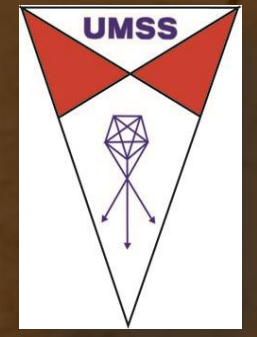


CHARACTERIZATION OF SALT-AFFECTED SOILS

High Valley of Cochabamba - Bolivia

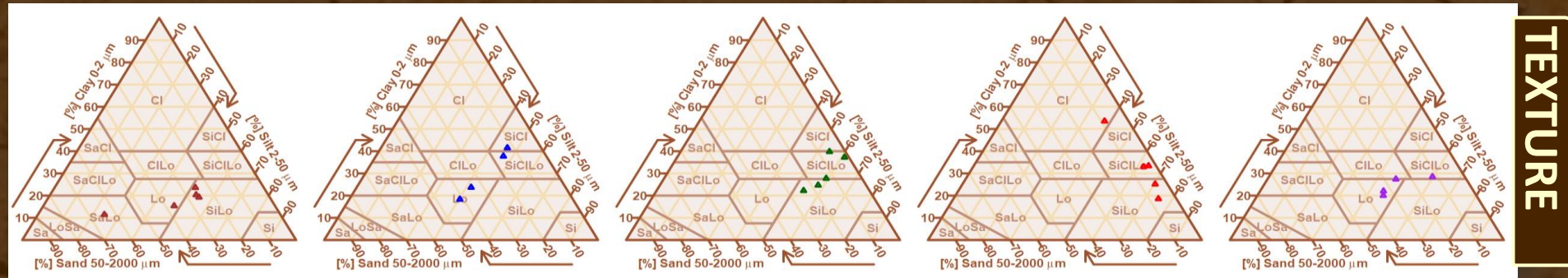
Andrade D., Colinet G.



