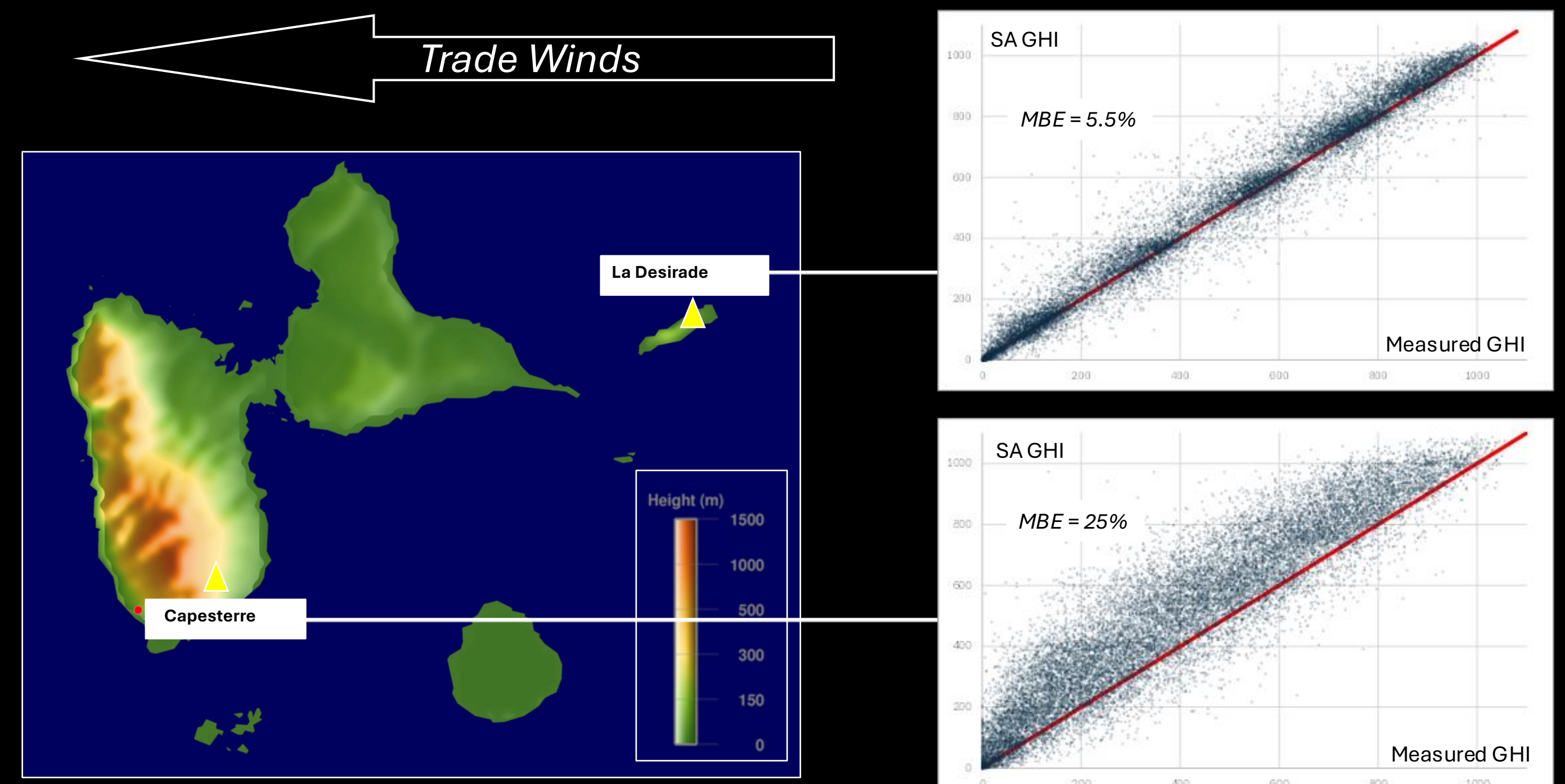
