



GNSS as a new field of cooperation for Argentina

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Unit of Cooperation in the International Projects of
Exploration of Universe and of Satellite Navigation

Comisión Nacional de Actividades Espaciales
ARGENTINA

Krasnoyarsk, Russian Federation
20 of May, 2015



CONAE



Comisión Nacional de Actividades Espaciales (CONAE)

National Commission on Space Activities
was created the 28 of may of 1991.

by the Presidential Decree 995/91

Comisión Nacional de Actividades Espaciales:

- Is a specialized Agency
- Its main mission : promote the developemment of space activities accordingly to the national interests.
- Assist the National governement in the formulation of the National Space policy.
- Prepare and submit for approval by the National Executive Power, the National Space Plan and its periodical revision.
- Actual Space Plan is 2004-2015, and the new revision is actually under study.



The National Space Program

The Space Program particularly emphasizes the use and scope of the concept of

“Space Information Cycle ”

The concept comprises the set of information from space which together with information from other sources, will have a relevant impact on certain socioeconomic activities within the country.

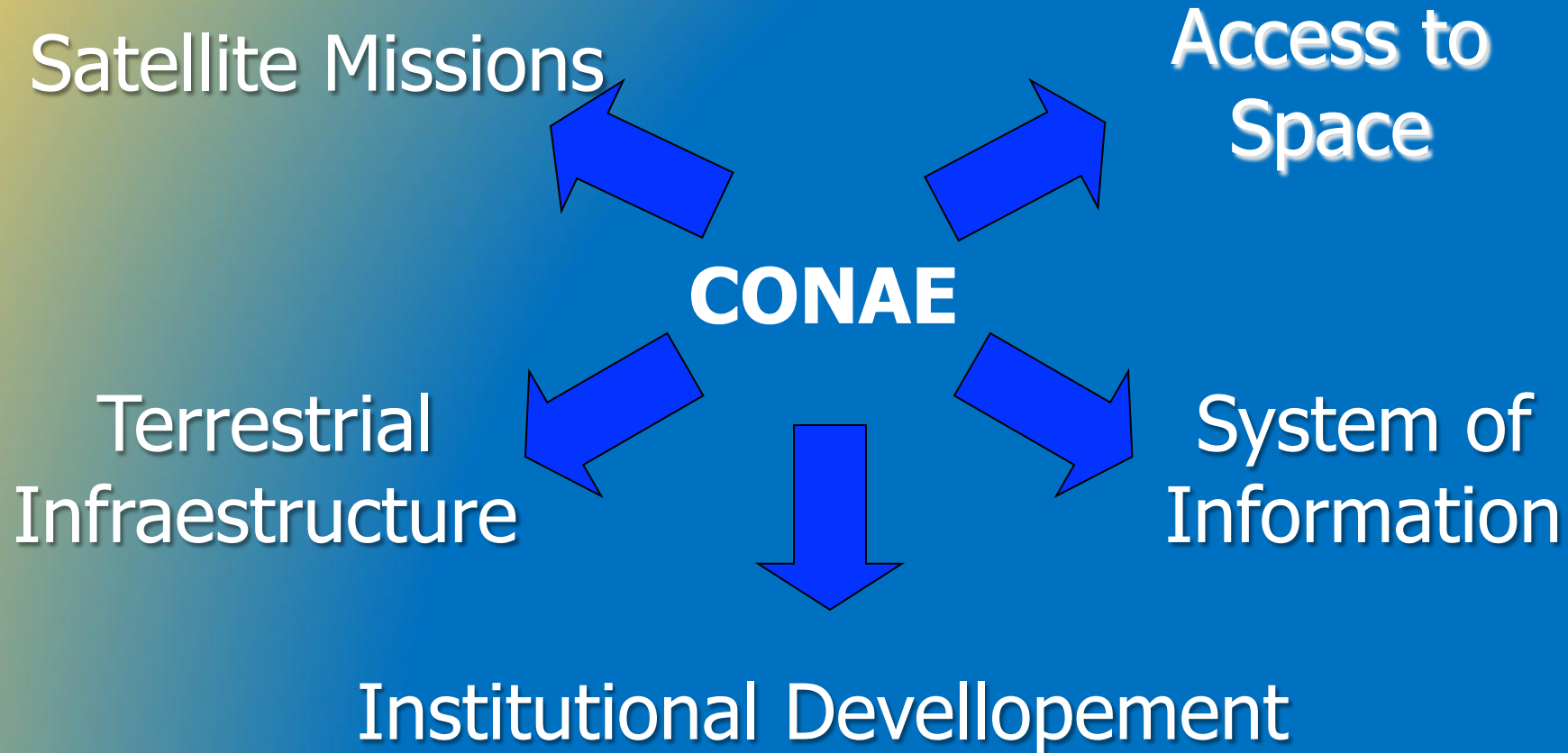
One of the main pillars
of the National Space Plan
is the

