

Sonora Field Campaign 2008

A person is silhouetted against a bright sunset sky, climbing a tall, thin tower. The sun is low on the horizon, casting a golden glow over the scene. The background shows a range of mountains and some trees in the foreground.

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Overview

- Isotopic Partitioning of Evapotranspiration
- Daily Soil Moisture and Temperature
- Soil Pit Analysis
- Installation of Regional Rain Stations
- Eddy Covariance Tower Installation
- Cultural Experience

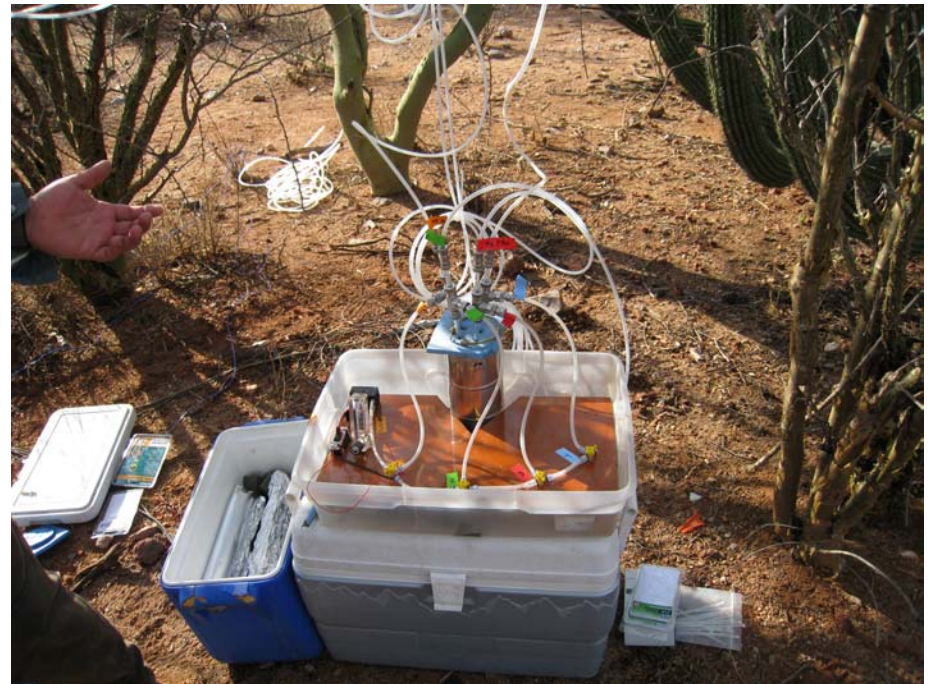
Isotopic Partitioning and Scintillometry