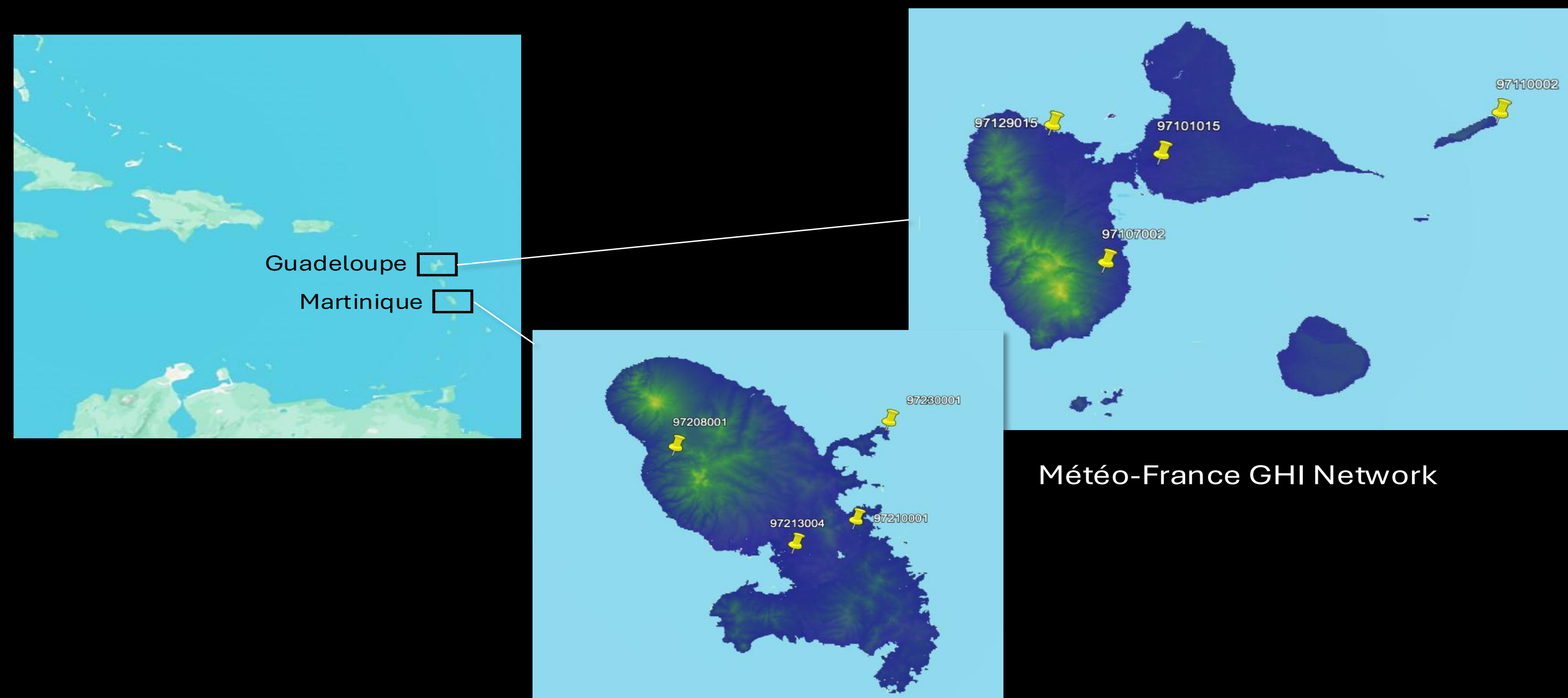