INTERNATIONAL ASSOCIATIVE
COOPERATION

Cooperación Internacional

NASA (United States)
ASI (Italy)
ESA (European Space Agency)
ROSCOSMOS (Russia)
AEB-INPE (Brasil)
CNES (France)
CSA (Canada)
ABAE (Venezuela)
CNSA / CLTC (China)
OOSA (United Nations)
JAXA (Japón)

Courses of Actions



The National Space Program

Six information cycles have been defined in topics such as:

- ***agricultural, fishing and forest activities***
- ***climate, hydrology and oceanography***
- ***disaster management***
- ***monitoring of environment and natural resources***
- ***cartography, geology and mining production;***
- ***health applications***

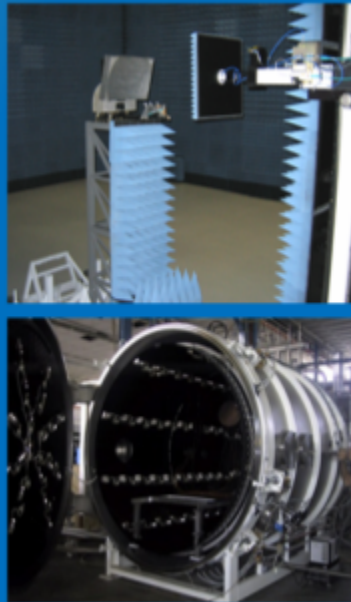
Ground Infrastructure: Teófilo Tabanera Space Center



Space Center Teófilo Tabanera



TT&C



AIT. Access to Space



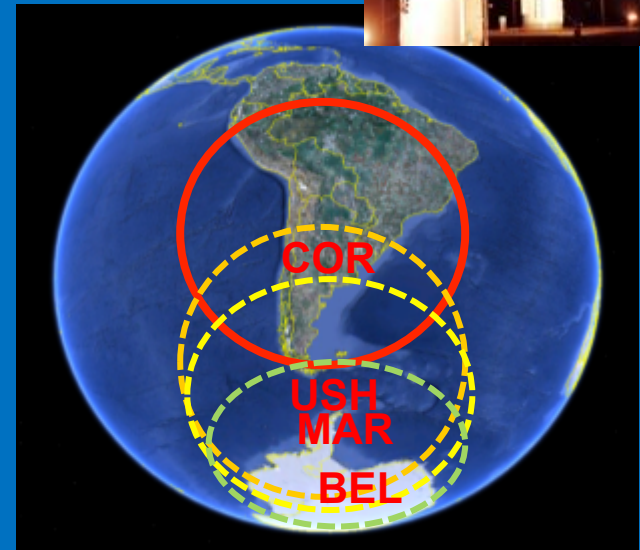
Antennas of 7 y13 m for TT&C of EO missions.

