



GAPMAP

An overview of GRASP's
GAPMAP mission

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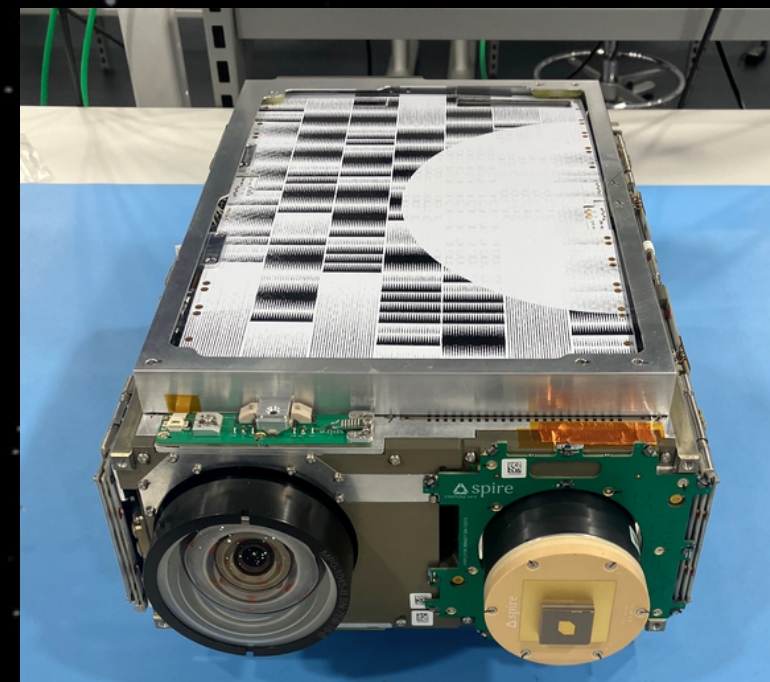


Introduction

Thanks to the payload development carried out at NASA by Chief Technical Officer Dr. Vanderlei Martins and his team, GRASP' GAPMAP mission utilizes NASA's HARP cubesat experience to launch the first commercial multi angular polarimeter (MAP) constellation into space.

MAP observations are presently considered as the most capable passive remote sensing observations for monitoring aerosol and particulate pollution. In this regard, GAPMAP mission marks a new milestone into Space history.

The constellation will permit 5 observations per day over each location at a global scale. A coverage that is not planned to be achieved by any current planned public MAP mission worldwide.



