

Towards the generation of National Crop Type maps in Argentina

De Abelleira D¹, Verón S¹, Banchemo S¹, Helena H², Mosciaro M², Noe Y²,
Vale L², Morales C², Gaitán J³, Volante J²

¹Instituto de Clima y Agua. National Institute of Agricultural Technology (INTA), Hurlingham, Argentina; ²EEA Salta. INTA, Salta, Argentina; ³Instituto de Suelos. INTA, Hurlingham, Argentina

e-mail: deabelleira.diego@inta.gob.ar

Introduction

Argentine JECAM site (www.jecam.org) started in 2010 with a target area of about 100x100 km in the Rolling Pampas (Figure 1). Size of the survey area was related to available processing capacity and high resolution image availability. Recent advances in image processing capability and the open availability of high resolution sensors, became more feasible the mapping of larger areas for annual crop type identification at field level. Nevertheless, the need for in situ data for calibrating and testing products is still a challenge.

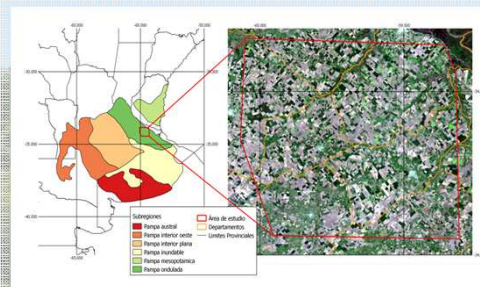


Figure 1. Location of initial Argentine JECAM Area

Methodology

For current campaign (2018-2019) we expanded our JECAM like on-road surveys along main agricultural areas of Argentina (Figure 2). Total area was divided using the Buenos Aires Grain Exchange (PAS) zonation which is based mainly in crop presence and abundance, and phenology. For each zone, geo-located points of crop types and no cropland areas

were registered twice a year (during winter and summer growing seasons) for the generation of training and validation datasets. A total of 10,911 geo-referenced samples were obtained to map an area of 730,000 Km². Supervised classifications are being performed through the Google Earth Engine platform.

Results

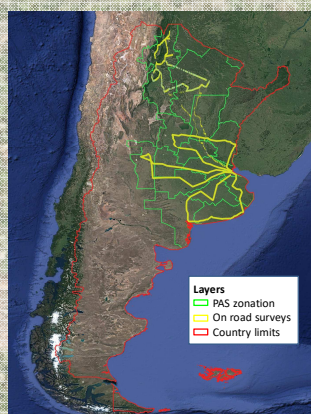


Figure 2. On-road surveys over main agricultural areas of Argentina

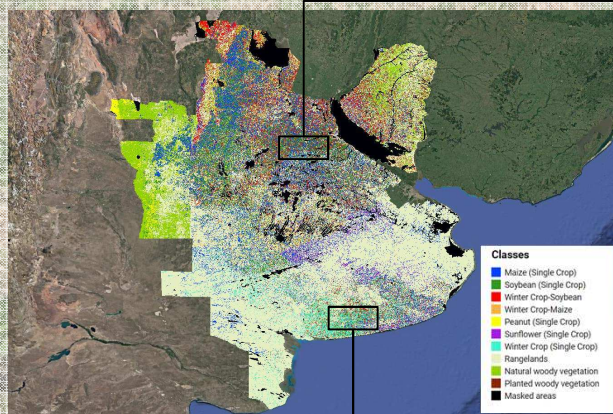
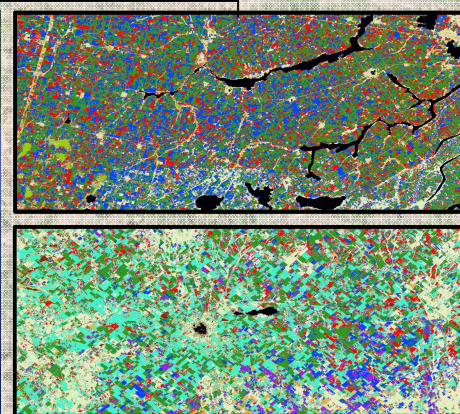


Figure 3. Crop Type map of the Argentine Pampas for the growing season 2018-2019



Classifications were completed in the Pampas region (Figure 3) using summary metrics following the MapBiomass Feature Space (www.mapbiomas.org) approach (101 indices derived from Landsat) for 3 different periods along the growing season. 10 classes were defined (Figure3) including single and double crops and no cropland areas. Accuracies ranged from 0.61 to 0.85 among the different zones.

Next steps

- Perform classifications in North Argentina (Chaco region) where field data was also obtained.
- Include temporal related metrics in the Feature Space.
- Next level class definitions (e.g. wheat /barley, early/late maize differentiation).