

Press Release

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Cassini's 'Grand Finale' at Saturn **Mission ends after pushing the boundaries of exploration**

Twenty years after departing from Earth and 13 years after it slipped into orbit around Saturn, the Cassini spacecraft is all set today for its 'Grand Finale', the last act of its mission as it plunges purposely into the planet's atmosphere. It will be no ordinary ending, as NASA has opted for a bold scenario to fly the spacecraft between the planet and its rings to measure their mass and deduce their age. The mission's science team will then use the data gathered to measure and map Saturn's gravity field and thus gain new insights into the planet's inner structure. The dramatic last dive will bring down the curtain on Cassini's fantastic 20-year odyssey. Since April, the spacecraft has been using up its last reserves of fuel flying a series of 22 increasingly tight ring-grazing orbits before it breaks up in the gas giant's atmosphere. This scenario also reflects NASA's desire to protect and preserve the planet's moons Titan and Enceladus and keep them pristine.

Cassini left Earth on 15 October 1997 carrying the Huygens lander designed to be released into the thick atmosphere of Titan, Saturn's largest moon. In 2004, the Cassini-Huygens tandem reached the vicinity of Saturn and went into orbit around the ringed planet. Cassini thus began its mission to study the atmosphere, magnetosphere and rings of Saturn and its moons (Titan, Enceladus, Rhea, etc.). A few months later it released Huygens, which was able to analyse Titan's atmosphere for several hours during its descent to the moon's surface—a descent and landing that yielded precious data on Titan's atmosphere and surface. A joint endeavour of Europe and the United States, Cassini-Huygens has been able to study the planet and reveal how moons are still forming today from the material in its rings, helping scientists to retrace the history of Saturn and our solar system.

The Cassini orbiter developed by NASA had 12 instruments, while the Huygens lander developed by ESA under the Horizon 2000 research programme had six. France played a key role developing and operating these instruments, with CNES and research laboratories attached to the French national scientific research centre CNRS involved in devising half of the experiments on the orbiter and lander. This contribution chiefly concerned two instruments on Huygens: the Aerosol Collector and Pyrolyser (ACP), designed to analyse the chemical composition of aerosols and developed by the LATMOS atmospheres, environments and space observations laboratory, and the Huygens Atmosphere Structure Instrument (HASI), a suite of sensors designed to measure the properties of Titan's atmosphere.

Watching the mission's Grand Finale live, CNES President Jean-Yves le Gall commented: "Cassini-Huygens has unveiled a whole new world for us. We knew that Titan has an atmosphere, but it is so thick that we had so far been unable to peer through it to the surface. Entering that atmosphere and then watching Huygens land on the moon's surface was just unbelievable. And today, after sending back a vast amount of astonishing science data, Cassini is now going out with a final flourish. It was a scientifically and technologically very challenging mission, but for two decades it accomplished a fantastic adventure that has inspired a whole generation of young scientists and spurred them to achieve great things."

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