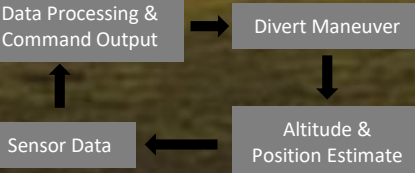


Strategies for Safely Landing on Venus Tesserae

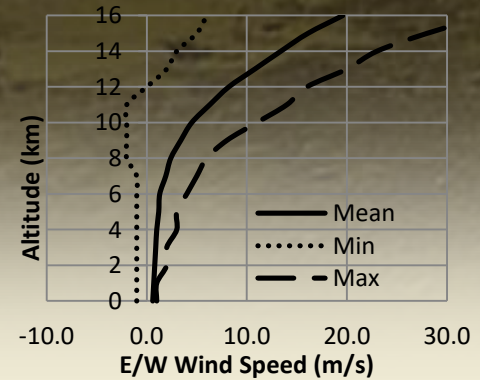
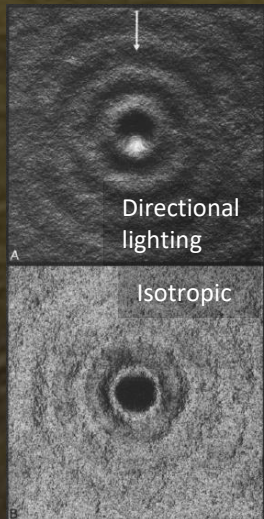
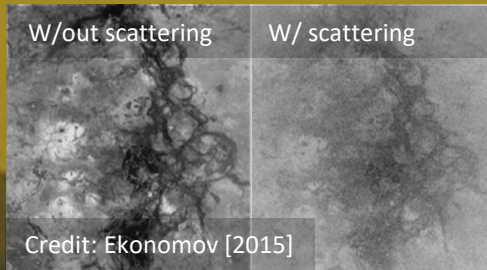
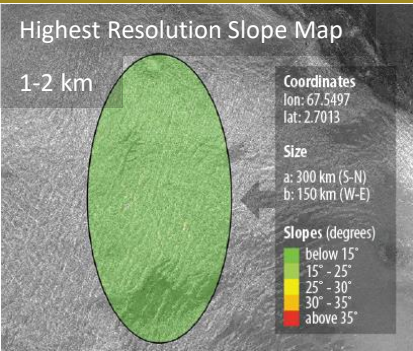


VEXAG 2020 Abstract #8016: J. J. Knicely, R. J. Lynch, L. H. Matthies, M. S. Gilmore, & R. R. Herrick

Venera 13 Image Credit: NASA NSSDC, r/Harvard Micro Observatory/Don P. Mitchell



Main Issues



Strategies

Closed-loop probability based AI pilots towards high value science and away from hazards

Divert fans require no propellant and reduce lander mass



Collapsible legs accommodate up to 30° slopes

Lander Image Credit: NASA GSFC.

Needs & Recommendations

- Feature identification & tracking for isotropic lighting conditions
 - Texture analysis?
- Software capable of:
 - Autonomously identifying & prioritizing science targets and hazards
 - Incorporating uncertainty
- Improved DI & LiDAR to allow a 2nd divert maneuver:
 - Increase LiDAR range above 2 km
 - Evaluate alternate wavelengths (e.g., the 1.27 μm atmospheric window)