On the Importance of Parallax Effects in Satellite-to-Irradiance Modeling

Marc Perez, Richard Perez, Andrew Foster, Jing Huang, Clean Power Research
Maina André & Raphaël Cécé, LARGE – Université des Antilles

2026 PVPWC Workshop
Albuquerque, NM (5/12-14 2026)

Evaluation of High Res. (1-km, 15-mins) SolarAnywhere in the Caribbean



POSSIBLE CAUSES OF LARGE BIAS IN CAPESTERRE

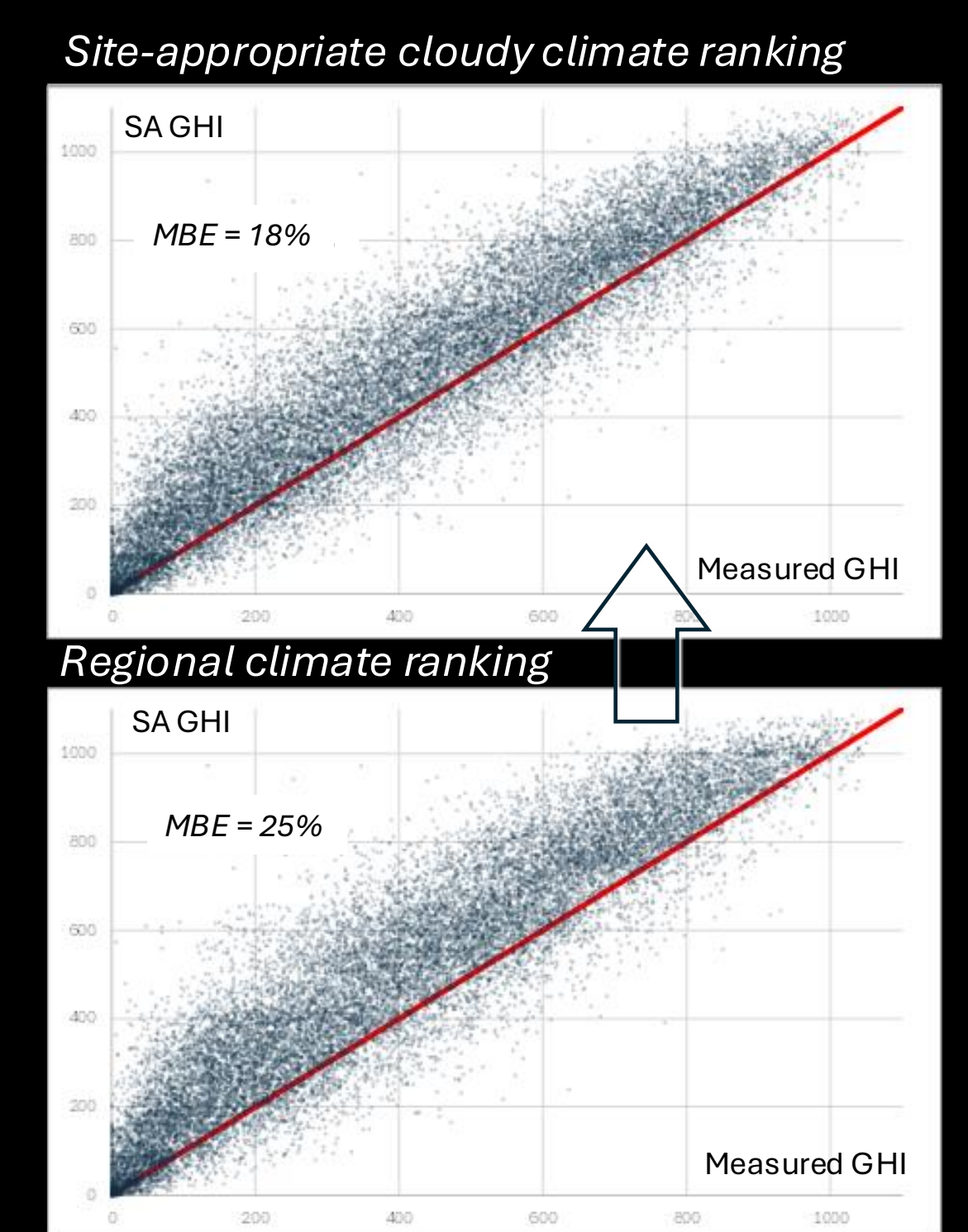
1. Terrain shading
2. Model ranking
3. Parallax effects
4. Calibration/

