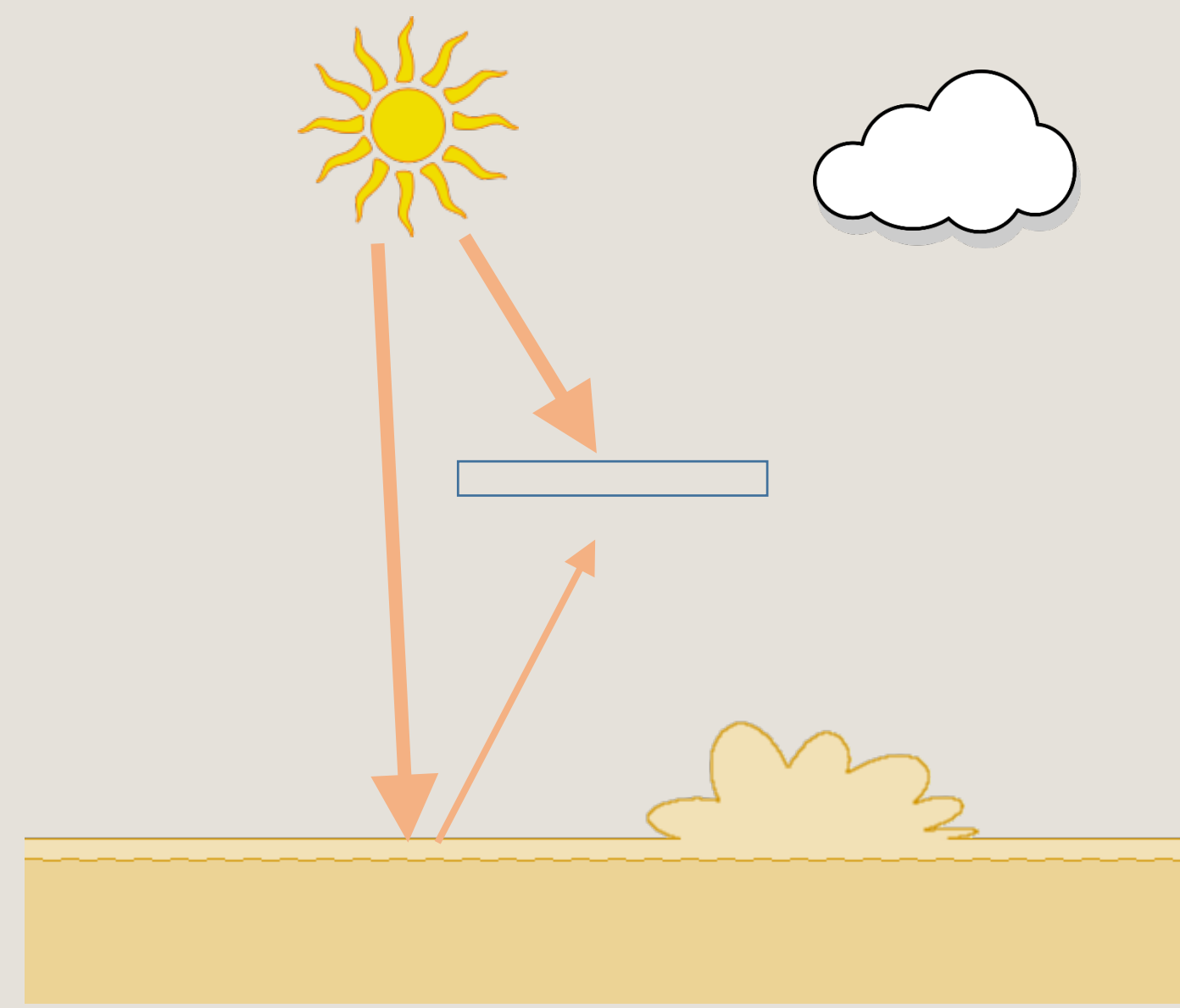


# Albedo Measurements with Reference Cells vs. Pyranometers



## Experiment

- Measuring albedo at pre-production met station site in Texas
- Two setups: one with pyranometers, one with c-Si reference cells
- Data collection summer 2019
- Ground cover: dry vegetation

