



SMAP Areco's Site - Argentina



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Keywords

Argentina, Soil Moisture, 3km-9km products, alternative validation strategies

Site View

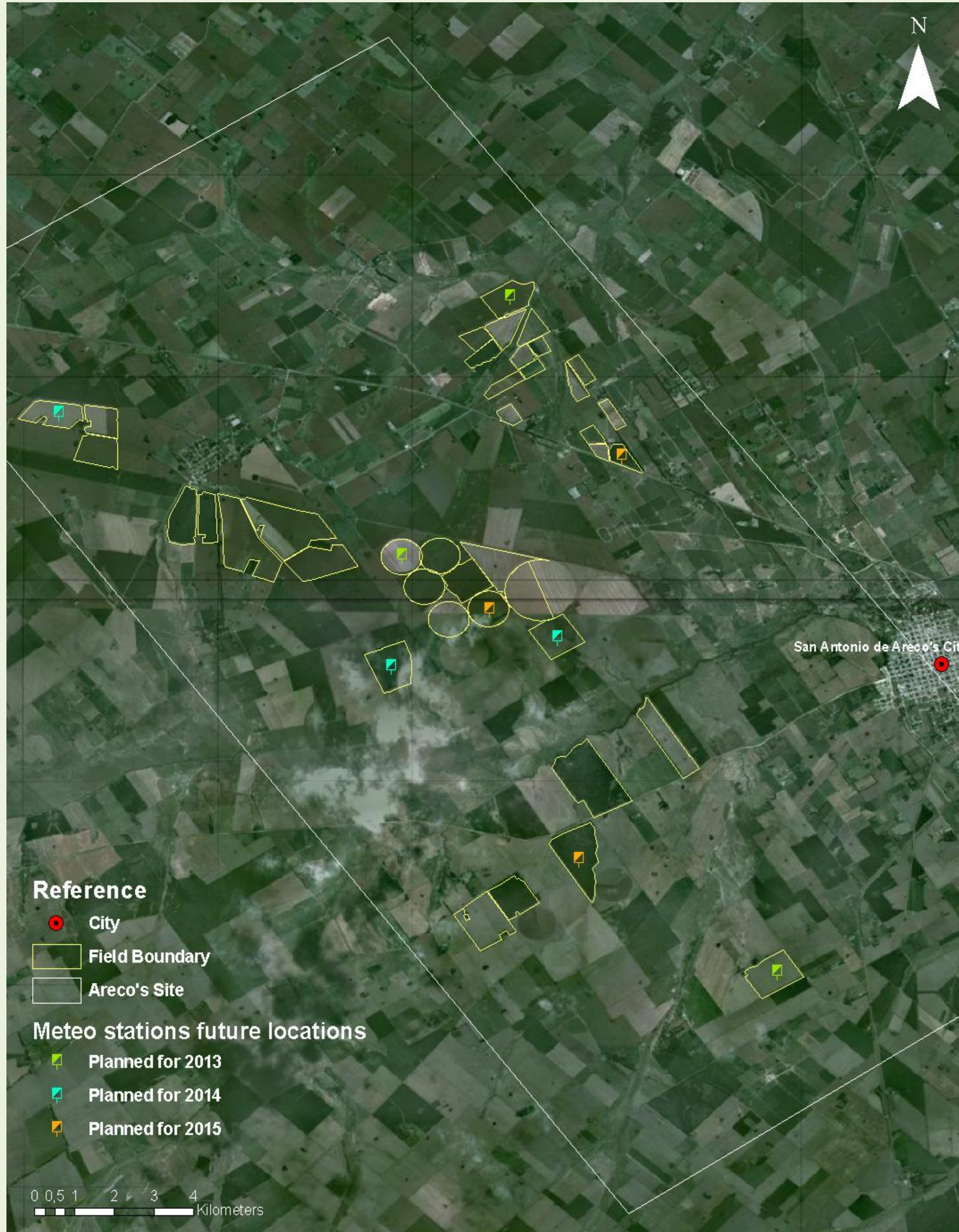


Figura 1. Areco's site map.

