

REXUS/BEXUS

Rocket/Balloon-borne EXperiments for University Students
A German-Swedish Student Programme



Certificate of Participation

This is to certify that **Georges L. J. Labrèche** has successfully participated in the REXUS/BEXUS programme as a member of the student team for the experiment TUBULAR (Alternative to AirCore for Atmospheric Greenhouse Gas Sampling).

The student followed a whole space experiment life cycle, supervised by experts of the Swedish Space Corporation (SSC), the European Space Agency (ESA), the German Aerospace Centre (DLR) and the Center of Applied Space Technology and Microgravity (ZARM). Between October 2017 and December 2018, the TUBULAR team proposed, designed, implemented, tested, operated, and documented a balloon experiment to validate a low cost air sampling mechanism which reduces the current complexities and limitations of obtaining data on stratospheric greenhouse gas distribution.

The TUBULAR experiment was successfully flown on the BEXUS 26 balloon in October 2018. Georges L. J. Labrèche together with the TUBULAR team submitted a final report fully covering the design, verification, operation, and results of the experiment. In addition, during the whole project an outreach programme has been performed to promote their experiment.

In particular Georges L. J. Labrèche participated in:

- The experiment Selection Workshop at ESA-ESTEC, in November 2017.
- The BEXUS 26/27 Launch Campaign at SSC's Esrange Space Center, in October 2018.

Georges L. J. Labrèche and the TUBULAR student team were sponsored by the Swedish National Space Agency (SNSA), ESA and DLR. This covered the "flight ticket" on a BEXUS balloon, expert support and travel expenses.

8th May 2019

A blue ink signature of K. Dannenberg, written in a cursive style.

K. Dannenberg

Head of Rocket and Balloon
Programmes and Life Sciences

A blue ink signature of H. Marée, written in a cursive style.

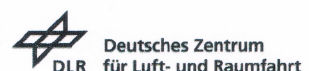
H. Marée

Head of the Education Office

A blue ink signature of P. Gräf, written in a cursive style.

P. Gräf

Head Microgravity Research &
Life Sciences



The REXUS/BEXUS programme is realised under a bilateral Agency Agreement between the Swedish National Space Agency (SNSA) and the German Aerospace Center (DLR). The Swedish share of the payload has been made available to students from other European countries through a collaboration with the European Space Agency (ESA). EuroLaunch, a cooperation between the Esrange Space Center of SSC and the Mobile Rocket Base (MORABA) of DLR, is responsible for the campaign management and operations of the launch vehicles. Experts from SSC, ESA, ZARM and DLR provide technical support to the student teams throughout the project.