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# GSIP Verification and Validation : Preliminary Results

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2015 PV Solar Resource Workshop

February 27, 2015

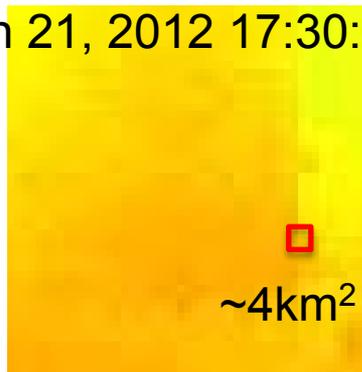


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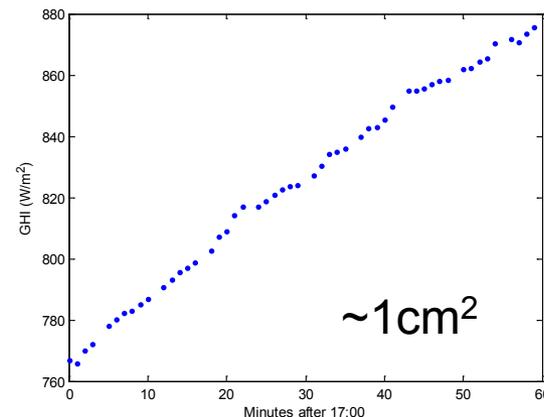
# Questions to answer

- What confidence can be placed in GSIP?
  - Compare with ground measurements
- What improvements can be made?
  - Look for systematic differences, i.e., seasonal, geographical, and/or geometrical
- However, we are comparing a point-in-time spatial average (GSIP) to a time series at a point (ground measurement)

