GXIBA-1

University Project UPAEP-Mexico

KiboCUBE Programme · UNOOSA / JAXA

Universidad Popular Autónoma del Estado de Puebla (UPAEP), Mexico

The 70th Virtual UNISEC-Global Meeting

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THE ORIGIN · 2021

KiboCUBE 2021

1. **KiboCUBE call (6th round)**
   Mission proposal submitted to UNOOSA and JAXA in 2021.

2. **Multi-stage evaluation**
   Technical and programmatic review of the mission and the team.

3. **Result: December 2021**
   UPAEP selected as one of the two winners; official announcement in February 2022.

4. **Project Plan**
   Built on the lessons learned from AzTechSat-1 (NASA, 2019–2020).

THE TEAM · 2022–2026

A multidisciplinary team with generational handover

≈ 80 students · 12 professors

Total participation over the life of the project, from several engineering programs and other majors.

Generational handover

First-semester students join as the most senior students finish their degree programs.

Multidisciplinary

Aerospace, Electronics, Software, Mechatronics, Law, Design and more.

2022
Design begins

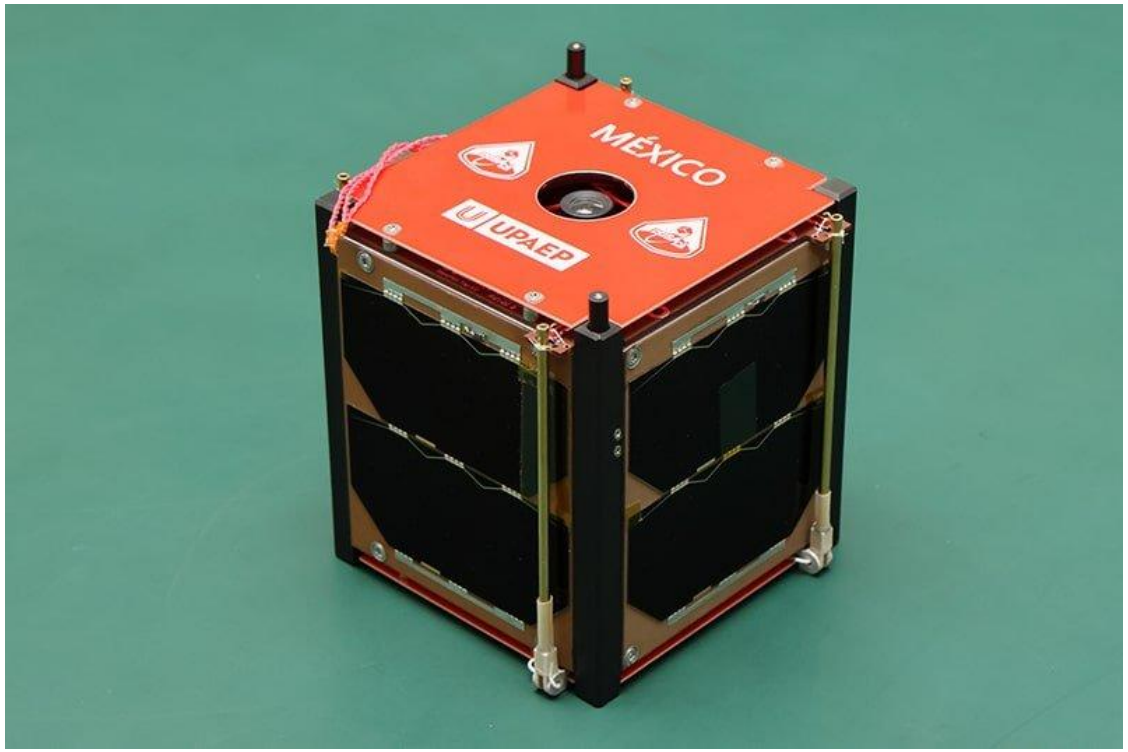
Aug 2025
Handover to JAXA

Oct 2025
Launch

Feb 2026
ISS deployment

TECHNOLOGY

Payload: seeing volcanic ash from orbit



1U CubeSat — 10 × 10 × 10 cm

A ~1.3 kg nanosatellite platform in low Earth orbit (400 km, 51.6°).

Visible-spectrum camera

Photographs active volcanoes, mainly Popocatépetl, and their ash emissions.

