

Red Argentina Para el Estudio de la Atmosfera Superior (RAPEAS)

Argentina Network for the Upper Atmosphere Research

Introduction:

This network was created by resolution of the board of Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) on 07-27-2011.

The mission of the Network is to consolidate in Argentina a scientific and technological community dedicated to the study of the upper atmosphere and its space environment, stimulate permanent advancement of the discipline, to coordinate the efforts of various groups and institutions for good and promote common development of advanced instrumentation, continuous production data, its modeling and analysis and training of human resources.

The overall objective is to promote and strengthen research and technology development aimed to study the upper atmosphere and space environment, contribute to the sustainability of human resources and a better use of the instrumental facilities already installed or that will be installed in the future.

Into the specific objectives, the most significant is maximizing the use of the AIRES Project (Argentina Ionospheric Radar Experiment Station): an incoherent scatter radar technology to be installed in Argentina thanks to a joint effort between the National Science Foundation (U.S.A.) and the CONICET.

The network currently consists of 21 research groups in 14 Argentine institutions located in the provinces of Buenos Aires, Mendoza, San Juan, Tucumán and Tierra del Fuego. La Plata is the coordinator node today and is responsible for maintaining communication between the network and the CONICET. The contacts are:

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Manager: Eng. Guillermo Rodriguez – grodriguez@fcaglp.unlp.edu.ar

Summary of Activities at 12/7/2012

There are 8 goals proposed, that comprise from scientific to institutional ones. Are explained here the most interesting for the international community.

Goal N° 1: Promoting development in the country of observation instruments based on radar technology

Proyect: *“Research, development and construction of Antennas array with electronic beamforming for Incoherent Scatter Radars”*

Was designed and constructed an antenna element unit for the array and the power amplifier to feed the antenna. Today we are measuring these elements to a final approval.

Goal N° 2: Maximize the benefits to the project AIRES Argentina

Was conducted the First International Workshop of the RAPEAS, in the La Plata city, with the presence of referents at word level in Ionosphere Studies like: Dr. Dieter Bilitza, Dr. David Altadill and Dr. Dalia Buresova.

This workshop was very useful to propose future actions and projects between the parts.

Goal N° 4: Make a list of available observational systems in Argentina and make its information available to the Network

As a part of this goal the ionospheric observational resources available are:

Ionospheric sounders:

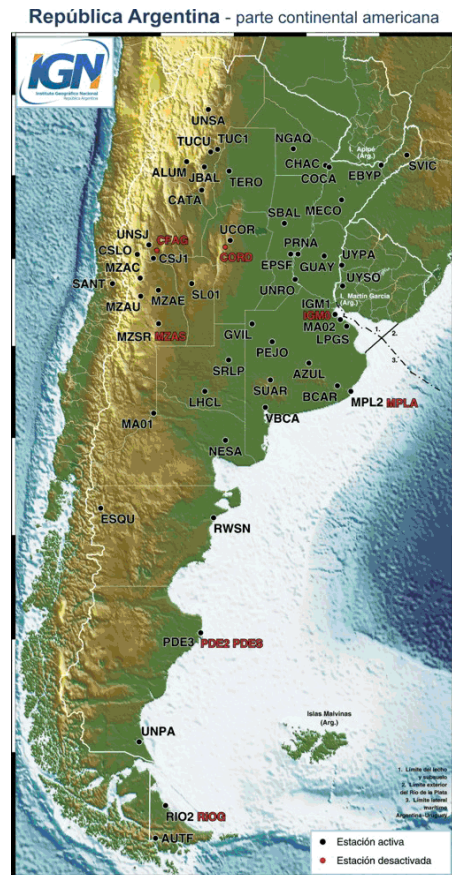
There was 10 sounders installed in the country but there are 4 in operation today (the black ones). The locations of the active sounders are: Tucumán, La Plata, Antarctica (San Martín Base) and Antarctica (Belgrano Base).

The others locations (red) in which there were installed sounders are: San Juan, Tucumán (2), Buenos Aires, Trelew and Ushuaia.



GPS Stations Network:

There are 50 stations but 7 of them (the red ones) are out of service today. You can see the locations in the map.



Magnetometers Network:

There are 5 active stations (black) and 5 proposed for the next four years (green), into the RAPEAS objectives.



Others Instruments:

Doppler Radar installed in Tucumán, near to the ionosonde.

Goal N° 5: Publicizing and disseminating information and results arising in the field of the network, through a portal.

The web page and a tool for the documents exchange between the partners in the network will be launch in the next 15 days.

Goal N° 6: Optimize the use of satellite information source produced under the National Space Plan, identifying relevant issues that offer competitive advantages for Argentina Community and promoting development through collaborative efforts.

There are several groups from Mendoza, Buenos Aires and La Plata working today, in this task very close with the National Space Agency (Comisión Nacional de Actividades Espaciales - CONAE).

Goal N° 7: Achieve the RAPEAS link with other international networks

Were conducted several official presentations at international events like International Ionosphere Reference workshop 2011 (Dr E. Gularte), and with national agencies of other countries like South African Space Agency - 2012 (Eng. G. Rodriguez).

Was deployed the logo for the network.

Argentine Ionospheric Radar Experimental Station (AIRES)

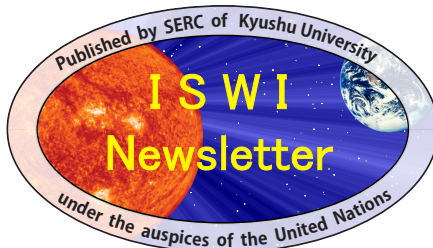
This is project of the National Science Foundation (NSF - USA) and Comisión Nacional de Investigaciones Científicas y Técnicas (CONICET – Argentina) and comprise the installation of a Advanced Modular Incoherent Scatter Radar (AMISR) in Argentina.

The goal here is to understand the energy transfer between regions of different latitudes for accurate prediction of the ionosphere response to changes of the conditions of space. So, for this they are required global toolkits with angular and temporal resolution in order to observe the environment as a whole with sufficient resolution to resolve mesoscale phenomena and track their dynamics.

The agreement between NSF and CONICET is being discussed and will be signed soon.

Were successfully deployed compatibility studies to install the instrument at the Chascomús city, near to La Plata and today, we are ready to start the construction of the support structure, and the final projects for the access road and other services like Internet access, electricity, etc. The radar wil be installed in 2014.

In addition, CONICET is finishing an agreement with the Universidad Metropolitana de Puerto Rico, to install a platform of 14 panels (an small version of AMISR) in the same place. This facility could give to us the chance to deploy interferometric measurements, enhancing the already powerful features of AIRES. This platform could be installed in the 2nd half of the 2013.



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