Isotopic Partitioning of Evapotranspiration

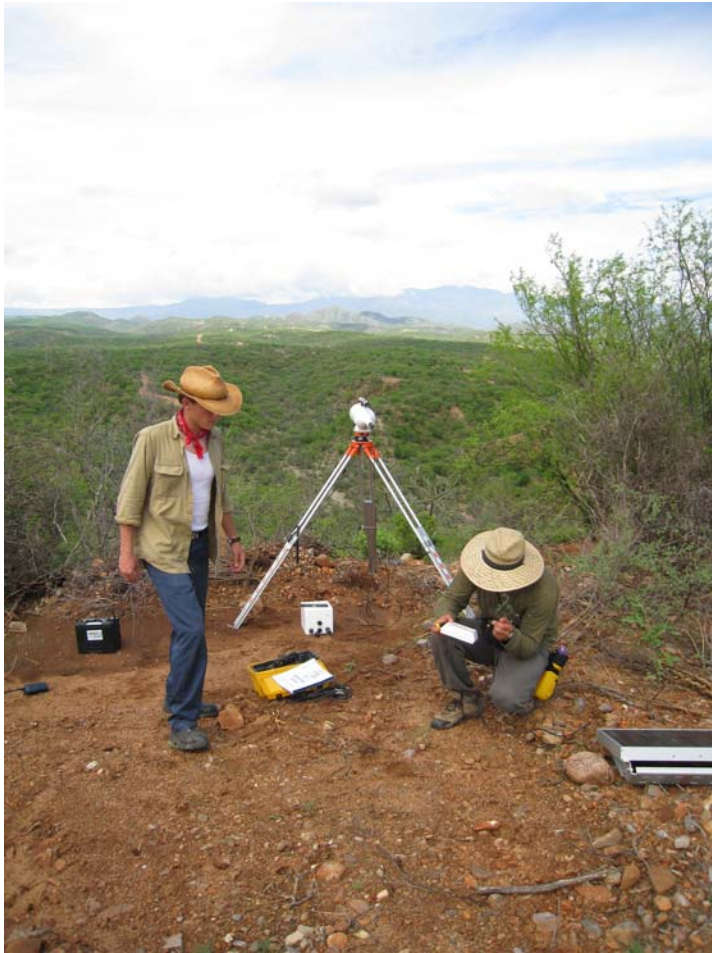


- Purpose: The purpose of this project was to determine the amount of water vapor that was coming from soil evaporation and the amount of water vapor that was being transpired by plants.

- **Location:** Rayon Tower in Sonora, Mexico
- **Setup**
- **What was collected:**
 - vapor samples at 4 heights (9m, 4.5m, 2.3m, and 0.1m),
 - soils samples
 - stem samples and leaf samples (for four tree species: Palo Verde, Ocotillo, Mesquite, and Acacia), and leaf samples
- **Duration:** Two days a week for three weeks



Scintillometry



- Purpose: The purpose of this project was to measure a single sensible heat flux measurement for an area on the scale of 1-3 km for comparison to calculated fluxes using satellite imagery.

- **Location:** Near Rayon Tower in Sonora, Mexico
- **Setup**
 - Two Scintec scintillometers (1 receiver with CPU and 1 transmitter per transect)
 - 3 transects setup overlooking different vegetation types
- **What was measured:** sensible heat flux
- **Duration:** Two weeks of campaign