Space Center Teófilo Tabanera

Antennas for TT&C in S band and downlink in band X:
3.6 m, 7.3 m y 13 m

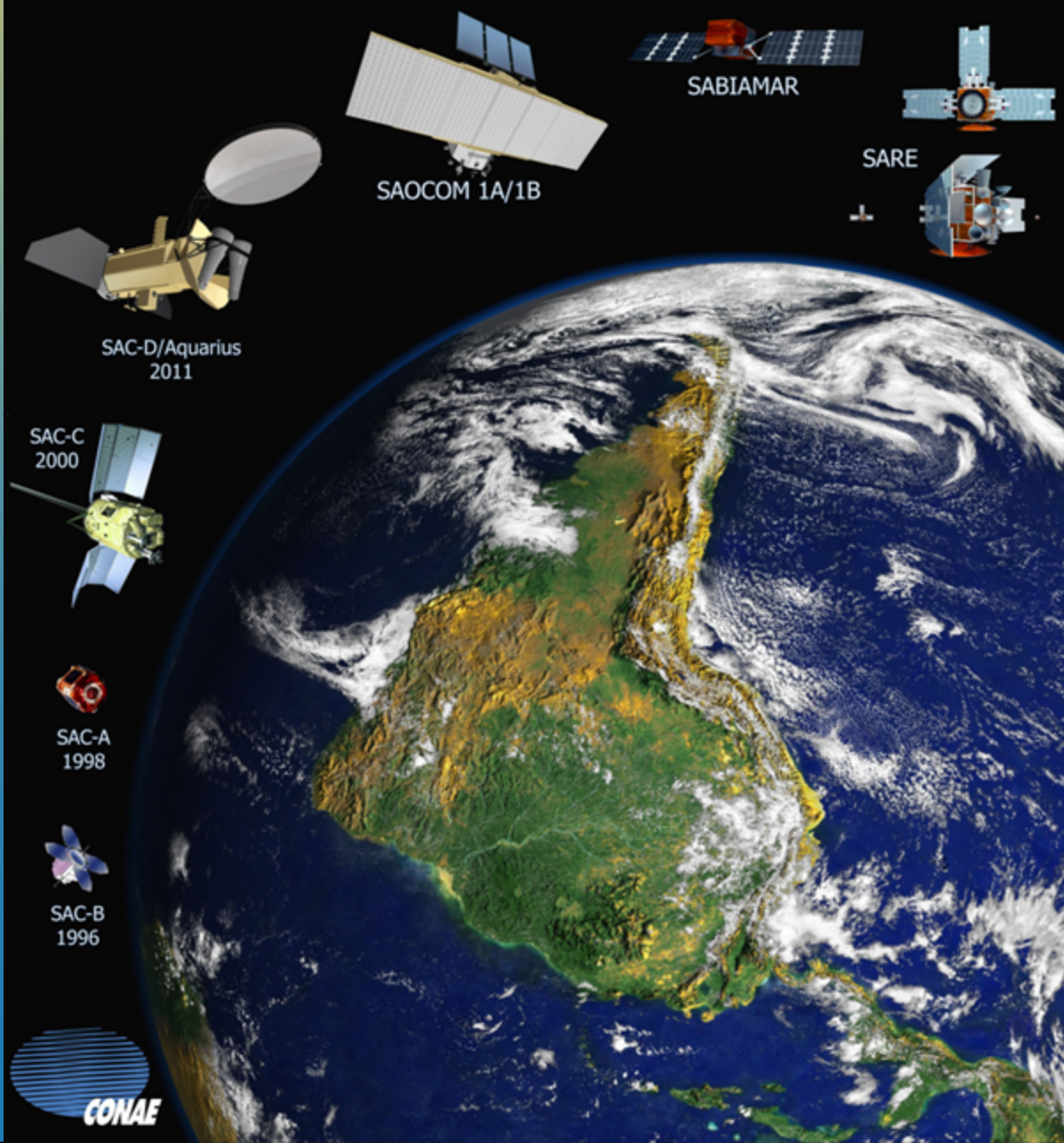
- Antenna of 10 m for Remote Testing.
- 2 antennas in L band for NOAA Satellites (USA) and Feng-Yun (China)
- New Antena of 3,6 m for downlink in X Band
- 2 antennas of 3,7 m for Satellites GOES (USA)

- Totally Automatics, skip from one satellites to another in 30 seg.
- Catalog of products available in one hora from pasage of satellite
- More than 24000 images distributed from its inauguration in 1997 and more than 1000 products standard per month
- 15 Gbytes of data acquired diary



Área of coverage
Cordoba Terrestrial Station
And the station planned in Tierra del Fuego,
Marambio y Belgrano II

Argentina in Space



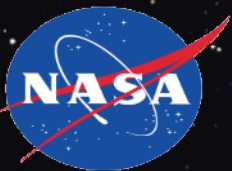


Weight: 475 kg
Altitud of Orbite: 705 km
Tipe of Órbite: cuasi polar — heliosincrónica
Inclination: 98.21 grados
Revisite: 16 days.

- MMRS
- HRTC
- HSTC
- GOLPE
- MMP
- IST
- INES
- ICARE
- DCS



SAC-C FIRST ARGENTINIAN SATÉLITE FOR EARTH OBSERVATION



Launched the 21 of november of 2000



SAC-D/Aquarius

Ocean Circulation, global water cycle, Climate interactions, climatic Changes, Atmosphere's parameters, radiation effects.