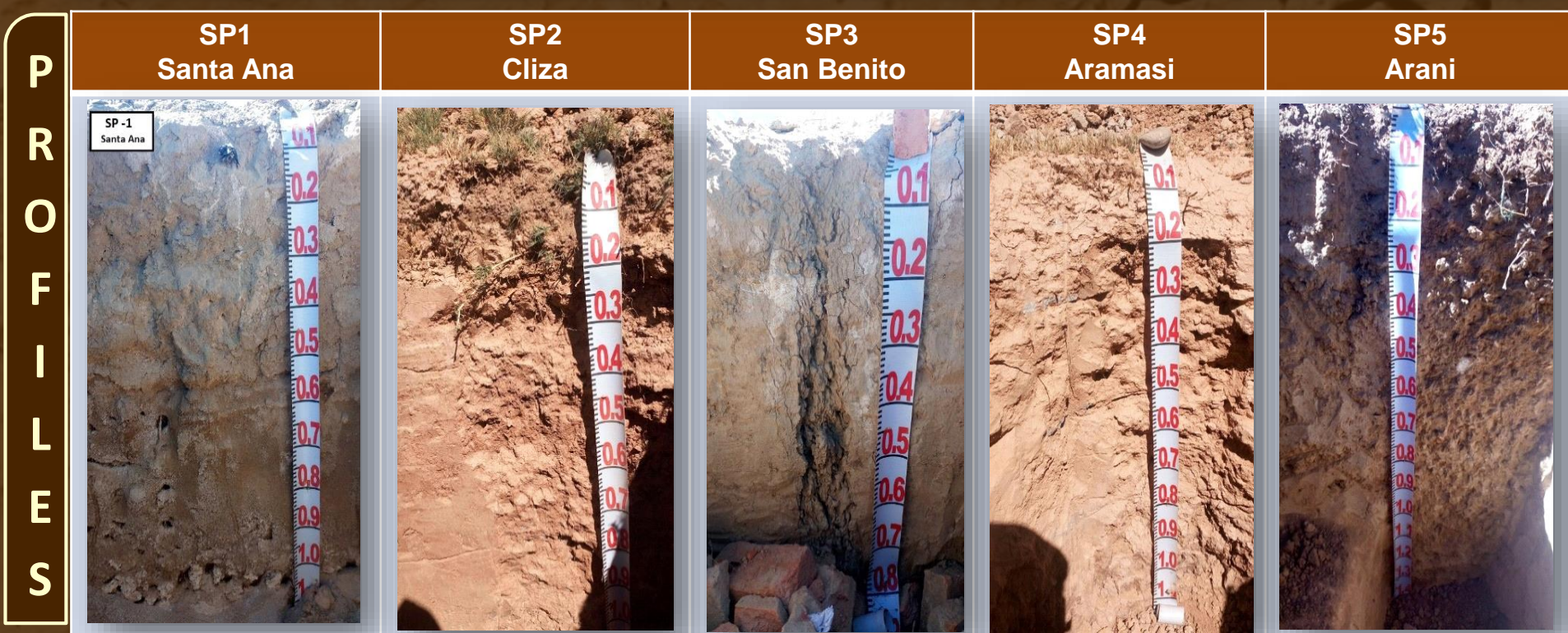
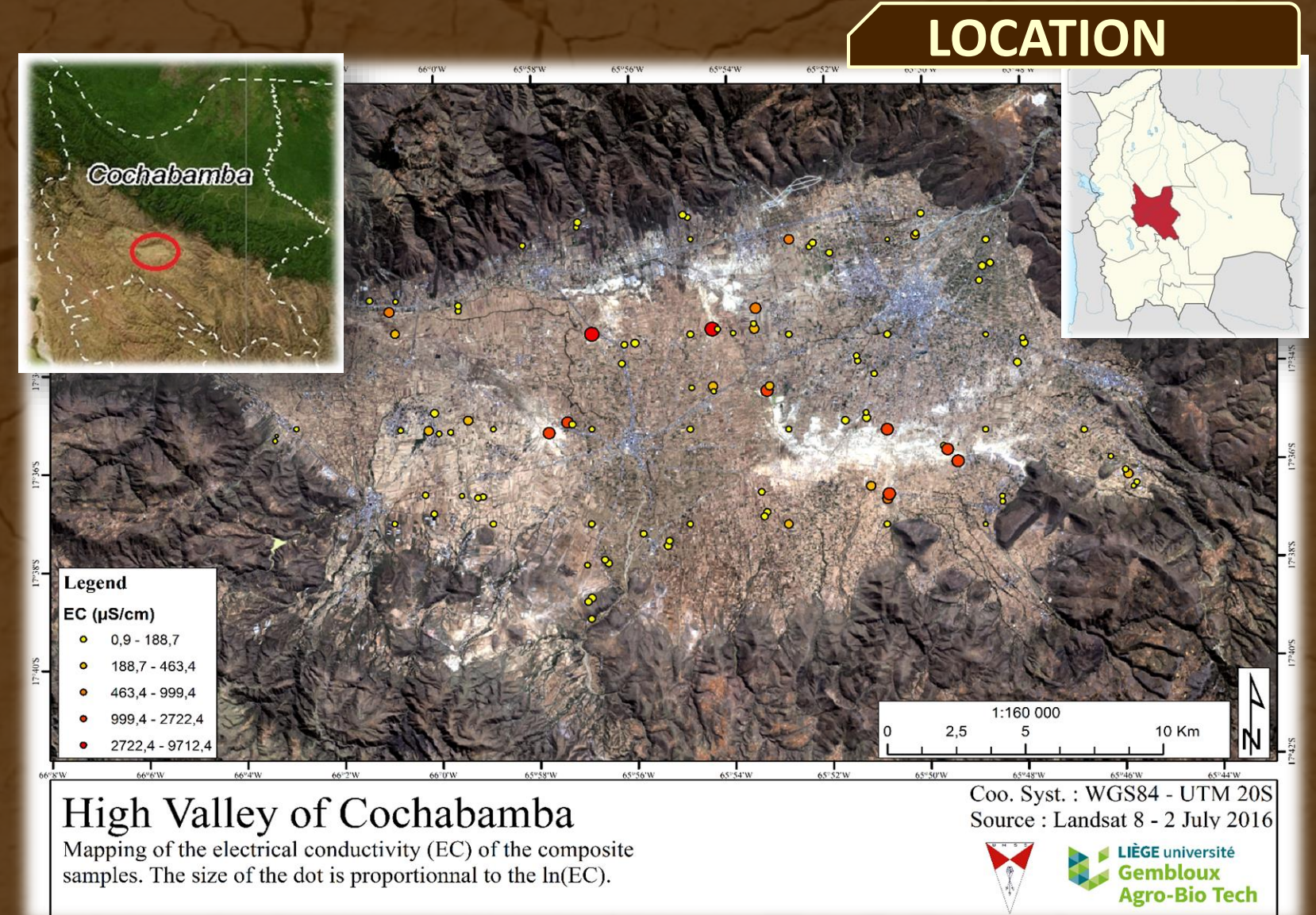
University of Liege - Gembloux Agro-Bio Tech - Soil Science
Passage des Déportés, 2 - B-5030 Gembloux / dn.andrade@doct.ulg.ac.be

