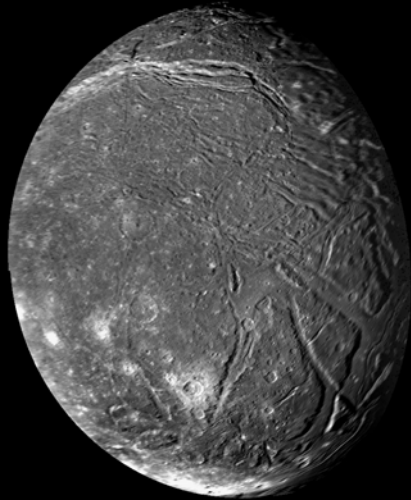


# URANIAN SATELLITES

Geologically Diverse & Compositionally Distinct  
from Saturn's Middle-sized Icy Satellites

**Ariel**



Extensive tectonism  
NH<sub>3</sub>(?) lava flows  
Viscous relaxation

**Umbriel**



Ancient dark surface  
Anom. bright ring  
"primordial?"

**Titania**



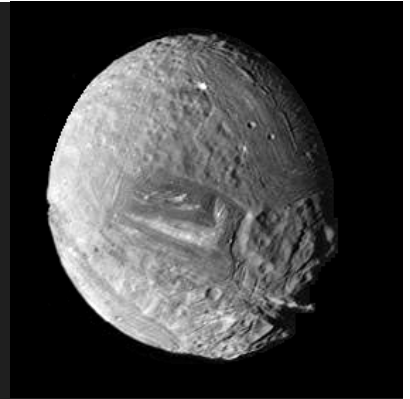
Deep Trenches  
Low crater density  
- resurfacing?

**Oberon**



Ancient troughs  
Dark floored craters  
- dark volcanism?

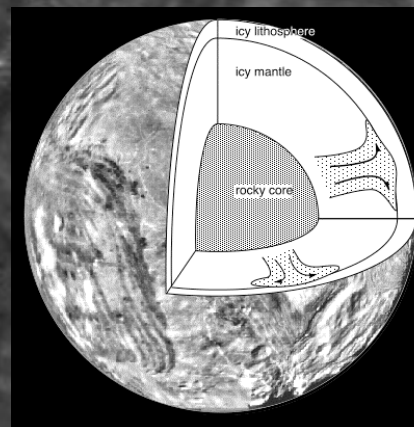
# Miranda: Bizarre Little World



Global network of large troughs  
Three ovoid resurfaced 'coronae'

*Catastrophic Reassembly  
or Internal Dynamics?*

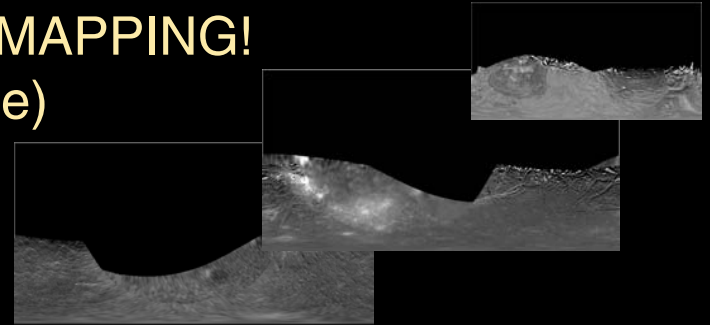
*Geologic mapping indicates  
internal convection caught  
in the act (Pappalardo)*



but why . . . ?

**GEOLOGIC HISTORY REQUIRES GLOBAL MAPPING!**  
(remember Mars, Earth's Moon, Iapetus, Dione)

***Voyager saw southern  
hemispheres only!***



***Only Opportunity to Map Northern Hemispheres of  
Uranian System at Equinox occurs next decade***

Was Uranus region of Nebula dominated by CO or CH<sub>4</sub>?

- ***Uranian more rock-rich than Saturnian satellites: 50-70% “rock”***
- ***CO<sub>2</sub> ice on Ariel (Grundy et al.), no NH<sub>3</sub> (?): What are lavas?***
- ***Dark “rocky” component unidentified: Exogenic or endogenic?***

***Advanced IR Spectrometers can now map out  
composition at high spatial and spectral resolution***