



# The HEMERA Stratospheric Balloon Infrastructure

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HEMERA is an **European Infrastructure** for scientific ballooning, funded by the **Horizon 2020** framework program of the European Union

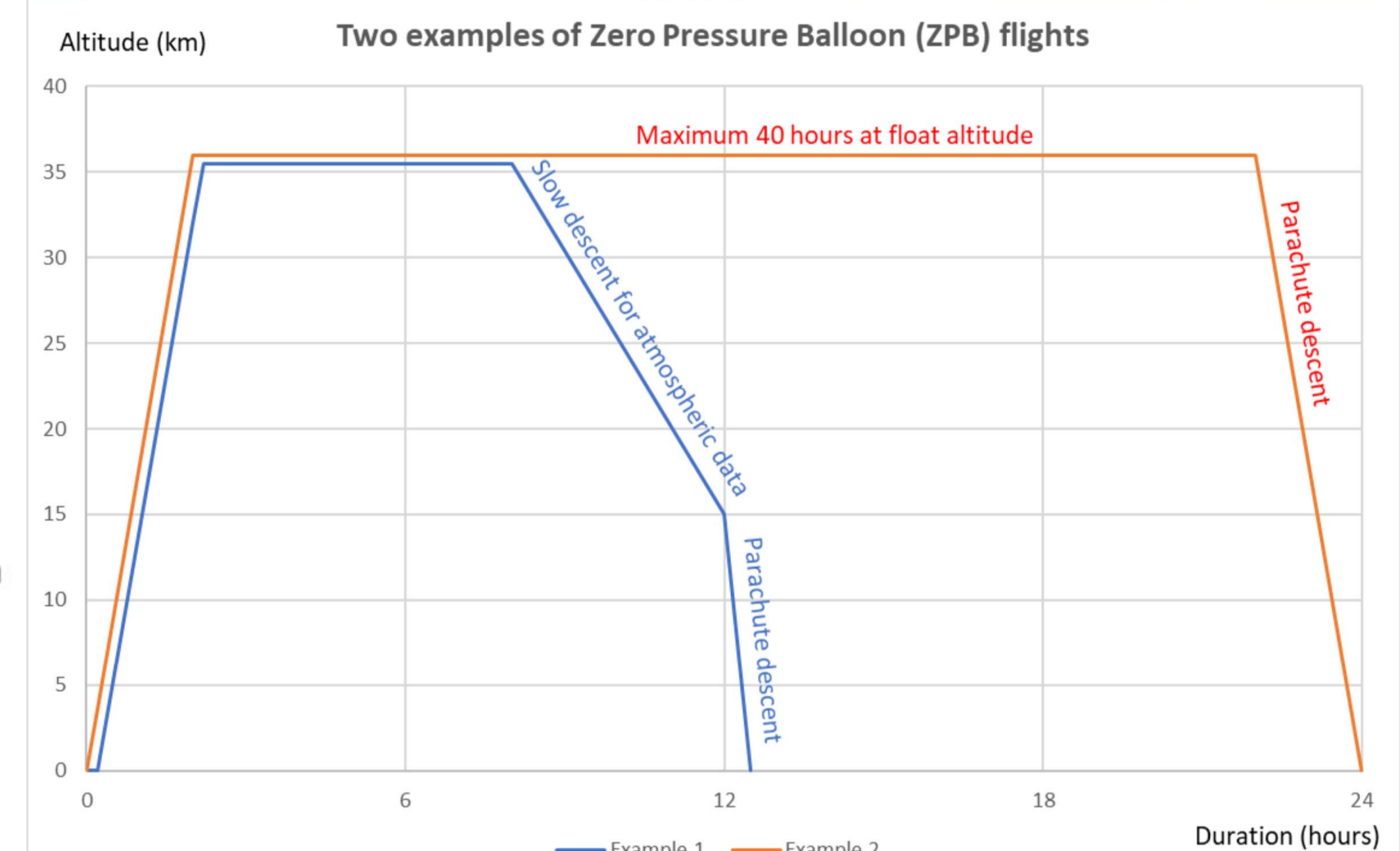
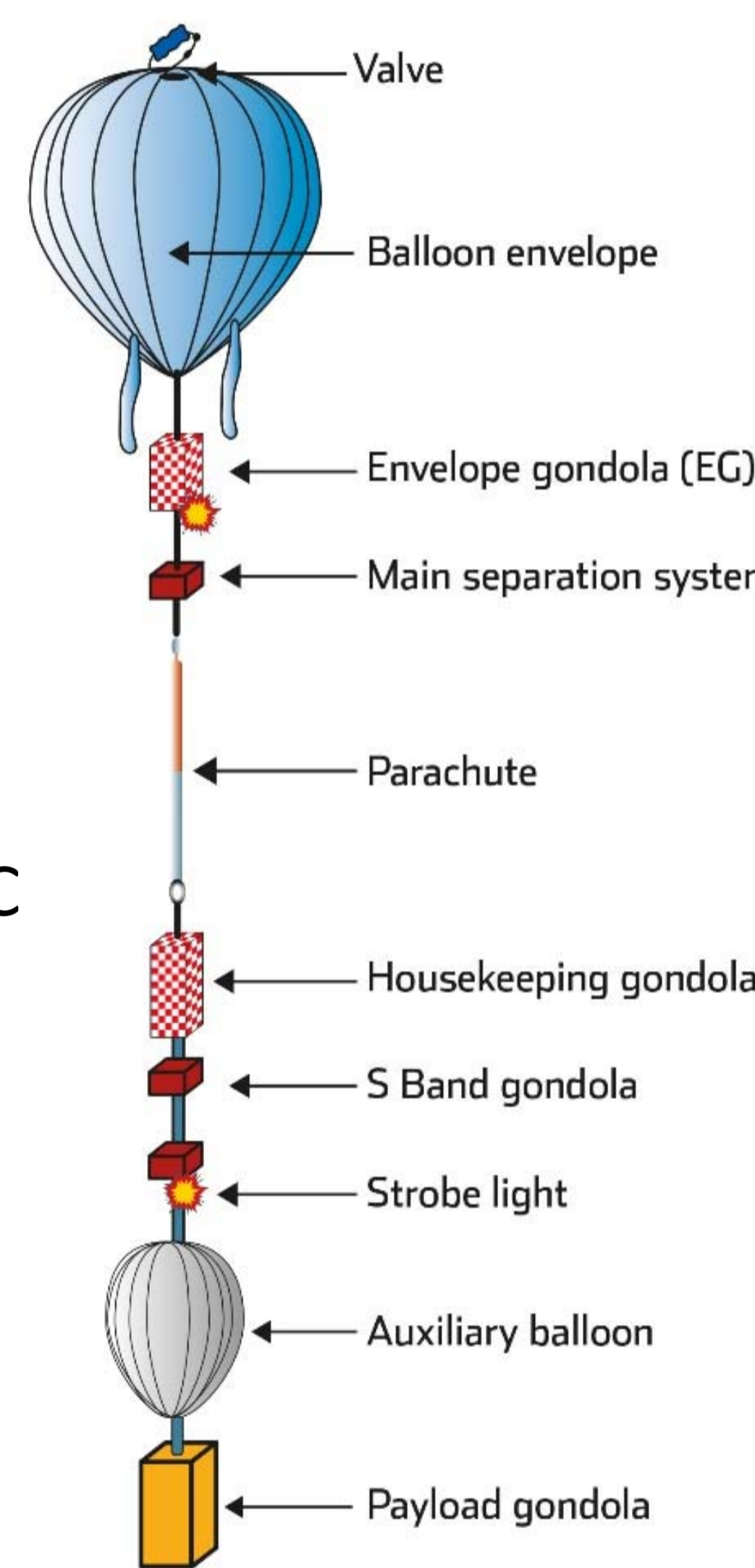
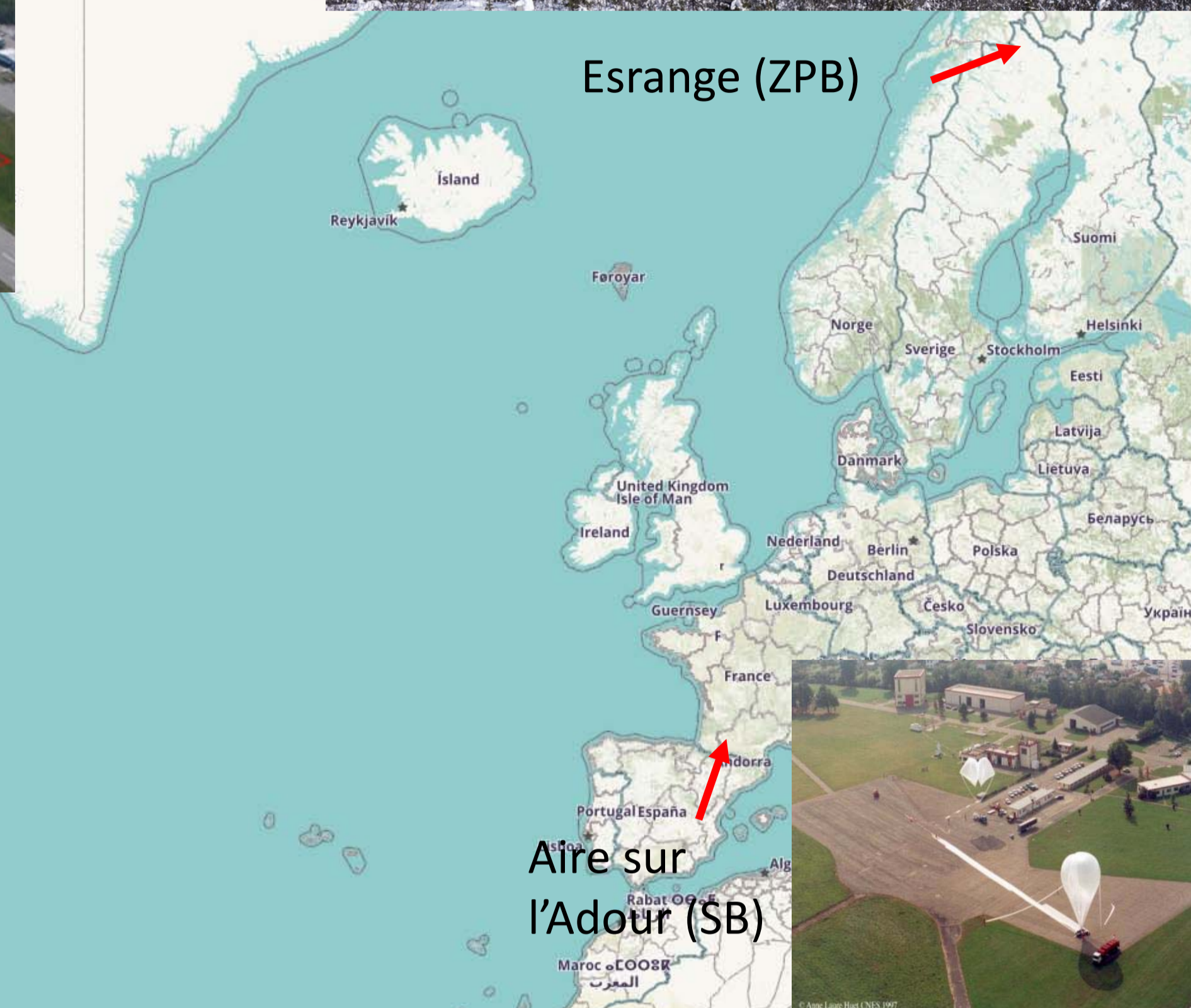
Partners are space agencies and space access providers, scientific bodies (research centers and universities) and industry

