UNITED NATIONS
Office for Outer Space Affairs

28th Workshop on Space Technology for Socio-Economic Benefits
"Space Exploration – A source of inspiration, innovation and discovery"

National Efforts in Venezuela on Space Exploration and the Integration with Latin America and the Caribbean

ABAE

Marglad Bencomo
Executive Director

BOLIVARIAN AGENCY FOR SPACE ACTIVITIES

Content

Space activities in Venezuela

The Bolivarian Agency for Space Activities (ABAE)

- ✓The creation law was officially published in October 25th 2007.
- ✓Operations started from January 01st 2008.
- ✓It is a public institution attached to the Ministry of Popular Power for Science and Technology.
- ✓It is the national institution in charge of running space activities at the Bolivarian Republic of Venezuela.

ABAE locations

a. Center for Space Research and Development (CIDE, under construction), Carabobo State.

b. Headquarter in Caracas, Distrito Capital.

b. Ground Applications System. Caracas, Distrito Capital

c. BAMARI Main Ground Control Station Guárico State.

d. Luepa Backup Ground Control Station, Bolívar State.

Venezuelan Space Programs

VENESAT-1 (2008-2020)

VRSS-1 (2012)

VRSS-2 (2017)

R&D Center

Venezuelan Space Programs

VRSS-1

TECHNICAL ASPECTS

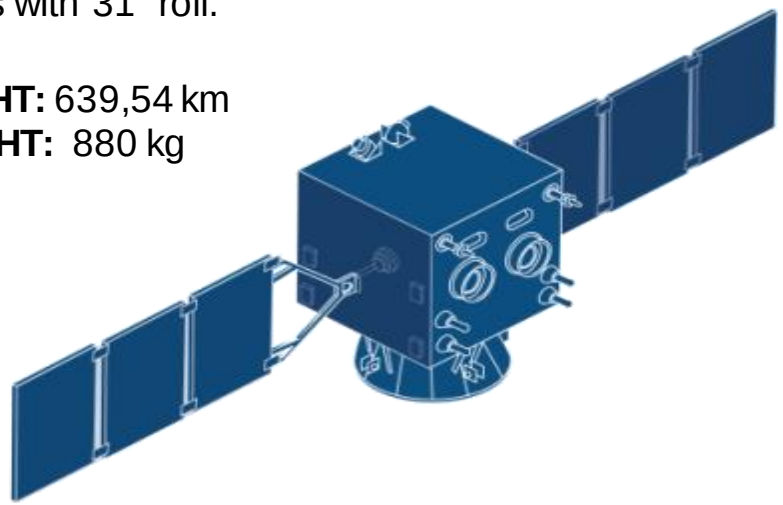
LOCAL TIME OF THE ASCENDING NODE:
10:30 am.

TYPE OF ORBIT:
Sun Synchronous.

REPETITION PERIOD (NADIR):
57 days.

REVISITA PERIOD:
4 days with 31° roll.

HEIGHT: 639,54 km
WEIGHT: 880 kg



PMC SENSOR
(Panchromatic Multispectral Camera - 2 Cameras)
Radiometric Resolution: 10 bits
Sweeping Width: 57 km

Spatial Resolution (m)	Spectral Bands	Spectral Ranges (nm)
2,5	PAN	450 – 900
10	MSS 1	450 – 520
10	MSS 2	520 – 590
10	MSS 3	630 – 690
10	MSS 4	770 – 890

WMC SENSOR
(Wide Multispectral Camera - 2 Cameras)
Radiometric Resolution: 10 bits
Sweeping Width: 369 km