HARP

AIRPHOTON

 GRASP

GAPMAP specifications

Products: 300m - 2.3km
Nadir pixel: 300 - 580m
Nadir binned: <2.5km

Resolution

4 wavelengths

- 440nm
- 550nm
- 670nm
- 870nm

3 Stokes parameters

- I
- Q
- U

>1,000km Swath

Up to 60 angles Hyper-Angular Sampling

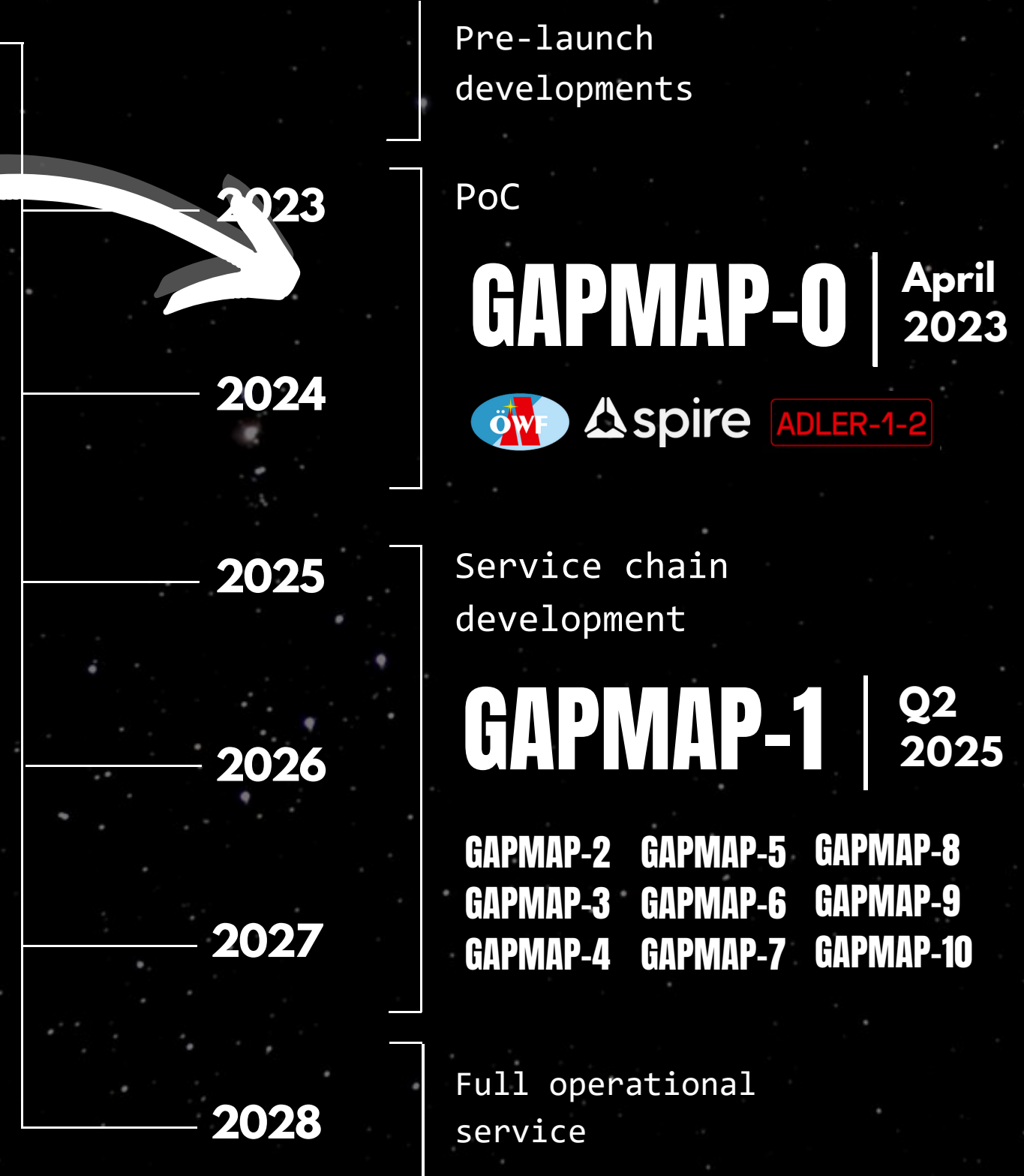
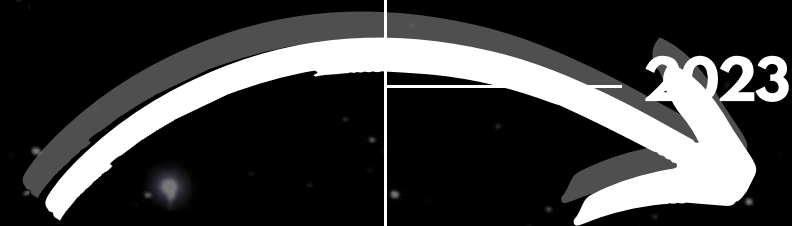
Calibration

- Radiometric
- Polarimetric
- Solar
- Moon
- Ground targets
- Satellite comparison
- On-board (future)

Size 2.5U

GAPMAP roadmap

1 year in
orbit!



GAPMAP applications



Volcanic
ash



Desert
dust



Forest
fires



Urban
smoke



Ocean
salt

GAPMAP's capabilities allow the observation of Earth's scenes from space across four wavelengths (0.44 – 0.87 μm) with up to 60 view angles and three Stokes parameters (I, Q, U).

This unique configuration yields a wealth of information about the Earth's surface, cloud properties, and especially atmospheric aerosols, hence permitting to discriminate between atmosphere and surface particles coming from different natural phenomena such as volcanic ash, desert dust, forest fires, urban smoke or ocean salt.

The future GAPMAP constellation will amass 100 times more measurements per orbit than traditional 3-color radiometric imagers.

