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Oral
(Virtual Talk)
The DQ-1 equipped with the ACDL payload was successfully launched into a sun-synchronous polar orbit on 16 April 2022 with an equator-crossing local time of around 13:30 p.m., and a 51-day repeat cycle. The ACDL is the world’s first space-borne integrated path differential absorption (IPDA) lidar instrument. In order to measure XCO2, the ACDL transmits two laser pulses of adjacent wavelengths (online at 1572.024 nm and offline at 1572.085 nm) and measures the echo signals with CO2 absorption reflected from the hard target..
This CO2 by IPDA lidar provides better data coverage, finer-scale details of CO2 distribution, attributed to its higher spatial resolution. More to the point, XCO2 can retrieve from IPDA without prior values of CO2. In addition, nocturnal measurements from ACDL bring additional information on the detection of respiration from vegetation and urban areas, offering valuable insights into the magnitude and distribution of terrestrial and oceanic sources and sinks, and benefiting future projections of climate change and the development of climate policies.
In this presentation, we will introduce the ACDL data processing methods and CO2 inversion results, as well as calibration and validation.
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