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# HEMERA

***CNES introduction on HEMERA current situation***



# HEMERA : OVERVIEW

HEMERA is both

an European  
Research Infrastructure

Balloon flight services

- Open access (*but not for free*)
- User manuals
- Various kinds of balloons
- Several Launch sites
- Scientific and technology applications

HEMERA DATABASE

- AAERIS
- <https://www.aeris-data.fr/projects/balloon-data/>

an H2020 grant

- WP management
- WP database
- WP transnational access
- WP Outreach, training, ...
- WPs R&D

HEMERA = an H2020 grant (2018-2022) = A Research Infrastructure



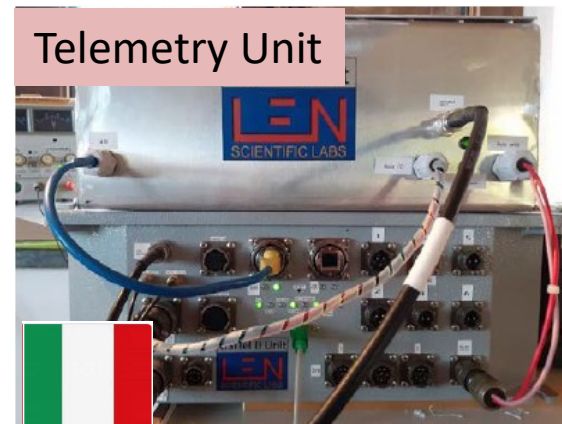
# HEMERA : OVERVIEW

Each work package of the grant was a success



an H2020 grant

- WP management
- WP database with **virtual access**
- WP transnational access
- WP **Outreach**, training, ...
- WPs **R&D**



A lot of very good work was done



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- WP management
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Let us focus on the **TRANSNATIONAL ACCESS** programme



# HEMERA transnational access program

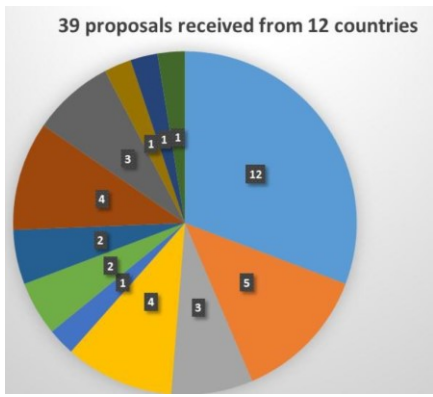
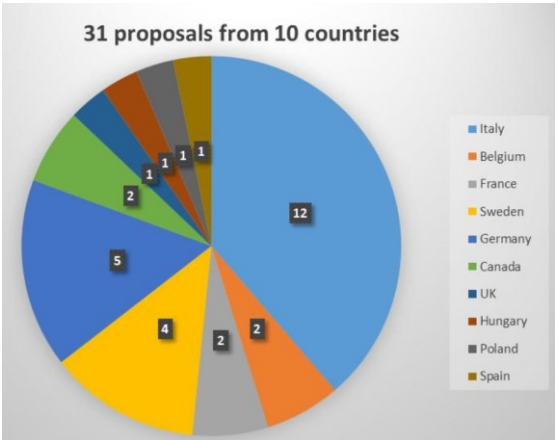
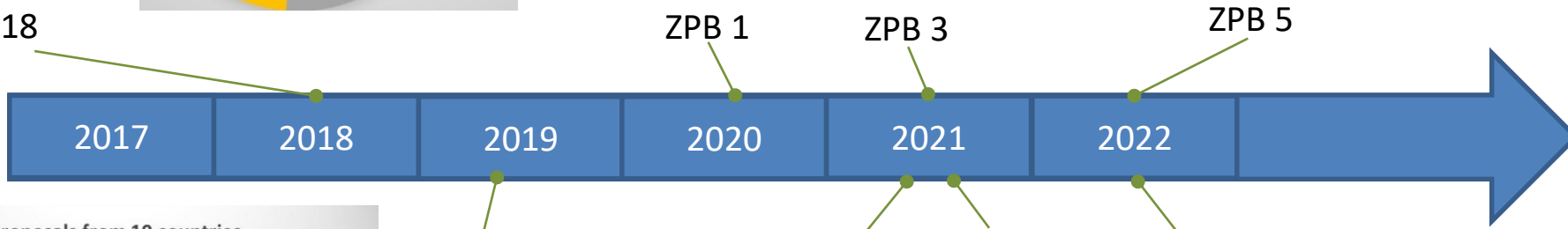
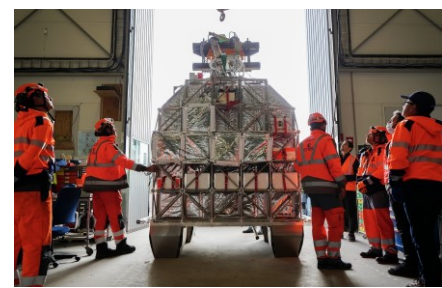


