

Repeat Photography for Phenological Monitoring

(M. Crimmins & T. Crimmins)



Onset Weather Station

Tipping Bucket Rain Gauge

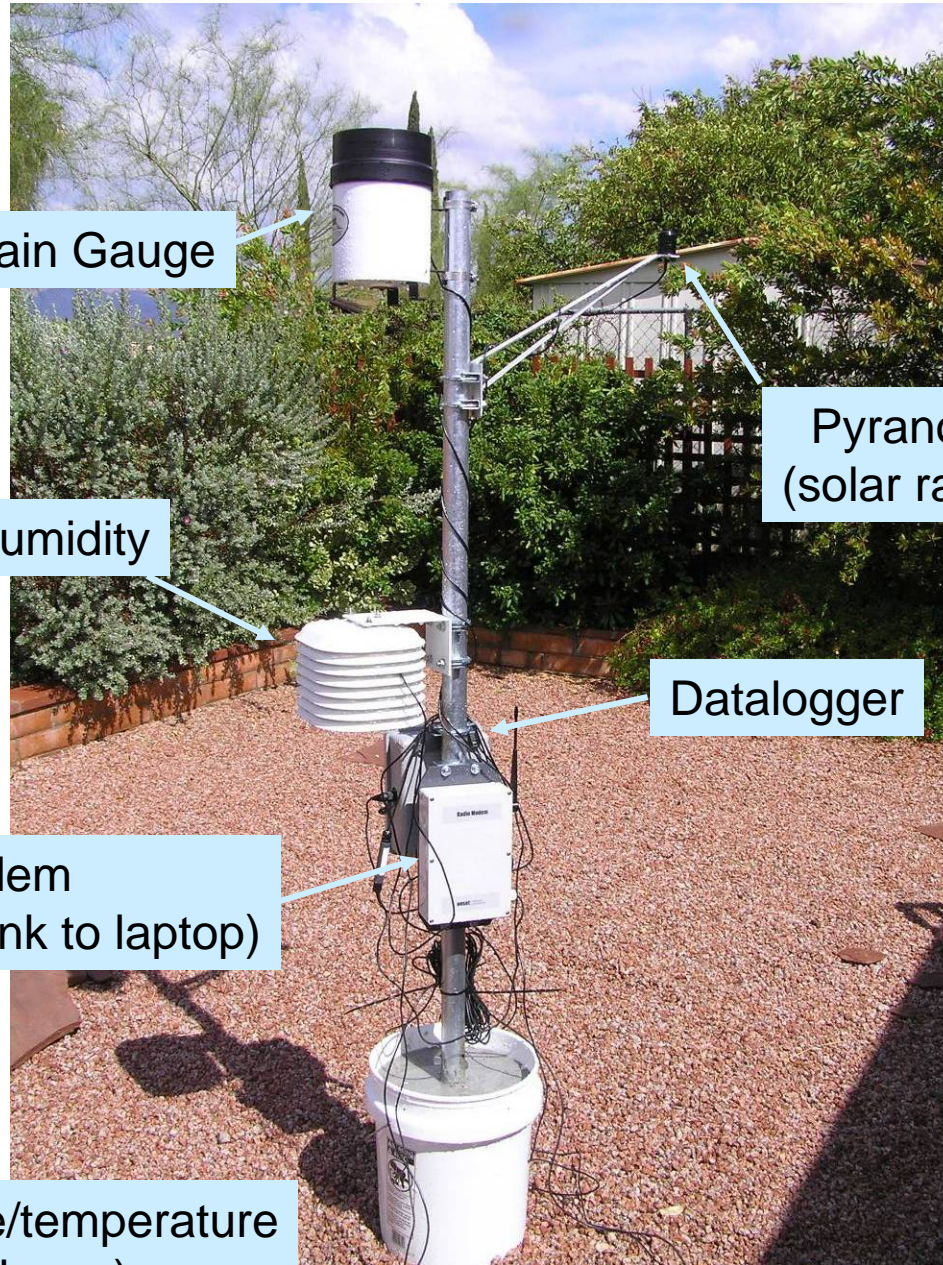
Temperature/Relative Humidity

Radio modem
(wireless link to laptop)

Soil moisture/temperature
(not shown)

Pyranometer
(solar radiation)