Weight : 1600 kg

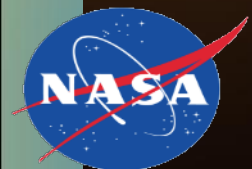
Altitude of orbit: 657 km

Type of orbit: quasi polar heliosincronic

Inclination: 98.21 degrees

Revisit: 7 days

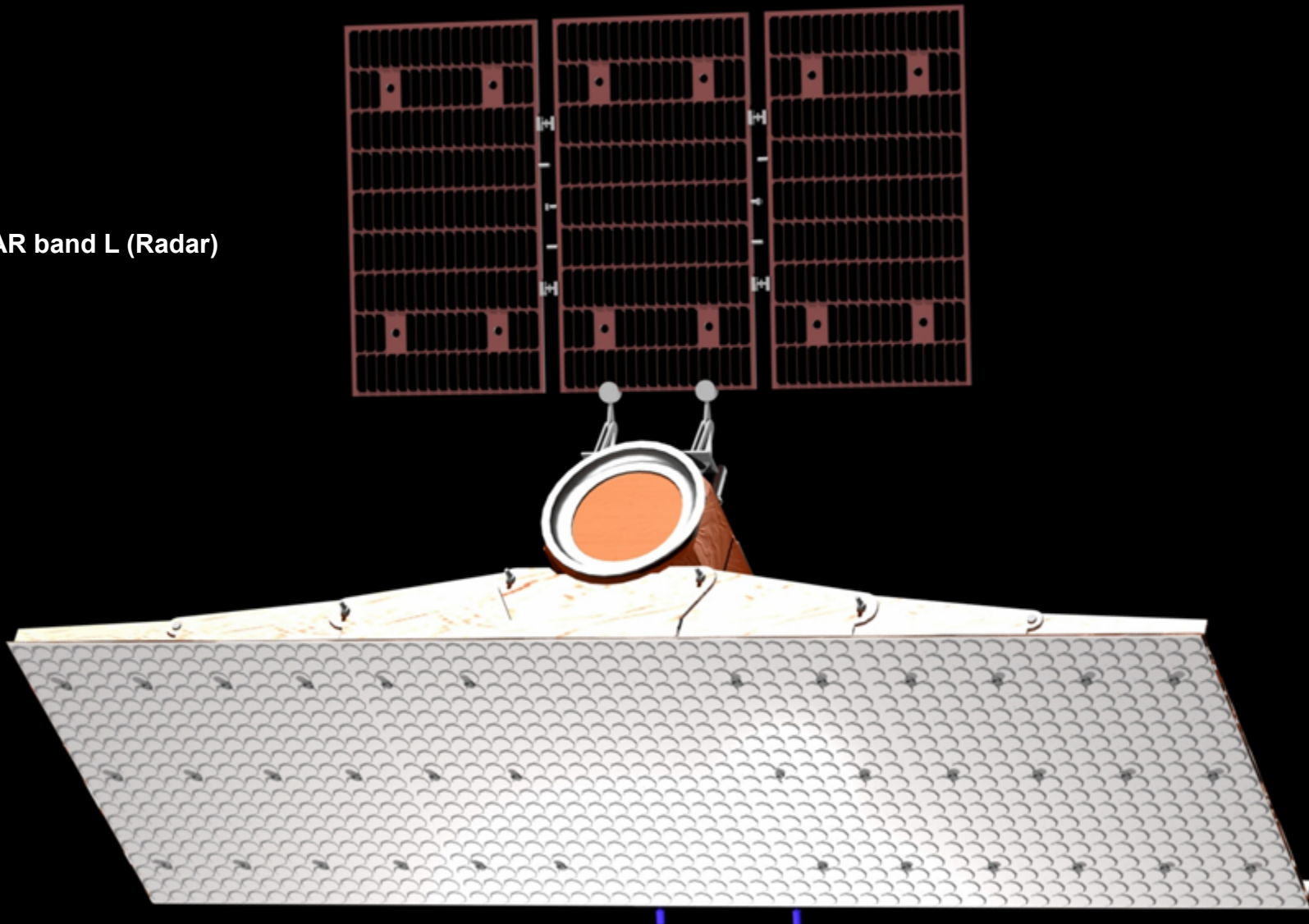
Participants:
Aquarius (USA), MWR, NIRST
(Canada), HSC, ROSA (Italia),
CARMEN 1 (Francia), DCS, TDP
Tests in Brasil





