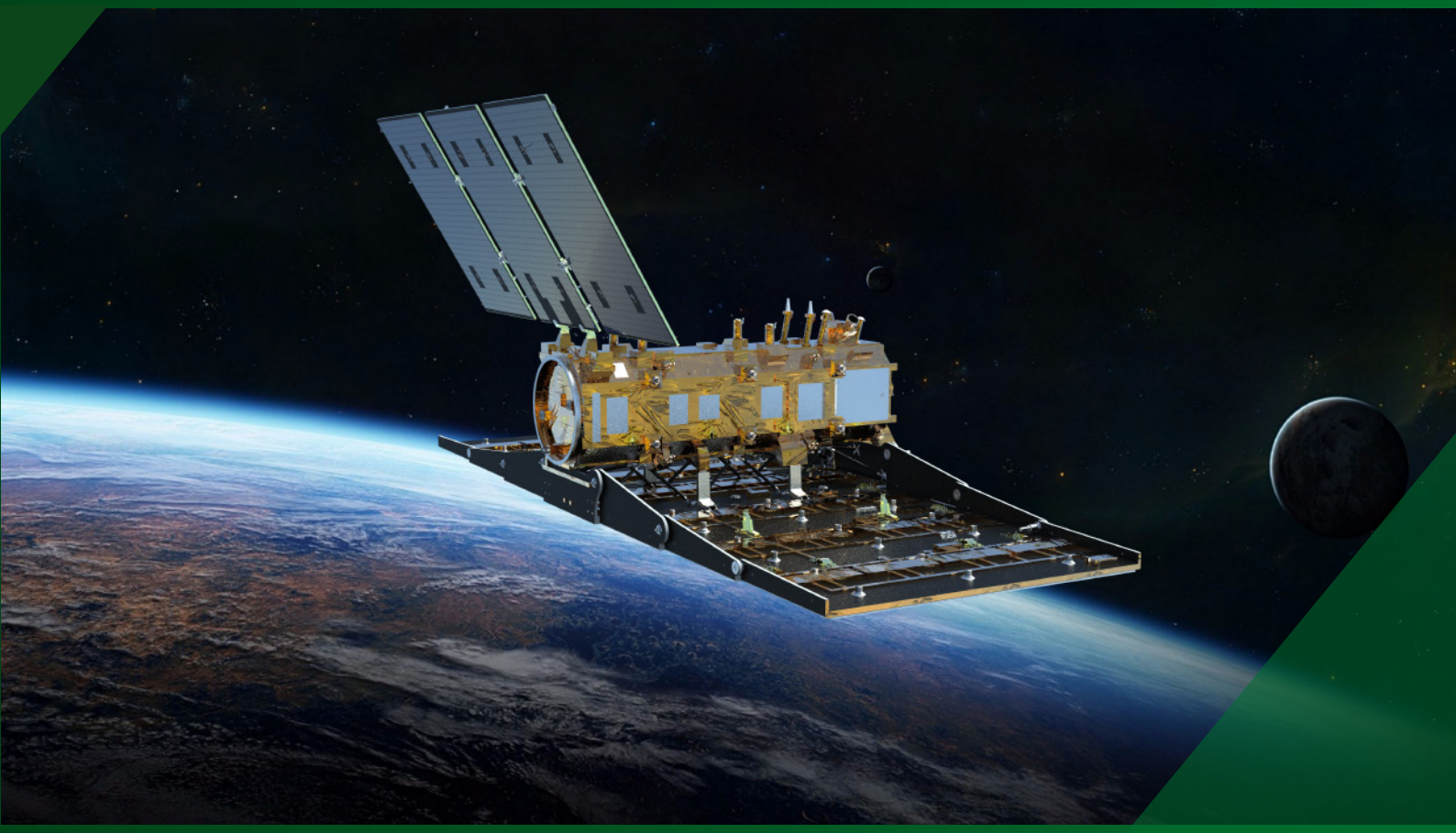
INVAP

SAOCOM Program: L-Band SAR Satellites



The SAOCOM (Microwave Earth Observation Satellites) mission includes 2 high performance satellites developed for the Argentine Space Agency CONAE. Both satellites share the same design requirements, functionality and operability. In this way, their manufacturing, integration and testing are being carried out simultaneously resulting into two identical satellites to be launched one year apart. INVAP is the prime contractor for the 2 satellites, from system design and engineering, to satellite assembly, integration, testing and in-orbit operations support.
The SAOCOM program also envisages the manufacturing of the next generation SAOCOM satellites to give continuity to the constellation. INVAP is already working in the follow-on mission definition.