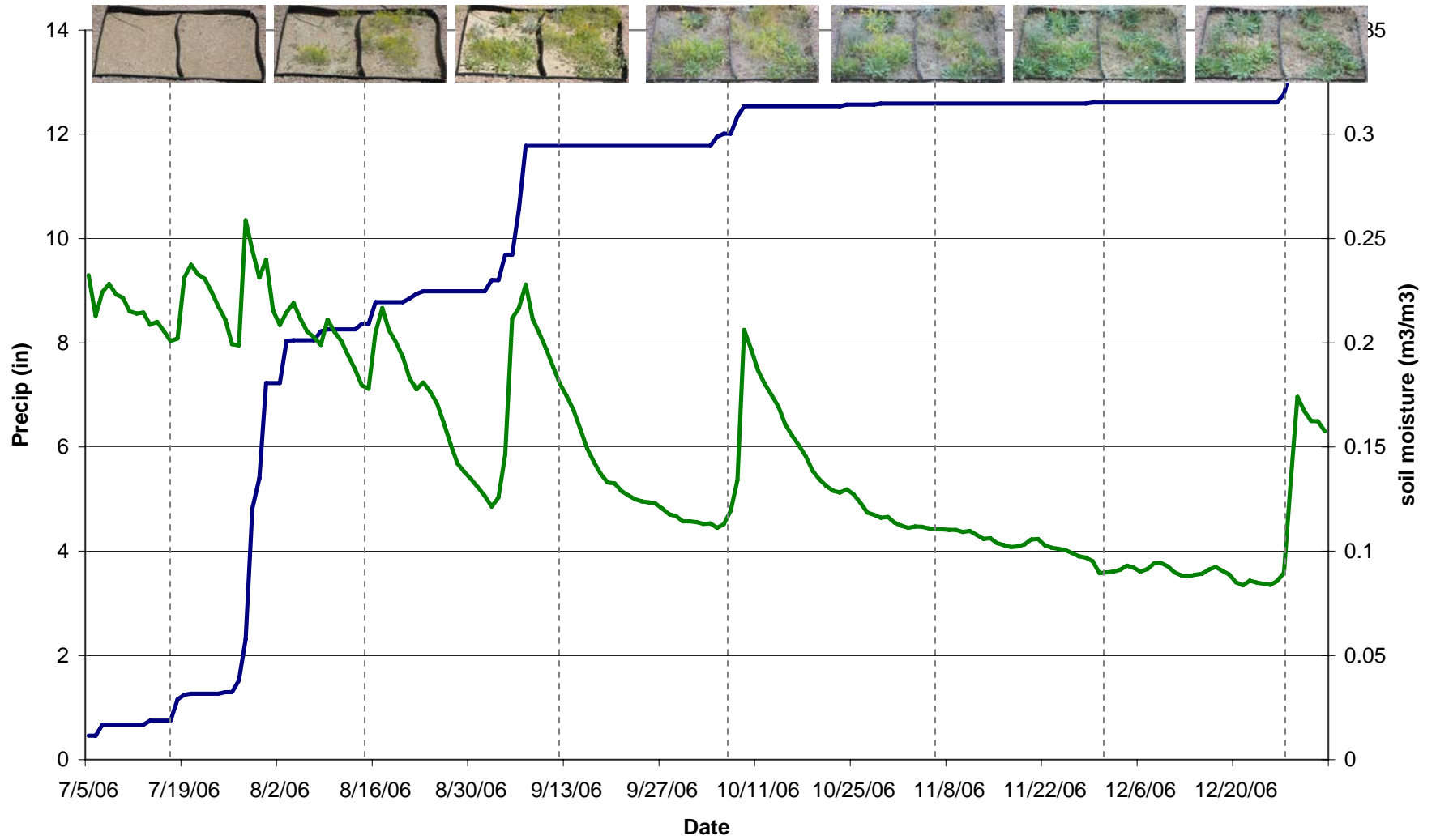
Datalogger



Weather Station Options

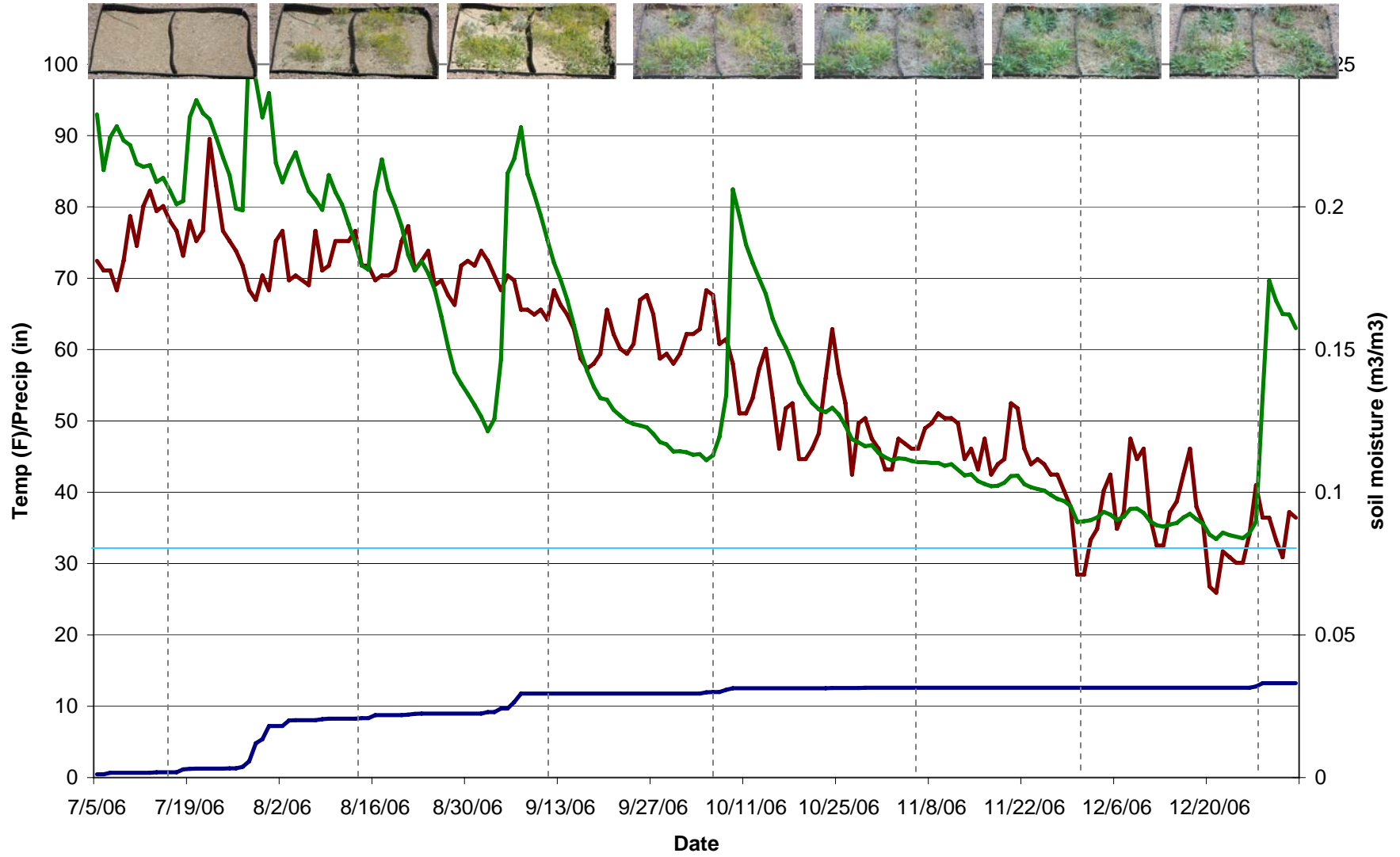
- Onset Weather Station
(<http://www.1800loggers.com/solutions/products/weatherstation/index.php5>) ~\$2500
- Campbell Weather Stations
(<http://www.campbellsci.com/weather-eto-stations>) \$3000-\$7000
- Davis Weather Stations
(<http://www.davisnet.com/weather/products/stations.asp>) \$500-\$1000

