

Enceladus plume discovery and future Europa plume investigations

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Abstract

The discovery of the Enceladus plume will be described, initially observed in Cassini magnetic field observations via draping of the magnetic field lines around the moon and an increase in water group ion cyclotron wave activity. Subsequent observations on a lowered flyby at 173km above the surface confirmed outgassing of a water vapour plume from cracks at the south pole, as well as internal heat leaking out of the cracks. The plume contains water vapour, dust and organic material. The consequences of this Enceladus plume as regards the interior structure of the moon as well the implications for potential habitability will be described. A comparison with the recent Europa plume observations will be made and future investigations examined.