

LONG-LIVED IN-SITU SOLAR SYSTEM EXPLORER (LLISSE)



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LLISSE REFRESHER

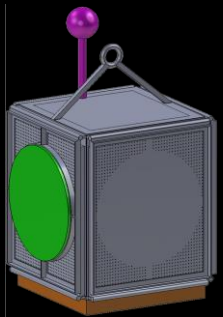
- LLISSE is a small and completely independent probe for Venus surface applications
- LLISSE acquires and transmits simple but important science
- Three key elements leveraged
 - Recent developments in high temperature electronics
 - Focused, low data volume measurements
 - Novel operations scheme

SCIENTIFIC MEASUREMENTS

Current status

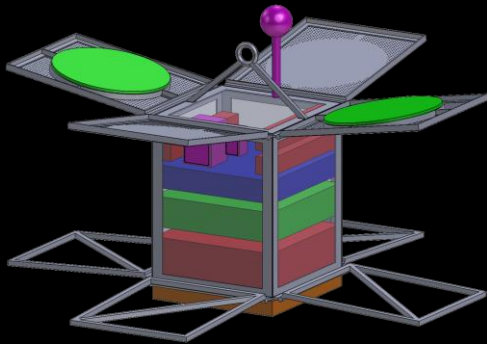
- Surface wind speed
 - Orientation (for wind direction)
 - Surface temperature and pressure
 - Near-surface atmospheric chemical composition
 - Operations Goal:
 - Operate for ~60 Earth days
- Lab version in exposure test
 - Prove of concept in test at Earth ambient conditions
 - Lab version in exposure
 - Sensors for several gases in Venus environmental test
 - Current test planned to run for 60 days. Most future tests 60 days or longer

CURRENT FOCUS IS ON BATTERY VERSION



~ 20 cm cube

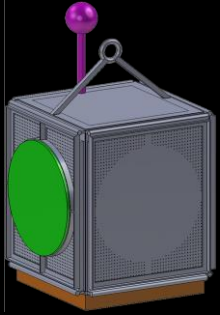
- Working parallel paths toward primary battery - down select in 2018
- With battery version, expect to realize around 3000 hrs of operation
 - If data sent for 2 minutes every 8 hours



- LLISSE stays dormant during cruise and launch - automatically powers on and begins operations at surface

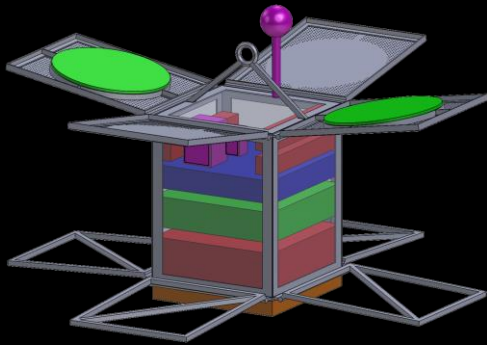
Battery Version –
3000 hours, ~ 10 kg

PROGRESS GOALS



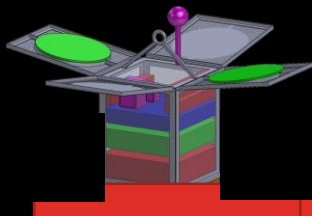
~ 20 cm cube

- Development on track
 - Electronics nearing complexity to realize acquisition of sensor data and processing to transmit
 - First generation of high temp sensors in exposure test
 - Primary battery in work
 - Working communication system design and some component testing



Battery Version –
3000 hours, ~ 10 kg

LLISSE ON VENERA-D



If separately deployed:
from what platform and
what altitude(s)

- Answers will help plan development / tests to maximize progress toward this application

If LLISSE is deployed— can it be done
close to surface ?

- Advantages include supporting measurements, possible visual confirmation of deployment, better chance for precise location knowledge

For main lander -
Deployed or
Attached ?

- If attached, perhaps can be on an arm that drops away from main body after landing
 - May reduce deployment risk

Main lander