

THE PICARD MISSION

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PICARD mission is dedicated to the understanding of the solar activity origin and its consequences for the Earth's climate. The measurements are the total and spectral solar irradiance, solar diameter, limb shape, solar asphericity, and helioseismic waves, which are key inputs for solar physics. To carry out this program, the PICARD team develops models of the solar convective zone and of Earth's climate which are especially tailored to allow for variable solar irradiance.

The measurements will be carried out by two absolute radiometers, sunphotometers, and an imaging telescope onboard a microsatellite built by the French Space Agency CNES, with launch foreseen for December 2009. The radiometers are similar to the ones on board SOHO. The imaging telescope contains an angular reference allowing a permanent control of the instrument geometric scale, which is referred to angular stars distances by rotating the spacecraft. Optical distortion and flatfield of the imaging telescope are regularly measured. The measurements carried out by the sunphotometers and the imaging telescope use the same wavelengths. Past and present solar diameter measurements on the ground revealing inconsistent variations with solar activity, to understand the role of the Earth's atmosphere, ground-based instruments will be also run during the mission allowing PICARD to extend its domain of interest to atmospheric physics by comparing ground and space diameters simultaneously measured as well as the atmospheric turbulence by a dedicated instrument. For extending the observations after the space mission, measurements from a stratospheric balloon will be initiated in September 2009.

The state of development of the mission will be presented as well as the PICARD mission center, which will process data to generate preliminary results for scientific analysis.

PICARD and the NASA Solar Dynamics Observatory will be in space at the same period for complementary and simultaneous measurements, which will allow a strong synergy between the two missions. A key circumstance is the solar variability to be encountered during the mission. The launch as foreseen will allow to meet this requirement by providing measurements during the solar activity rising phase.

PICARD, solar diameter, helioseismology