Soil Moisture and Temperature

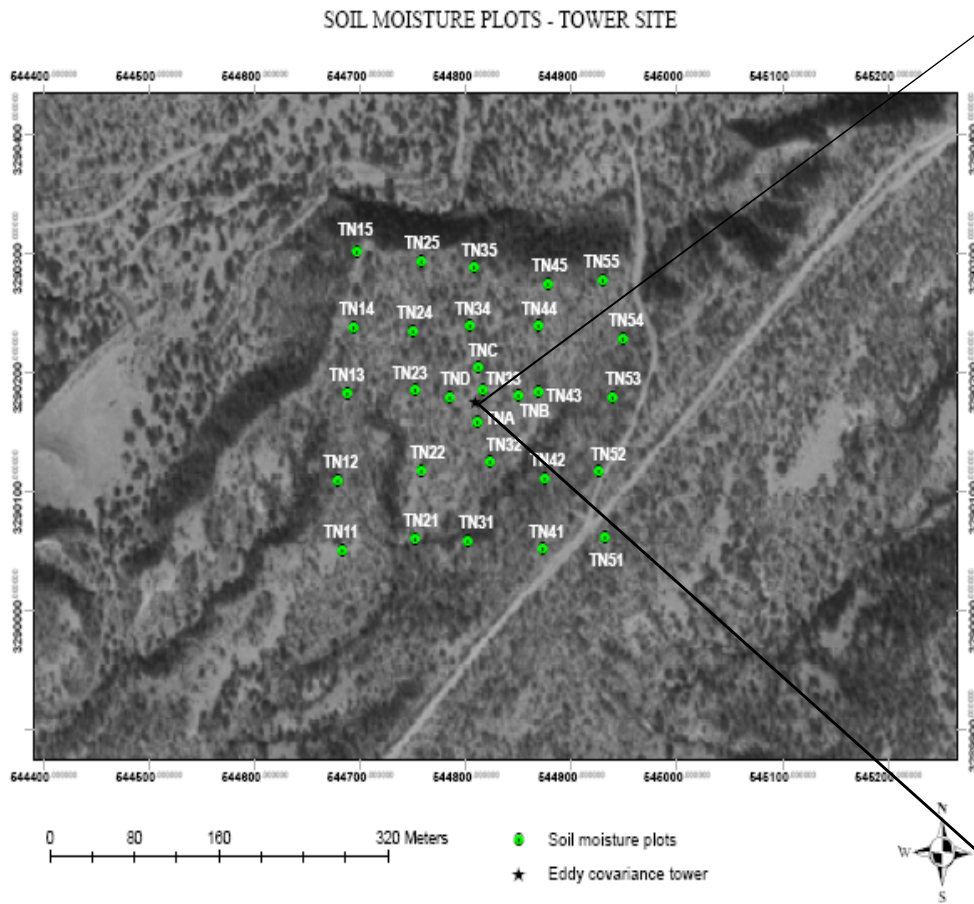
Rayon Tower Location

Latitude: 29.7410044 N

Longitude: 110.5366073 W

Measurements Days: 15

Date: July 3rd-July 18th / 2008





1m

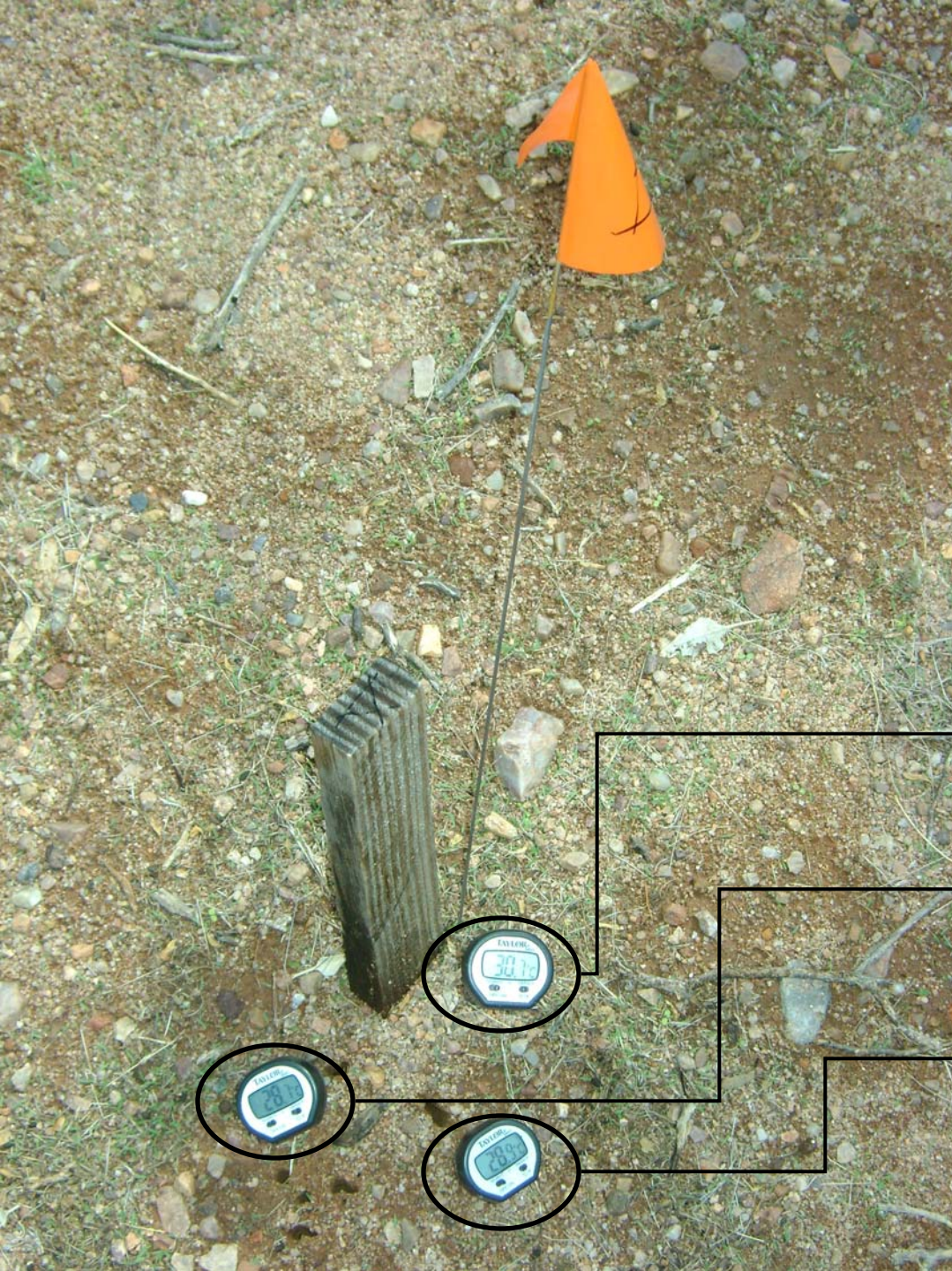
1m



CANAD



SOIL MOISTURE PROBE
(THETA PROBE)