On-board processing + Iridium

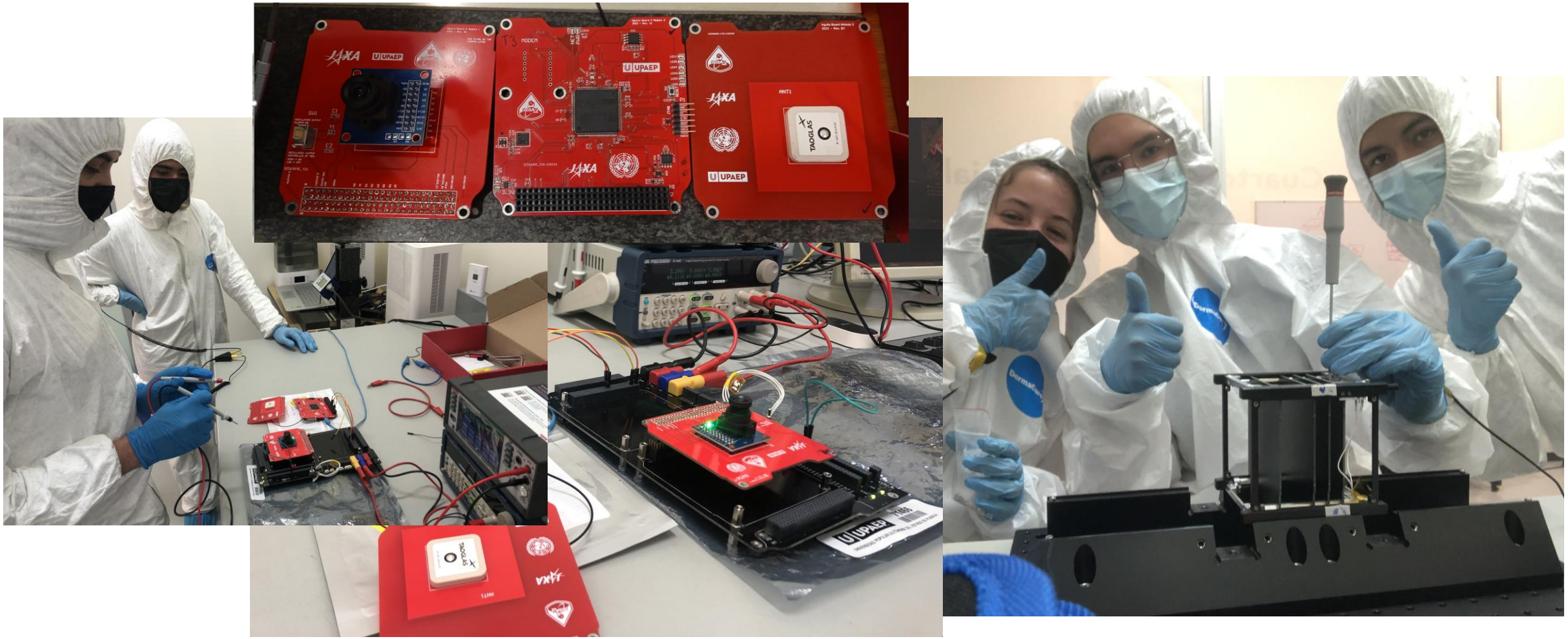
The image-analysis results are downlinked via the Iridium constellation.

UHF amateur band

Beacon and data for the UPAEP ground station and radio amateurs worldwide.

HANDS-ON WORK

Satellite integration at the UPAEP laboratories



Every subsystem was integrated and verified by students, with a FlatSat as the ground twin for testing.