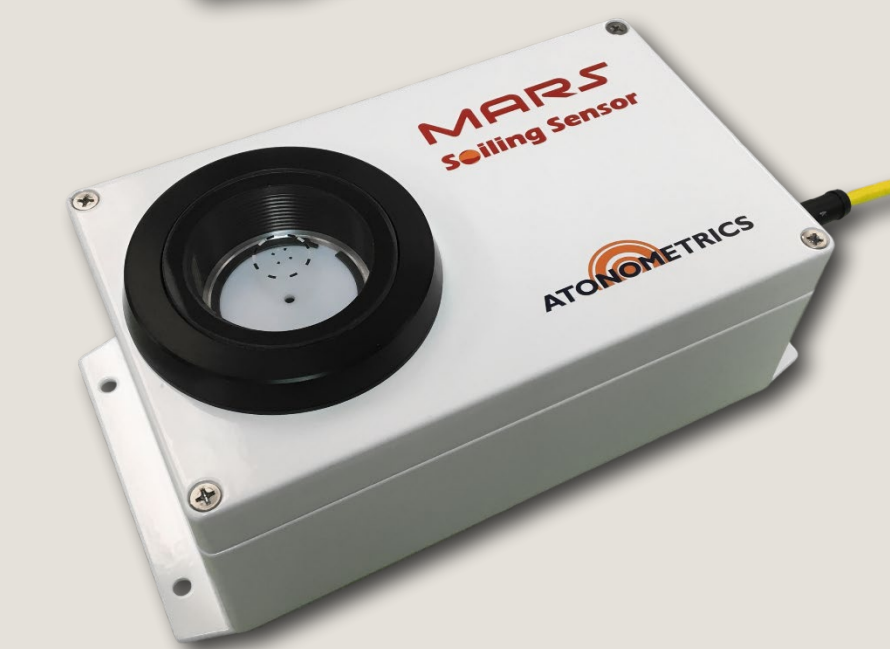


### Pyranometer



- Broadband response
- Cleaned weekly

