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# Status of the SIRGAS reference frame: recent developments and new challenges

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**Abstract.** In accordance with recent developments of the International Association of Geodesy and the policies promoted by the UN-GGIM Subcommittee on Geodesy, a main goal of SIRGAS is the procurement of an integrated regional reference frame that not only supports the precise determination of geocentric coordinates but also provides a unified physical reference frame for gravimetry, physical heights, and geoid. The geometric reference frame is given by a network of ~500 continuously operating GNSS stations, which are routinely processed by ten analysis centres to generate weekly station positions aligned to the International Terrestrial Reference Frame (ITRF) and multi-year (cumulative) reference frame solutions. This processing is also the basis for the generation of precise tropospheric zenith path delays with an hourly sampling rate over Latin America. The reference frame for the determination of physical heights is a regional densification of the International Height Reference Frame (IHRF). Current efforts focus on the estimation and evaluation of potential values obtained from high resolution gravity field modelling, an activity tightly coupled with the geoid determination. The gravity reference frame is aimed to be a regional densification of the International Terrestrial Gravity Reference Frame (ITGRF). SIRGAS activities in this regard are devoted to evaluate the quality of existing absolute gravity stations and to identify regional gaps where further absolute gravity stations are needed. Another main SIRGAS objective is to promote the use of its geodetic reference frame at the national level and to support capacity building activities in the region. This presentation summarises key milestones in the establishment and maintenance of the SIRGAS reference frame and discusses current efforts and future challenges.