GAPMAP first captures

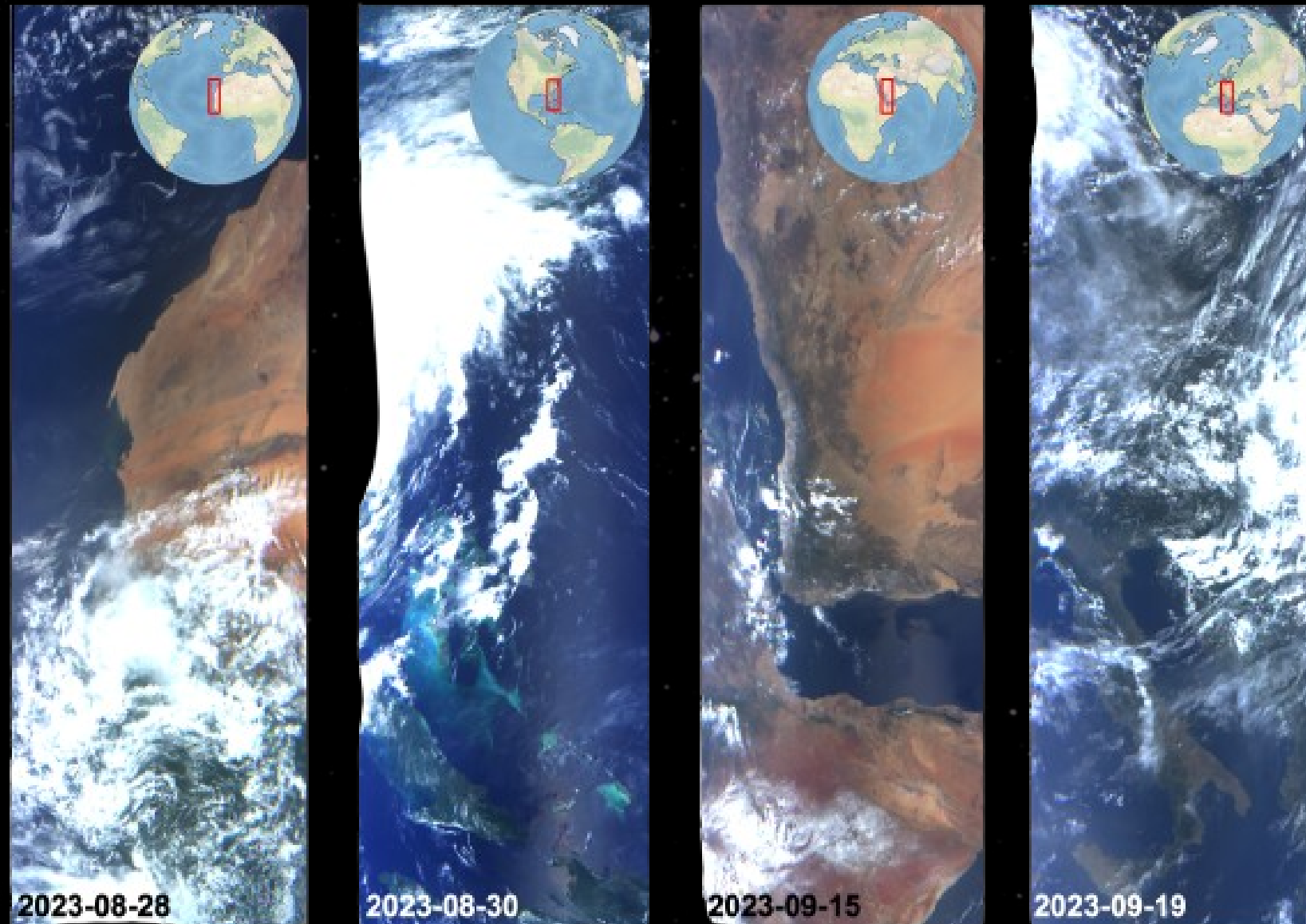


Image:GAPMAP-0's data scenes across 4 different regions of the globe. Each scene is identified with the specific region on a map and the corresponding capture time. Source: GRASP

GRASP's GAPMAP-0 payload now monitoring Earth's atmosphere and surface

Lille, France - 12th January, 2024 | The French company GRASP announced that its GAPMAP-0 instrument, launched in April 2023 on the Adler-2 satellite mission, has begun to deliver Earth observations of Earth's atmosphere and surface. This is a significant milestone for the company as the multi-angle, multispectral polarimeter is the only privately developed payload of its kind currently acquiring Earth data. 'This progress validates our mission and serves as a guiding light for its future,' expressed David Fuertes, CEO of GRASP.

The technology driving this instrument was developed by Dr. Vanderlei Martins, CTO of GRASP, and his team in Maryland (USA). It draws extensively on the expertise developed by Dr. Martins and his team from their design and build of NASA's HARP payload, and represents significant advancements in cubesat capabilities.

[Read more](#)

GAPMAP end-users



Industry



Mining



Agritech



Insurance



Policy makers

Products that will be issued from GAPMAP data include retrieved Level 2 Aerosol and Surface characterization using the GRASP algorithm which allows the synergy between different data sources as Dr. Dubovik stated.

GRASP is one of the most advanced algorithms for aerosol properties retrieval and it will generate data of the interest of public agencies at large as well as different B2B segments – such as the mining industry, the mining sector, precision agriculture and other private operators – that are in need of surface and atmosphere characterization that can be obtained from small satellite constellations.

[Read more](#)

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