OBJECTIVES

- Generate a comprehensive salt-term soil classification, besides a salt-affected soil description database
- Validate the relationships among salinity / sodicity parameters
- Define future perspectives in terms of soil rehabilitation



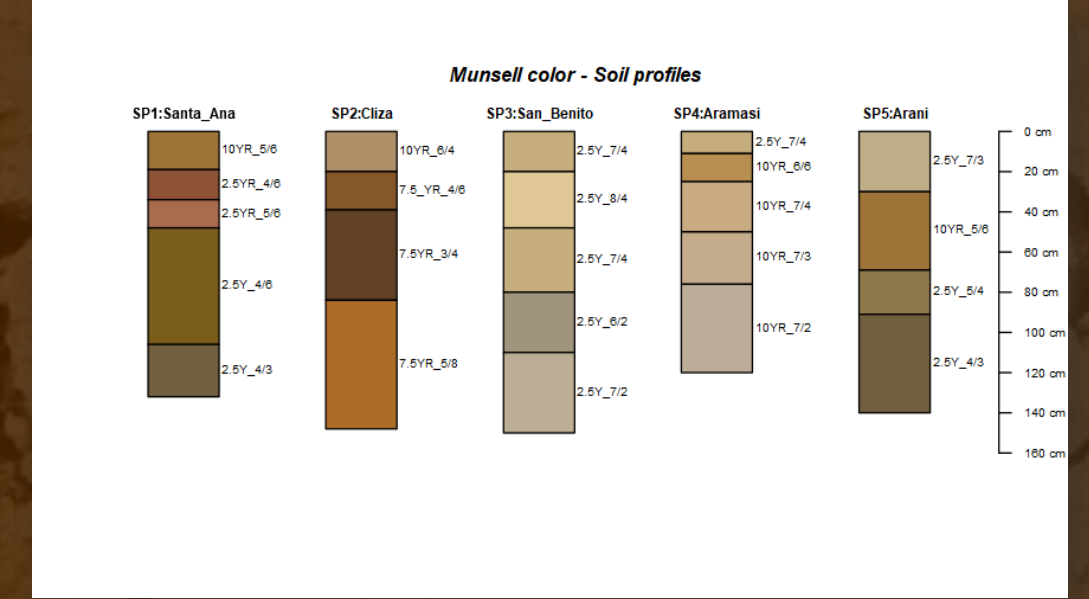
TEXTURE



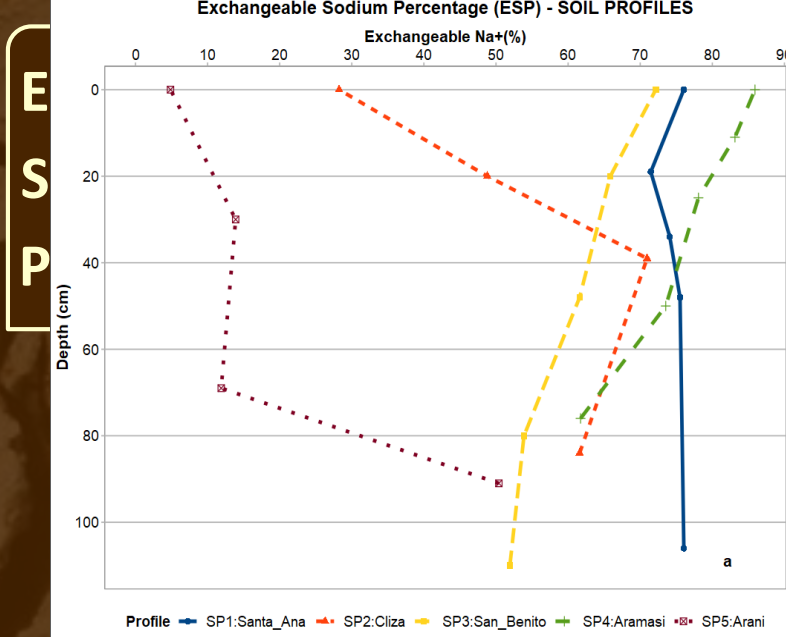
LANDSCAPE



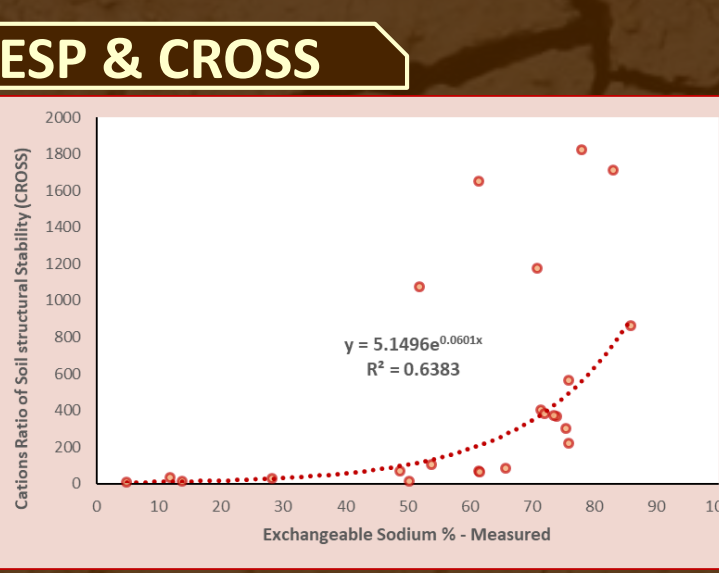
