



**Report on the Symposium SIRGAS2017,  
SIRGAS Workshop on real-time GNSS positioning, and  
SIRGAS Workshop on SLR in Latin America**

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SIRGAS, the Geocentric Reference System for the Americas, is the IAG Sub-commission 1.3b. Its current activities, advances, and new challenges are reported, discussed, and re-oriented (if required) in the annual SIRGAS Meetings, which are being held since 1993. In this series, the Symposium SIRGAS2017 took place in Mendoza, Argentina, from November 27 to 30, 2017. It was organized by the *Universidad Nacional de Cuyo* and the *Universidad Juan Agustín Maza*, with the support of the International Association of Geodesy (IAG), the Pan-American Institute for Geography and History (PAIGH), the *Consejo Nacional de Investigaciones Científicas y Técnicas* of Argentina (CONICET) and the *Agencia Nacional de Promoción Científica y Tecnológica* of Argentina. In the frame of this symposium, two additional activities were programmed: A workshop on real-time GNSS positioning from November 22 to 24; and a workshop about SLR in Latin America from November 30 to December 1, 2017.

The symposium SIRGAS2017 was attended by 128 participants (Fig. 2) from 16 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Germany, Guatemala, Mexico, Panama, Spain, United States, Uruguay, and Venezuela). The main topics addressed during the symposium included advances in the implementation and maintenance of national reference frames (8 presentations); real-time applications based on the SIRGAS infrastructure (6 presentations); vertical reference systems (9 presentations); gravity and geoid (8 presentations); improvement and maintenance of the SIRGAS reference frame (9 presentations); detection and assessment of geodynamic effects on the SIRGAS reference frame (9 presentations); atmosphere studies based on the SIRGAS infrastructure (3 presentations); other geodetic techniques in SIRGAS (8 presentations); and general reports (4 presentations). Five invited conferences were presented: Current activities of the IAG (Hermann Drewes, IAG Secretary General, Germany); Some applications of ionospheric and geodetic models supported by real-time GNSS measurements (Manuel Hernández-Pajares, Universidad Politècnica de Catalunya, Spain); SLR – An Overview and General Aspects (Daniela Thaller, Bundesamt für Kartographie und Geodäsie, Germany); SLR and the Gravity Field (Daniela Thaller, Bundesamt für Kartographie und Geodäsie, Germany); and SLR and the Global Terrestrial Reference Frame (Daniela Thaller, Bundesamt für Kartographie und Geodäsie, Germany). In total, 51 oral contributions and 18 posters were presented.



*Participants of the Symposium SIRGAS2017, Mendoza, Argentina, November 27 to 30, 2017*



The workshop on real-time GNSS positioning was attended by 50 participants from 12 countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Panama, Spain, Uruguay, and Venezuela). It was organized as an activity of the SIRGAS Working Group II "SIRGAS at national level". Lectures were provided by Roberto Pérez-Rodino (*Universidad de la República*, Montevideo, Uruguay), chair of the SIRGAS-WGII, María Fernanda Camisay (*Universidad Juan Agustín Maza*, Mendoza, Argentina), Gustavo Noguera (*Universidad Nacional de Rosario*, Rosario, Argentina), and Manuel Hernández-Pajares (*Universidad Politècnica de Catalunya*, Barcelona, Spain). The main topics were: Real-time positioning systems and techniques (RTK, NetRTK, PPP), national real-time infrastructures, caster and real-time stream management, NTRIP and associated software (BNC, RTKLib, etc.), theoretical foundations of the European project AUDITOR (Improved GNSS ground-based augmentation system for precision agriculture services) with emphasis on the generation of reliable ionosphere products for the calculation of real-time corrections. Three practical exercises were developed: one for real-time measurements in the field and two for connectivity, configuration, and calculation in the cabinet.



*Participants of the workshop on real-time GNSS positioning, Mendoza, Argentina, November 22 to 24, 2017*

The workshop on SLR in Latin America was attended by 43 participants from 10 countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Germany, Peru, Uruguay and Venezuela. The main objective of the workshop was to evaluate the possibility of extending the SIRGAS reference frame by means of SLR stations to improve the geocentric realization of the regional frame. Daniela Thaller (Bundesamt für Kartographie und Geodäsie, Germany) provided an overview about the SLR dataflow and analysis performed within the International Laser Ranging Service (ILRS), and representatives of the four SLR observatories installed in South America (Arequipa, AGGO, Brasilia and San Juan) reported about the status and future improvements at the different stations. Bernd Sierk of the European Spatial Agency (ESA) presented the ESA plans related to new SLR developments and applications. Finally, Daniela Thaller outlined some recommendations to start SLR data processing experiments within SIRGAS. Following these recommendations, the next activity is to prepare and distribute an input data set to be processed by the different groups installed in Argentina, Brazil, Peru and Costa Rica. Results of this experiment will be discussed during the next SIRGAS symposium in 2018.



*Participants of the workshop on SLR in Latin America, Mendoza, Argentina, November 30 to December 1, 2017*