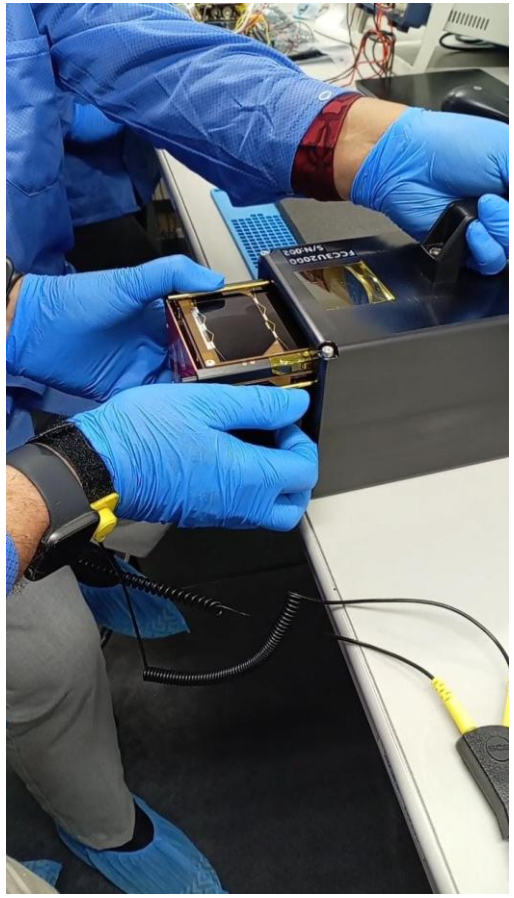
MARCH 2025

JAXA visits UPAEP: presentation of the Gxiba-1 team

Hands-on technical support from JAXA engineers on the way to the flight model handover.

VERIFICATION

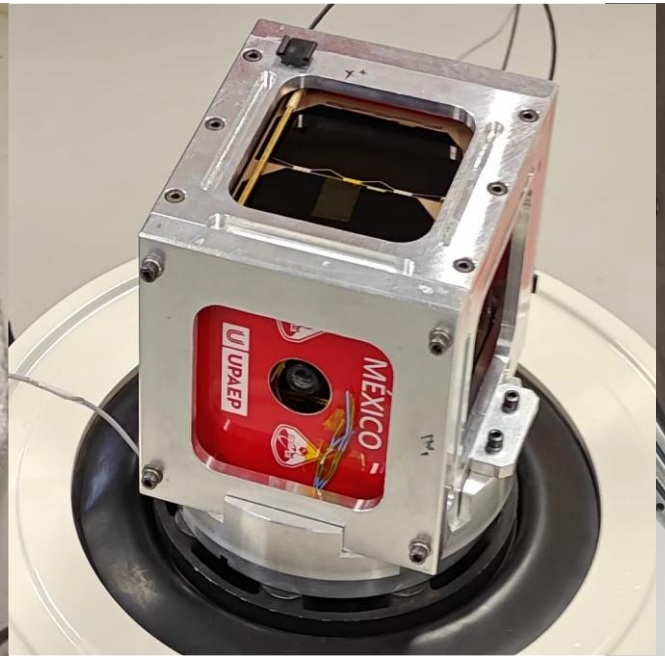
Fit-check testing: the satellite in its deployer



The fit check confirms that the CubeSat meets the J-SSOD deployer's mechanical tolerances before acceptance.

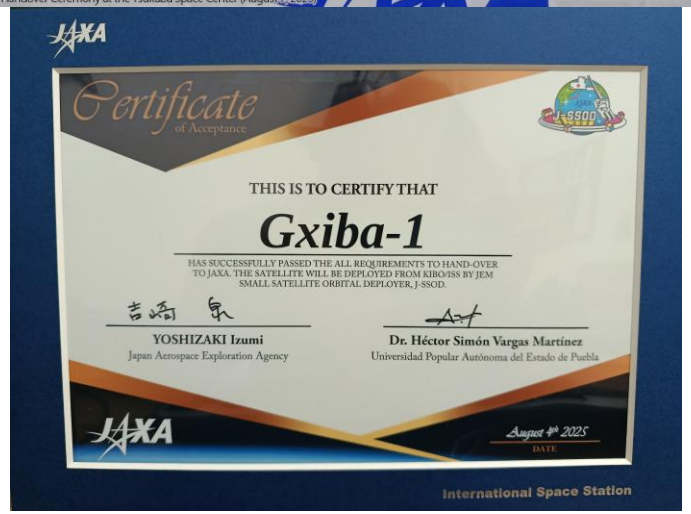
QUALIFICATION

Environmental testing at UNAM



Inter-institutional collaboration: the satellite was qualified in Mexico, at UNAM facilities, to JAXA requirements.

Flight model handover to JAXA



August 7, 2025, Tsukuba Space Center: Gxiba-1 is officially accepted to fly to the ISS on HTV-X1.

ISS · FEBRUARY 3, 2026

Deployment from the Kibo module (J-SSOD #35)

Launched Oct 26, 2025 on the H3 rocket (HTV-X1) from Tanegashima · deployed with the Kibo robotic arm on Feb 3, 2026.