HEMERA has three major elements:

- Provision of **Trans-National Access** to balloon flights and scientific data acquired through balloon flights
- **Networking** : to strengthen and enlarge the user community
- **Joint Research** : to improve ballooning technology and scientific instrumentation

## Trans National Access:

- Flights provided through EU funding with no cost for the user
- 6 flights with Zero Pressure Balloons for up to 150 kg payload
  - 3 flights by SSC from Esrange near Kiruna, Sweden
  - 3 flights by CNES ( 1 x Esrange, 1 x Timmins, 1 x TBD)
- 20 flights with Sounding Balloons for up to 3 kg payload
  - by CNES from Aire sur l'Adour, France
- Gondolas for Zero Pressure Balloon flights provided by CNES/SSC
  - several instruments on one gondola
  - light instruments preferred to allow more users to fly
  - all instruments/gondolas will be recovered
- Flight levels: up to 38 km and down to 15 km
  - depends on total mass of payload and gondola
- Instruments to be provided by the user through own funding!



Timeline	Activity
July 2018	First call for proposals
October 15, 2018	Submission of proposals to first call
January 2019	Selection of payloads of first call
August 2019	First flights of selected payloads from first call in Timmins and Kiruna
December 2019	Second call for proposals
February 2020	Submission of proposals to second call
May 2020	Selection of payloads of second call
August 2020	Further flights of selected payloads from first call in Kiruna
In 2021	Flight possibilities for payloads selected in second call with CNES and SSC from Kiruna and/or Timmins

Interface	CNES	SSC
Telemetry / Telecommand	TM: up to 1.5 Mbit/s TC: up to 70 kbit/s Ethernet (TCP/UDP) 4 asynchronous links 12 ON/OFF switches	Up to 2 Mbit/s duplex total Ethernet (TCP/UDP) 3 asynchronous links
Power / Batteries	Li-Ion: 28 V, max. 1 kW	Needs to be included in instrument
Pointing	Attitude sensors (INS & stellar) Azimuth and elevation	Not available
Additional services	Actuator control, thermal monitoring, GPS & time sync.	On/Off of instrument GPS, accelerometer

<https://www.hemera-h2020.eu/>

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