Pheno Plot Climate Data



— Cumulative Precip (in.) — Avg. Soil Moisture (m³/m³)

Pheno Plot Climate Data



— Cumulative Precip (in.) — Min Temp — Avg. Soil Moisture (m3/m3)



Histogram & Camera Information



No EXIF data available.



Make a caption!





Histogram & Camera Information



No EXIF data available.



Make a caption!





Histogram & Camera Information

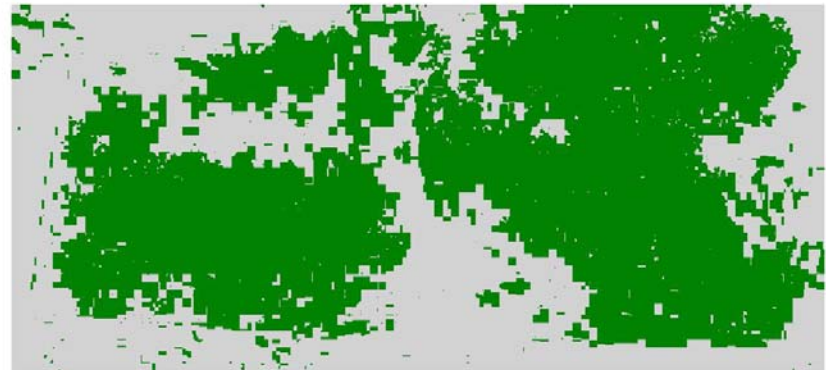


No EXIF data available.