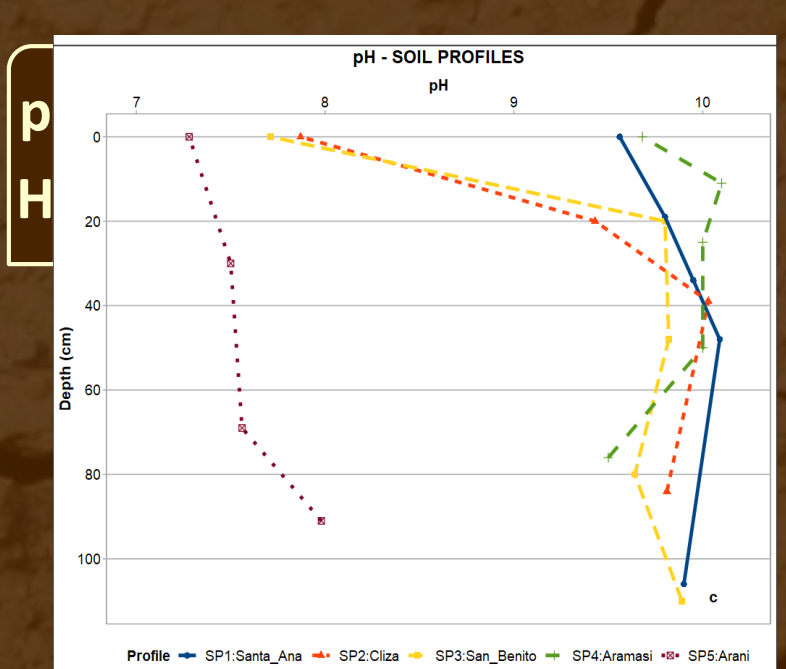
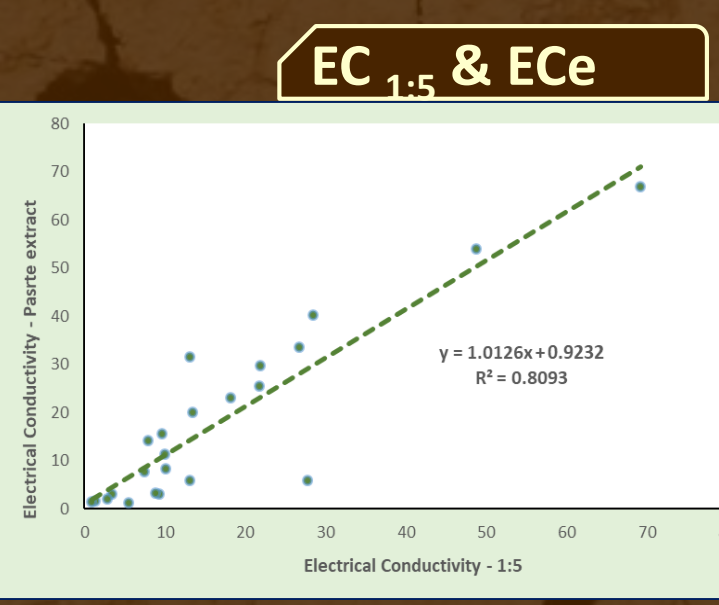
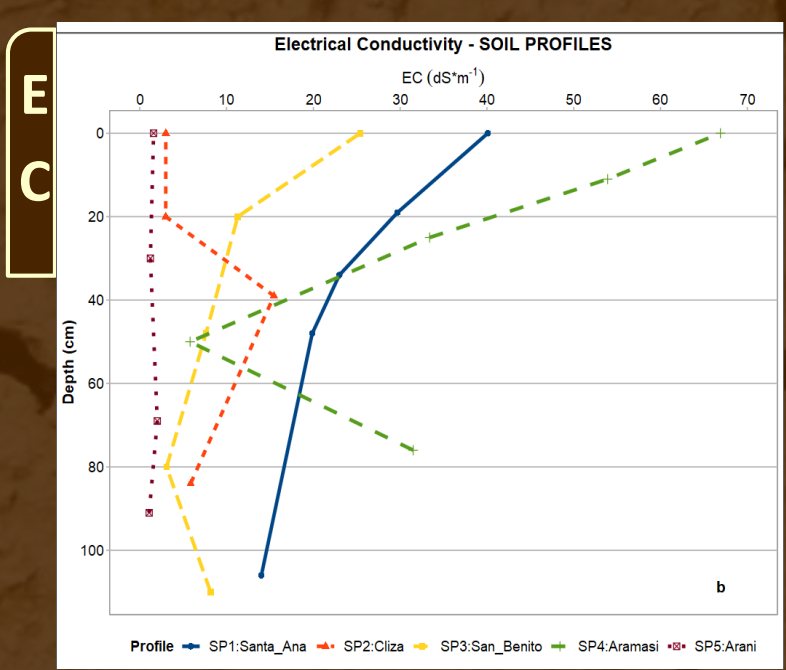
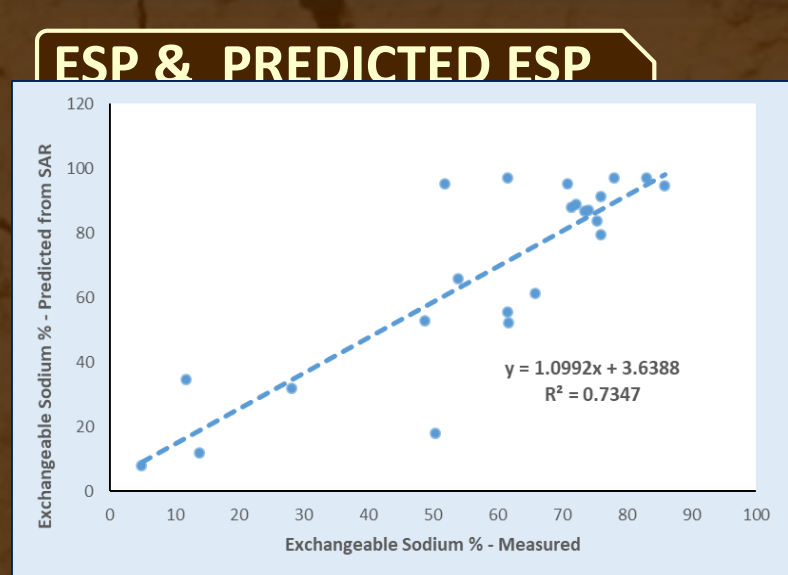
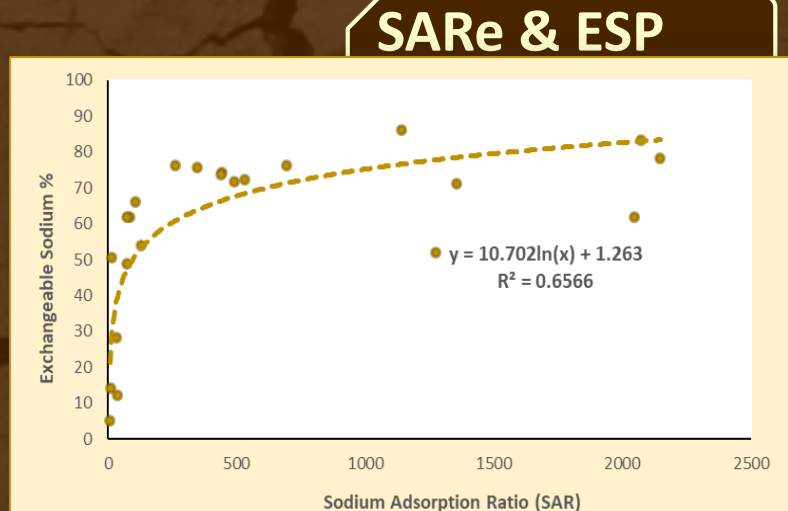
COLOR