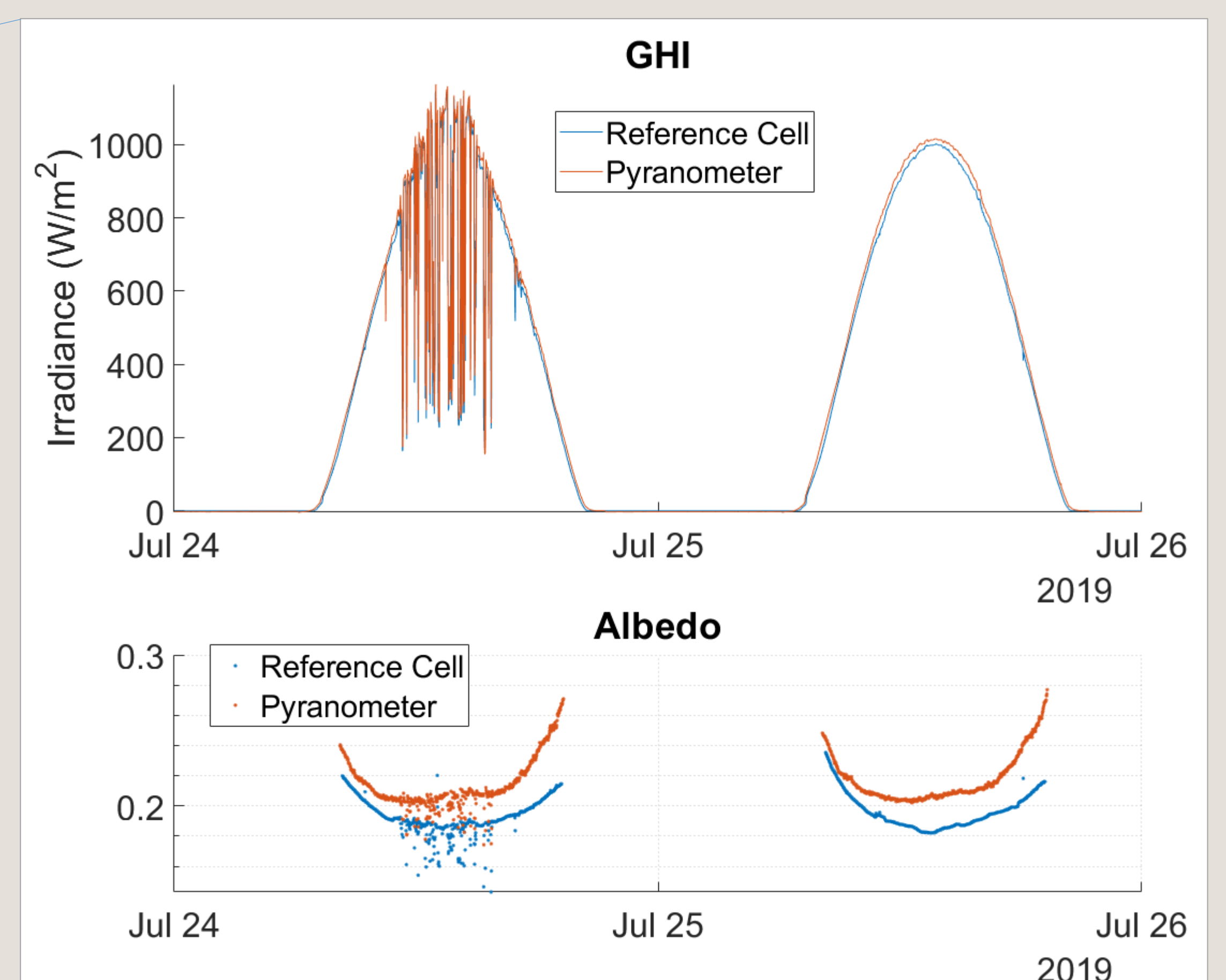
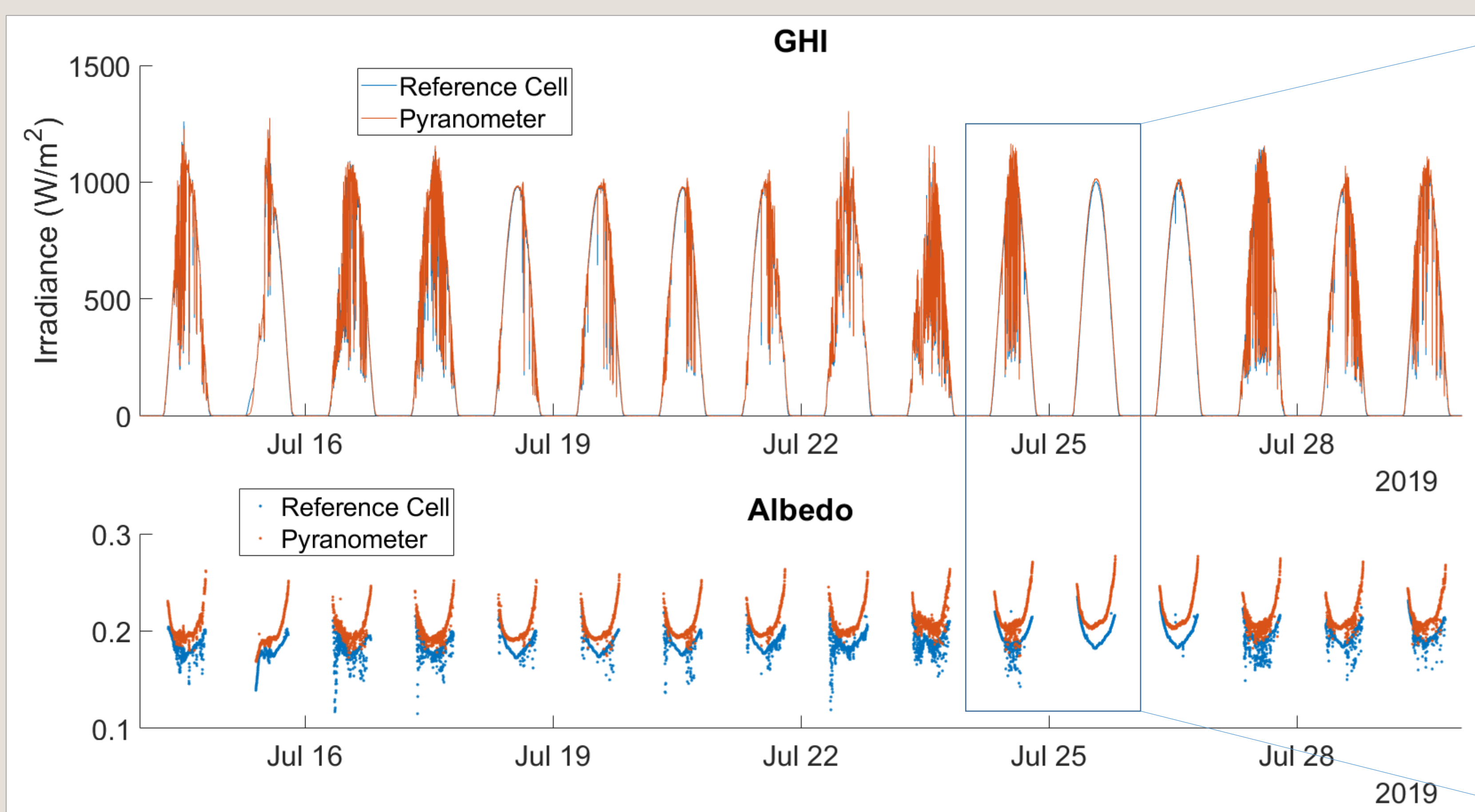
### Reference Cell