Negligible – accounting for < 0.5% of observed bias

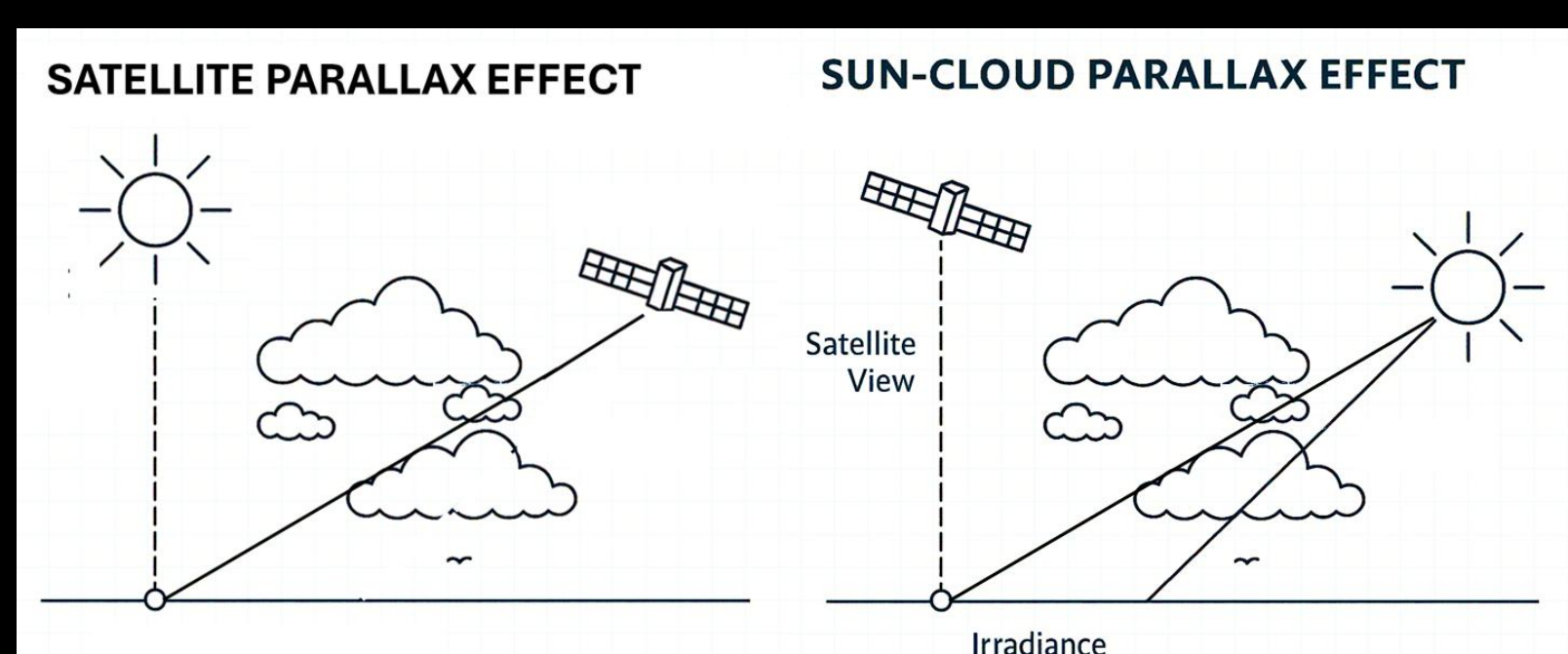
Model Ranking



This SolarAnywhere feature was developed to resolve issues of high albedo locations mistaken as clouds. Ranking postulates that the Nth ranked K_t in a given month must be equal to a given fraction of K_t^{clear} . N depends climate currently defined with a coarse 1° lat-long resolution. This is too coarse to capture small islands microclimates.

