

## THE ARGENTINE POSGAR '94 REFERENCE FRAME

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### ABSTRACT:

The technologic developments and economic changes that occurred in Argentina during the last two decades have strongly pointed out the need for an update of the national reference system. In this sense, the IGM (Instituto Geografico Militar argentino) has recently adopted the POSGAR'94 (Posiciones Geodesicas Argentinas) frame as the realization of the national reference system of Argentina. This frame consists of 127 evenly distributed points on a grid of approximately 200 km cell size. The measurements were carried out mainly by the IGM, during 1993 and 1994, with the cooperation of other national and foreign institutions. The computations, including the definition of the reference system, were performed by the Facultad de Ciencias Astronomicas y Geofisicas of La Plata (FCAG).

This work describes the main features of the POSGAR network, emphasizing the way used to refer it to the WGS84 system. Comparisons between some POSGAR'94 and the recently adopted SIRGAS (Sistema de Referencia Geocentrico para America del Sur) coordinates are also included.

The SIRGAS project was established during the "Conferencia Internacional para la definicion del Datum Geocentrico Sudamericano" held in Asuncion, Paraguay, in October 1993. Its execution is led by two working groups: Working Group I, whose goal is to establish a geocentric reference frame for South America by means of a high precision geodetic network, covering the whole continent (eight stations of this network are in Argentina); Working Group II, whose goal is to lead the densification of the SIRGAS frame inside the South American countries.

In this work, the current status of the SIRGAS project is outlined and the strategy to integrate the POSGAR network to the SIRGAS frame is also discussed. For this purpose, a complete re-computation of the POSGAR observations by using the Bernese scientific software will be performed. A preliminary analysis is also shown which states that the change in the POSGAR '94 geocentric coordinates will be less than one meter, mainly stemming from the change of the reference system and the improvement in precision. This analysis also shows that the changes of the relative coordinates will be in most cases of less than 1ppm.