- Spectrally matched
- Soiling monitored and corrected with Mars™

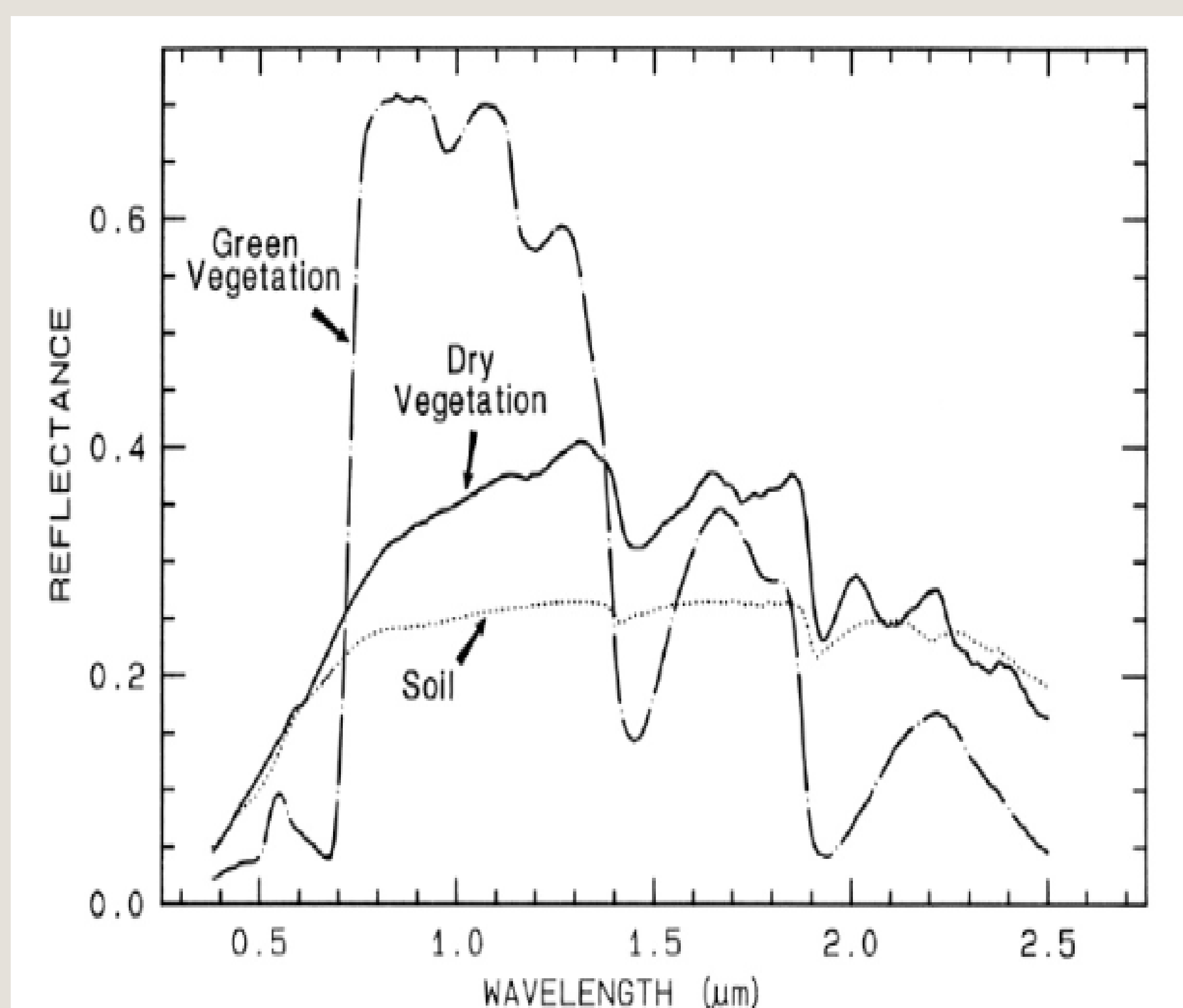
## Results

- Pyranometer albedo consistently higher than reference cell albedo, ~0.02 absolute (~10% relative)



