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

Approved for public
SCIENTIFIC MEASUREMENTS

- Surface wind speed
- Orientation (for wind direction)
- Surface temperature and pressure
- Near-surface atmospheric chemical composition
- Operations Goal:
  - Operate for ~60 Earth days

Current status
- 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

- 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

• 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

~ 20 cm cube
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

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

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