Make a caption!

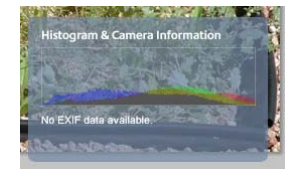
subset > plot2006_10_19 171335.jpg 1/7/2007 4:01:02 PM 2670x1190 pixels 298KB (50 of 51)

Image Classification - Offset Excessive Greenness



07/06/06

09/13/06



$$\text{OEG} = (b_{\text{avg}} - g_{\text{avg}}) + (r_{\text{avg}} - g_{\text{avg}})$$

Climate vs. Photo Metrics

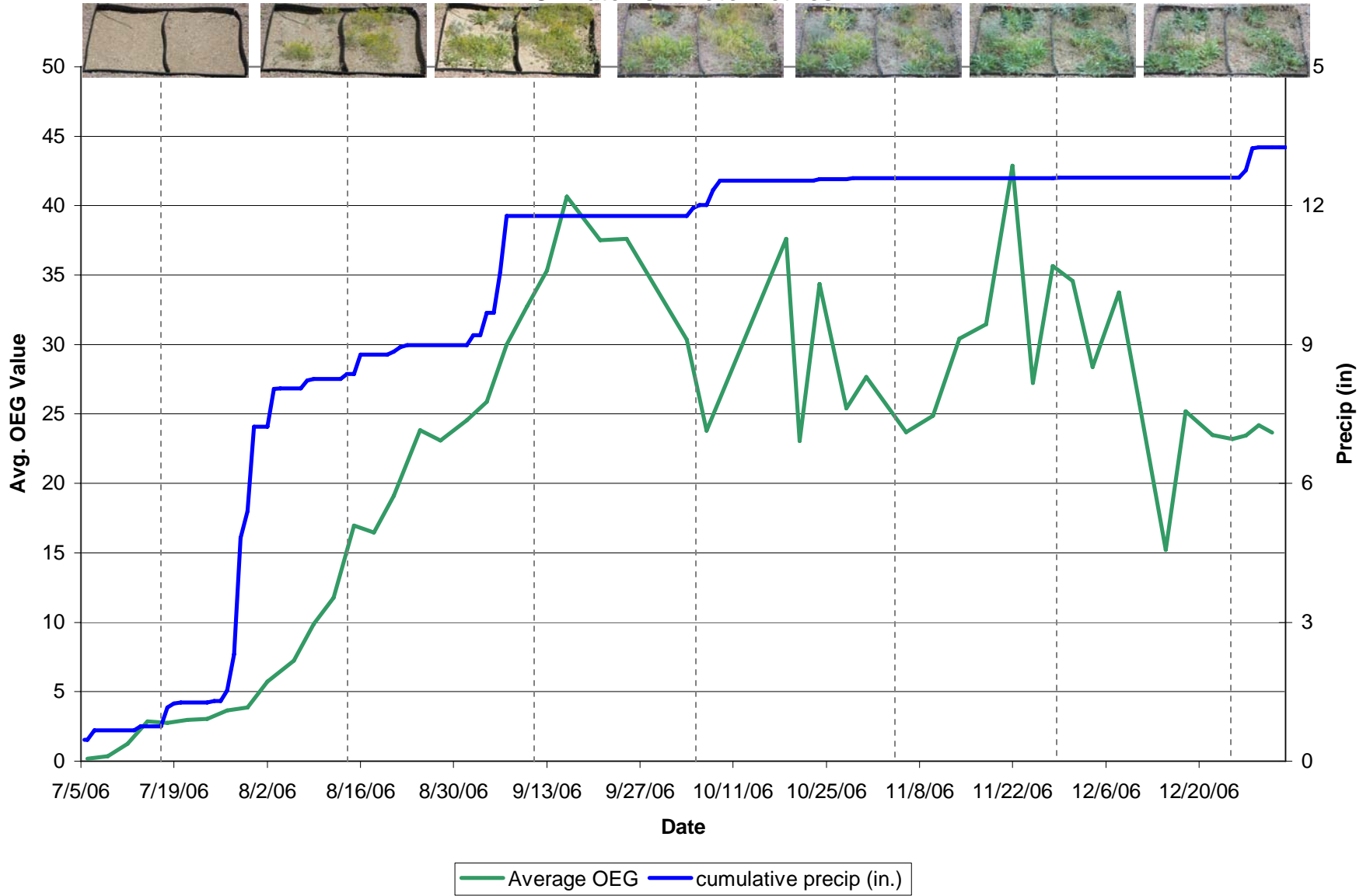
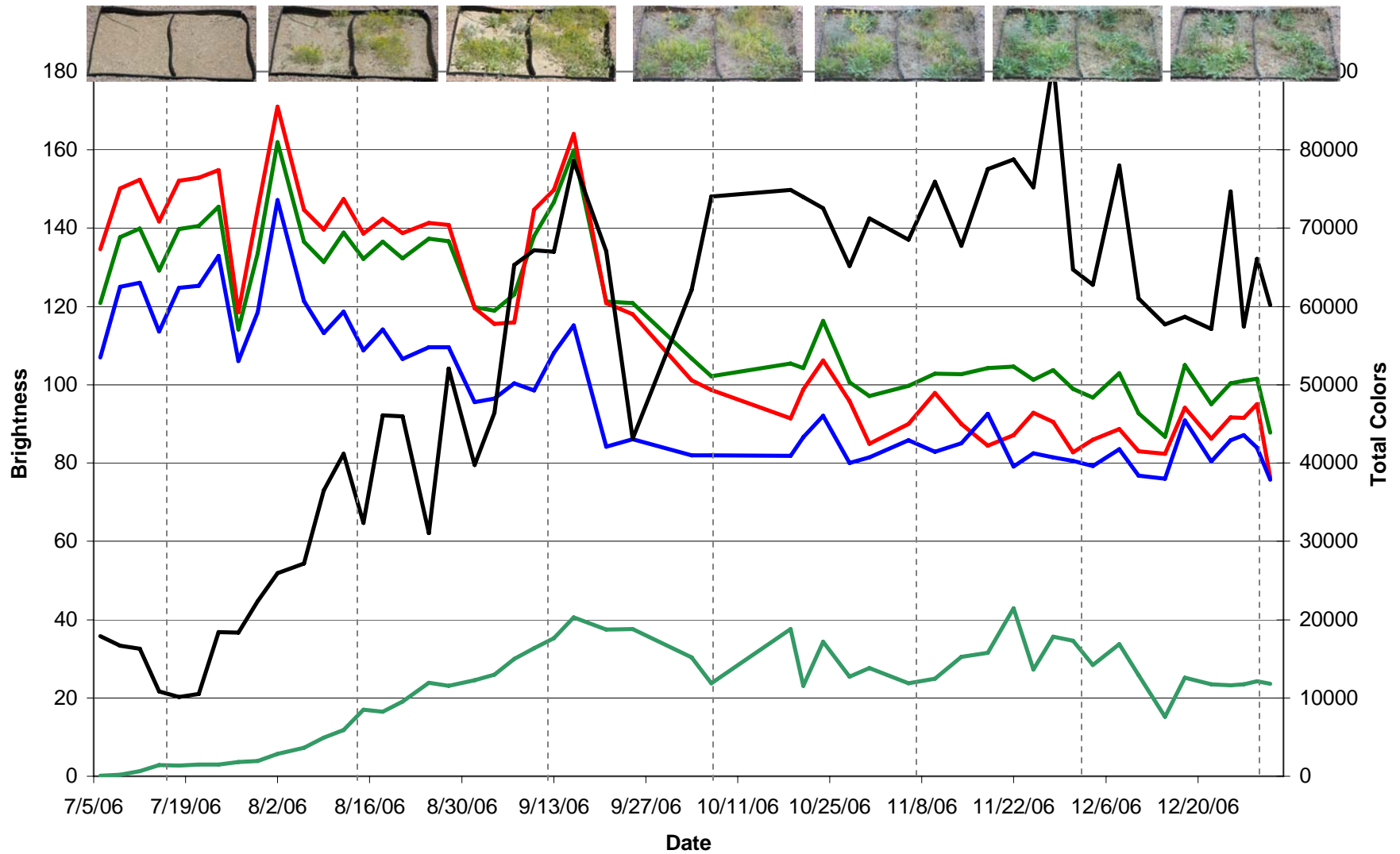


Photo Metrics



Avg. Green Avg. Red Avg. Blue OEG Total Colors