Misión SAOCOM

- Two satélites SAR band L (Radar)
Soil Moisture



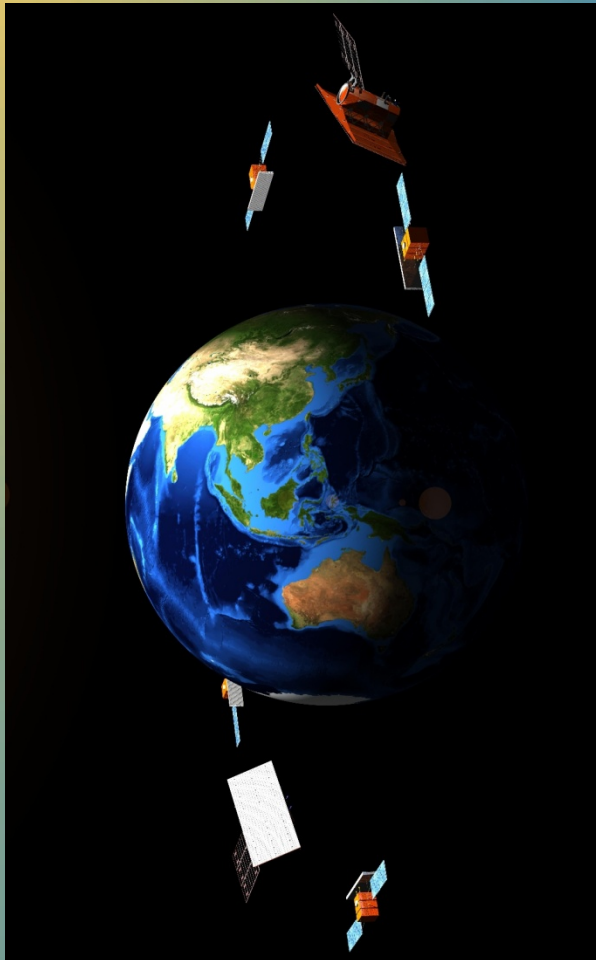
SIASGE

System of
Satellites Ítalo-
Argentinean for
Social benefits,
Emergency
management
and Economical
Devellopement.





Sistema SIASGE - (SISTEMA ÍTALO-ARGENTINO DE SATÉLITES PARA LA GESTIÓN DE EMERGENCIAS)



Big Synergy from
Utilization of SAR in
bands X and L
in the same scena:

Fluods

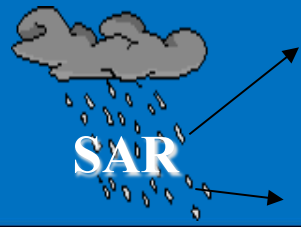
Soil Management

Ices Monitoring

Hidrology

Geology

Revisit: 12 hs.



SAOCOM (mission Argentina), Band L - 06:00 am

COSMO-SkyMed (Mission Italy), Band X - 10:00 am



Mission SABIA/MAR

Argentinian Brazilian Joint satellite Mission
for monitoring applications on the Coasts,
Seas and environmental studies

Multispectral Sensors of advanced
technology

(15 - 25 bands)

Under construction



Mario Gulich Institute for Advanced Space Studies



Gulich Institute for Advanced Space Studies



- Created on July 25th, 2001 as a joint initiative between CONAE and the Cordoba National University.
- General Infrastructure and Planning provided by CONAE following our National Space Plan guidelines.
- Academic support provided by Cordoba National University and others.
- *With active participation of the Italian Space Agency*



CONAE

**Mario Gulich
Institute**

**Univ. Nac.
de Córdoba**

**Advanced
Developments
(Expanding
knowledge
bounds)**

**Development of
Human Resources**

objectives

➤ **Natural and Anthropogenic Disasters
and Environmental Control**

SIFEM

➤ **New Applications in Health**

**Ministry of
Health**



Emergency Management

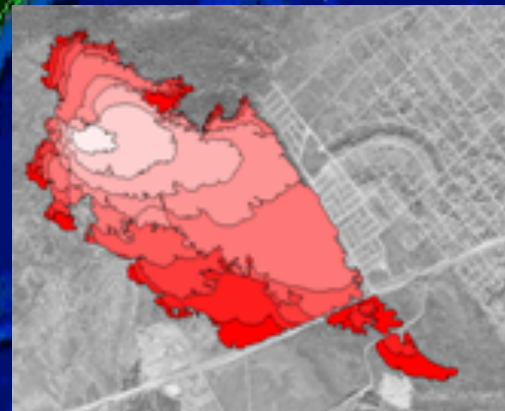
CONAE's Gulich Institute

Provision of
Space Information



Training

Models
Development



Emergency Management

International Charter "Space and Major Disasters"

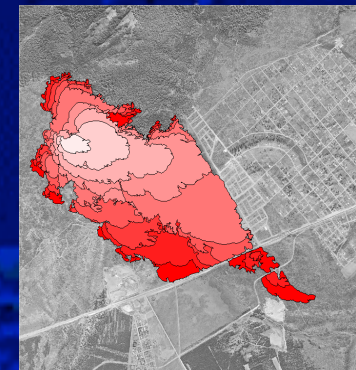
Charter members
provide Space
Information for
Emergency
Management