SOIL THERMOMETER

Three depths

1 cm

5 cm

10 cm



















Soil Pits

Soil Pit Analysis

- 5 Soil Pits in Sierra Los Locos
- 4 Soil Pits near Rayon Tower



Soil Pit 20

- On top of terrace in Sierra Los Locos
- 3 Horizons
- Depth of 65 cm



Soil Pit 22

- Hill slope on terrace in SLL
- 5 Horizons
- Depth of 100 cm



Soil Pit 26

- Hillslope of dissected alluvial fan
- Depth of 2 meters



Cultural Experience



Language Sharing



The Tower Crew



Moonshine



San Carlos



On the Streets of Rayon



The Monsoon is Here



A Hard Day's Work

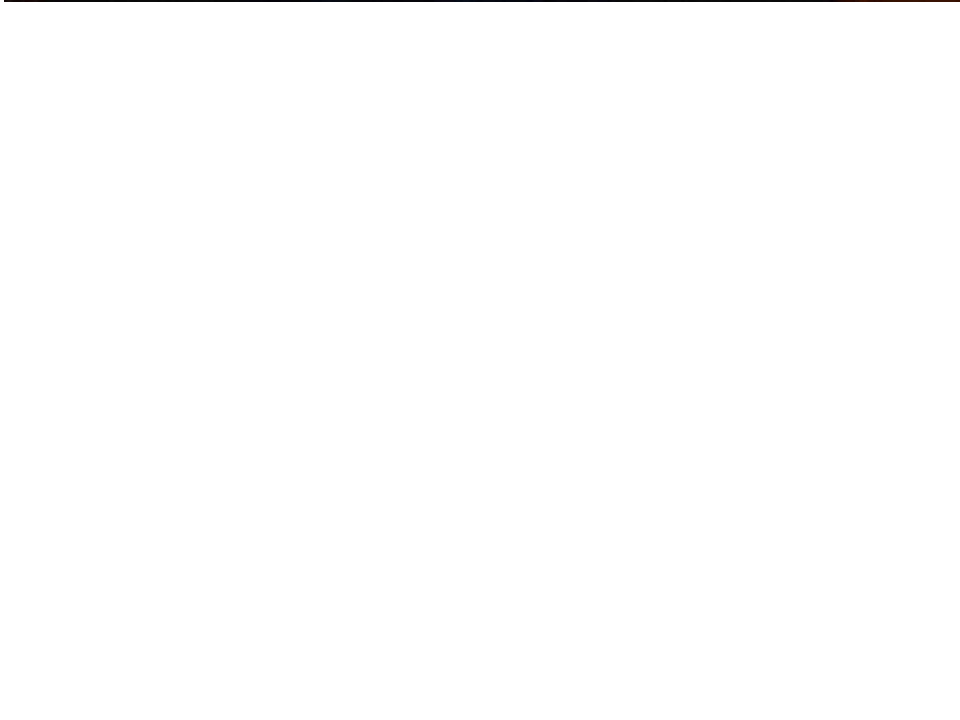


Rain Gauge Installation





























ANOTHER DAY IN PARADISE!







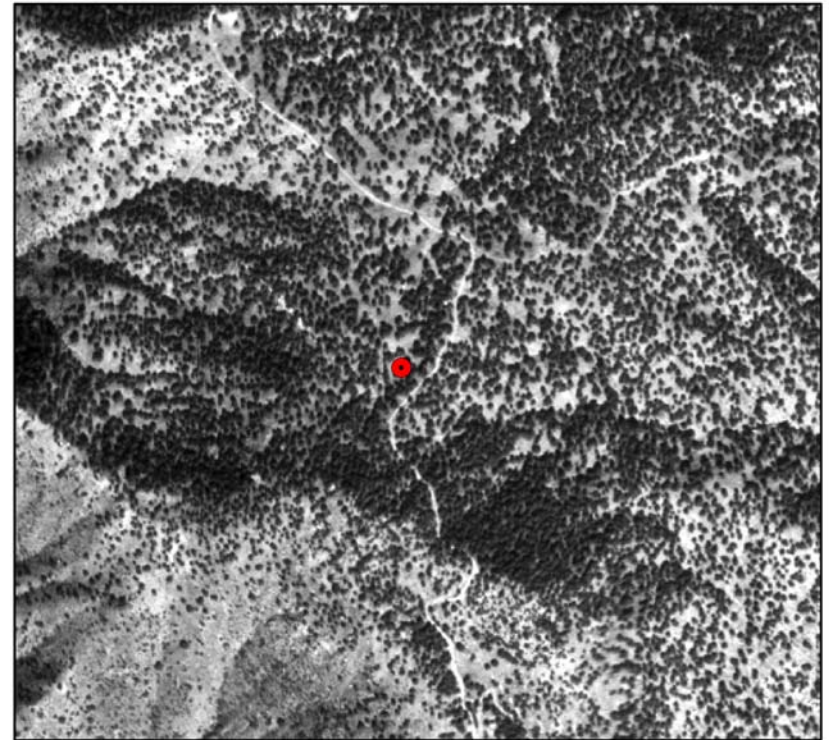
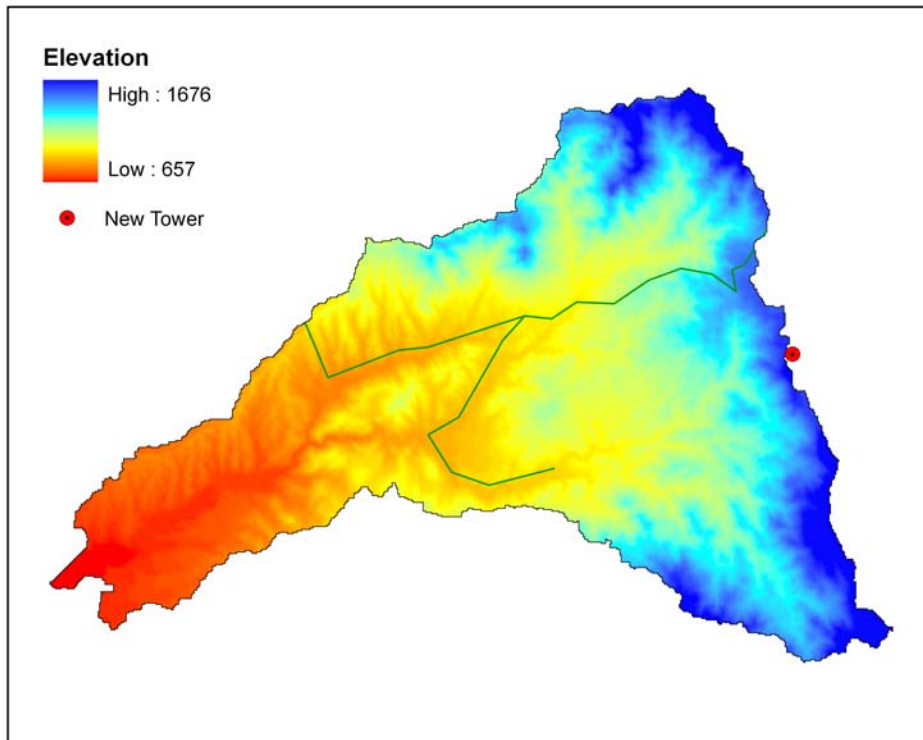