Beacon, NORAD identification and Iridium

UHF beacon

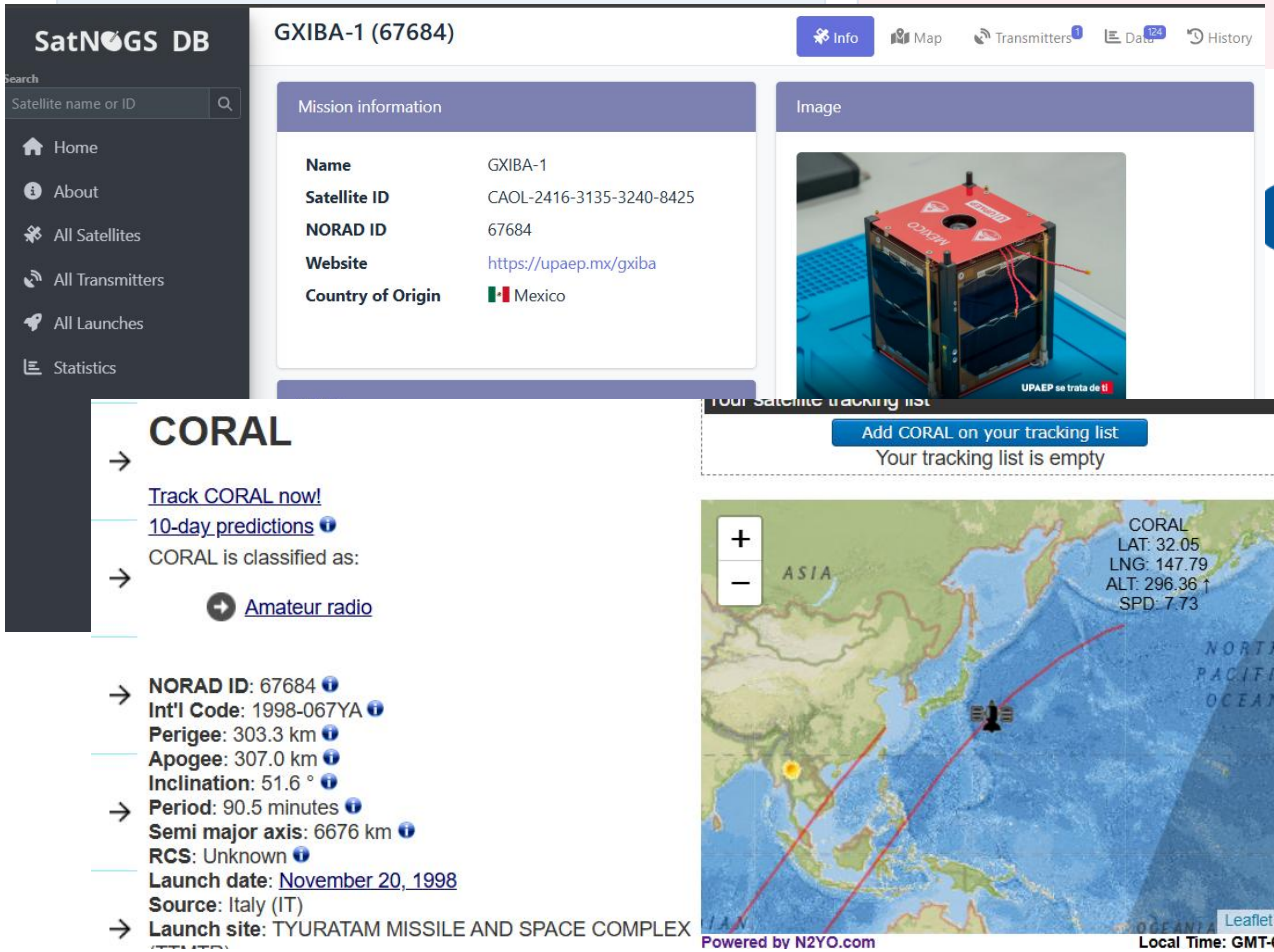
Periodic amateur-band messages carrying CENAPRED's volcanic alert level, receivable by radio amateurs around the world.

