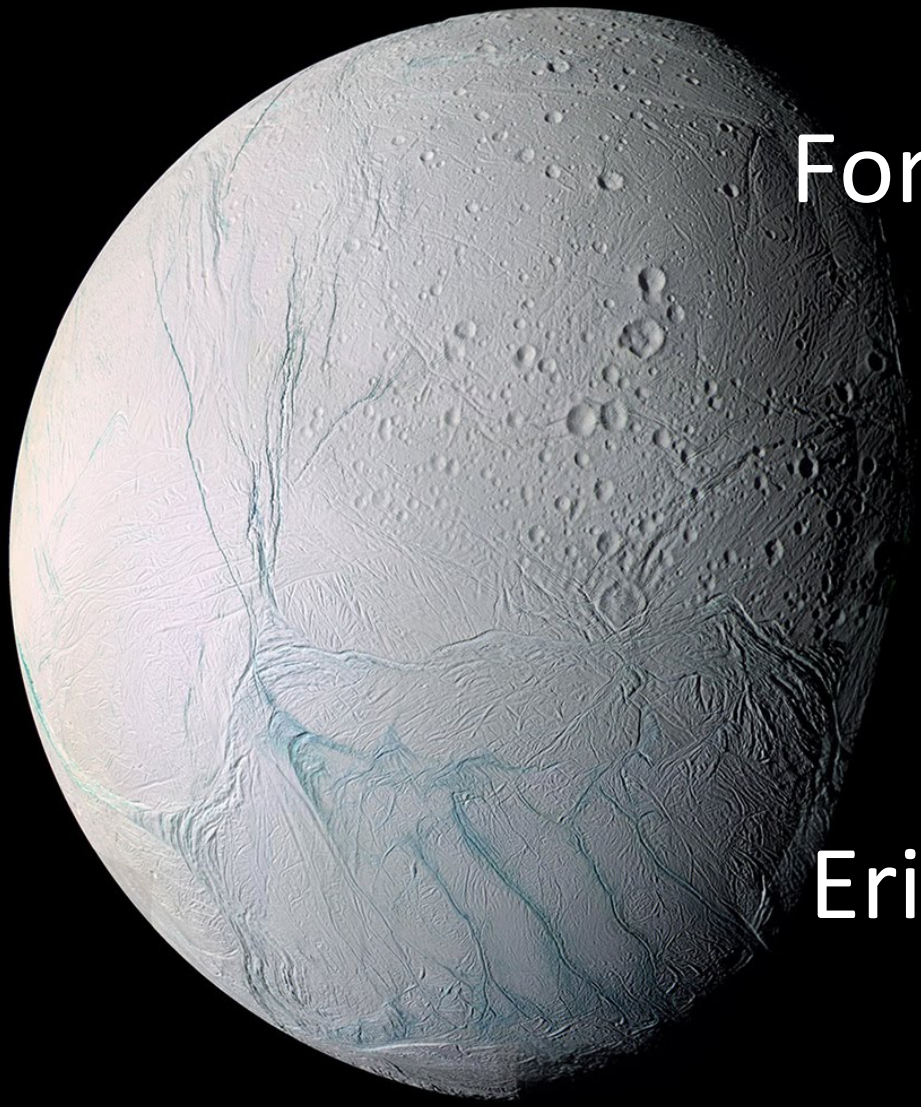
Ice Viscosity and Heat Flux on Enceladus During the Formation of the Leading Hemisphere Terrain

