Plate Tectonics Possible on Europa

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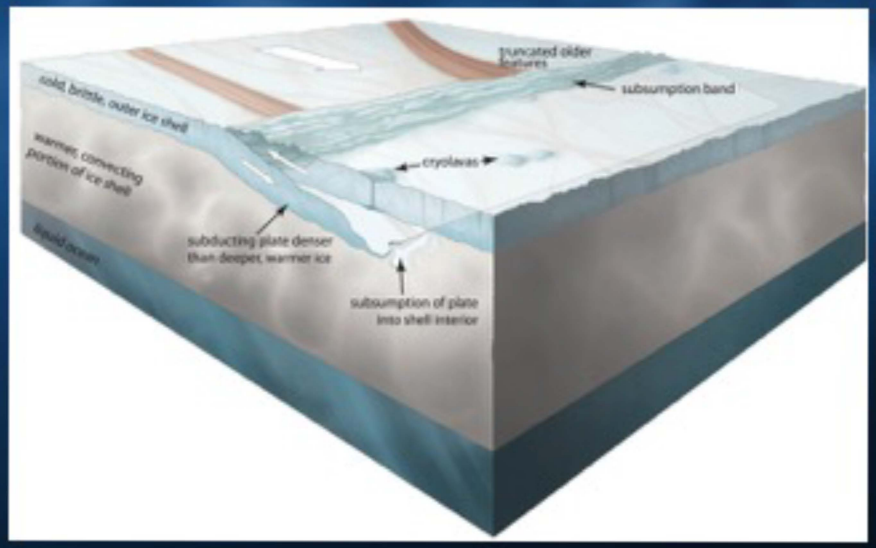
A new geophysical modeling study has shown that subduction of slabs of Europa's ice shell is possible which could have important implications for the possibility of life in a subsurface ocean.

- Scientists studying the stripes on the surface of Europa in the past have been able to "rewind" movement of large slabs of the Jovian moon, and identified regions that look like spreading ridges on our planet. When this type of expansion happens, the material has to go somewhere, and though hypotheses indicated that it could be subduction, it is difficult to identify this process remotely.



- In this study, scientists created a simple model to track the physical properties of a large subducted slab of ice. As varying conditions were tested, they showed that salt content and porosity were the primary drivers, but that a range of plausible conditions could allow for subduction to occur.
- This process would be very important for life in a subsurface ocean, which would depend on nutrient cycling with the oxidized surface to sustain necessary chemical reactions.