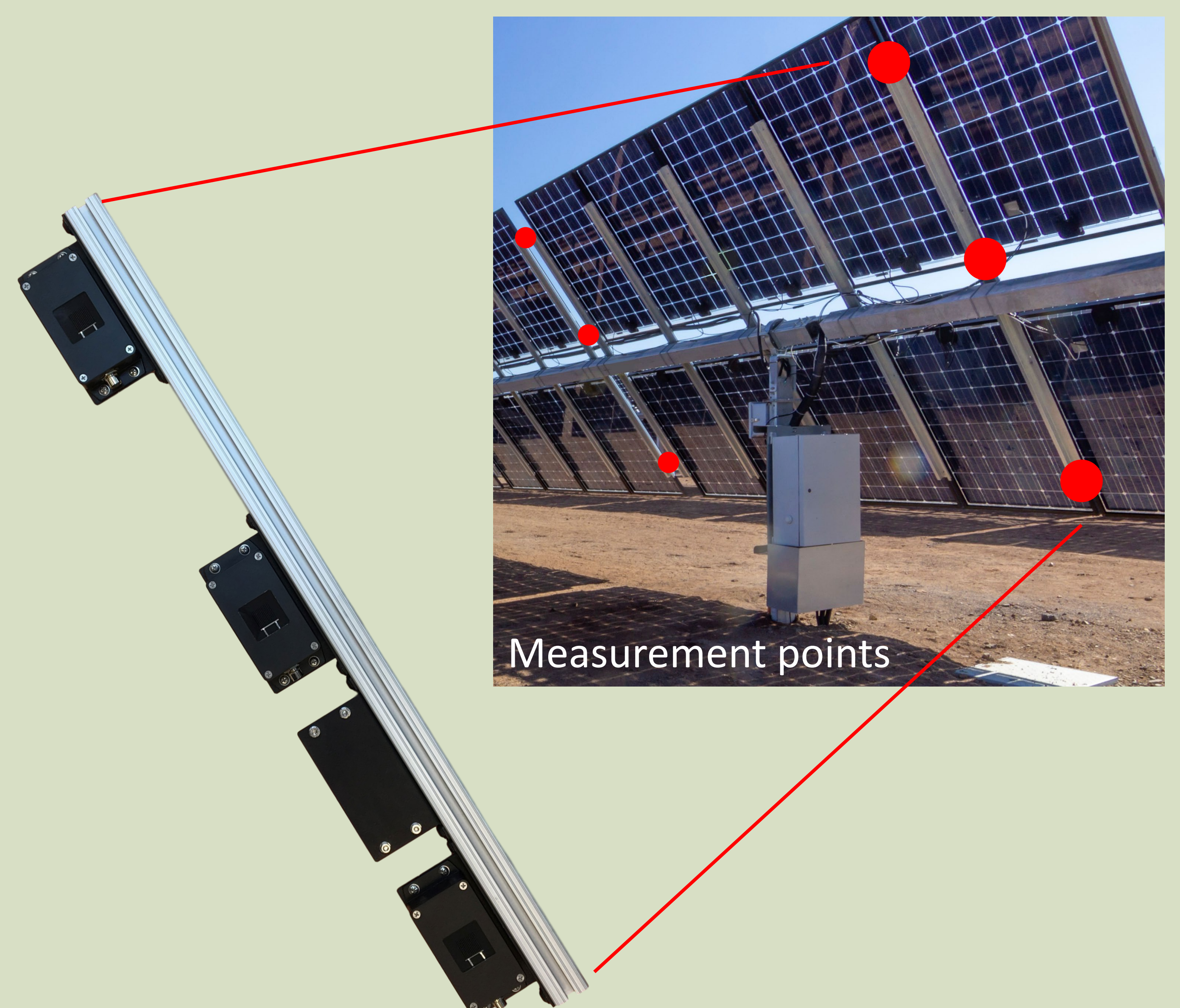
## Albedo Spectral Dependence

Does spectral dependence cause pyranometer albedo mismatch with actual bifacial array performance?



From Clark, *Spectroscopy of Rocks and Minerals*, Fig. 1.18, 1999.

## Rearside Irradiance Measurement on Bifacial Arrays



Networked front-back reference cell system for multi-point measurement of front & rear-side irradiance