Early Warning
Models
development



Project Manager
Training in the Region



Landscape Epidemiology

CONAE's Gulich Institute

Space Information
Provision

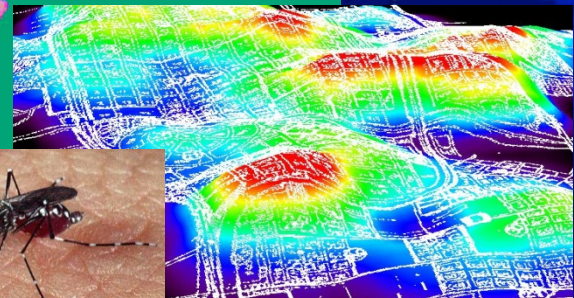


Triatoma infestans
(c) H. Kahlert & A.M. Hore



Training

Models
Development
and Risk Maps





IG INSTITUTO
DE ALTOS
ESTUDIOS
ESPACIALES
MARIO GULICH



Maestría

Aplicaciones Espaciales de Alerta y Respuesta Temprana a Emergencias

Becas Ciclo 2014

La Maestría tiene una duración de dos años y está dirigida a profesionales de diversas disciplinas. A su término estarán capacitados para utilizar información espacial y tecnologías de avanzada para la gestión de emergencias.

Los estudiantes cuentan con becas de estudio de tiempo completo en el Instituto Gulich ubicado en el Centro Espacial Teófilo Tabanera de la CONAE en Córdoba; y una estadía en centros de investigación en Italia. Las becas son financiadas por la CONAE. La estadía en Italia es cofinanciada por el Gobierno de la República Italiana y la CONAE.

Una de las principales herramientas disponibles son los datos provistos por el Sistema Ítalo Argentino de satélites para beneficio de la Sociedad, Gestión de emergencias y desarrollo Económico (**SIASGE**), para la formación de los alumnos y el desarrollo de proyectos en el marco de la Maestría.

Informes:
lg@conae.gov.ar
www.conae.gov.ar

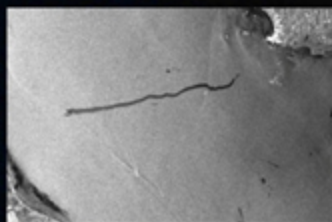


Imagen ERS. Contaminación Río de la Plata



Imagen SARAT. Cultivos CETT-Córdoba



Imagen COSMO SkyMed.



Cooperation in the Region



Regional Space

Agency

A composite image showing a portion of the Earth on the left, with its blue oceans, white clouds, and brown landmasses. To the right of the Earth is the Moon, showing its grey, cratered surface. The background is a black space filled with numerous small white stars.

Cooperation in International Projects of Exploration of the Universe



Cooperation with the European Space Agency

Installation of Deep Space 3 Antennae in Malargüe, Mendoza

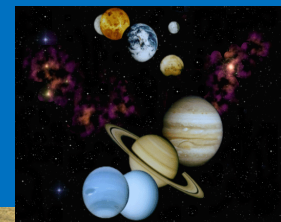
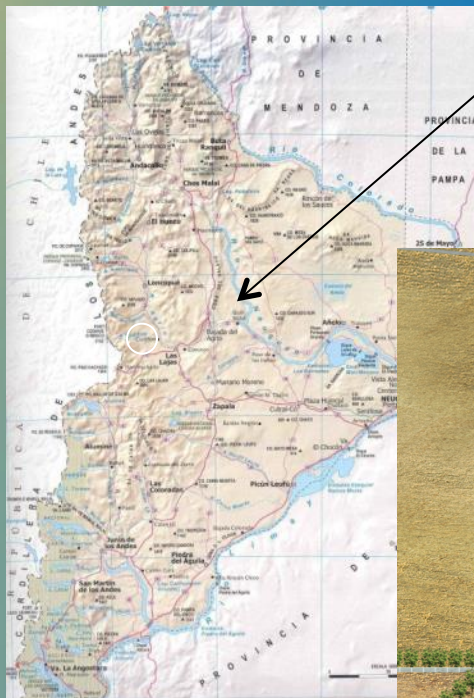


