

E3

Mobile Environmental Sensing Platform for RIMAC Water Use

Athletic fields display differences in surface properties (color, reflectance) and water content due to different uses and irrigation schemes. To accurately sense the complex heterogeneity a vast array of static sensors or a mobile sensing platform is needed.

Goal: Develop a sensing system for manual mobile data sampling of the UCSD campus athletic fields to reduce water use.

Approach:

Useful preparation: MAE125B

- Build “tripod on wheels” with the following instrumentation: albedometer, GPS, IR thermometer, soil moisture sensor, datalogger, switch
- Obtain data daily after an irrigation day to observe drying of the soil in different locations
- Display data in geographic information systems (e.g. ArcGIS)
- Determine spatial differences in water content and suggest improvements in irrigation scheme.

Soil moisture measurements

Reading: http://maeresearch.ucsd.edu/kleissl/171B/UC_CropCoefficient_Turfp5-9.pdf,
http://www.cimis.water.ca.gov/cimis/pdf/CIMIS_urban_resource.pdf,
<http://www.cimis.water.ca.gov/cimis/infoStnSensorSpec.jsp>

