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VENUS MISSION: RESULTS AND PERSPECTIVES FOR A NEW OPTICAL 1-DAY REVISIT  
MISSION

**Abstract**

VEN $\mu$ S (Vegetation and Environment New Micro Satellite) is an ISRAELI-FRENCH Earth observation satellite that provides optical time series, from Level-1 up to Level-3 products (bi-monthly syntheses of surface reflectances), over a selection of 186 specific sites worldwide. Launched on August 2nd, 2017, on a polar sun-synchronous orbit, this mission provides a unique combination of high spatial, spectral, and especially revisit frequency characteristics with 12 spectral bands imagery. After three years with 2-day revisit scientific mission on Earth resources monitoring, thanks to the good health of the mission, CNES and ISA decided to extend the mission to take benefit of this satellite and explore a new unique feature in Earth observation: a 1-day revisit period associated with a 4-m spatial resolution. This phase, named VM5, begins in March 2022 and should last two years.

After a brief description of the VEN $\mu$ S specifications, this presentation will overview this new mission phase in VEN $\mu$ S life. It will describe how the ground and board segments have been adapted to manage these new temporal revisit specificities. The selected sites will also be introduced concerning the acquisitions, and the first results concerning radiometric and geometric performances will be presented.

Moreover, considering these new characteristics, VEN $\mu$ S role as a demonstrator to prepare new missions will be emphasized. Indeed, this new 1-day revisit orbit at 560 km provides data that may simulate

future high revisit and high-resolution sensors, such as the next generations of Sentinel-2 or Landsat. It also allows to accurately benchmark spatio-temporal fusion methods dedicated to merge Sentinel-2 and future metric resolution and lower revisit period missions, such as the Sentinel-HR mission currently studied by CNES. By merging Sentinel-2 and Sentinel-HR data, it will be possible to get a high resolution and high revisit time series.