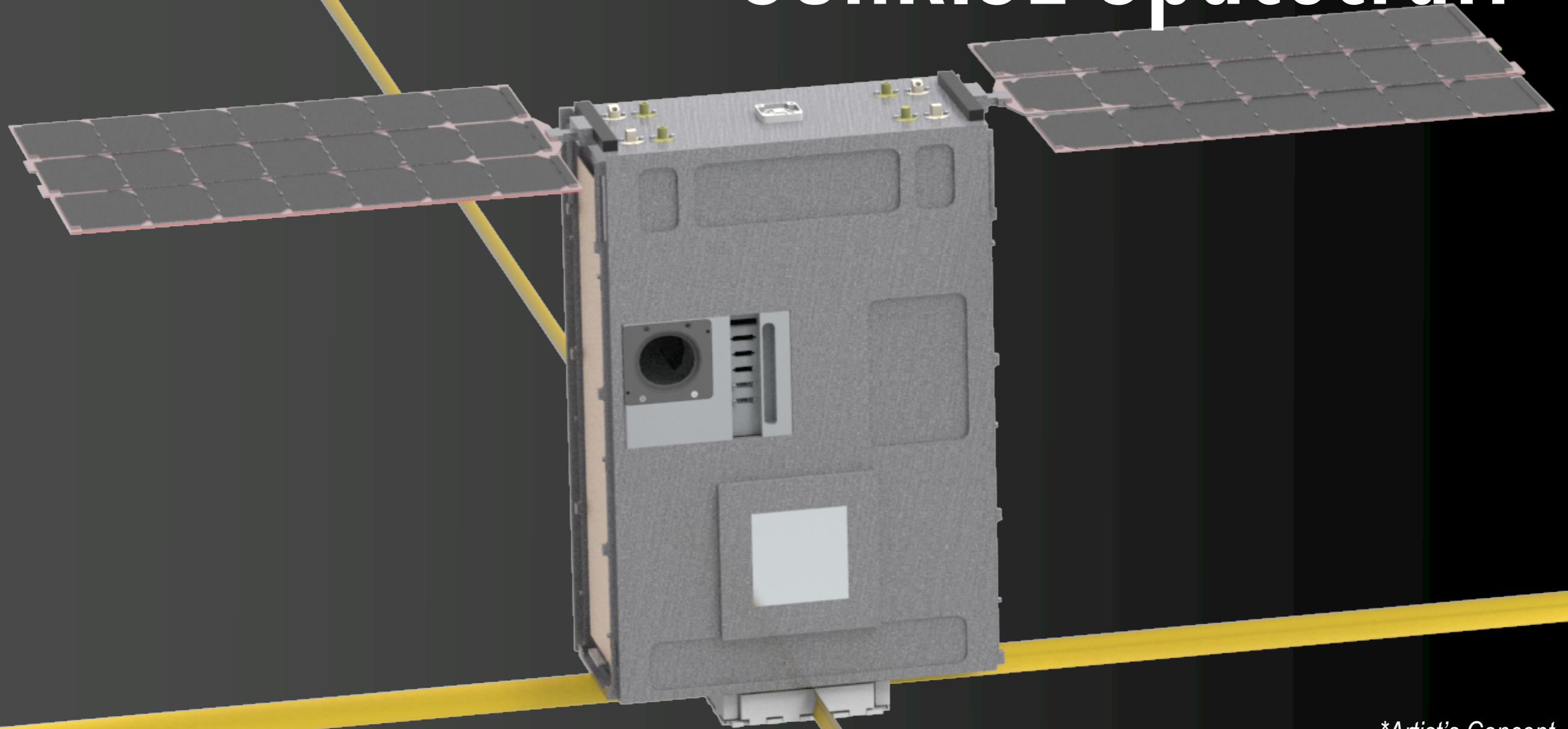




# End-to-End Information System



# SunRISE Spacecraft\*



*\*Artist's Concept*



# Conclusion

- Mission concept would achieve Decadal Survey science for < \$100M
- Proposal with high heritage bus and straight-forward operations
- Key enablers: GPS at GEO, FX correlator, economies of scale for multiple builds, secondary payload launch, passive formation, and MSPA.
- SunRISE 3D interferometer would be a stepping stone for future, more complex, space-based interferometers

