



New Space Weather Services in Argentina: The Tucumán Space Weather Center

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The Tucumán Space Weather Center - TSWC (<https://spaceweather.facet.unt.edu.ar/>) is a programme from the Universidad Nacional de Tucumán (UNT) in Argentina that works in collaboration with many national and international institutions. The TSWC is dedicated to the development, study and monitoring of space weather conditions with an emphasis in the upper atmosphere using space and ground-based instrumentation. The center comprises 3 laboratories: Laboratorio de Telecomunicaciones (LabTel), Laboratorio de Computación Científica (LabCC), and Laboratorio de Ionósfera, Atmósfera Neutra y Magnetósfera (LIANM). Located in Tucumán, Argentina (26° 51' S, 65° 12' W, dip lat 15°), the TSWC has great relevance for space weather studies due to two main distinctive features as a low latitude station: (a) is located near the south crest of the Equatorial Ionization Anomaly (EIA) and (b) is close to the South Atlantic Magnetic Anomaly.

The monitoring and service systems rely on the acquisition, processing and analysis of data mainly from local instrumentation deployed in UNT and in Argentina, and also from external sources (such as publicly available databases). Local instruments include: an AIS-INGV ionospheric sounder, a continuous HF Doppler radar system, 2 GNSS receivers, a Riometer and a Magnetometer. These instruments have been deployed in collaboration with international institutions. The TSWC includes also other ionospheric monitoring systems at Argentinian stations, such as middle latitude Bahia Blanca station in collaboration with Universidad Tecnológica Nacional. The Near-Real-Time service of ionosonde data (in collaboration with INGV) is included as an affiliated asset in PECASUS consortium services providing information about potential hindrances in impact areas of HF- and satellite communication, satellite-based navigation, and radiation at flight altitudes.

The TSWC portal relies heavily on near real-time acquisition, processing and product delivery through a complex data pipeline and data processing infrastructure that includes tailored software development.

An in progress feature of TSWC is related to services that make use of GNSS and ionospheric modelling. This is being done in collaboration with ICTP and includes: (a) automatic total electron content (TEC) calibration using the Argentinian GNSS receivers network, RAMSAC (<https://www.ign.gob.ar/NuestrasActividades/Geodesia/Ramsac>); (b) TEC maps of Argentinian sector, (c) NeQuick assisted foF2 maps using the network data.

This presentation will describe the mentioned TSWC current services, along with other future planned capabilities.