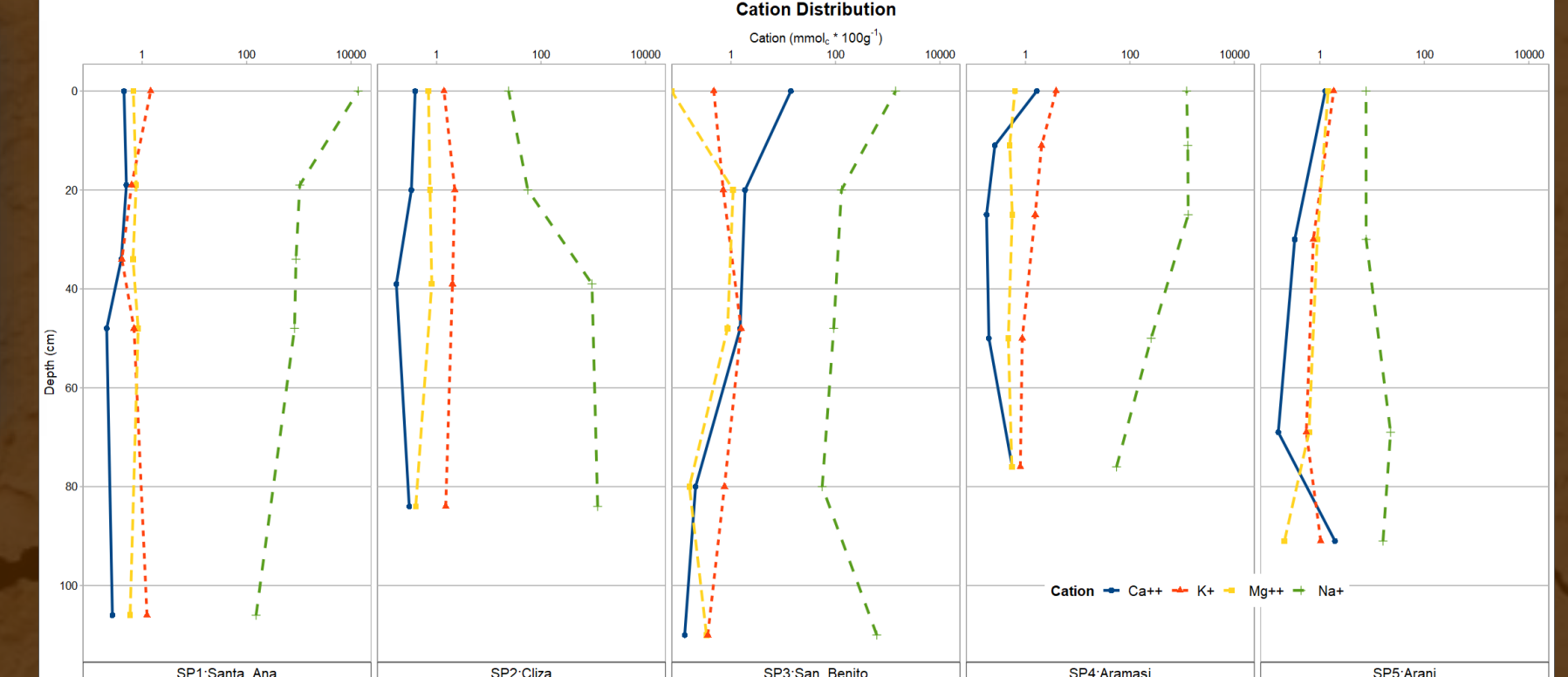
SALINITY PARAMETERS



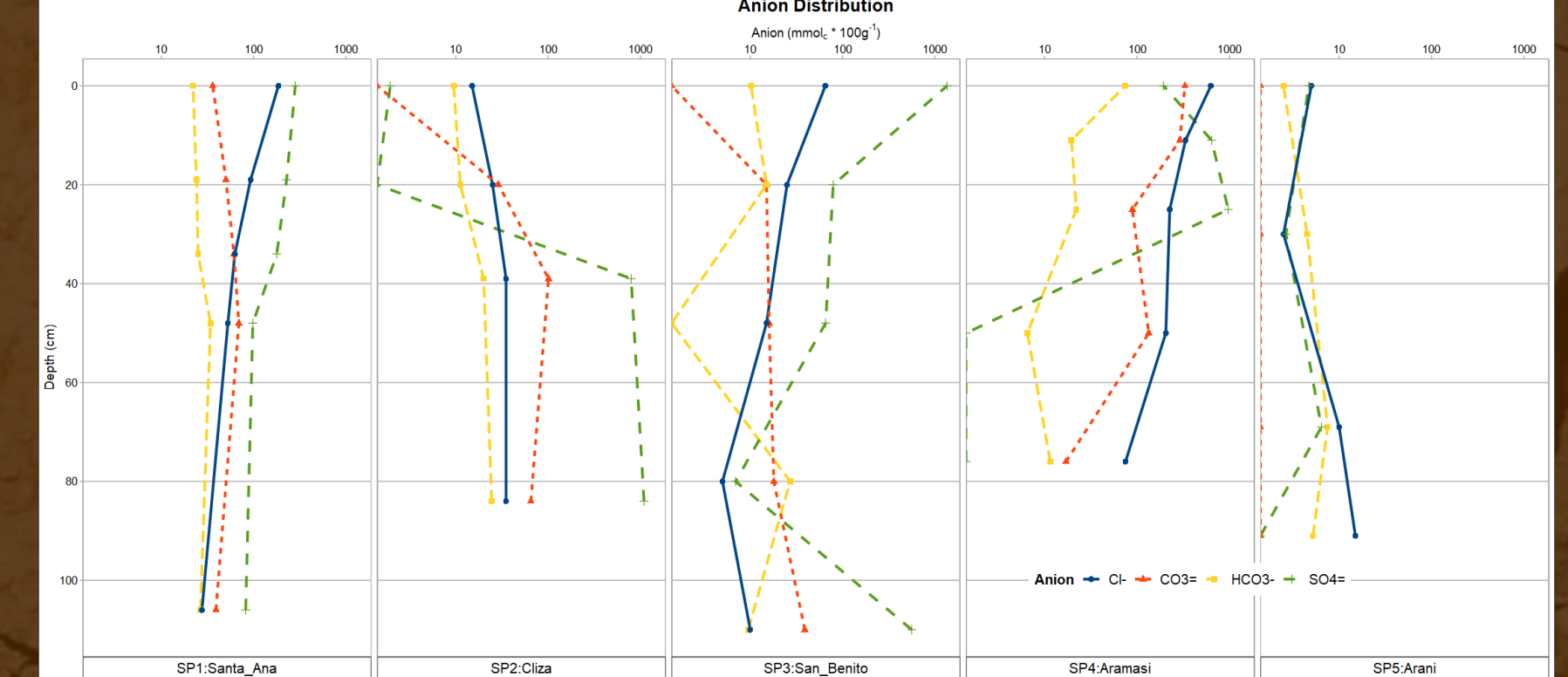
- Exchangeable Na⁺ and EC show similar behavior
- Taking into account [2CO₃ + HCO₃⁻] and/or Na⁺ over [Cl⁻ + 2SO₄⁼] ratios (Chhabra 2005), neutral salts predominate over alkaline salts



