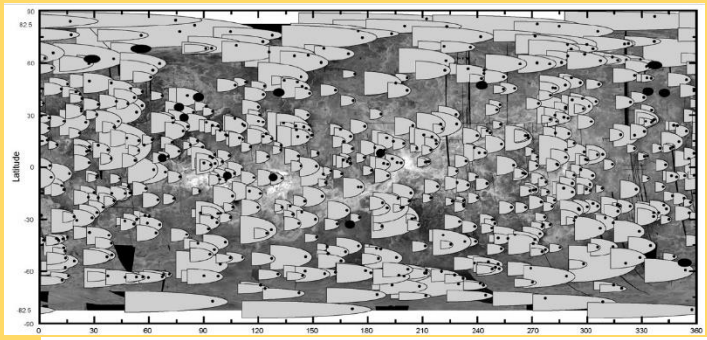
CALYPSO VENUS SCOUT

Credit: Sam Zaref

VEXAG Meeting; November 2020

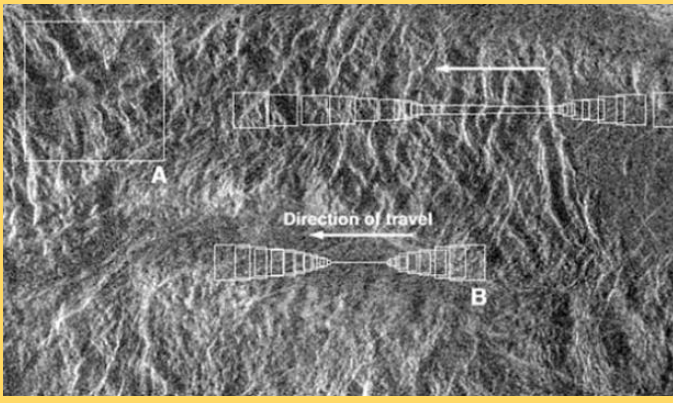
Philip Horzempa

- Bathysphere - lowered to 10 km
- Anchor Balloon remains at 50 km
- Access to all Terrain Types
- High Resolution Images
- IR Spectra (0.55 – 1.0 um)

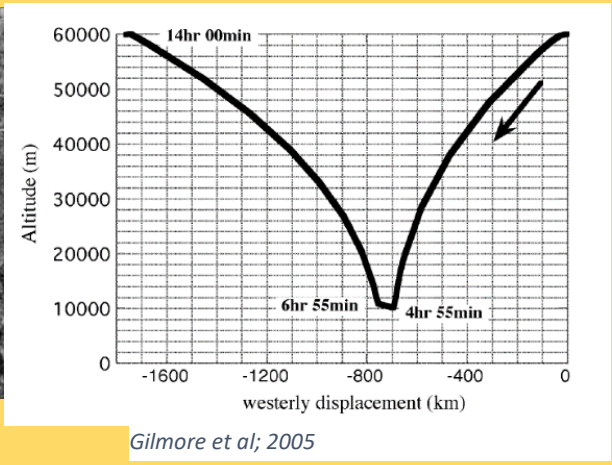


Global landing Sites - Basilevsky et al; 2007

Credit: Sam Zaref



Gilmore et al; 2005

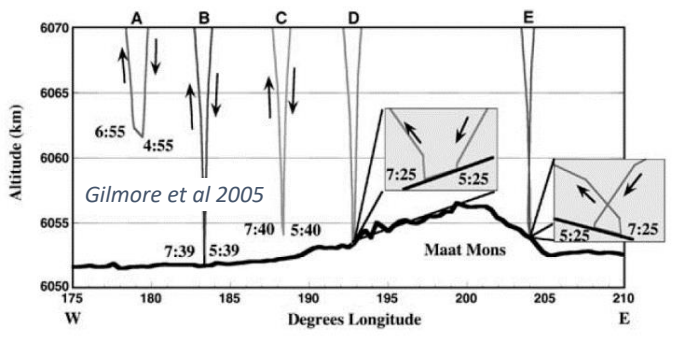


Gilmore et al; 2005

Canteen Creek Anticline, Australia

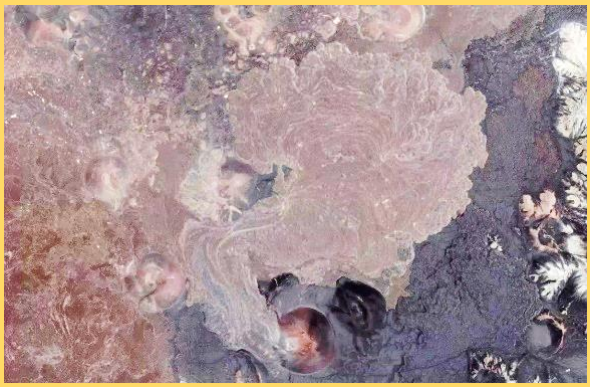
accreted terranes (?); Thetis Regio (Ghail 2002)

- Calypso architecture: science module (Bathysphere) that is lowered from an Anchor Balloon that remains at 50-60 km.



Gilmore et al 2005

- tether is reeled out to allow the Bathysphere to make forays to 10 km above Venus' surface, with dips to 1 km for specific targets.
- Bathysphere "reeled in" to cool off
- Calypso's architecture enables more advanced missions that will collect samples from the surface.
- 2nd generation craft will conduct "touch and go" dives to target sites. Those samples will be analyzed back at the Anchor Balloon. This allows instruments such as a miniaturized petrology lab to identify mineralogy and lithology.
- 3rd generation Calypso goes one step further. It will scoop or drill for samples at the surface during brief forays. Those rocks will be taken to altitude where an Earth Return Vehicle awaits at the Anchor Balloon.
- No need to design a rocket that can survive the 500C (900F) conditions on the surface of Venus.
- Calypso's mobility will allow it to collect samples from all of the major terrain provinces.



Lava Flow Festoon, Arabian Peninsula

References: Basilevsky et al (2007), "**Landing on Venus: Past and future**," Planetary and Space Science 55

Gilmore et al (2005), "**Investigation of the application of aerobot technology at Venus**," Acta Astronautica 56

R.C. Ghail (2002), "**Structure and evolution of southeast Thetis Regio**," JGR Planets vol. 107, issue E8

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