Satellite Main Features

- Weight: 3000Kg
- Dimensions: 4.7m x 1.2 m in diameter in stowed configuration.
- 3 Solar Arrays: 1,61m x 2,69m.
- SAR Antenna: 10m x 3.5 m with two-axes beam steering capabilities.
- Frequency: L-Band (1,275 GHz)
- Orbit type: sun-synchronous at 620 km height
- Revisit cycle: 16 days (one satellite), 8 days (constellation)
- Ground resolution: 10 to 100 m
- Coverage: 30 to 350 km
- Angle of incidence: 20 to 50 degrees
- Absolute radiometric accuracy: 0,25 dB (for the entire mission).
- Relative radiometric accuracy: 0,05 dB (within the scene).

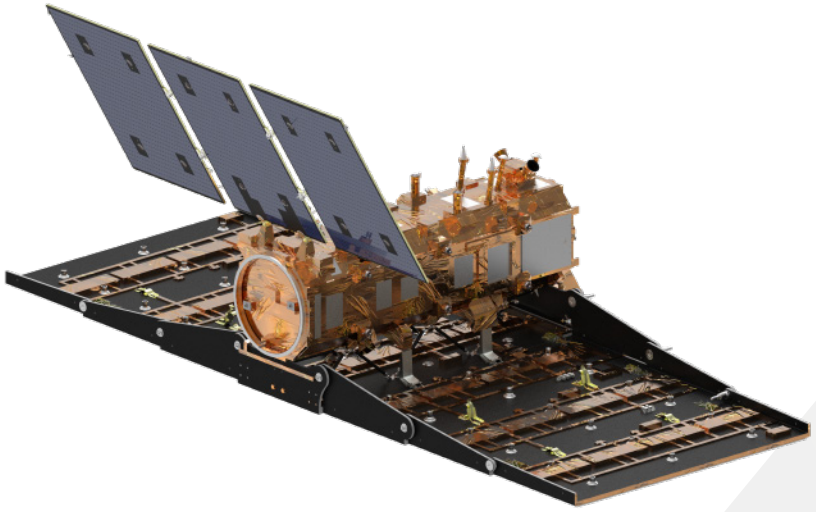
Weight
3000Kg

Dimensions
4.7m x 1.2 m in diameter in stowed configuration

Deployed antenna dimensions
35 m²

Lifespan
5,5 years

Orbit type
Sun-synchronous



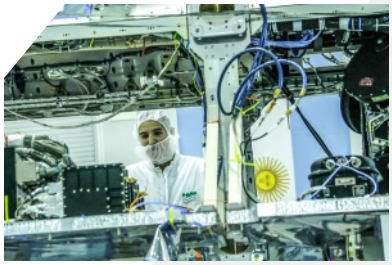
Height
620 m

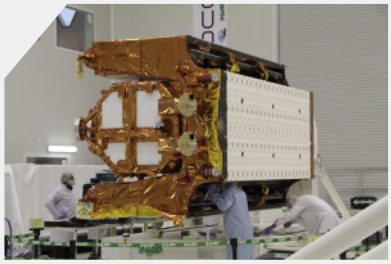
Coverage
30 to 350 km

Ground resolution
10 a 100 m

Revisit cycle
16 days (one satellite), 8 days (constellation)

Launcher
Falcon 9 / SpaceX





Payload

The main instrument is a state of the art polarimetric Synthetic Aperture Radar (SAR), which operates in L-band microwave frequency range. This instrument will provide with real time information in any weather condition and time of day, with a spatial resolution between 10 and 100 meters.

Mission Objectives

• Obtain specific products derived from SAR information, in particular soil moisture maps, which represents a great help for agriculture, hydrology and for the health area, due to its proven socio-economic impact. Soil moisture information has a key role in:

- planting, fertilization and irrigation decisions.
- crop growth estimation.
- Understanding the hydrological cycle: evaporation rates, surface runoff, infiltration, percolation.