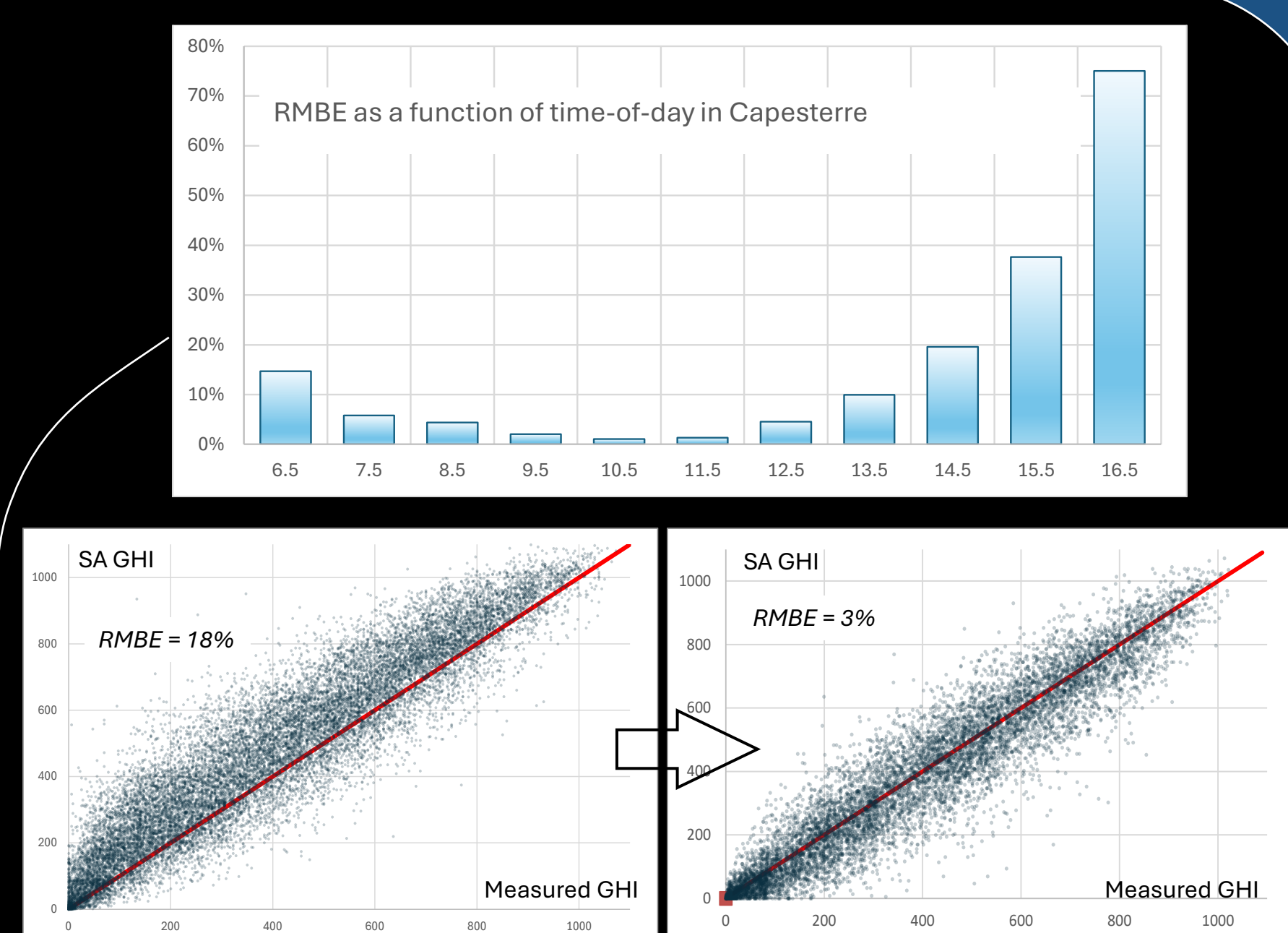


Parallax effects



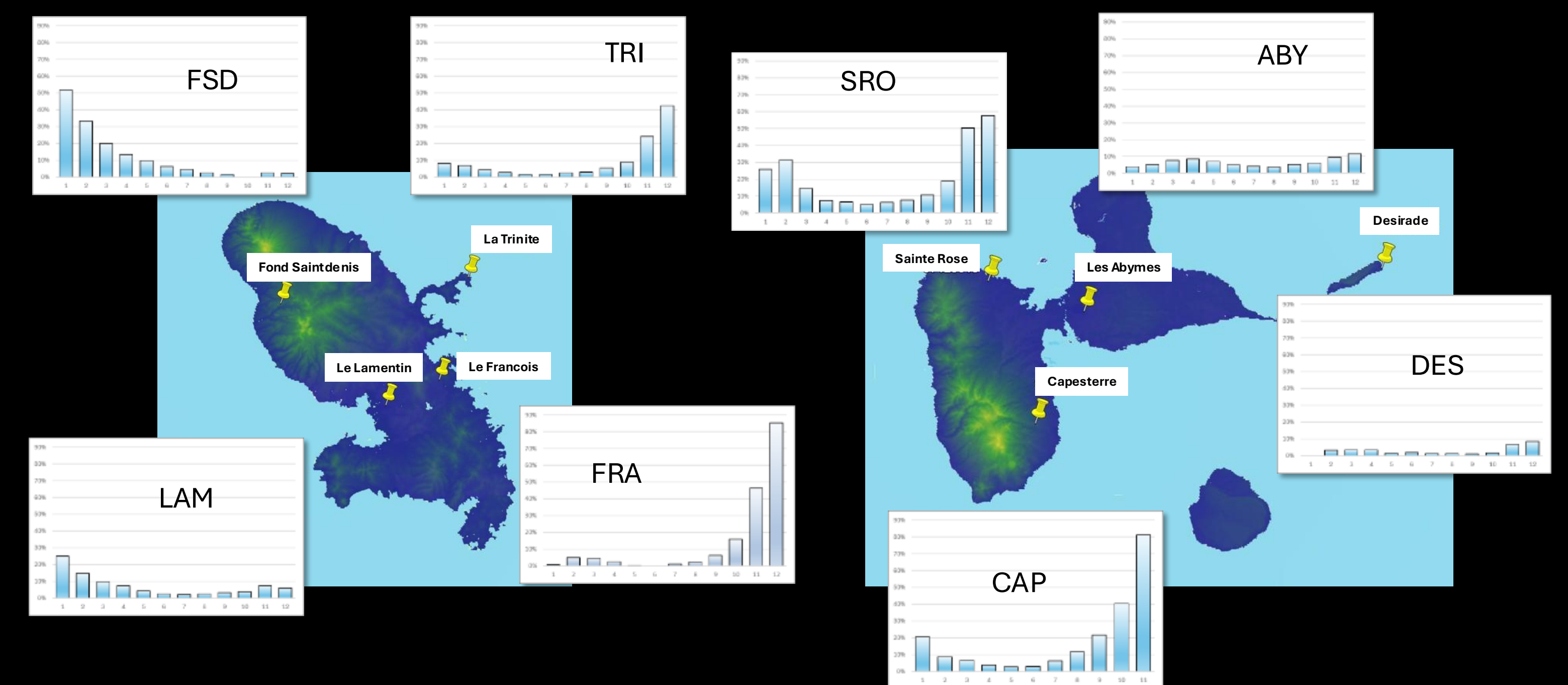
Important when the satellite view angle is shallow. This is a prevailing issue at higher latitudes

Important when strong microclimates defined marked location specific cloud regimes. **This is the case here**