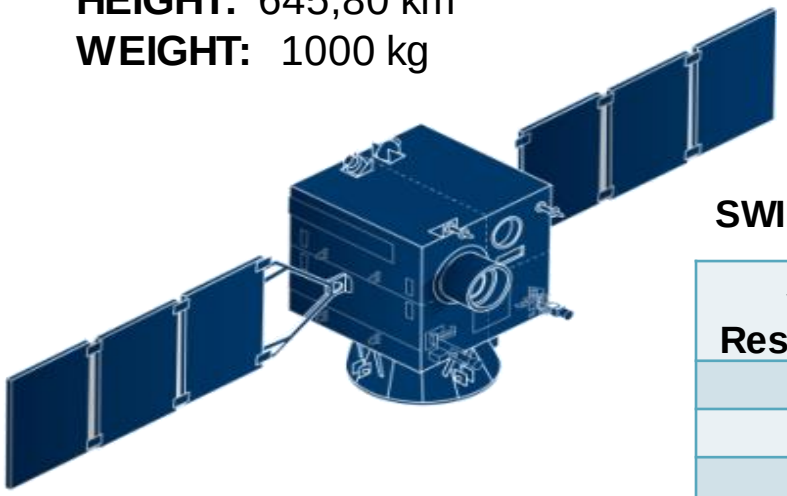
Spatial Resolution (m)	Spectral Bands	Spectral Ranges (nm)
16	MSS 1	450 – 520
16	MSS 2	520 – 590
16	MSS 3	630 – 690
16	MSS 4	770 – 890

Venezuelan Space Programs

VRSS-2

TECHNICAL ASPECTS

LOCAL TIME OF THE ASCENDING NODE:
10:30 am.
TYPE OF ORBIT:
Sun Synchronous.
REPETITION PERIOD (NADIR):
101 days.
REVISITA PERIOD:
4 days with 35° roll.
HEIGHT: 645,80 km
WEIGHT: 1000 kg



HRC SENSOR
(High Resolution Camera)
Radiometric Resolution: 10 bits
Sweeping Width: 30 km

Spatial Resolution (m)	Spectral Bands	Spectral Ranges (nm)
1	PAN	500 – 800
3	MSS 1	450 – 520
3	MSS 2	520 – 590
3	MSS 3	630 – 690
3	MSS 4	770 – 890

IRC SENSOR
(Infra Red Camera)
Radiometric Resolution: 12 bits, Sweeping Widht: 30 km

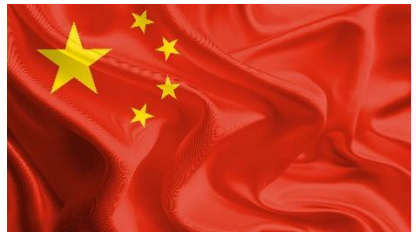
SWIR (SHORT WAVE INFRARED)

Spatial Resolution(m)	Spectral Bands	Spectral Ranges (nm)
30	1	900 – 1100
30	2	1180 – 1300
30	3	1550 – 1700

LWIR (LONG WAVE INFRARED)

Spatial Resolution (m)	Spectral Bands	Spectral Ranges (nm)
60	1	10300 – 11300
60	2	11500 – 12500

International relationships



CELAC
Comunidad de Estados Latinoamericanos y Caribeños

COPUOS
Comisión sobre la Utilización del Espacio Ultraterrestre con Fines Pacíficos

Organización de las Naciones Unidas para la Alimentación y la Agricultura

National relationships

funvisis
Fundación Venezolana de
INVESTIGACIONES SISMOLÓGICAS

1904 1954
MUNITORES TABULARUN
AD DEFENSIONEM
DIRECCIÓN DE GEOGRAFÍA Y CARTOGRAFÍA DE LA FANB
CUNA DEL "CONOCIMIENTO GEOGRÁFICO... SABER ESTRATÉGICO DEL ARTE DE LA GUERRA"

IGVSB

Fundación Instituto de Ingeniería para Investigación y Desarrollo Tecnológico

MPPAT
Ministerio del Poder Popular para la Agricultura y Tierras

MINEC
Ministerio del Poder Popular para el Ecosocialismo

PROTECCIÓN CIVIL Y ADMINISTRACIÓN DE DESASTRES
PC
VENEZUELA

INAMEH

Capacities

Capacities

TT&C Services

RS data download

Space Systems

Ground control stations

Main objectives:

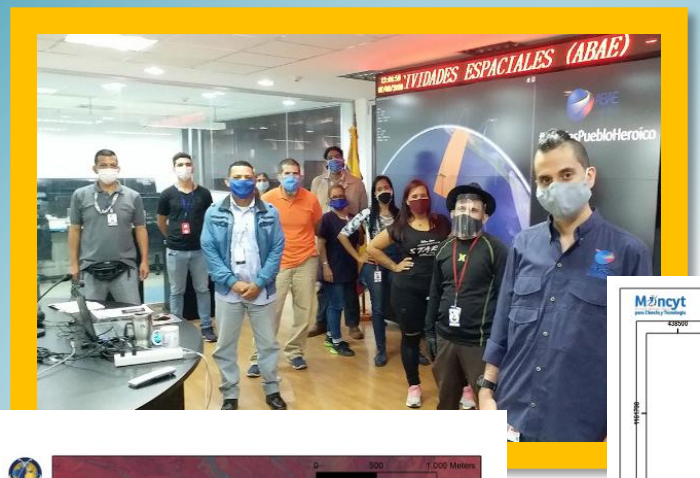
- ✓ Performing satellite orbital control and managing satellite platform for communication and remote sensing satellites.
- ✓ Adjusting satellite payload status and managing mission plans.
- ✓ Ground equipment operation and maintenance.
- ✓ Receiving data from remote sensing satellites.

ABAE
AGENCIA BOLIVARIANA PARA ACTIVIDADES ESPACIALES

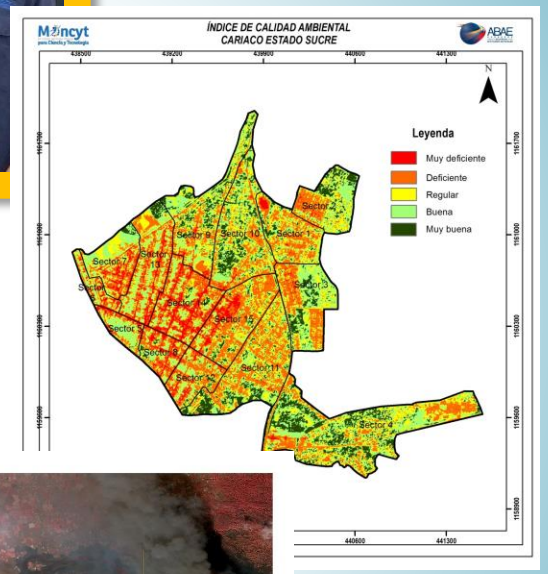
Space segment

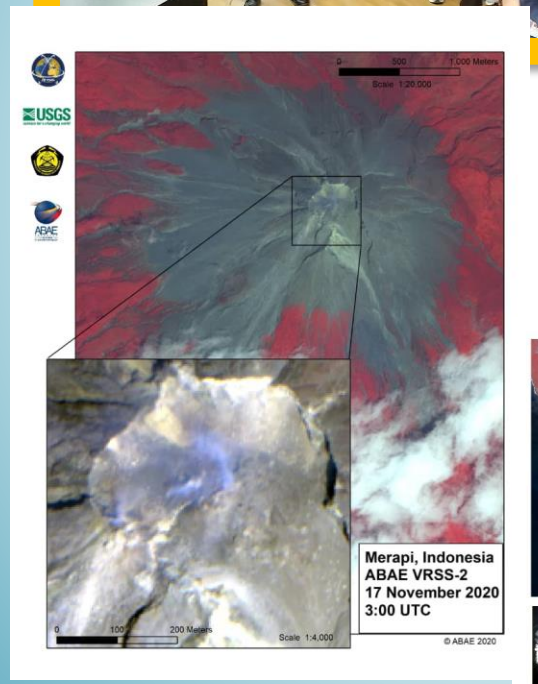
Ground segment: Main BAEMARI GCS
and Luepa Backup GCS

