

Magnetic Field Observations; at Saturn with CASSINI and at Jupiter with JUICE.

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Some of the highlights of discoveries made utilising magnetic field observations from the Cassini spacecraft at Saturn will be described. These include the planetary period oscillations that fill the Saturnian magnetosphere, that change over time, and that are different between the northern and southern hemisphere. The need to understand these observations is critical for Cassini end of mission science during which time the spacecraft will have 22 close flybys to Saturn, enabling resolution of the planetary dynamo field as well as how long a day is on Saturn. The discovery by the magnetometer team of a dynamic south polar plume on Enceladus, one of Saturn's icy moons, will also be described. We will also look to the future and the required measurements the magnetometer, onboard the ESA JUICE mission to Jupiter and its moons, will need to make. The most difficult measurement as well as the most interesting is that of the induced magnetic field signatures in a liquid subsurface ocean at Ganymede. Resolving these signatures at more than one inducing frequency will allow unambiguous determination of both the depth and conductivity of the ocean and potentially of its global extent.

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