Figure 5. Launch of the SSC HEMERA 2021 ZPB

Call for project 2018



Call for project 2019



About 70 proposals were received from all over Europe

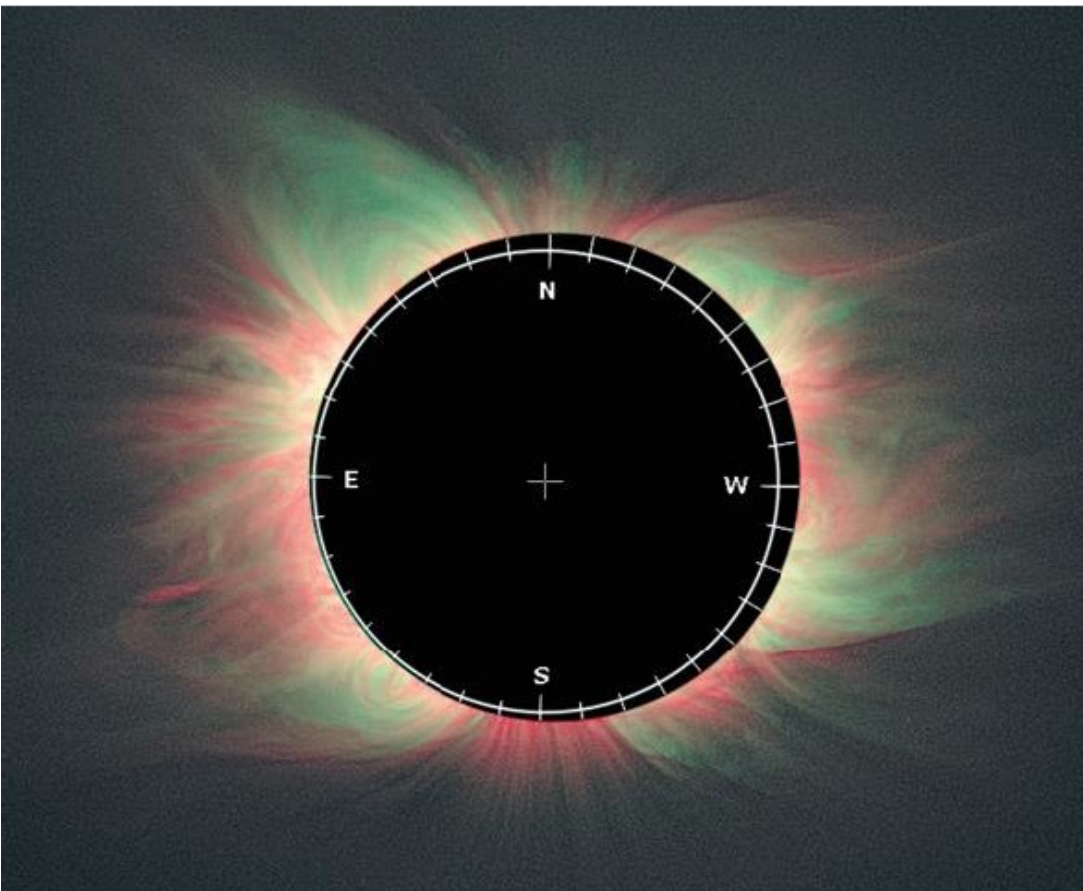


# HUGE SUCCESS of the HEMERA transnational access flights (1/6)



## SUN STUDY

Coronagraph – CORMAG



Pointing precision  
~ 10 arcsec



# HUGE SUCCESS of the HEMERA transnational access flights (2/6)



## Atmospheric chemistry

In-situ experiments

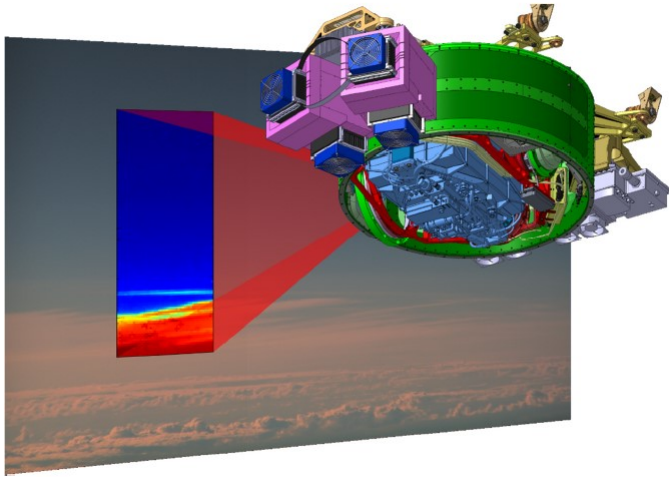


- **4 Aircore(s)** (air coring)
- **1 Mega-Aircore** (air coring)
- **1 LISA sampler** (CO<sub>2</sub>, CH<sub>4</sub>, CO )
- **1 Cryogenic Air sampler** (Ozone and sulfur)
- **2 Pico-SDLA** (IR spectrometer for CO<sub>2</sub>/CH<sub>4</sub>)