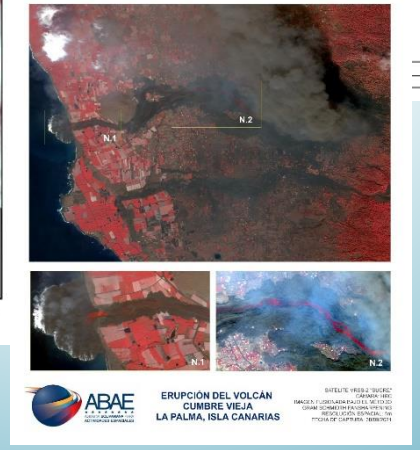
Capacities



Geomatics products services







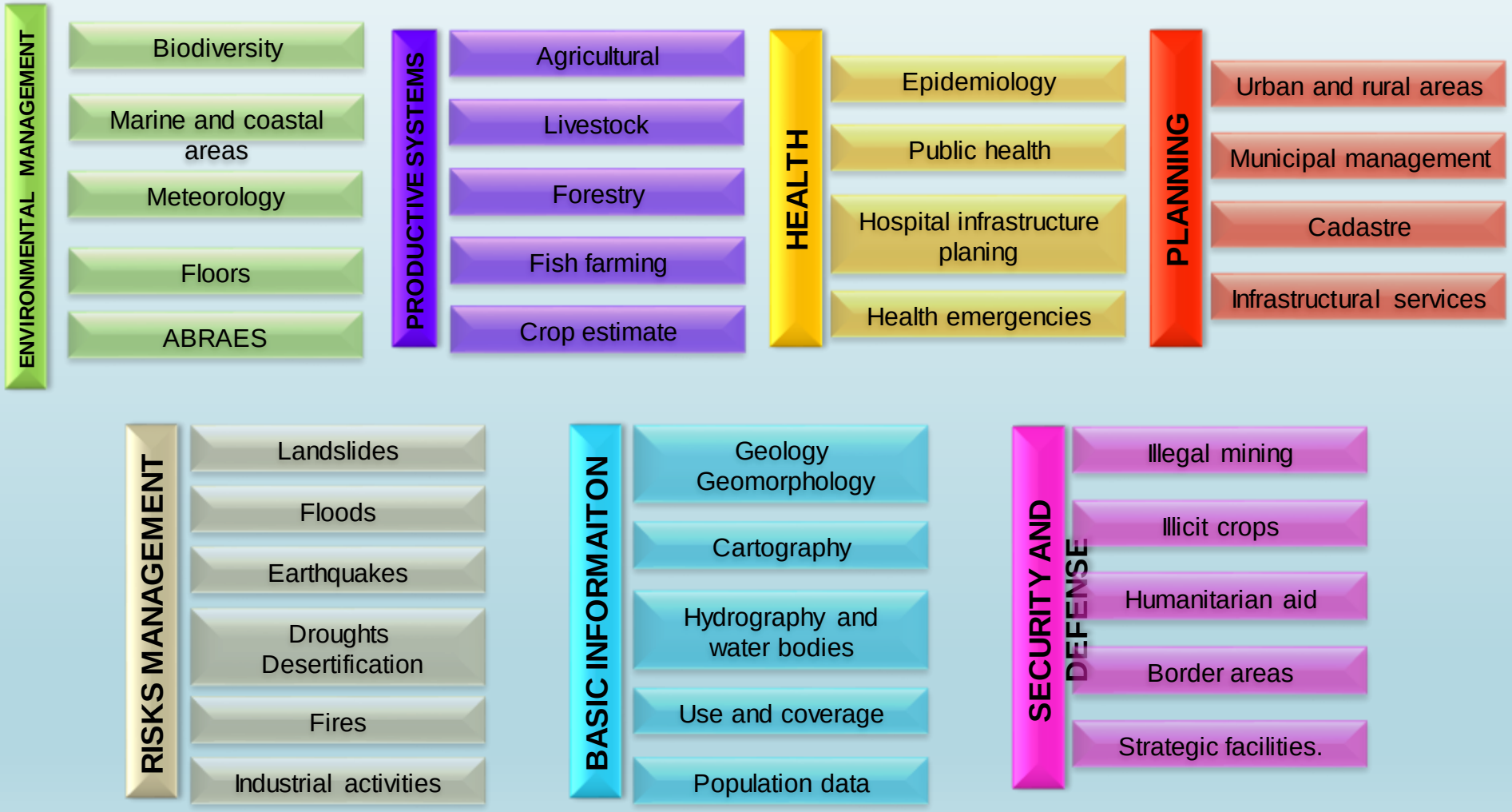
Space Applications Systems

Main objectives:

In charge of running scientific and technological programs, projects and activities to use and apply the space technologies:

- ✓ Earth observations.
- ✓ Global navigation satellite systems.
- ✓ Telecommunications.
- ✓ Scientific use of satellite measurements.

