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The Cassini-Huygens Mission: Huygens legacy

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The Huygens Titan probe was carried by Cassini to Saturn and targeted towards Titan on December 25th, 2004. Twenty one days later, on January 14th 2005, Huygens entered in Titan's atmosphere and descended under parachute for about 2,5 hours. It safely landed and continued to operate on the surface for more than 3 hours. During the descent, and for about 70 minutes after landing, Huygens radioed its data stream to the Cassini orbiter for later relay to the Earth. Doppler and VLBI data were also acquired through a network of ground-based radio telescopes that detected the faint Huygens signal. The Huygens Probe performed above expectation despite the loss of one of the two redundant radio channels whose receiver on board Cassini was not configured properly. An overview of the Huygens mission is provided and a selected set of science results are presented. Huygens legacy for future in situ Titan atmospheric and surface exploration missions is discussed. Huygens dynamics under parachute, in particular its rotation, was not as expected. This is the subject of a special 2-year study that started at the end of 2017. Initial results of that study will be reported. The Cassini/Huygens is a joint undertaking between NASA, ESA and ASI. It was launched on 15 October 1997 and placed in orbit around Saturn on 1st July 2004.