Planetary Sciences with ALMA

Tomohiko Sekiguchi[1]; Daisuke Iono[2]

[1] NAOJ; [2] ALMA Project, NAOJ

http://www.nro.nao.ac.jp/alma/J/index2.html

ALMA, the Atacama Large Millimeter/submillimeter Array, will be a single research instrument composed of up to 80 high-precision antennas, located on the Chajnantor plain of the Chilean Andes in the District of San Pedro de Atacama, 5000 m above sea level. The exceptional new capabilities offered by ALMA will enable us to investigate the physical properties of the cold Universe, regions that are optically dark but shine brightly in the millimeter/submillimter portion of the electromagnetic spectrum.

Providing astronomers a new window on celestial origins, ALMA will probe the first stars and galaxies in the deep universe, and directly image the formation of planets around stars that are similar to our own Sun.

ALMA will operate at wavelengths of 0.3 to 9.6 millimeters, where the Earth's atmosphere above a high, dry site is largely transparent, and will provide astronomers unprecedented sensitivity and resolution. The up to sixty-four antennas of the 12 m Array will have reconfigurable baselines ranging from 150 m to 18 km. Resolutions as fine as 0.005 will be achieved at the highest frequencies, which is a factor of ten better than the angular resolution of the Hubble Space Telescope.

ALMA project
http://www.alma.info/