TOWER Installation

Tower Location

- Sierra Los Locos
- Oak savanna ecosystem
- Elevation ~ 1300 m



Criteria of site selection

- Homogeneous vegetation cover
- Dominant wind direction over region
- Tower height 12 m



Set up of new tower

- Base installation
- Concrete base and anchors



Set up of new tower

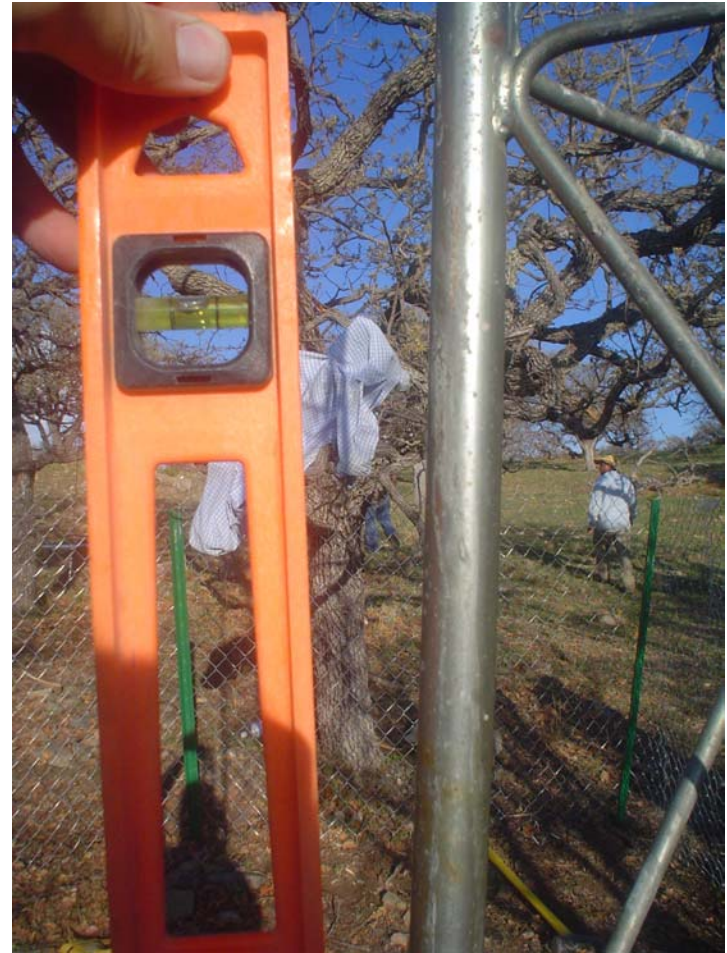


Set up of new tower



Set up of new tower

.....Nobody's perfect



Soil heat flux plates

- 2 cm below the soil surface
- Different location



Soil moisture sensors

- Different depths: 2, 10, 15 and 30 cm.
- 2 cm depth for soil heat flux correction