Synergetic effects



# HUGE SUCCESS of the HEMERA transnational access flights (3/6)



## Atmospheric Chemistry

Remote measurements

GLORIA-B

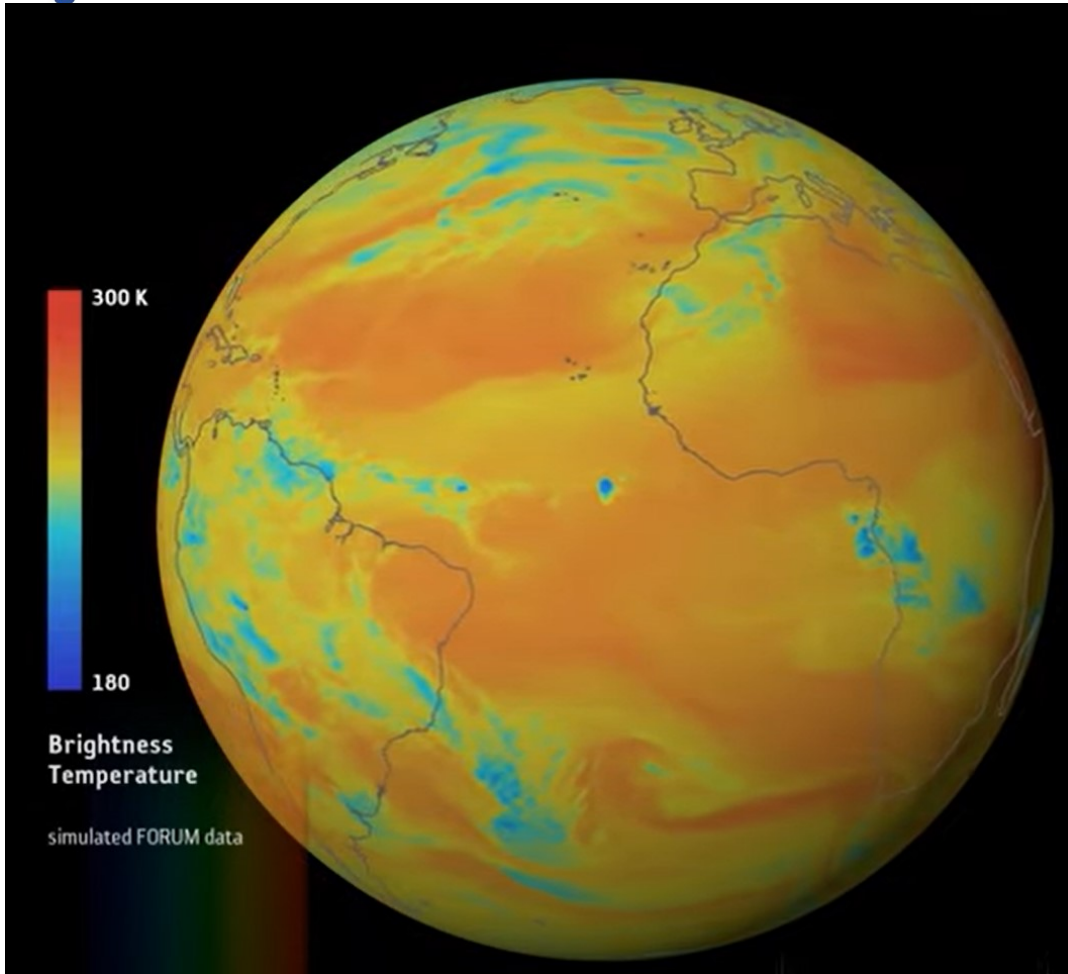


Hyperstral limb imager





## HUGE SUCCESS of the HEMERA transnational access flights (4/6)



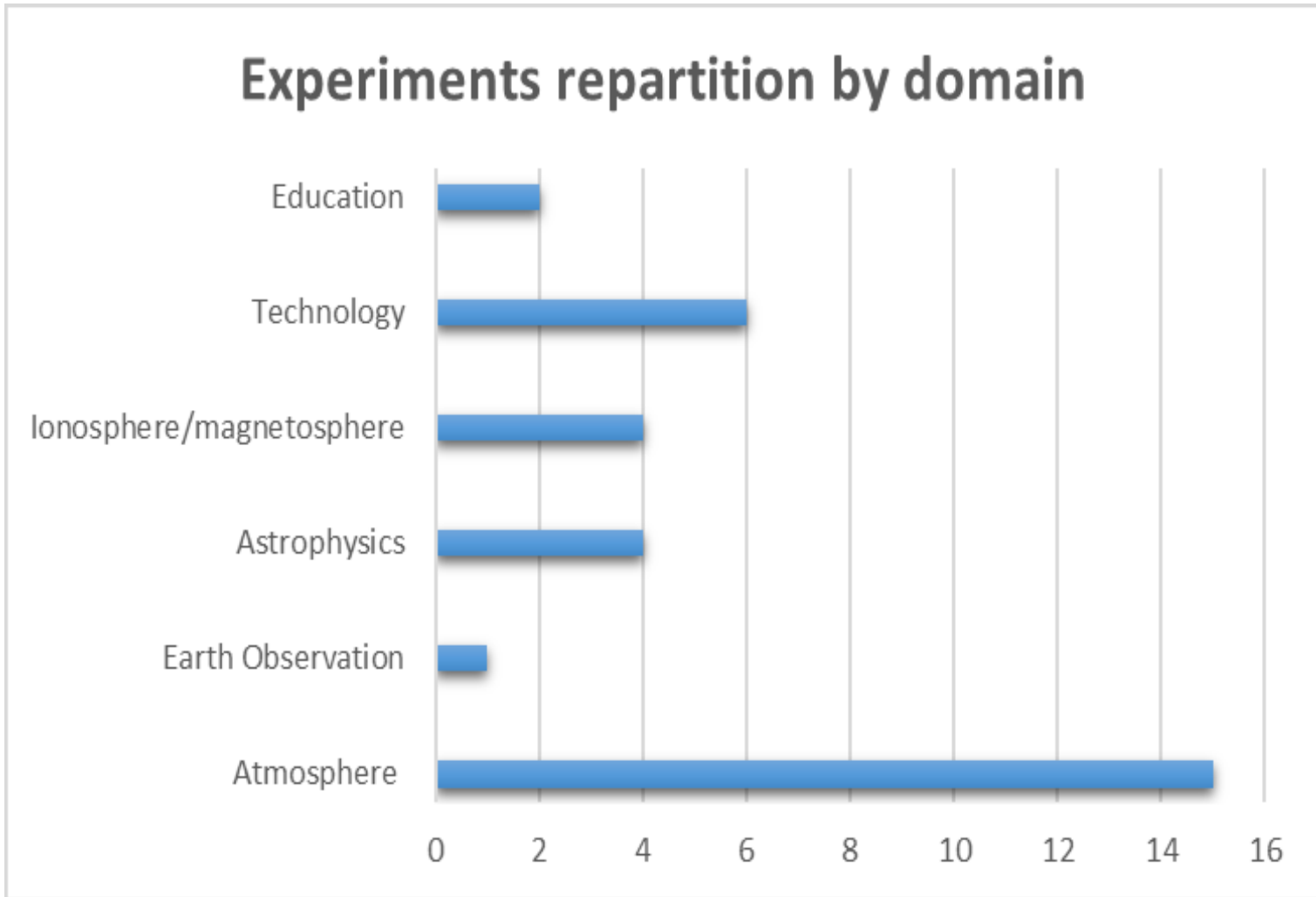
## EARTH Radiated Energy imager

FIRMOS-B ;  
Far Infrared Radiative Closure Study

Preparation of  
the ESA earth-explorer  
FORUM satellite



## HUGE SUCCESS of the HEMERA transnational access flights (5/6)

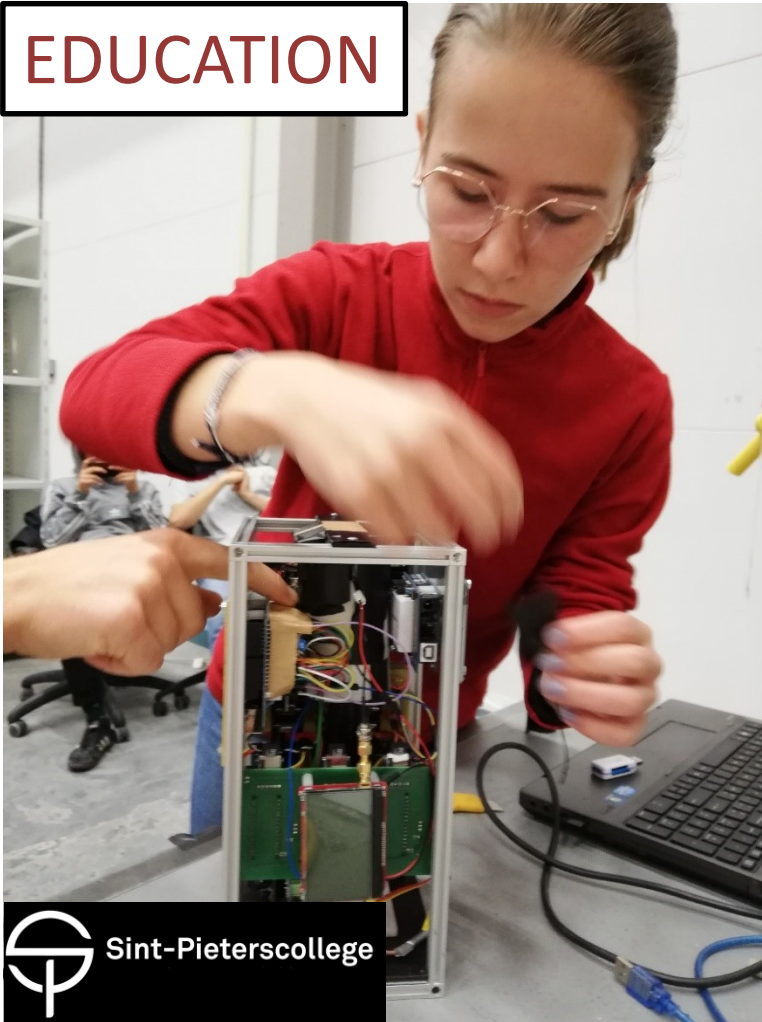


32 experiments – Most of them in atmospheric science



# HUGE SUCCESS of the HEMERA transnational access flights (6/6)

## EDUCATION



STRAINS

## TECHNOLOGY



PROTO-CUBES

Education and Technological experiments



## IMPRESSIVE DEMONSTRATION of the impact of this programme

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All these world class flights demonstrates that  
this transnational access program has a huge impact

*But this program is not funded after 2022 ...*

**It would really be a pity  
to leave these beautiful payloads  
on the ground after 2022 !**



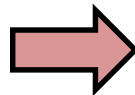


## How much does an European transnational access programme cost ?

[0,5-2] keuros/kg of payload flight

If it was supported by several countries or agencies in Europe,

the yearly cost could be limited to 100-200 keuros/year per country



Is there any solution to keep regular access opportunities to the stratosphere to European scientists after 2022?



## CONCLUSION



HEMERA flight – KIRUNA 2021

CNES and SSC BALLOONS are great tools to make good science.

Let us use them !