Work in Progress

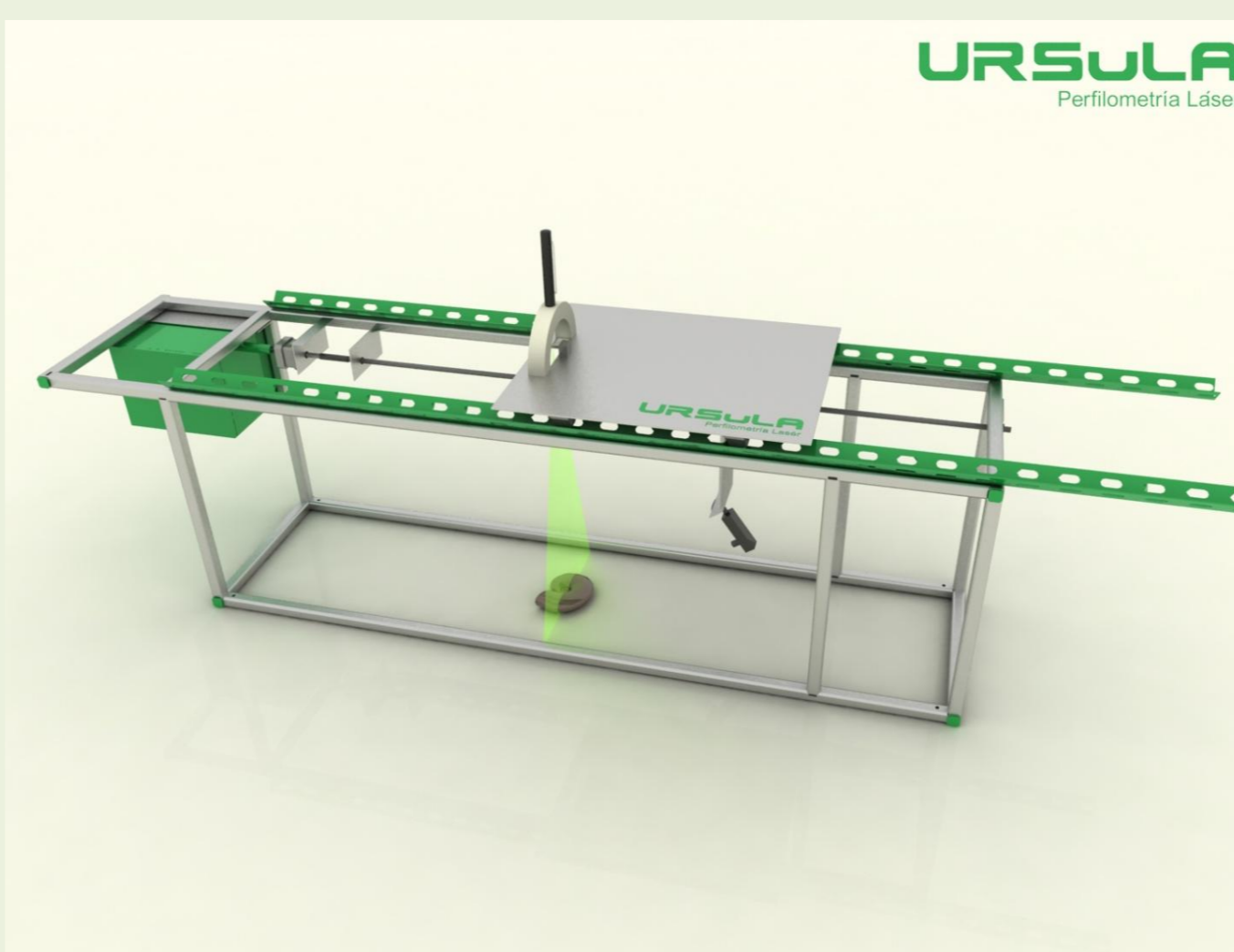
The site is currently under development. Nine meteorological stations will be placed in significant plots in the following years (see Figure 1 for possible location and timetable). The stations will measure soil moisture, along with several other agronomical variables. Intensive campaigns were and will be done in order to calibrate the stations sites. These campaigns consist on measuring soil moisture in the station surrounding area, in order to characterize the spatial variability of soil moisture in every zone.

The site was extensively monitored by SAR systems due to its status as a JECAM site. Moreover, the site is also an experimental site of SAOCOM announcement of opportunity (AO) projects. In this context, several SAR-AT acquisitions are currently planned for the next year. SARAT is an airborne L-band full polarimetric SAR system developed by CONAE. Also, IAFE's group developed a SAR soil moisture retrieval algorithm based on Bayes theory which is going to be tested in the area using SAR images.

Groups expertise

INTA Clima y Agua has a proven expertise in agricultural monitoring and modeling using remote sensing data. It's a key institution in Argentina's agricultural monitoring.

