

Christophe Sotin Technical Talk (October 2016)

Two-phase convection in the high pressure ice layer of the large icy moons

Observations by the Galileo and Cassini missions strongly suggest the presence of a deep global ocean inside the large icy moons Ganymede and Titan. Interior models based on (i) the interpretation of gravity coefficient (mass distribution with depth) and (ii) phase diagram of water ice, propose that the ocean is squeezed between the icy crust and a high-pressure ice layer that prevent direct contact between the ocean and the rocky core. This study describes results of 2D numerical simulations of two-phase convection in the high-pressure ice layer. It shows the role of partial melt forming at both interfaces with convection providing the process by which chemical compounds can be transferred from the deep interior to the surface.