Sonic anemometer

- Installed 9 m high



Net radiometer and pyranometer



Relative humidity and air temperature sensor



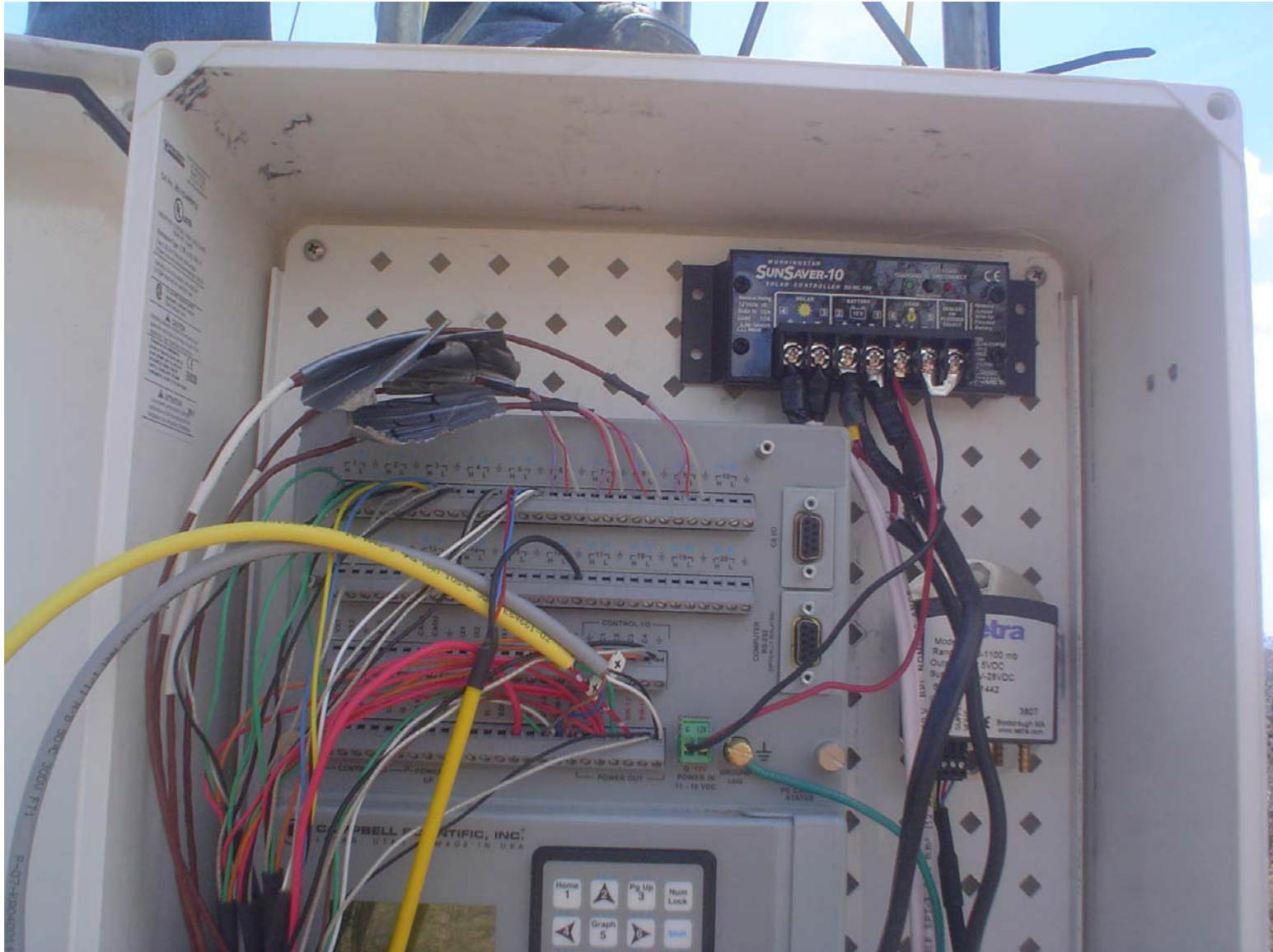
Electric power

- Two 65 watts solar panels

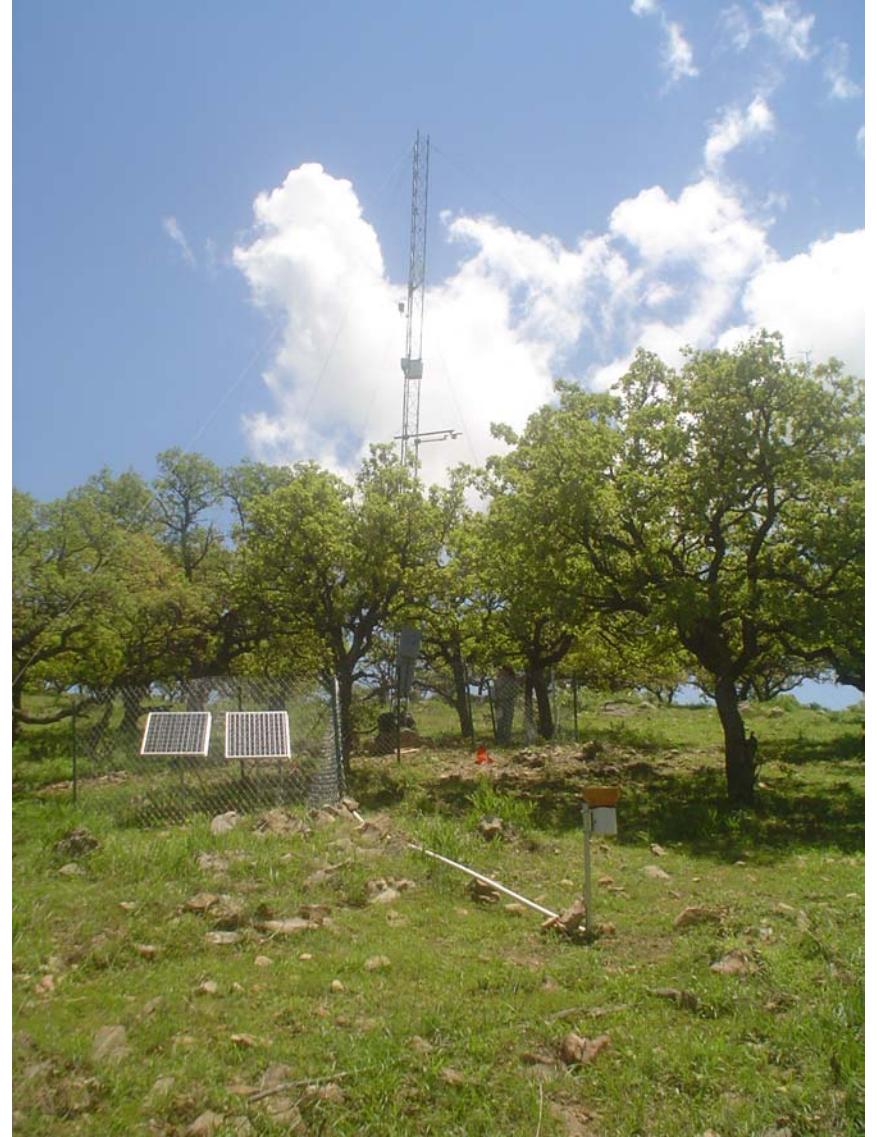


Datalogger

- Model CR5000



Los Locos tower



- 4 days to complete the installation
- 2 days in “Los Cuates” ranch
- 1 smashed finger
- 1 injured back
- 1 Person who quit the campaign
- 1 serious dehydrated person
- 1 dislocated shoulder



- 12 Ramon noodles soups
- 12 Tuna cans
- 12 salmon cans



- And one close encounter of the third kind.....