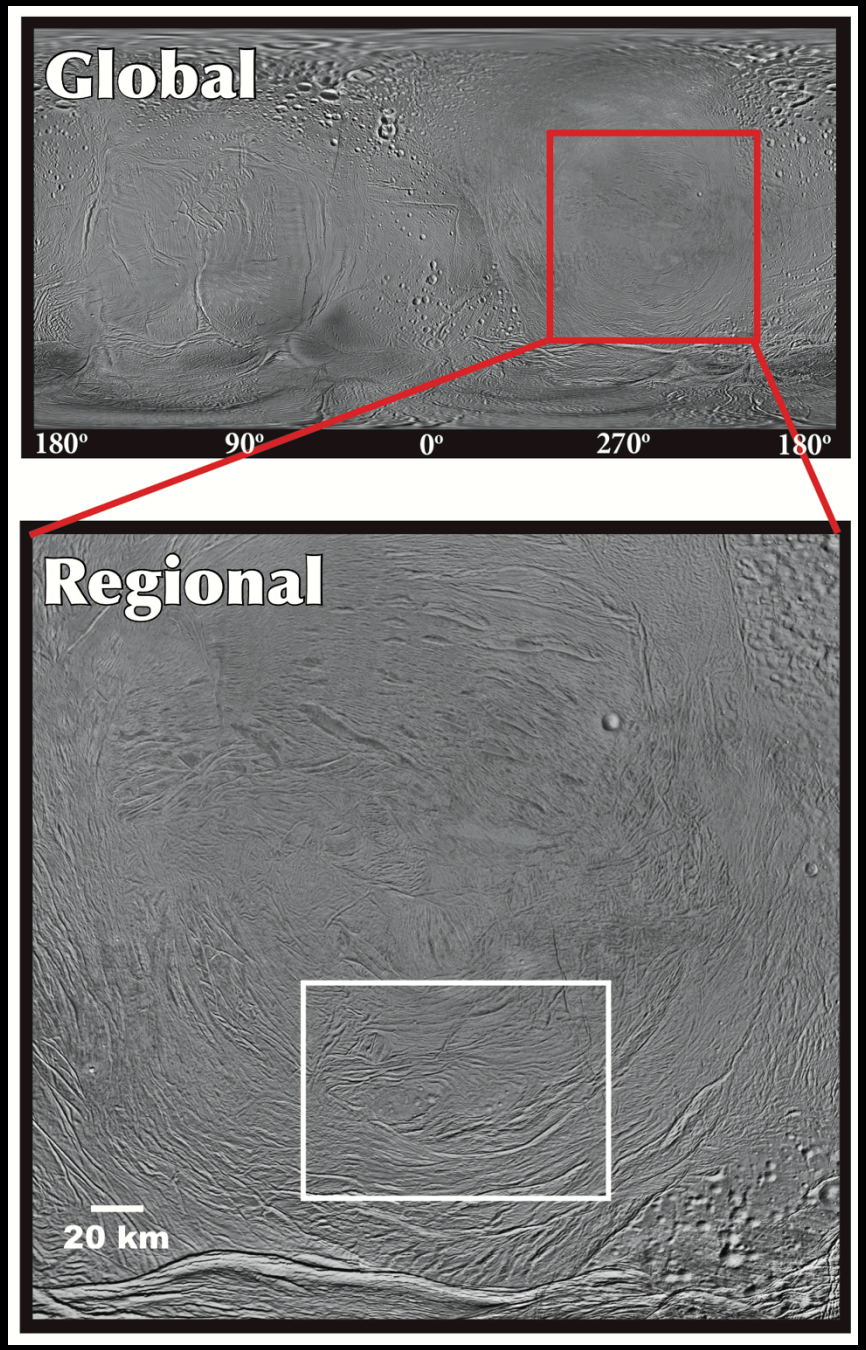


Erin Leonard (UCLA, JPL)
Robert Pappalardo (JPL)
An Yin (UCLA)

