MAGAL
Altimetry Constelation

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Space-Earth Interactions

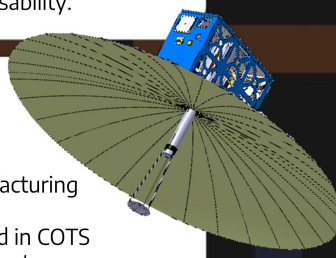
MAGAL Ocean Radar Altimetry, a New Space Approach

MAGAL project aims the definition of a new satellite constellation, based in small satellites, like CubeSats, for ocean monitoring, at local, regional and global scales, based on a new innovative radar altimeter. MAGAL is aligned with the European "New Space" agenda, aiding Portugal towards becoming a space nation.

MAGAL constellation main goal is to improve the current temporal sampling of the ocean from 10 to 5 days, keeping, at the same time, the spatial sampling and data accuracy. Its main payload is a custom state-of-the-art radar altimeter (capable to fit in an around 1.5U CubeSat).

MAGAL is also developing a new concept of Data Centre to work as a Full Integrated Service, not restricted to MAGAL data only, but combining them with other data sources, to provide a complete set of services and products with higher added value to the end-user, in specific layers, which can be accessed depending of the user permissions.

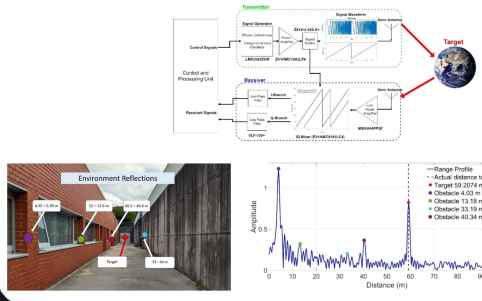
MAGAL involves major Portuguese industry and science players, aiming the leverage of space industry at all supply chain phases, from conceptual design to launch and data usability.



MAGAL Key Features

- Scope: Radar altimetry over oceans and inland water bodies
- Orbit: SSO
- Altitude: 499,85km
- Inclination: around 97,4°
- 6 Satellites in a single orbital plane
- Footprint Area: around 5km²
- Temporal Resolution: 5 days with 76 revolutions per repetition cycle
- Spatial Resolution: around 87,88km at Equator
- Satellite shape: 24U (TBC)
- Satellite weight: 70kg (TBC)
- Cost: 3M€
- Launch Cost: 6M€
- Timeline: procurement, manufacturing and testing: 2 to 3 years
- MAGAL Satellite shall be based in COTS system, except the Radar Altimeter
- Dedicated Data Centre
- MAGAL aims a "high-reliability" CubeSat system, with 3 years lifetime

Radar Altimeter



Data Centre

Conclusions

MAGAL aims to be a proof of concept of an innovative technological concept such as a constellation of small satellites carrying radar altimeters, not yet implemented to date, can improve on-orbit capability at reduced system cost for ocean monitoring and climate studies and redefine the future of Satellite Altimetry.

MAGAL project is being developed as a strong partnership between Portuguese industry and scientific community, together with UT Austin.

Promotors: efacec, ciimar, CEiiA, CoLAB +ATLANTIC, omnidea, instituto de telecomunicações

Partners: Gaspar Frutuoso Fundação, AIR CENTRE, TEXAS

UTAustin Portugal, FCT Fundação para a Ciência e a Tecnologia, TEXAS

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