REMOTE SENSING APPLICATIONS

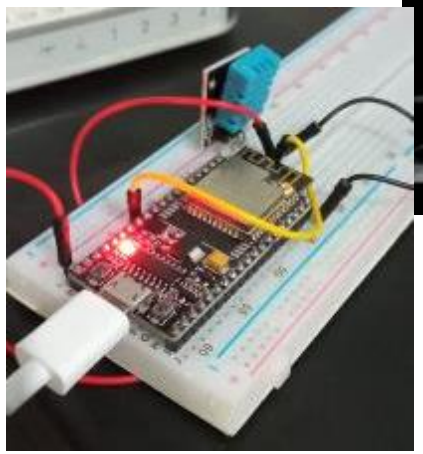


Capacities

Space Research & Development

Main objectives:

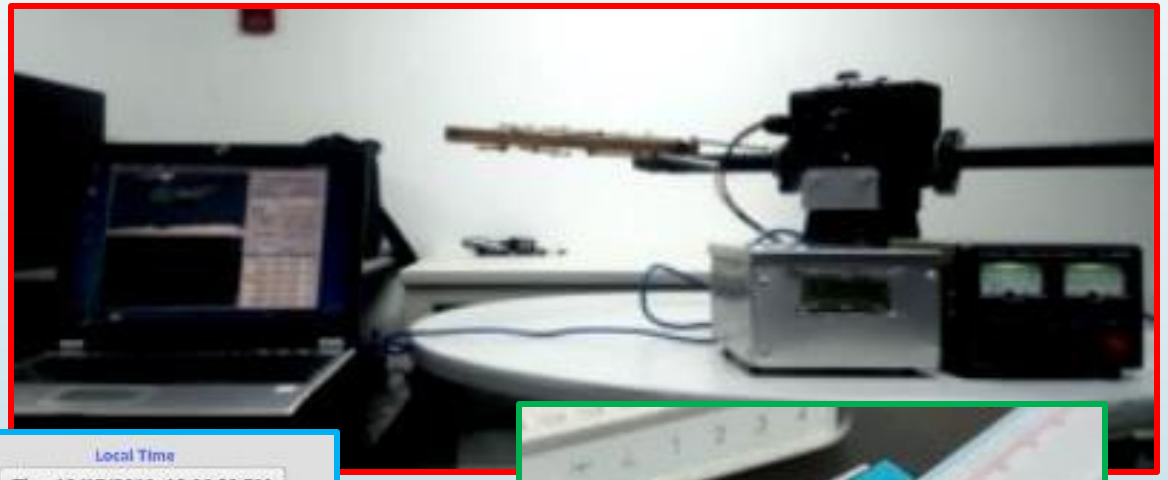
- ✓ Researching, planning and implementing new space programs and projects.
- ✓ Developing hardware and software for technological solutions.
- ✓ Transfer new technologies, products, and manufacturing process into the Agency.