Inauguración:
Diciembre 2012

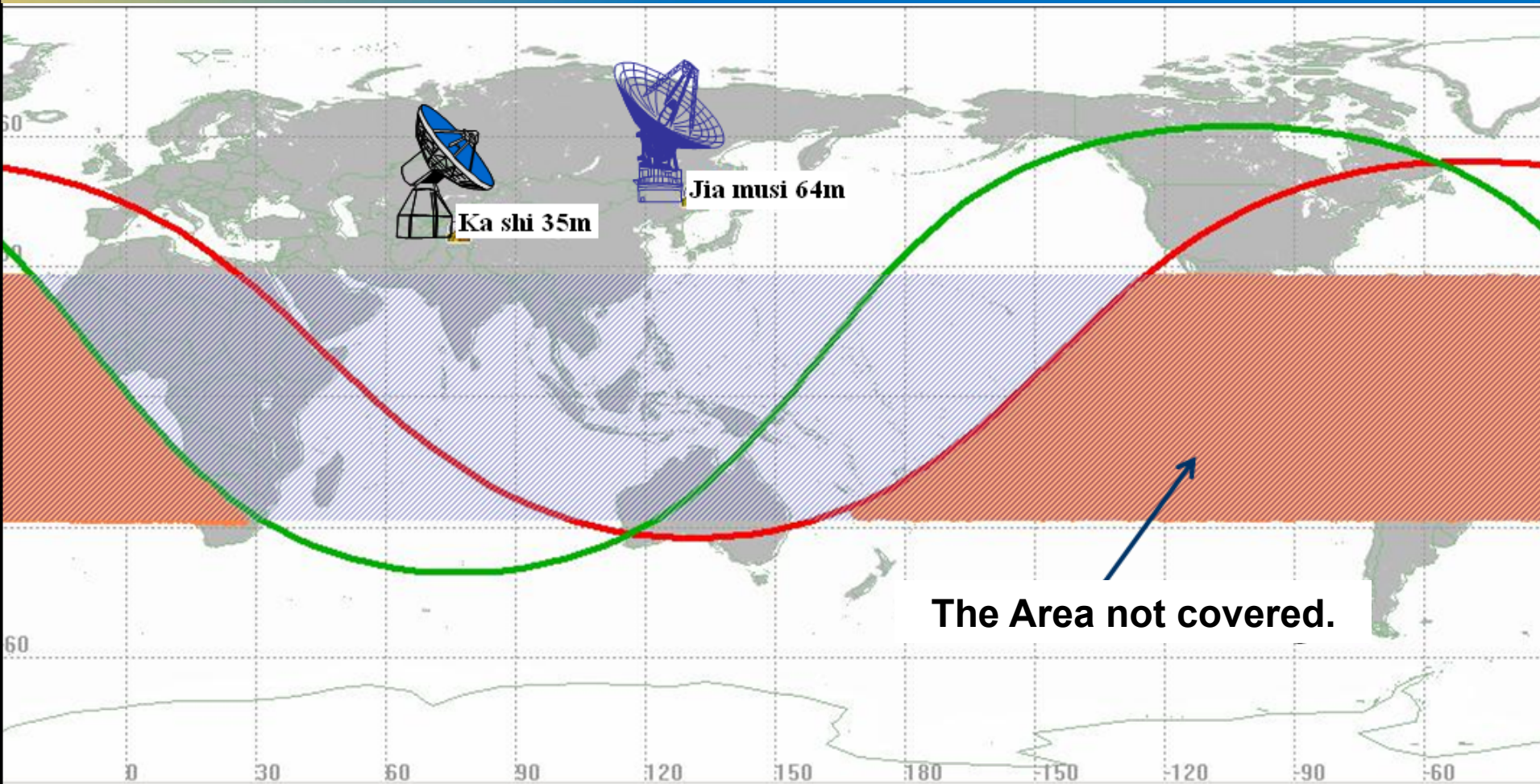


Cooperation between Argentina and China
in the frame of China Lunar Exploration Program through the

