SABIA-Mar Satellite Mission

Committee on the Peaceful Uses of Outer Space COPUOS

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UNITED NATIONS
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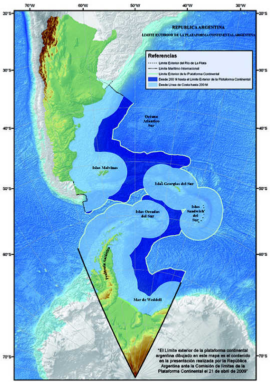
Why is studying the ocean so important?

- They covers 70 % of the Earth's surface and play a fundamental role in our daily lives.
- Oceans regulate the global climate and the carbon cycle.
- Oceans are source of natural resources.
- It is vitally important to understand the ecology, bio-geo-chemistry and the threats faced by the oceans in order to make a sustainable use of their resources.
- Ocean Color remote sensing is a very useful technique for monitoring our oceans and coast.

SABIA-Mar mission in context

The SABIA-Mar is a satellite mission mainly focused in ocean color studies. It was born as a great contribution to regional coastal studies in the framework of...

- Argentinian National Space Plan.
- SAC-D/Aquarius mission continuity.
- Argentinian Pampa Azul initiative.
- Sustainable Development Goals contribution.
- International Ocean Color and climate change communities.



Web Images.

SABIA-Mar mission

Main Objective

To obtain information over oceans in all the world, particularlly on Argentinian and South America coastal waters, focused on:

Primary productivity
Ecosystems and maritime habitats
Fishery management
Water quality

Global (800 m)

Scenarios

Regional
South America Coast
(200/400 m)

PRODUCTS

Water Leaving Radiance
Chl-a concentration
Kd(490)
PAR
Turbidity
Sea Surface Temperature

SABIA-Mar Mission Summary

THE SATELLITE

Sun-synchronous Polar orbit
702 Km height
99.8 min period
10:20am local time DN
2 days revisit
9 days repeat cycle
700 kg mass - 2x2x2 m
5 years lifetime

Cameras

VISible-**N**ear **I**nfra**R**ed
NIR-ShortWave **I**nfra**R**ed
Thermal **I**nfra**R**ed
High **S**ensitivity **C**amera
Data **C**olletion **S**ystem
Liulin Dosimeter
GNSS receiver

Spectral bands

16 VIS-NIR-SWIR (412 to 1610 nm)
2 TIR (10800 & 11800 nm)

Ground Stations

Córdoba
Tolhuin

SCIENCE

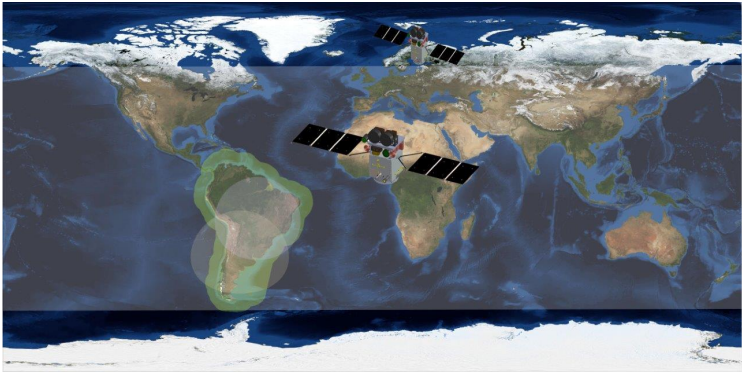
Research

Science Team
Added value products
Data distribution for free

Educational

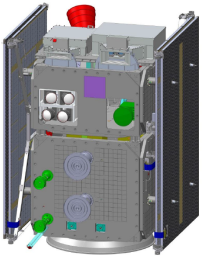
Public Outreach program
Webinars
Teaching aids

Mission Scenarios



- Regional: Coastal zone of South America coming to about 650 km offshore, in addition to Inland Waters in South America, with spatial resolution of 200m. For regional studies and monitoring of Vitória-Trindade Ridge and Malvinas Islands regions 1000 km coverage is requested.
- Global: geographical coverage in latitude shall be 120 degrees ($\sim \pm 60^{\circ}$ latitude) with seasonal changing limits, at a 800m of spatial resolution.