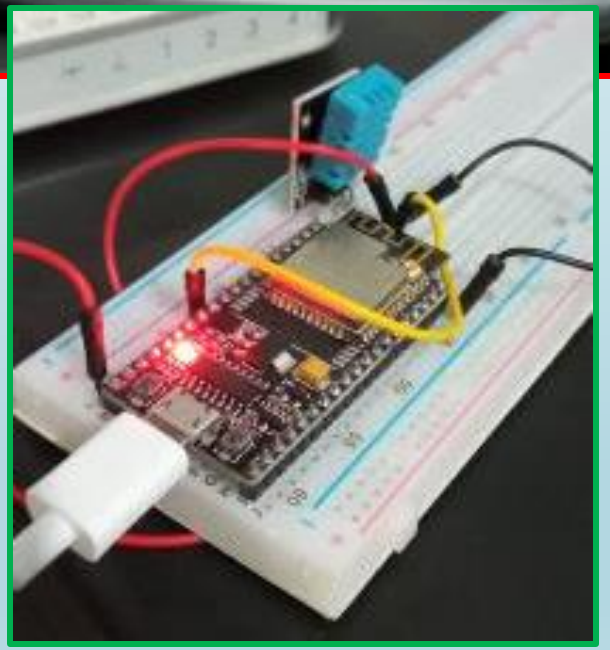


Hardware y software engineering prototypes

R&D

Space activities



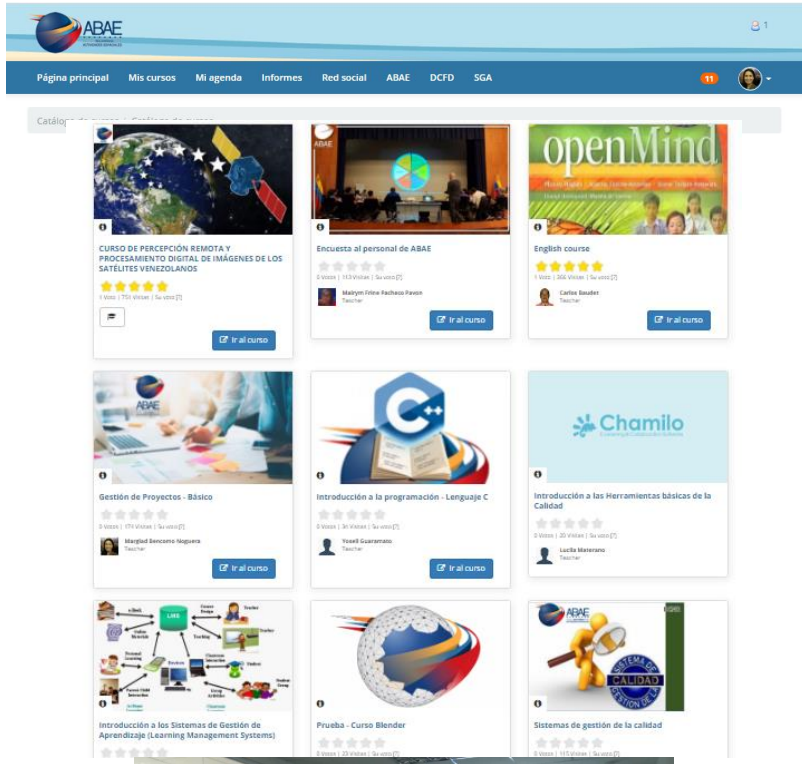


Capacities

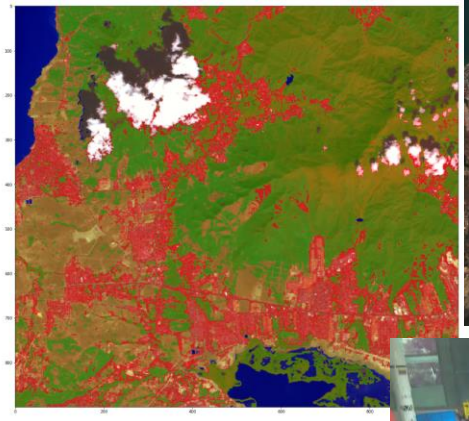
Space Training and Education

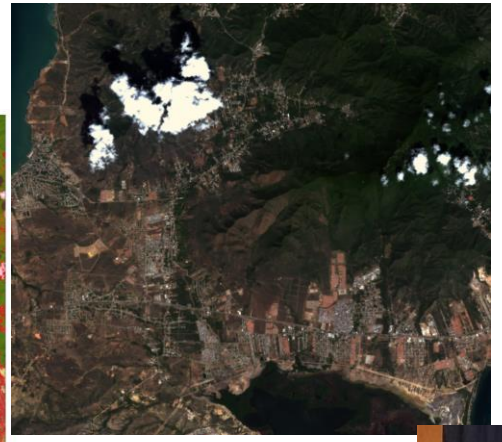
Main objectives:

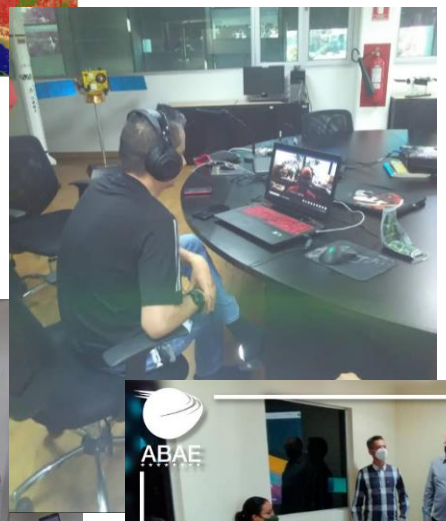
- ✓ Based on research, plan and implement space training programs.
- ✓ Identify training needs according to the Agency Strategic Plan.
- ✓ Implement new technologies and education tools for the space education.

