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OUTCOME AND LESSONS LEARNT FROM THE HEMERA BALLOON INFRASTRUCTURE –  
NEW AND INNOVATIVE APPROACH FOR SCIENCE, TECHNOLOGY AND PREPARATION FOR  
NEW SPACE AND EARTH OBSERVATION MISSIONS

**Abstract**

Stratospheric balloons are highly useful platforms for science and technology, as self-standing tools for e.g. climate relevant atmospheric research and astrophysics or as platforms for preparation and validation of new space and Earth Observation missions and instruments. Usually, stratospheric balloons fly at altitudes of 20-40 km with flight durations from a few hours to several weeks. Compared to satellites, balloons possess relatively low cost and short lead times from the experiment idea to the flight, thus being particularly attractive to young researchers and students.

In January 2018, a new balloon infrastructure called HEMERA was launched. The HEMERA project is funded by Horizon 2020, the Framework Programme for Research and Innovation of the European Union. The project is coordinated by the French space agency CNES and involves 13 partners from several European space agencies, universities and companies as well as the Canadian Space Agency, CSA. A major objective of HEMERA is to enlarge the user community within research and technology related to stratospheric balloons and to coordinate activities within the field. The HEMERA activities involve balloon flights carrying experiments from various countries, development of generic atmospheric sensors and virtual access to the data collected.

Six major balloon campaigns are taking place within HEMERA offering free of charge balloon flights to users and scientists from various science fields and/or for technology tests. Each zero-pressure balloon carries several experiments thus contributing to efficient usage of the infrastructure and promoting international cooperation among the users. The launch sites are Esrange in Sweden and Timmins in Canada as well as Aire Sur L'Adour in France, the latter for smaller sounding balloons. In addition, various outreach and education activities are foreseen such as dedicated workshops for users and summer school for students and new users of balloon platforms.

The presentation will deal with the results of HEMERA, outcome of the balloon campaigns and examples on how the low-cost balloon-born infrastructure can be used for various science and technology needs.