March 21, 2012 17:30:00 GMT



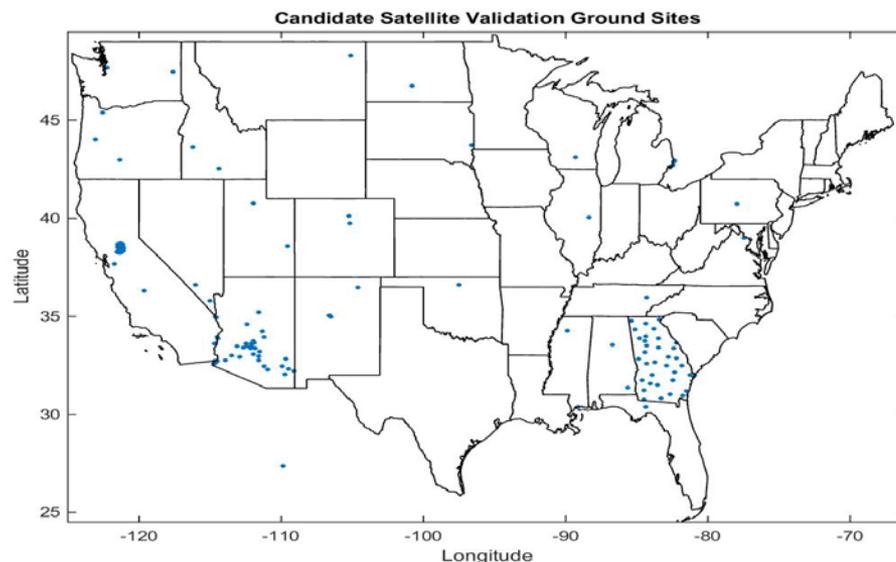
VS



# Quantity and quality data

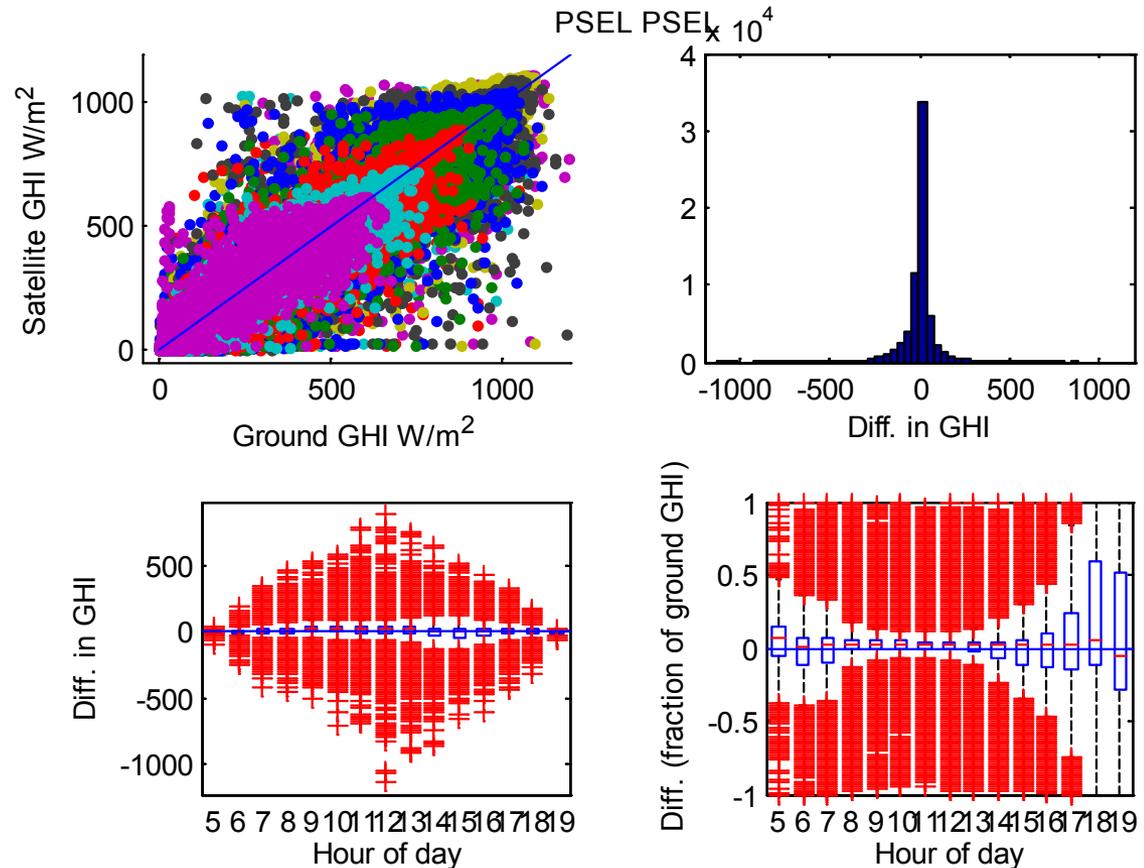
- Compare GSIP results with measured ground data
  - Avoid data used in GSIP development
  - Quantity and quality data approach
    - Many lower quality GHI instruments, some not maintained
    - Quality and self-consistency filters
  - Data at different spatial and time scales

- 1 min data at ~15 locations across the US
- 60 and 15 min data for AZ and GA networks
- 1 min data for SMUD network (5km spacing)
- Time averaging of ground data

