# **Timeseries soiling with historical weather recommended.** TMY annual energy differences negligible between daily vs. monthly soiling loss, but slight bias observed with historical timeseries, and long-term average monthly suppresses interannual variability.

- Comparison of monthly vs. daily soiling loss with TMY doesn't tell the full story. **TMY and monthly soiling suppress bias and variability.**
- Annual solar energy usually calculated with monthly soiling loss combined with TMY weather. Figure 1 shows negligible differences between monthly vs. daily soiling loss. Comparison of annual energy calculated with daily vs. monthly energy at 1000 TMY3 stations also negligible.
- However, Figure 3 shows **bias in annual energy calculated between monthly vs. daily timeseries (TS) soiling and historical weather.**
- Figure 4 shows monthly TS soiling profiles deviate from the long-term average (LTA) monthly soiling profile. Figure 3, shows **interannual soiling variability can be significant compared to solar resource variability.**
- **Therefore, TS soiling with historical weather recommended to accurately calculate both variability and median annual energy.**

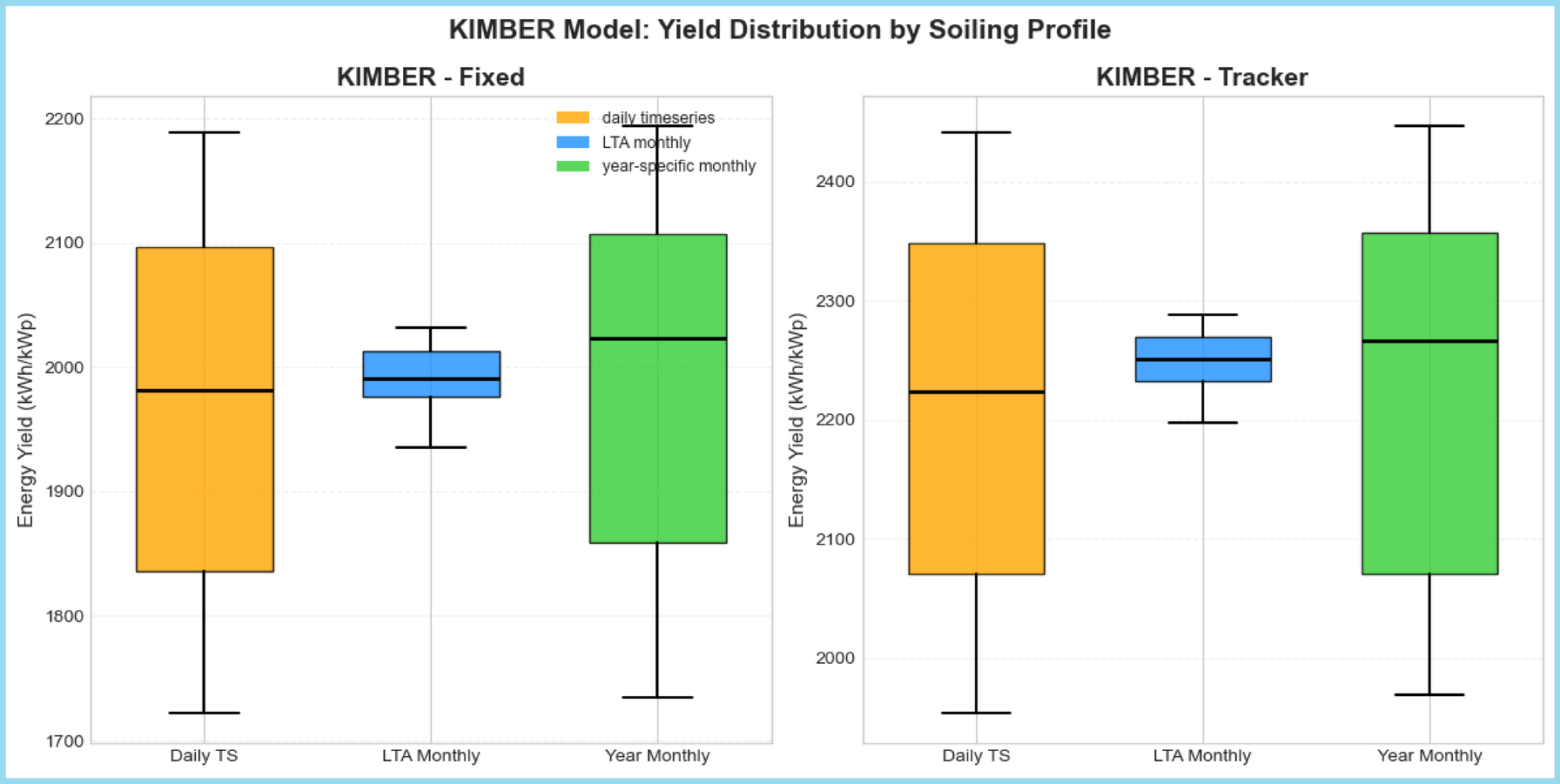


Figure 3: Three-way comparison of energy yield distributions with historical weather from 2008 to 2025 in California, calculated between daily vs. monthly timeseries (TS) vs. long-term average (LTA) monthly soiling profiles. There is a bias between daily and monthly TS soiling, and LTA monthly soiling suppresses interannual variability.

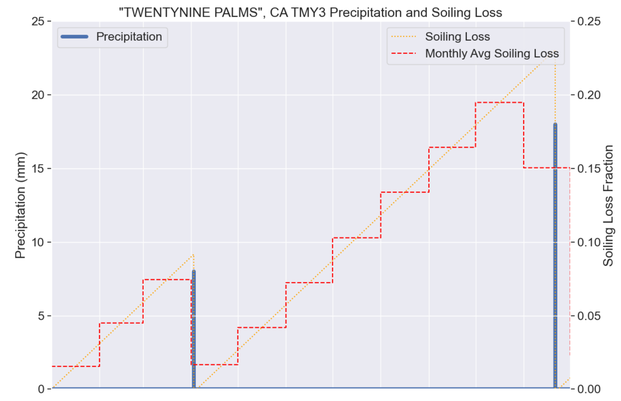


Figure 1: Daily and monthly soiling profiles shown in orange dotted and red dashed lines on right axis with precipitation in blue on left axis from TMY3 for Twentynine Palms, CA.

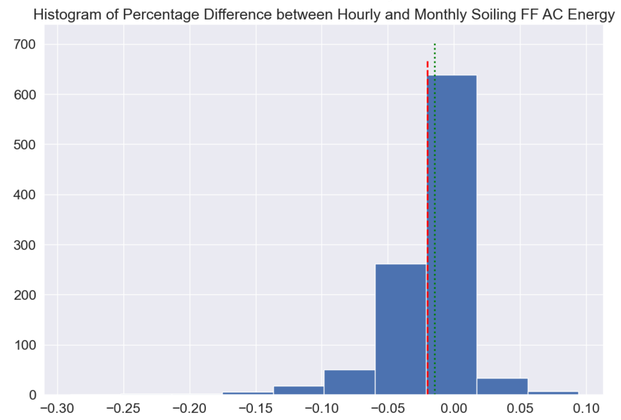


Figure 2: Comparison of annual energy calculated with daily vs. monthly soiling profiles from 1000 TMY3 stations shows negligible delta.

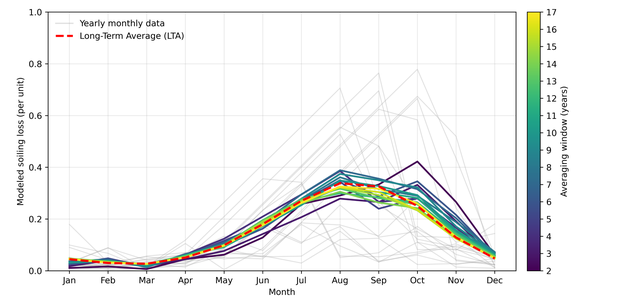


Figure 4: Monthly variation by year and LTA soiling.

Scan a QR code below to email questions:

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Impact of Long-Term Average Soiling and Temporal Resolution on Energy Yield Analysis.

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