Geodynamical contexts for water-rock interactions in Icy Worlds.

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Exploration of Jupiter's and Saturn's system, respectively by *Galileo* (1996-2003) and *Cassini-Huygens* (2004-2017), has revealed that several moons around Jupiter (Europa, Ganymede, Callisto) and around Saturn (Titan, Enceladus, Mimas) harbor a subsurface salty ocean underneath their cold icy surface. The composition of these oceans probably results from complex aqueous processes involving interactions between water, rock, organics and volatile compounds from which these bodies were built. Such aqueous processes are expected to be efficient mostly during the early stage of evolution when water and rock separated, but they could be still active in some icy bodies at present, as witnessed by the intense activity observed at Enceladus' south pole by the *Cassini* spacecraft. The co-existence of water, organics and salts together with a strong heat source associated to tidal friction may potentially lead to the first bricks of life. Even if there is no direct evidence yet, similar ingredients might also be present within Europa, Titan and Pluto. Based on recent experimental and numerical results, we will discuss the context under which water-rock interactions may occur in icy worlds, depending on their size, and how they may affect their chemical evolution.