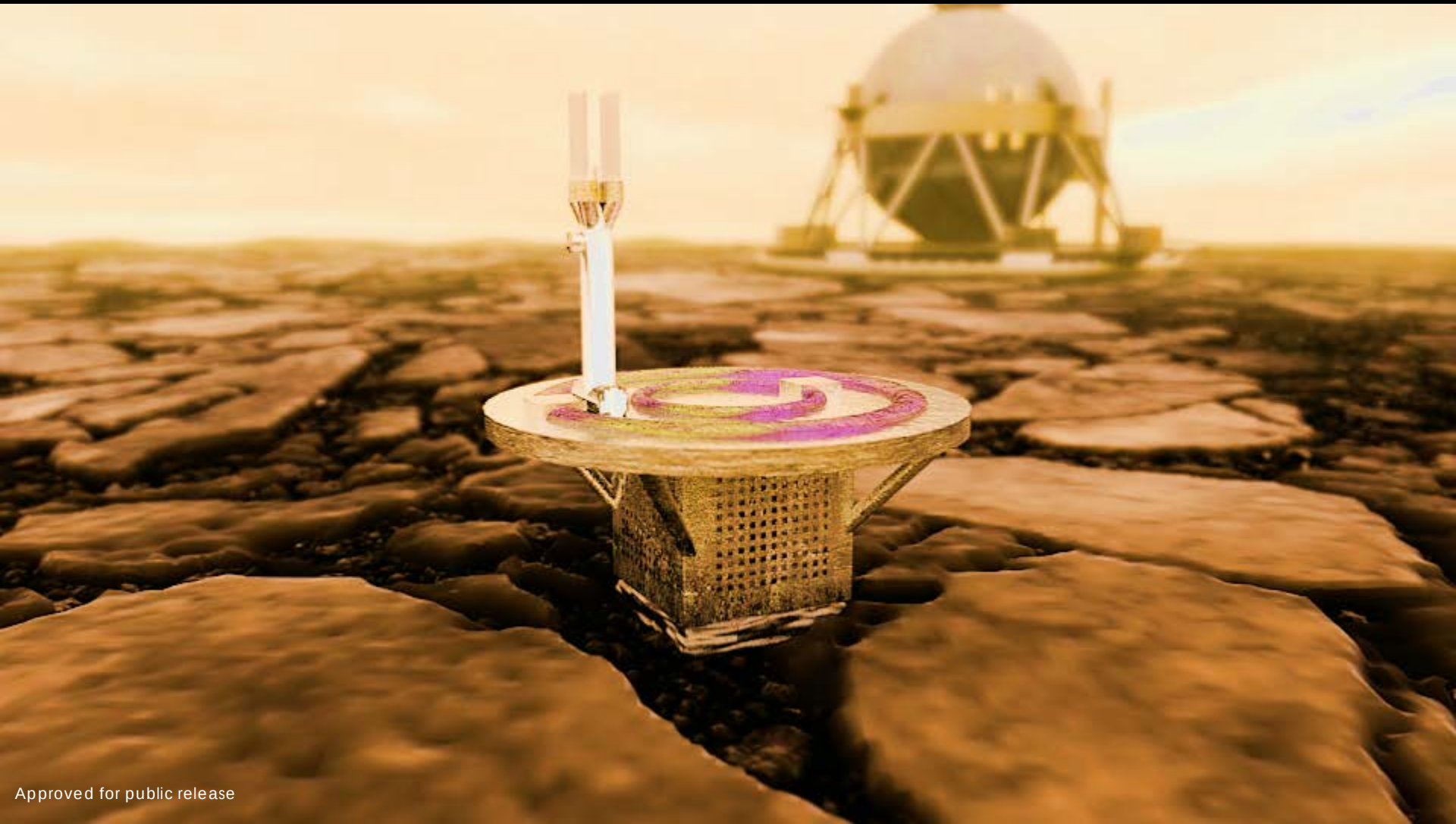
LONG-LIVED IN-SITU SOLAR SYSTEM EXPLORER (LLISSE)

PRESENTED BY TIBOR KREMIC, NASA GLENN



LLISSE Science Objectives and Traceability

Decadal Survey Goals	LLISSE Science Objectives	Measurements	Instrument Requirements
A) Define the current climate on the terrestrial planets	1) Acquire temporal meteorological data	Measurement of p, T, u, v and light	3-axis wind sensor measurements, radiance
	2) Estimate momentum exchange between the surface and the atmosphere	Same as above	Same as above
B) Understand chemistry of the middle, upper and lower atmosphere	3) Determine the key atmospheric species at the surface over time	Measure the abundance of gases H_2O, SO_2, CO, HF, HCl, HCN, OCS, NO, O_2	Chemical sensor measurements
C) Determine how solar energy drives atmospheric circulation and chemical cycles	4) Determine the rate of solar energy deposition at the Venus surface	Measure incident and reflected solar energy	Measurements of radiance

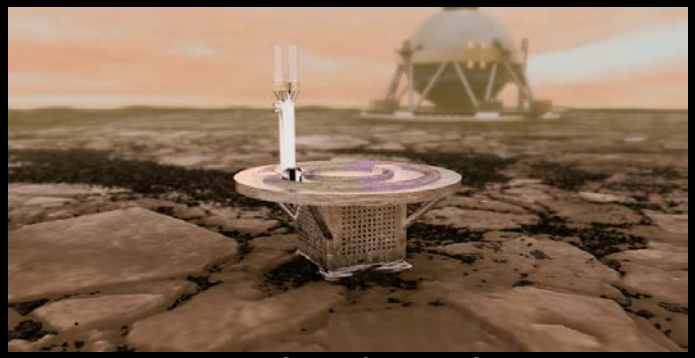
- Operations Goals:
  - Operate for a minimum ½ Venus solar day – capture one day/night transition
  - Take / transmit measurements periodically – timed for science need and to maximize transfer to orbiter / data relay
- LLISSE will also be a technology demonstrator for more sophisticated future long lived missions

LLISSE

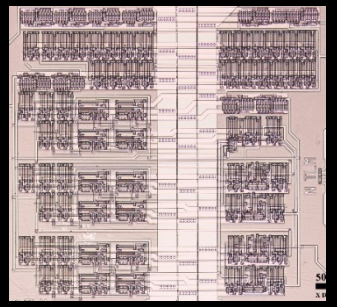
An Approach to achieve a class of long-lived landers for Venus

Simple but important science from the Venus surface - for months

Potential Technology Demonstration version - Up to 10 days surface ops



Version of LLISSE in development ~10 kg and ~60 days life



500°C Durable 1000+ Transistor SiC IC

SAEVe Concept ~25 kg, ~40 cm dia, and 120 days life

All LLISSE's will be demonstrated at Venus surface conditions for intended life in GEER