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Progress of the SPART project to monitor planetary middle atmospheres

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Investigating the abundance and time variation of minor constituents and their isotopes provide us an important information about the dynamical and chemical balances and evolutionary processes of planetary atmospheres. To study how activities of the Sun, a typical G-type star in our galaxy, influence the physical conditions and (photo) chemical reaction network of the atmospheres of Venus, Mars and gas-giant planets, we have promoted regular and long-term observations of these planetary middle atmospheres at 90 ? 345 GHz bands developing a 10-m ground-based Solar Planetary Atmosphere Research Telescope (SPART).

In November 2011 we succeeded first detection toward Mars and mapping observation toward Orion Molecular Cloud 1 with a spectral line for rotational transition of carbon monoxide (J=1-0: 115 GHz) by using the SPART. Now we are just starting to carry out test regular observations. In this talk the current status of this project will be presented.

Keywords: millimeter wave, submillimeter wave, planet, middle atmosphere, solar system, ground-based telescope