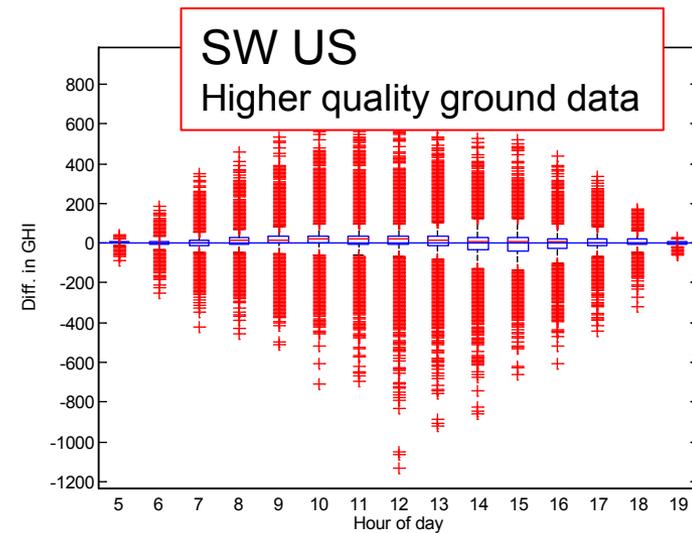
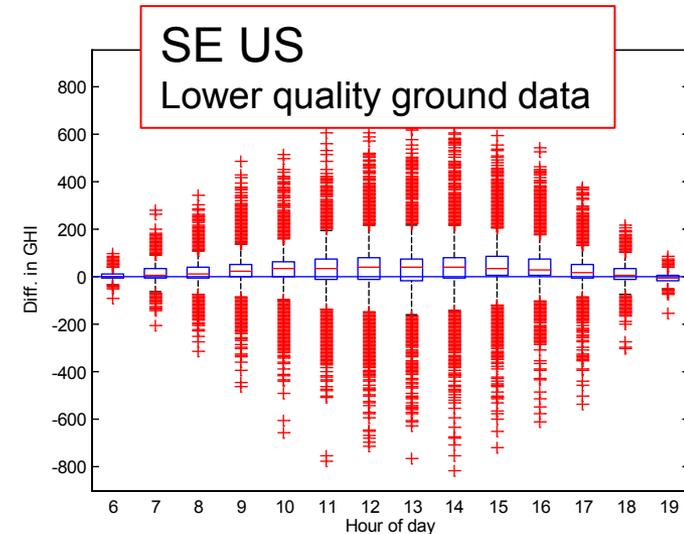
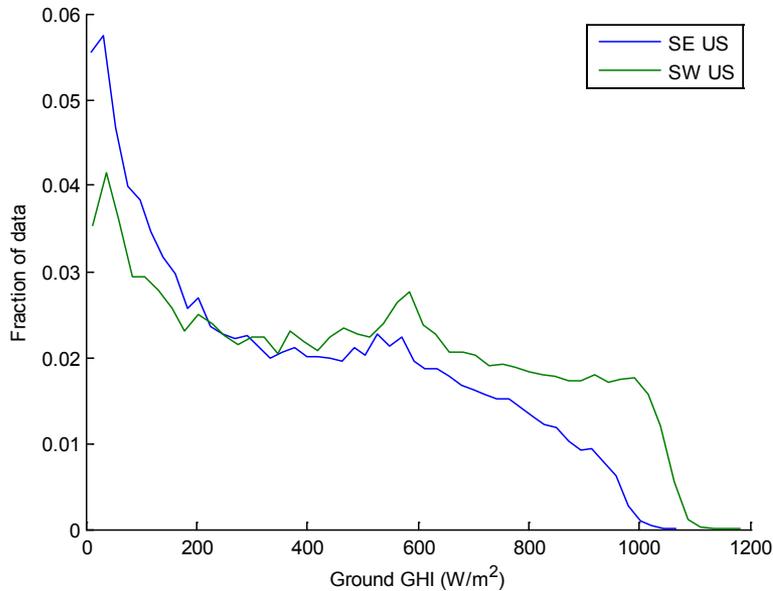


# GSIP generally compares well

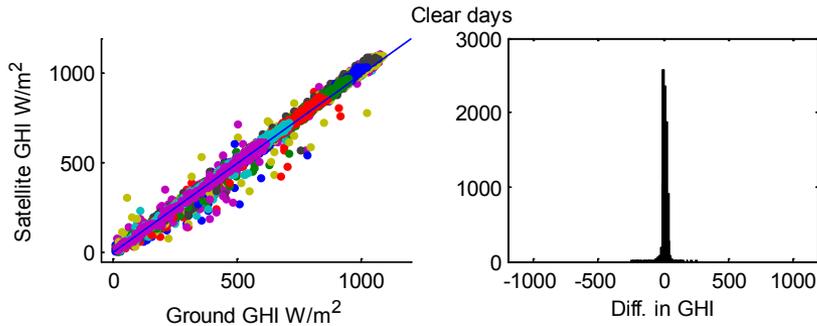
- 1 min data at SNL (05-12) reduced to 30 minute averages
- GSIP generally unbiased at this location
- Disparity between spatial and temporal scales causes most of the scatter