Instalation in the Province of Neuquen, of the China Deep Space 3 Antena

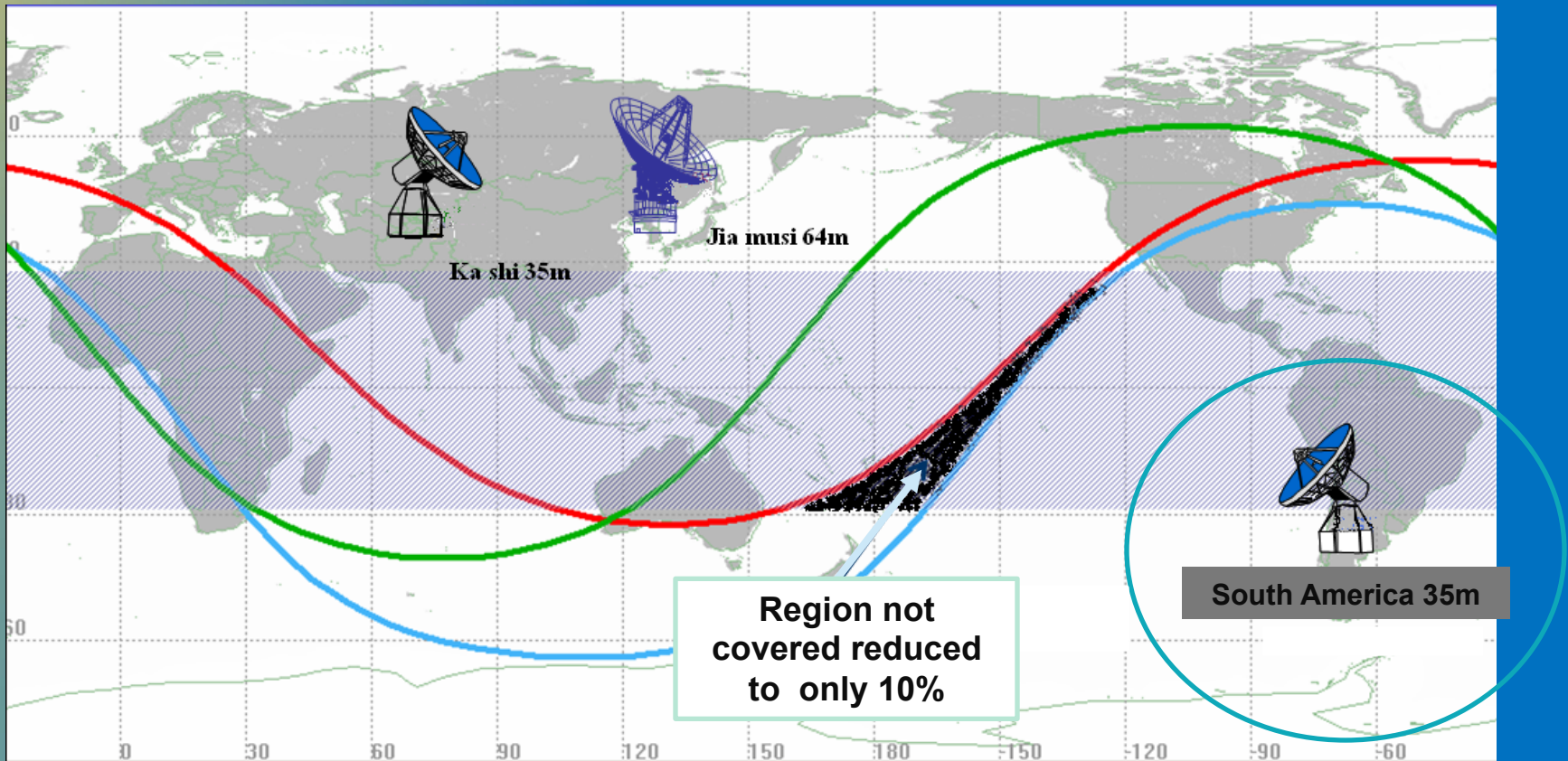


Chinese existing Deep Space Network dedicated to the China Lunar Exploration Program in its territory



Chinese Deep Space Network

- With the third Deep Space Station, the TT&C coverage achieve upto 90%.



Chinese Deep Space Station in Neuquen Province, Argentina
Actually under construction



Chinese Deep Space Network

- In the future, the 3 stations will give support to other missions of exploration of Mars and asteroids.





The Global Navigation Satellite GNSS is a new and very promissory field of space activity for Argentina and CONAE, which can be materialized in cooperation with other partners.

The next Space Plan revision will include one of the field of Activities: the cooperation in the development of GNSSs.



CONAE understand the importance of the GNSS for society.

Exists already experience in the allocation of the GPS Differential station in the Province of Cordoba, connected to the NASA Space Geodesics Network to improve the exactitude of the GGOS in the world and Regional measurements.

In the past, also existed the negotiations with GALILEO.

Actually is under negotiation the project of Installation of the Control and Differential Monitoring Station for GLONASS.



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CONAE is also interested to cooperate in the projects of Augmentation of the regional systems (WAAS, EGNOS, SDCM, GAGAN among others).



CONAE is interested in the training courses on the GNSS, to be organized in the Institute for Advanced Space Studies Mario Gulich, in the Province of Cordoba, Argentina for the potential users of Argentina and the region.



With the help and cooperation of UNOOSA in the participation of CONAE in this Workshop in Krasnoyarsk, CONAE had the opportunity to introduce its capacity to the GNSS Community and it is willingness to contribute to the development of GNSSs and propose to organize together with the UNOOSA one of the future regional Meetings on the GNSS in Argentina.



for more information:

www.conae.gov.ar



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Thank you!!!

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