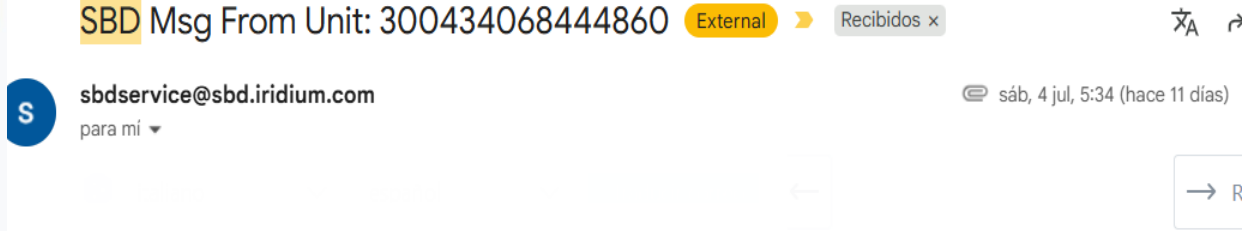
NORAD ID under verification

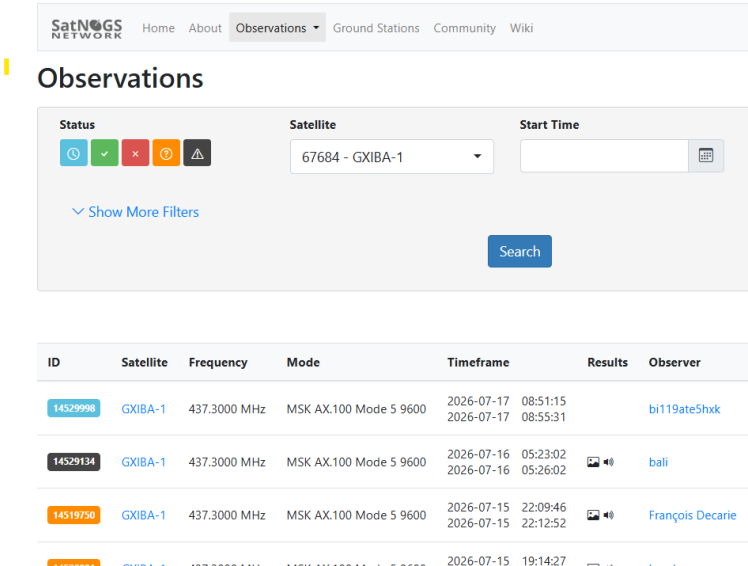
Catalogs crossed after the multi-satellite deployment: SatNOGS lists 67684 and N2YO 67685 for Gxiba-1 (swapped with CoRAL). Being resolved via Space-Track.

Iridium SBD

Fast-contact channel: health telemetry and image-processing results without waiting for ground station passes.







The mission today and ahead

Today: consolidating communications

Active work to strengthen the two-way link (uplink and downlink), using the FlatSat as the validation bench.

Gxiba-2

Next generation with a hyperspectral camera, able to identify volcanic gases and not just ash.

A ~12-month mission

Low orbit at 400 km; at end of life the satellite re-enters and burns up, leaving no space debris.

National constellation

UPAEP invited by the Federal Government to collaborate with UNAM, IPN and CICESE on a Mexican Earth-observation constellation.

MEVA program

Gxiba-1 is part of Monitoring and Exploration of Active Volcanoes: satellites, stratospheric balloons, drones and rovers.

Talent development

The permanent goal: students ready for the space industry or to start their own companies.

WHAT'S NEXT

New projects: KuSat

A new satellite mission

KuSat starts from two full cycles of experience: AzTechSat-1 and Gxiba-1.

Mission definition

First stage: define the scientific and technological contribution before building anything.

A new generation of students

The generational handover continues: new leaders trained on Gxiba-1.

STRATEGIC PARTNERSHIPS

Partnership with Kyutech: mobility and joint projects

Kyutech
Kyushu Institute of Technology

Student mobility

UPAEP student stays and exchanges at Kyutech, a world reference in university CubeSats (BIRDS program).

Joint satellite projects

Cooperation on nanosatellite development, testing and operations between Mexico and Japan.

Research and graduate studies

A bridge to graduate programs in space engineering and shared research projects.

Thank you, JAXA and the KiboCUBE programme

ありがとうございます — Thank you very much!

KiboCUBE Academy

JAXA

For the technical guidance, the launch, and the deployment from Kibo.

UNOOSA · KiboCUBE

For opening access to space for institutions in emerging countries.

UPAEP community and partners

Students, professors, UNAM, AEM, the Mexican Embassy in Japan, and CENAPRED.