SkyRider HAPS for Earth Observation applications from Stratosphere

"SKYRIDER MISSION IS TO CREATE ADDITIONAL DATA SETS FROM STRATOSPHERE FOR EARTH OBSERVATION APPLICATIONS"

Utilizing payload development for Cubesats:

- Optical imagers
- Infrared imagers
- Radars
- Lidars
- Other instruments for remotely Earth sensing

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ESA SUPPORTED DEVELOPMENT

➤ **2018 Galileo Masters** - CZECH REPUBLIC REGIONAL WINNER

➤ **2019 ESA BIC Prague** - ESA BUSINESS INCUBATION CENTRE PRAGUE ALUMINI

➤ **2022 ITT1** - PROJECT ARRANGEMENT FOR A FRAMEWORK PROJECT IMPLEMENTING

ESAS SUPPORT OF SPACE-RELATED ACTIVITIES IN THE CZECH REPUBLIC

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Lighter Than Air HAPS (High Altitude Pseudo-satellite)
operation altitude approximately **20 km**
mission duration **6 months**
payloads **12 kg** with power consumption **5 kW**
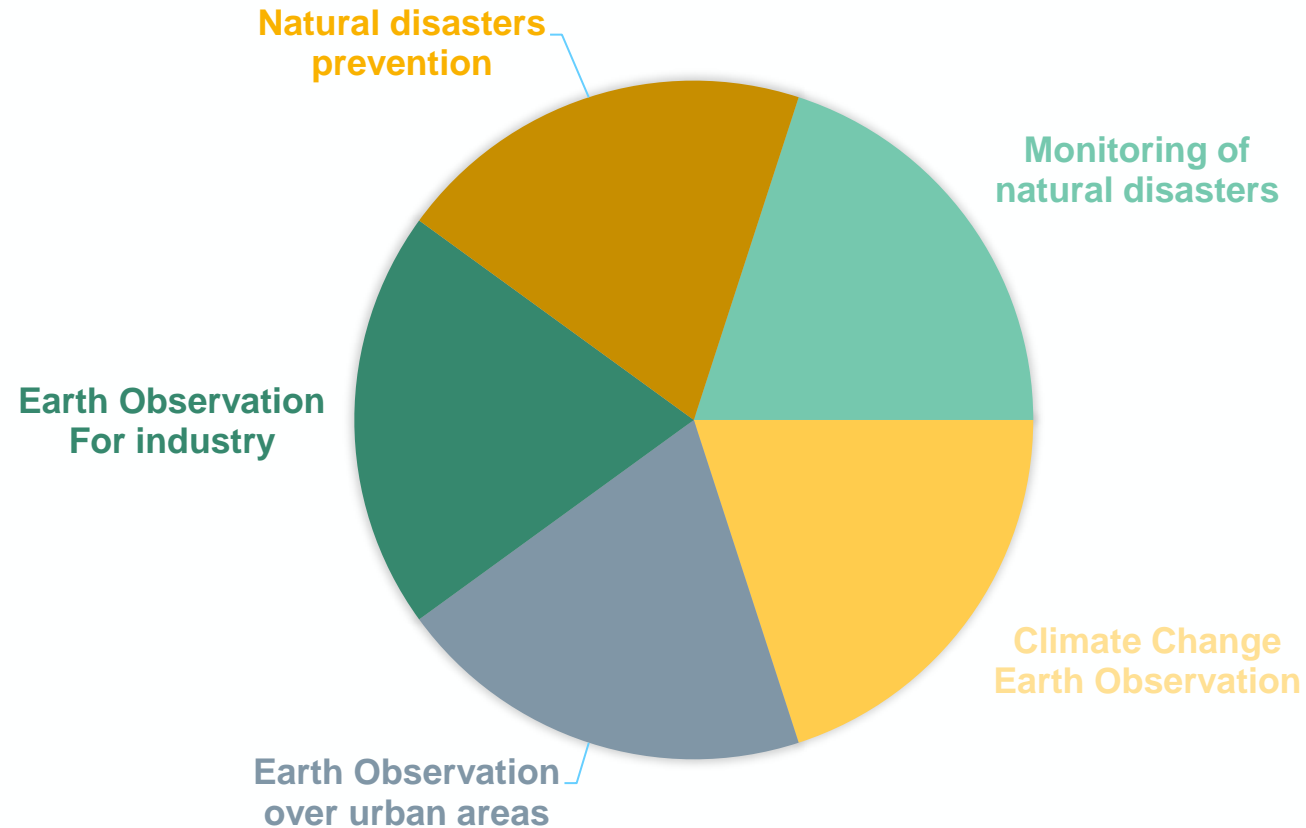station keeping capability in winds up to **15 m/s**

SkyRider

Main HAPS Advantages:

- complementary to satellites

- altitudes above air traffic

- operation above weather

- high level of autonomy

- fast payload accommodation

- zero CO_2 Emission operation

- reusable

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SkyRider HAPS for Earth Observation applications from Stratosphere

EARTH OBSERVATION APPLICATIONS FROM STRATOSPHERE:

- Natural disasters prevention
- Monitoring of natural disasters
- Earth Observation For industry
- Climate Change Earth Observation
- Earth Observation over urban areas

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Natural disasters prevention

Prevention of losses to environment, property, infrastructure and human lives
Fire detection
Meteorology

Duration: long-term operations (months)
Station-keeping: not required
Platform movement: circling above desired location(s)
Swarm operations: possible
Data transmission: live

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Monitoring of natural disasters

Fires, floods, hurricanes, tornados, …
Prediction of disaster evolution
Situational awareness and monitoring

Duration: short-term operations (days)
Station-keeping: required
Platform movement: limited
Swarm operations: possible
Data transmission: live

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Earth Observation on climate change

Climate change:
Polar caps
De-forestration
Animal migration
Water

Remote sensing:
Air pollution
Atmospheric measurements

Duration: long-term operations (months)
Station-keeping: not required
Platform movement: circling above desired location
Swarm operations: not required
Data transmission: daily

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Earth Observation over urban areas

Traffic management
Parking
Situational awareness
Heat monitoring
CO_2 measurements
Security

Duration: short or long-term operations
Station-keeping: required
Platform movement: limited
Swarm operations: possible
Data transmission: live

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Earth Observation for industry

Plant monitoring
Pipeline monitoring
Heat monitoring
CO_2 measurements
Security

Duration: short or long-term operations
Station-keeping: required
Platform movement: limited
Swarm operations: possible
Data transmission: live

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Ultimate future: MARS Atmosphere exploration

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