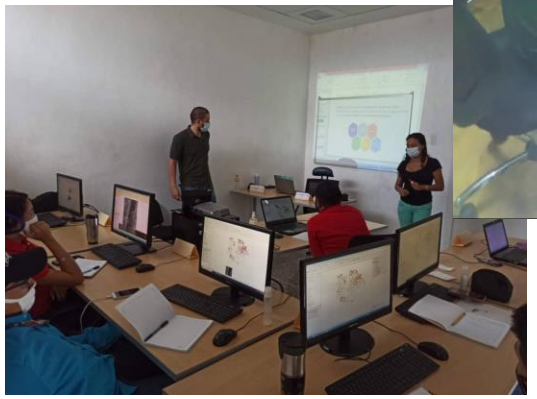


Capacities







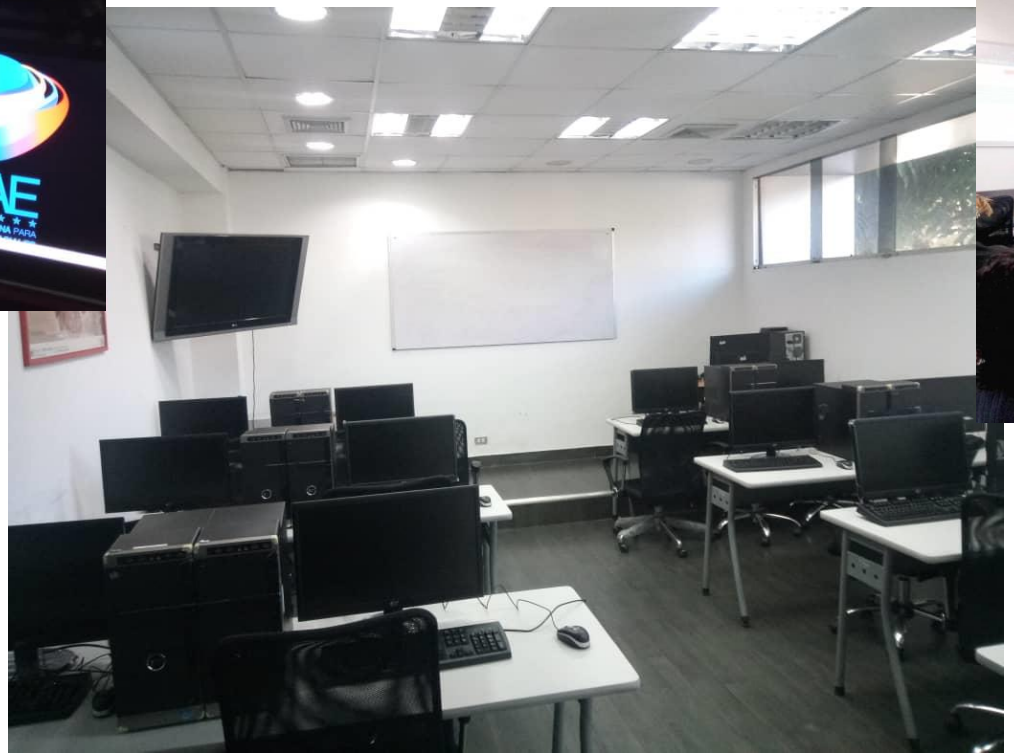


Academic programs

- Space Law
- Satellite Operations
- Geomatics
- Microcontrolers
- Space Program Management
- Quality Systems

Oferta Académica

Academic capacities



Capacities

Space informal education

Capacities

National efforts on space exploration

National efforts on space exploration

Venezuelan space projects

VENESAT-2

VRSS-3

TT&C-TDRS Services

Nanosatellites

Others

National efforts on space exploration

CENTER FOR SPACE RESEARCH AND DEVELOPMENT

- Design, assembly, integration and test of small satellites (≤1000kg).
- Earth observation and scientific missions.
- To promote scientific networks integrated into the space sector, allowing research in strategic areas such as material science, electronics, chemistry, computer science, among others.

