

## **Stratéole 2 – A Long Duration Lagrangian Balloon Campaign to study the Tropical Tropopause Layer and Lower Stratosphere.**

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Stratéole 2, a long duration scientific ballooning campaign to study the Tropical Tropopause Layer (TTL) and lower stratosphere, organized by CNES and LMD in France, is planned for 2017 – 2020. This campaign presents a rare opportunity for US scientists to make long duration physical and chemical measurements of the TTL from nearly Lagrangian balloon platforms. The TTL plays a critical role in governing stratospheric composition and in driving large-scale dynamics such as the quasi-biennial oscillation (QBO), yet it remains one of the more poorly observed regions of the atmosphere. The Stratéole 2 platform will span the void between sporadic aircraft studies and lower resolution satellite measurements by providing two seasons of longer duration measurements from high resolution in situ and remote sensing instruments. Stratéole 2 builds upon the highly successful joint European/US Concordiasi long duration super-pressure balloon campaign in the Antarctic in 2010, and Stratéole 2 will be similarly structured with a combination of US and European instruments constituting the balloon payloads. There are five instrument proposals in development from several US institutions, which include measurements of aerosol particles, temperature profiles, GPS radio occultation measurements, ozone measurements and water vapor profiles. Scientific goals of the campaign include investigations into the role of gravity and equatorial wave dynamics, the transport of trace gases, clouds and aerosols, stratospheric hydration, and the validation of satellite retrievals and model simulations

**Project Location:** Balloons will be launched from the Seychelles or a similar equatorial location, and circumnavigate the equatorial band from 20°S to 15°N.

**Field Campaign Dates:** The mission will consist of three field campaigns, a validation campaign with 4 balloon launches December 2017 – January 2018 and two science campaigns with ~20 balloon launches each December 2018– February 2019 and December 2019 – February 2020.

**Facilities to be Requested:** There are no NSF facilities that will be requested.

**Number of Proposals:** There will be 5 individual proposals submitted.

**Other Funding Agencies:** The primary funding for the balloon system and mission operation will be provided by the Centre National d'études Spatiales (CNES) with European science funding from the Centre National de la Recherche Scientifique (CNRS) and Agence Nationale de la Recherche (ANR).

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