IC: NASA

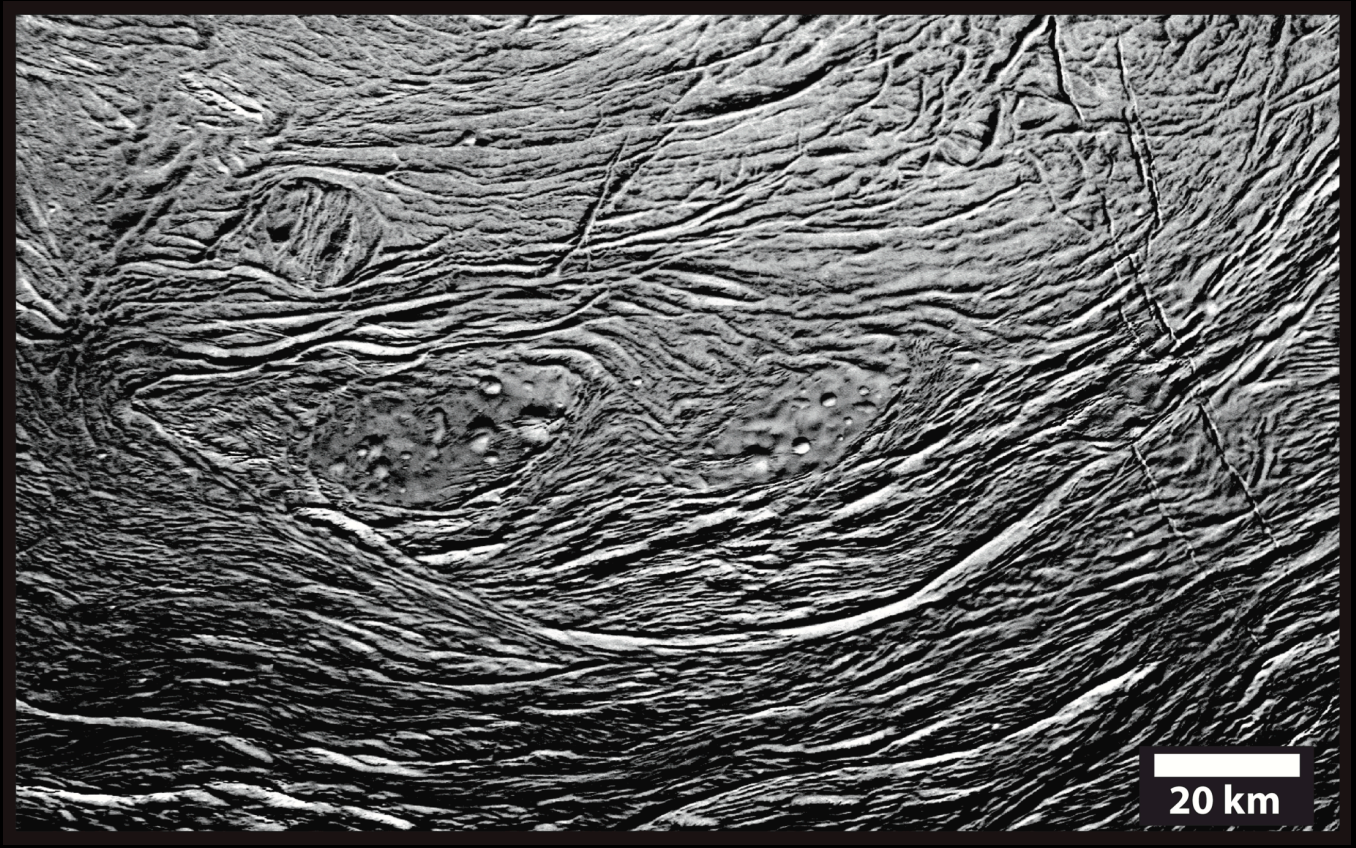
Leading Hemisphere of Enceladus

- It has been proposed that Enceladus is dominated by partial resurfacing episodes (e.g. Spencer and Nimmo, 2013)
- Evidence for past resurfacing and regional tectonics in the leading hemisphere
- ~10-50 Ma (Crow-Willard and Pappalardo, 2014)
  - Not many craters



Constraining the Ice Viscosity

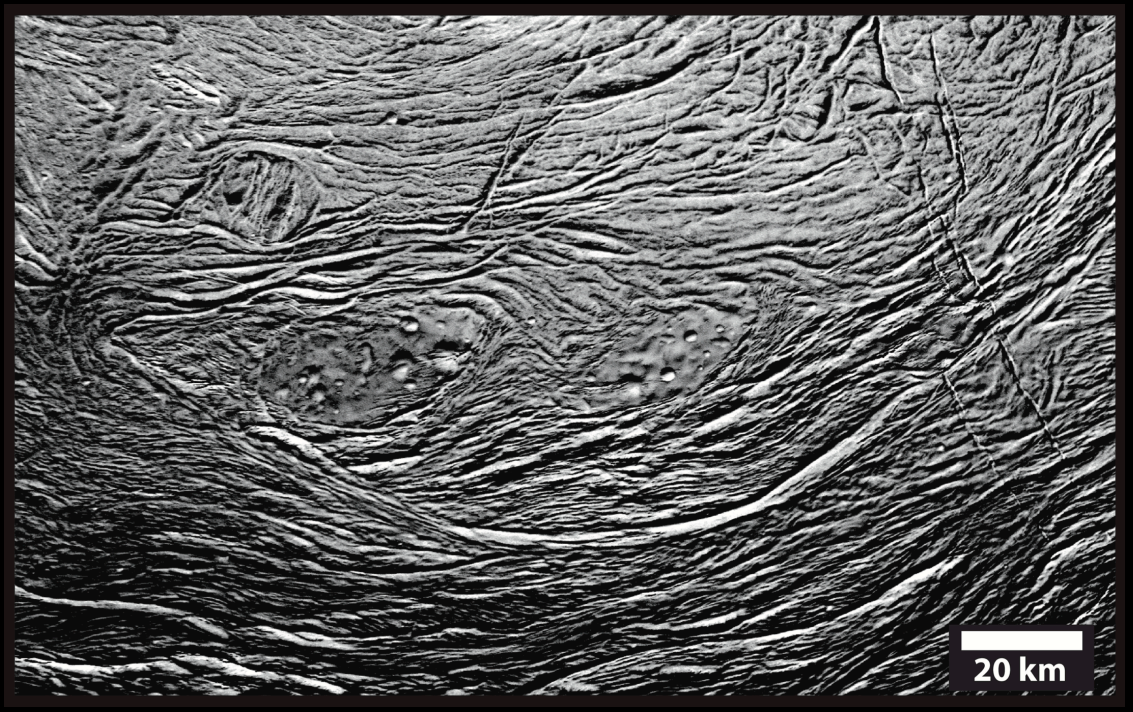
- "Crater Islands" a feature at ~30°S, 270°



- Viscosity = Stress/Strain Rate

Constraining the Ice Viscosity

- Use an Earth analogue (clast rotation) to estimate the shear strain
- Approximate required heat flux from interior with different shell thicknesses
  - Reveals need for potential "regolith" (cf., Bland et al., 2012)



IC: wikipedia

See my poster of ask me for more details! I am happy to answer any questions now, or later (erinleonard@ucla.edu)