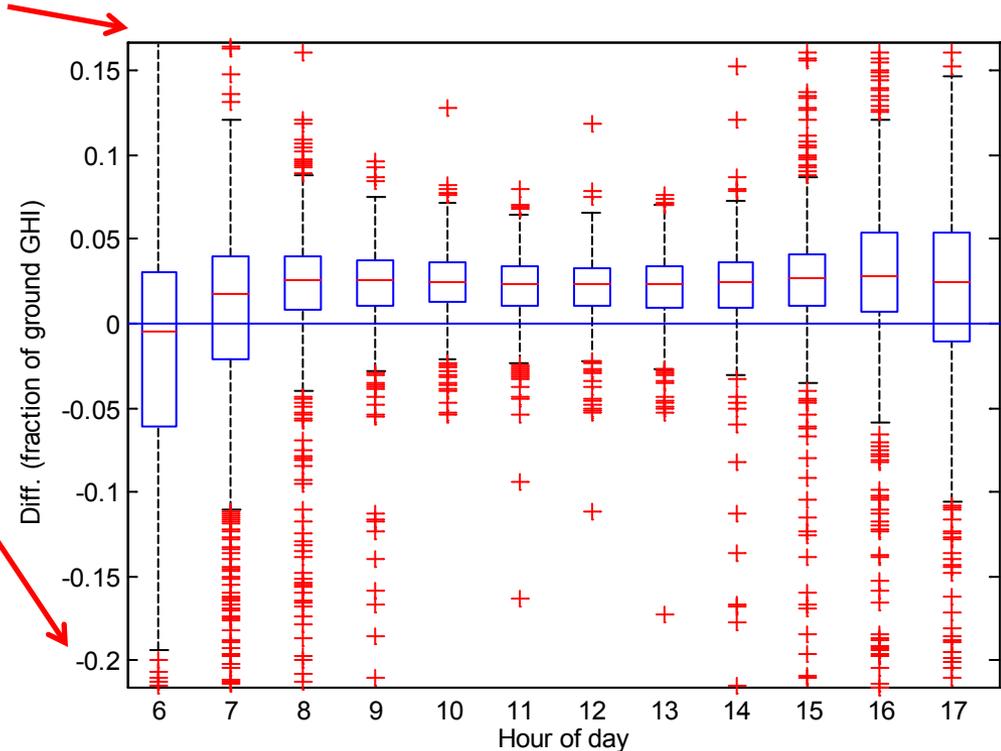
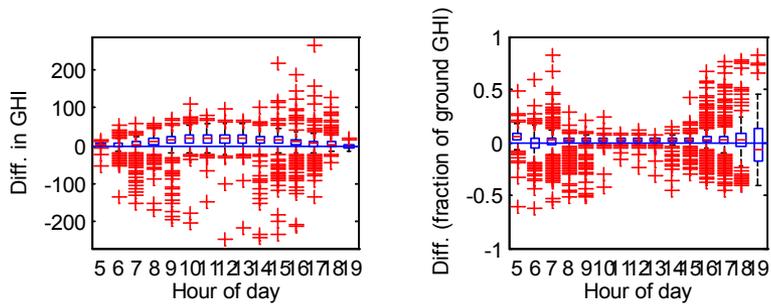
# GSIP performance is similar in different climates, different quality of ground data