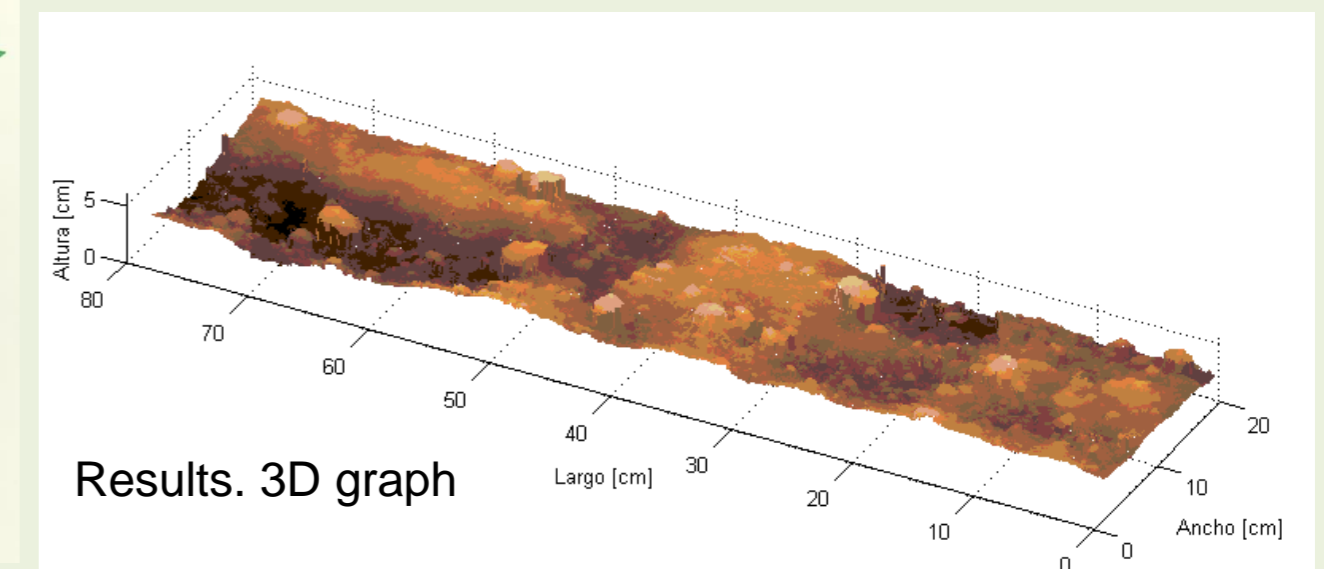
IAFE Remote Sensing Group has a solid expertise in microwave interaction models (both active and passive). Moreover, during the last years there was a systematic effort to develop *ad hoc* instruments to validate products on the field. Among them, a 2D laser profiler (URSULA) and an integrated soil moisture probe/GPS/storage device.



Technical characteristics

Scan area: 78,8 cm x 25 cm.
Maximum scan height: 12 cm.

	Accuracy (mm)	Resolution (mm)
Height	0.2	0.7-1.6
Width	0.2	0.2
Length	0.3	1.5



Introduction

The Areco's field experiment is been developed by INTA Clima y Agua (<http://climayagua.inta.gov.ar/>) and the institute for Astronomy and Space Physics (IAFE, www.iafe.uba.ar/tele/). This is the first experiment specifically designed to validate mid resolution satellite-derived soil moisture products. The site is actually a JECAM site (Radarsat2 and TerraSar X), a future ALOS 2 and SMAP site.

Site objective

The main objective of this work is to setup a field experiment to validate satellite derived soil moisture products in South America. In particular, to generate methodologies to estimate soil moisture condition from SMAP data and ancillary information. As a secondary objective, we plan to develop a cost effective set of strategies to validate satellite hydrologic products without the need of intensive field data.

Description of Areco's Site.

The Areco study site is an area of about 300 km² in northern Buenos Aires province, Argentina (center coordinates 34° 15' 43" S/59° 28' 0" W), and is one of the Joint Experiment for Crop Assessment and Monitoring (JECAM) sites (<http://umanitoba.ca/outreach/aesb-jecam/>) since 2010.

San Antonio de Areco study site belongs to the Argentine Rolling Pampas at ~100 Km of Buenos Aires City. The area has a mild (temperate)-subhumid climate (1000 mm mean annual rainfall) with the following features:

- > Typical Field Size (Area): 20-30 hectares.
- > Main Crops: Soybean, wheat and maize.
- > Crop Growing Season: From June to April
- > Soil type: Typical Argiudoll, with a well-developed B horizon.
- > Soil Texture: Silty loam soils (silt content of 60-70%) up to 30 cm depth. From 30 cm depth, the textural B horizon is silty clay loam.
- > Landscape Topology: Almost flat to undulating plains with slopes lower than 2% to 3%.
- > Soil Drainage Class: Poor to imperfectly drained.

Field work is planned in several sites within the district.

Agronomical variables to be measured

Measurement Type	Method	Depths
Soil moisture (continuous)	Dielectric probe (Hydra Probe II)	10 cm
Soil moisture (intensive)	Dielectric probe (Hydra Probe II)	10 cm
Soil moisture (intensive)	Gravimetric	10 cm
Soil roughness	2D Laser profiler	N/A
General atmospheric variables	several	N/A