The satellite



2024

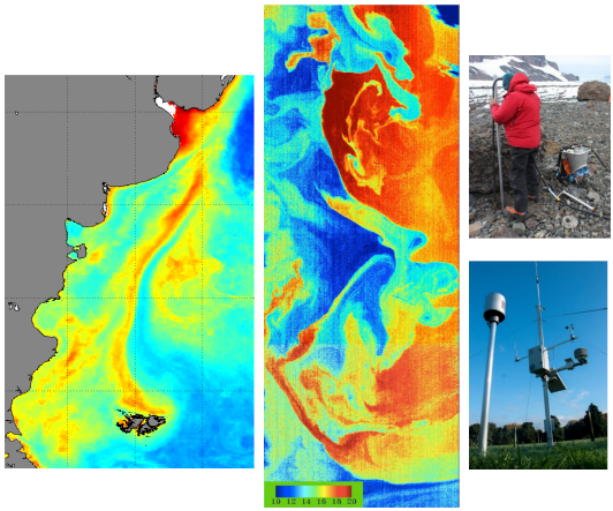
LAUNCH

Spectral bands and cameras

Camera	Swath	Band	λ_0 [nm]	FWHM [nm]	GSD Regional [m]	GSD Global [m]	L_{typ} [W m^{-2} µm^{-1} sr^{-1}]**	L_{max}	S/N* NETD**
VIS/NIR	1496km	B0	412	10	200	800	79	602	1000
		B1	443	10	200	800	68	664	1000
		B2	490	10	200	800	52	686	1000
		B3	510	10	200	800	45	663	1000
		B4	555	10	200	800	34	643	1000
		B5	620	10	200	800	21	570	1000
		B6	665	10	200	800	16	536	1000
		B7	680	7.5	200	800	15	517	1500
		B8	710	10	200	800	12	489	1000
		B9†	750	10	200	800	10	447	600
		B11†	865	20	200	800	5.9	333	400
NIR/SWIR	1495km	B9†	750	10	400	-	10	447	600
		B10	765	10	400	-	7.8	430	600
		B11†	865	20	400	-	5.9	333	400
		B12	1044	20	400	-	3.7	236	400
		B13	1240	20	400	-	0.88	158	250
		B14	1610	60	400	-	0.29	82	250
TIR	800km	B15	10800	900	400	400	300	323	0.3
		B16	11800	900	400	400	300	323	0.3

† Bands 9 and 11 are repeated in both cameras.
* for VIS/NIR & NIR/SWIR @L_{Typ} at GSD:1000 m.
** for TIR in °K.

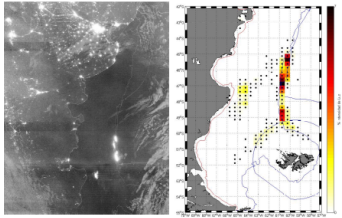
- Users: International Ocenan Color Community, Government institutions, Decision makers, Research and Education
- Processing levels: L1, L2, L3.
- Format: Products will be generated in netCDF4 format with CF and ISO metadata.
- Data Policy: SABIA-Mar data will be available for free in CONAE's website.



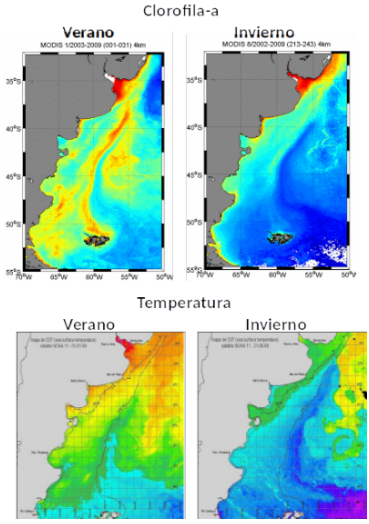
Chlorophyll-a concentration, Sea Surface Temperature, Data Collection System.

Potential value-added Applications

- Surveillance and navigation support.
- Fisheries and aquaculture.
- Health: toxic algae blooms, water quality, coastal sediments.
- Emergencies.
- Ocean circulation and dynamic
- Climate change and global trending.



Night high sensibility NPP/VIIRS, Jigger boats frequency (INIDEP), MODIS image.



Based on MODIS images.

¡Muchas Gracias!

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