# Clear sky days show evidence of bias



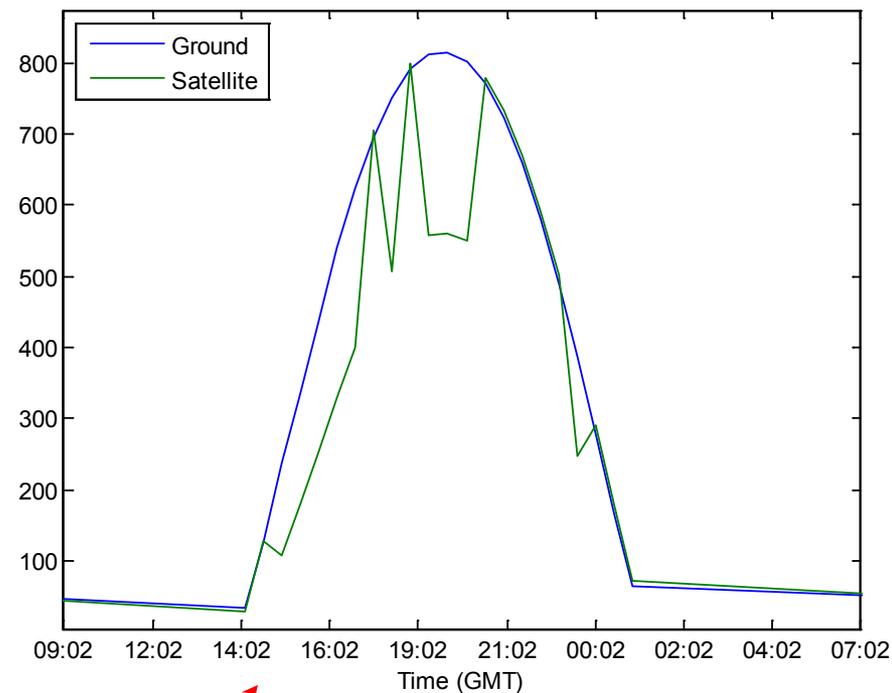
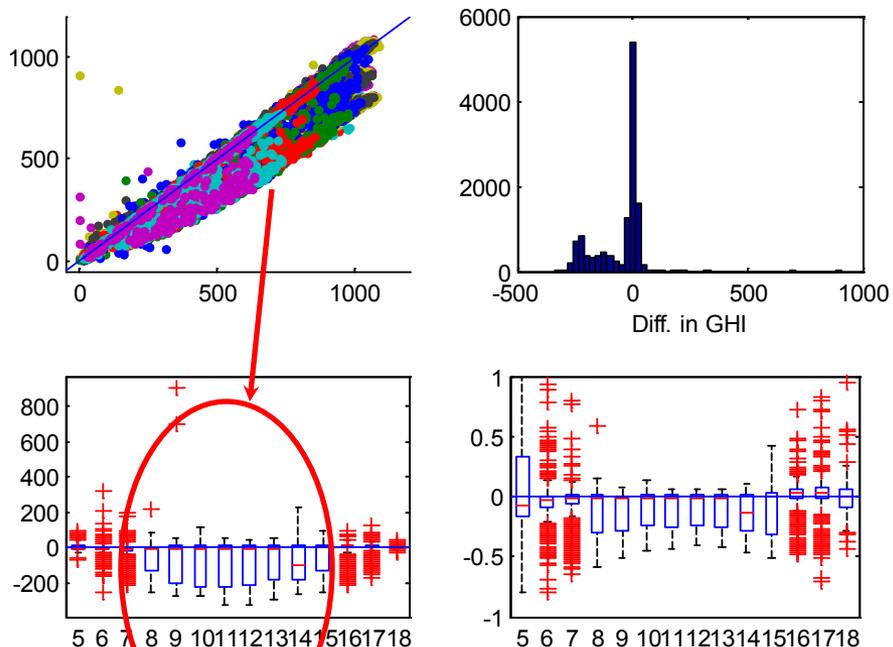
- Slight trend to overestimate GHI for clear skies
- Similar at many other locations



# Clear sky for ground isn't always clear in GSIP

But perhaps an unavoidable result of comparing spatial average to time average

Clear days



Ground > GSIP for most clear hours