• Exploit the capability of SAR interferometry for information extraction: terrain modeling, terrain displacement mapping, vulcanology, etc.

• To give support to emergencies: prevention, monitoring and mitigation.

• To satisfy Space Information Cycles included in the Argentine National Space Program: agriculture, fishing and forestry, weather and climate, hydrology and oceanography, emergencies, environment and natural resources of land and sea, urban areas, cartography, geology, mining and territorial planning, health.

Other Potential Applications

• Ship detection & oil spills.

• Digital elevation models.

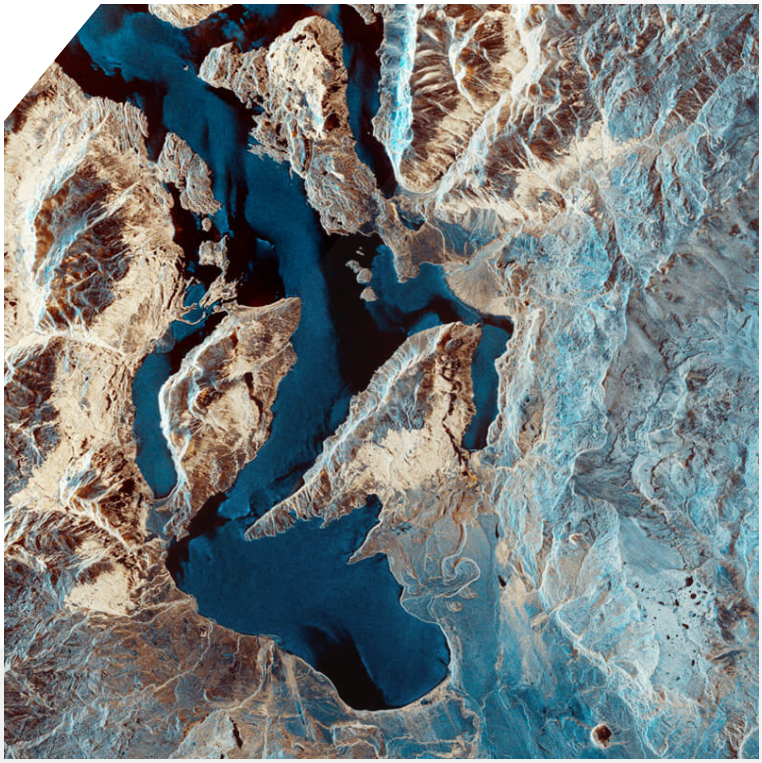
• Support in emergencies.

• Deforestation maps.

• Wetlands Monitoring.

• Volcanic lava Monitoring.

• Sea Ice Monitoring.

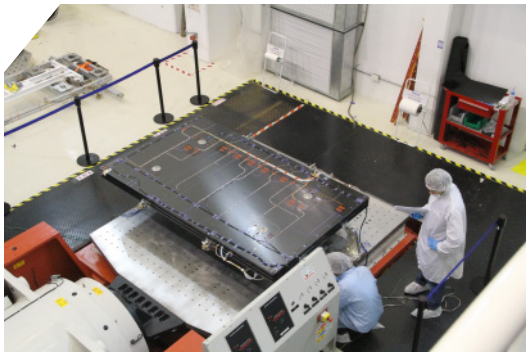


SIASGE CONSTELLATION

SIASGE is the Italian-Argentine Satellite System for Emergency Management composed by the SAOCOM Constellation and the COSMO-Skymed Constellation in order to implement a double band (X+L) SAR Mission SIASGE goal is to obtain accurate and updated information of fire, floods, volcanic eruptions, earthquakes, avalanches, landslides and mudslides.

ESA's Companion Satellite: SAOCOM-CS

The ESA Companion Satellite is a passive-receive only SAR satellite which will fly in formation with the CONAE L-band SAR SAOCOM. It will record the SAOCOM radar echoes reflected from Earth's surface providing new science opportunities and innovative measurements such as SAR tomography and bistatic interferometry and radiometry.



CONAE ASI Agenzia Spaziale Italiana INVAP

NUCLEAR

DEFENSE, SECURITY AND ENVIRONMENT

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INVAP

Headquarters
4950 Luis Piedrabuena Avenue
San Carlos de Bariloche
Province of Río Negro
Phone number: +54 (294) 440-9300

www.invap.com.ar