National efforts on space exploration

CENTER FOR SPACE RESEARCH AND DEVELOPMENT

ASSEMBLY, INTEGRATION AND TEST FACILITIES (AITC):

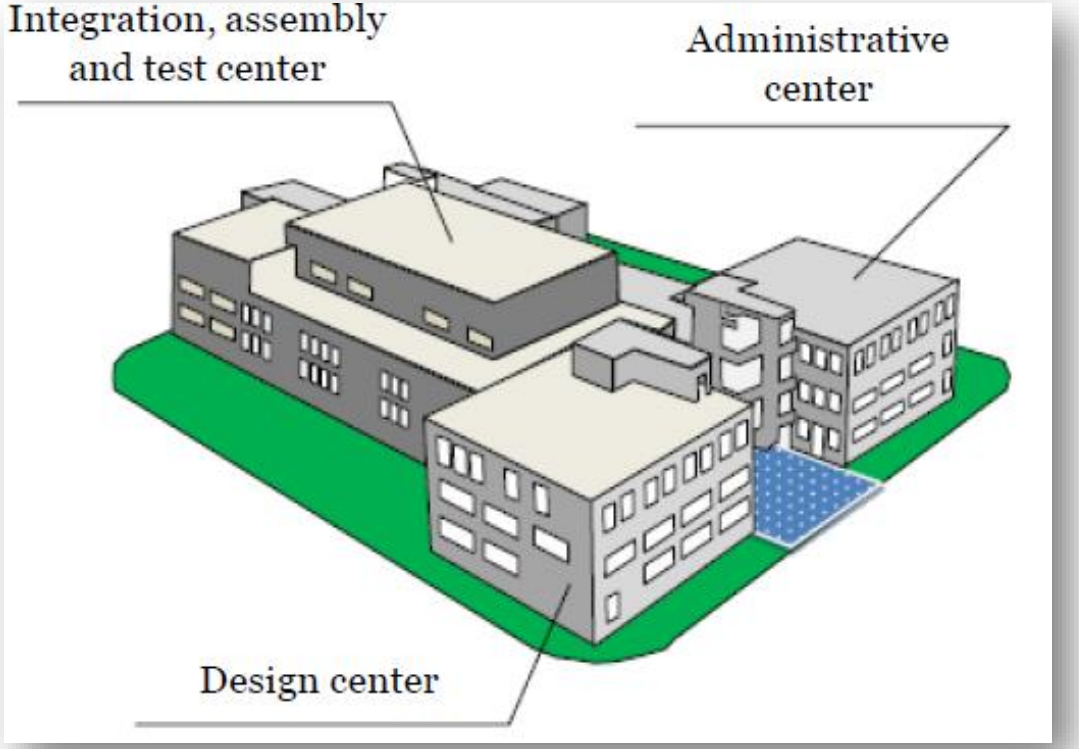
- Electromagnetic compatibility
- Checkout test
- Space environmental simulation
- Acoustic test
- Leakage detection
- Alignment test
- Mass properties

DESIGN FACILITIES (DC):

- System design
- Telemetry, tracking and command
- Attitude and orbit control subsystem
- Electric power subsystem
- Onboard data handling subsystem
- Propulsion subsystem
- Thermal control subsystem

ADMINISTRATIVE FACILITIES

- Administrative activities



National efforts on space exploration

CENTER FOR SPACE RESEARCH AND DEVELOPMENT

Integration with Latin America and the Caribbean

Integration with Latin America and the Caribbean

Signing of the Convention establishing ALCE, the Latin American and Caribbean Space Agency

September 20, 2021

"The ALCE will be an international organization that will coordinate cooperation in space technology, research, exploration, and related applications that contribute to and strengthen the comprehensive and sustainable development of a regional space program that will benefit the Latin American and Caribbean peoples".

Source: https://www.gob.mx/sre/en/articulos/signing-of-the-convention-establishing-alce-the-latin-american-and-caribbean-space-agency-283235?idiom=en

Final considerations

Final considerations

1. The Venezuelan space policy is aimed at developing local and regional space capabilities for peaceful and humanitarian purposes.

2. Inclusion of developing countries in research and development activities aimed to enhance and promote the space exploration.

3. General capacity building for developing countries in scientific and technical areas for space exploration, including transfer of technology and management, methodologies and techniques.

4. Commitment to joint effort to maintain the space exploration for the benefit of mankind

ABAE

AGENCIA BOLIVARIANA PARA
ACTIVIDADES ESPACIALES

AbaeVzla

www.abae.gob.ve