

## Our Night Sky in September 2017

Saturn will be setting at about 10pm in the middle of the month, while the Pleiades will be rising in the east at the same time. Venus will greet the early risers at about 0415 onwards in the east, with Mars and Mercury rising an hour later.

Later this month, the spacecraft Cassini will be ending its days in a fiery plunge into Saturn's atmosphere to avoid the possibility of it crashing into Enceladus, and contaminating that moon, one of the prime targets for discovering possible life forms. Cassini has been a tremendous success during its 13 years orbiting Saturn, and has returned enough data to keep scientists busy for years. Some of the highlights include the mapping of Titan, the largest moon in the Solar System, and the only one to have a dense atmosphere, which enables a "Methanological" cycle similar to the Hydrological cycle on Earth; this comprises the evaporation of methane and ethane from the surface, the formation of clouds, and the precipitation of methane and ethane rain back onto the surface where it runs off in rivers into lakes of liquid ethane and methane.

Saturn has over 30 moons ranging from the tiny to Titan, which is larger than Mercury. One of these, Iapetus, is very curious since one side is blacker than soot, while the other side is white. The Surface darkening on Iapetus comes from organic materials left behind as ice in the warmer Cassini Regio region sublimates. The dark patches seem to be made of organic materials similar to those found in early meteorites or comets. There is also a suggestion that some material may have come from outside Iapetus. Iapetus also has an equatorial ridge which runs along 1,300 kilometres through the central region of the moon. It is about 20 kilometres wide and towers up 13 kilometres over the surrounding surface. No one is quite sure why or how it formed.

Cassini has been spending its last months making daring dives between the inner edge of Saturn's rings and the top of the planet's atmosphere, providing scientists with extraordinary images of the structure of the rings. However, on the 15<sup>th</sup> September, (our daughter's birthday!), Cassini will end its brilliant mission in a flash of fire as it enters the embrace of the planet it has been studying for so many years. Farewell Cassini, and many thanks for all the beautiful images you have returned.

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