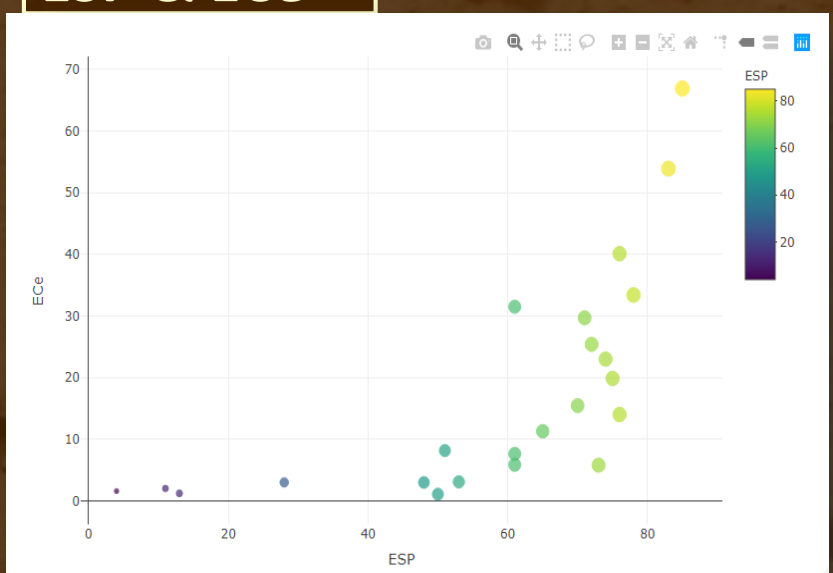
CATION DISTRIBUTION



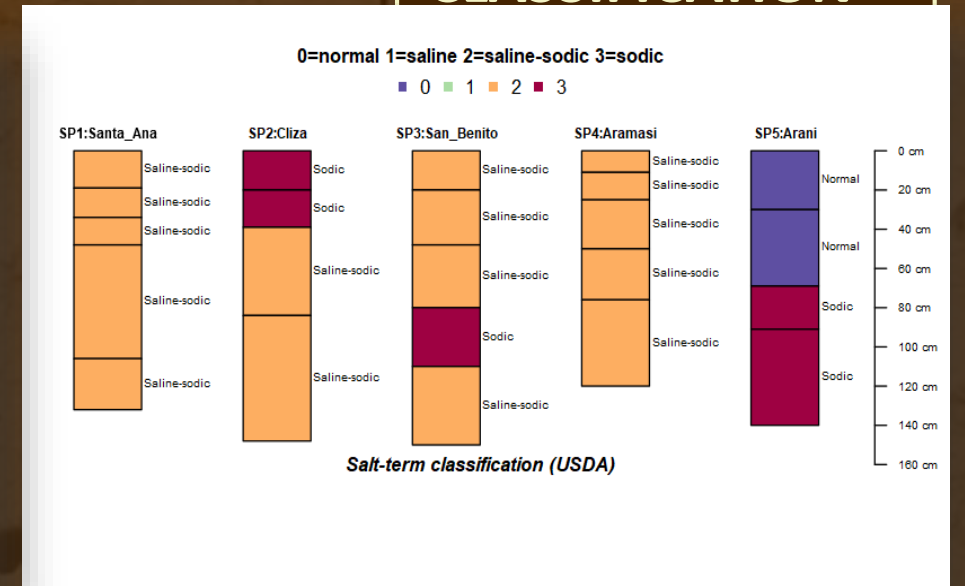
ANION DISTRIBUTION



ESP & ECe



CLASSIFICATION



SOME REMARKS & CONCLUSIONS

- ✓ Soils are mainly saline-sodic (saline-alkali) with an over-accumulation of Na⁺ and soluble salts, contributing to soil disaggregation, water-logging, transient salinity and plant toxicity
- ✓ The salt-term classification (USDA) should consider salt types and their ratios for a more suitable salt-affected soil characterization
- ✓ The regression models for SAR_e, EC_{1:5}, and ESP can be used to estimate ESP, EC_e and CROSS respectively
- ✓ Due to dominant salinity and sodicity, chemical/organic amendments and lixiviation strategies for saline-sodic soil reclamation might be assessed

ESP= Exchangeable Sodium Percentage, EC= Electrical Conductivity, SAR= Sodium Adsorption Ratio, CROSS= Cations Ratio of Soil structural Stability