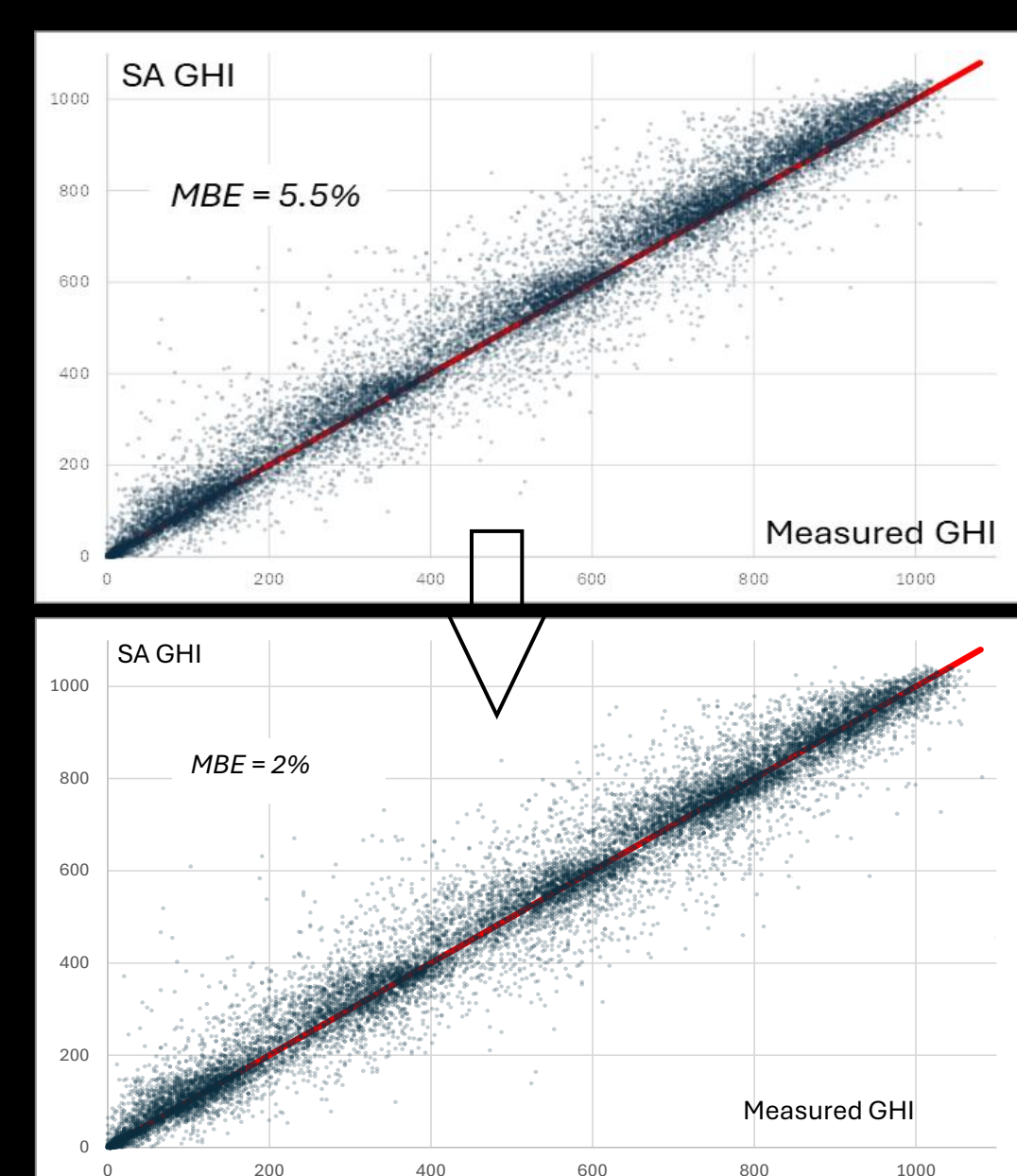
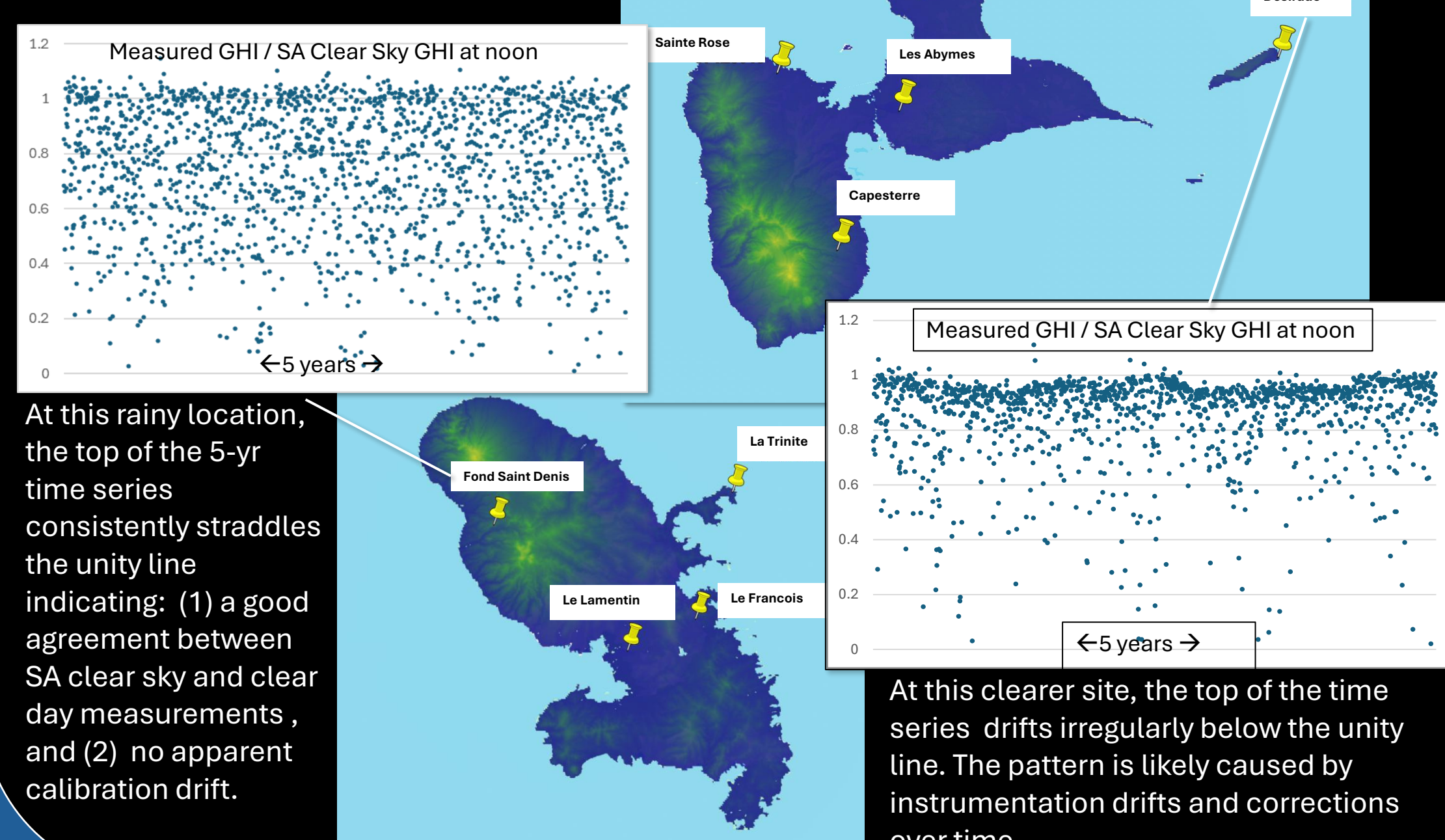


Applying a preliminary across the board % bias correction

Intraday bias patterns are consistent with site position relative to local orography



Calibration



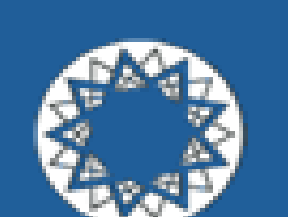
When Applying a measurement calibration correction inverse to the observed drift, the RMBE may be reduced considerably.

TAKEWAYS

- Parallax shifts may be a first-order error in modern high-resolution satellite products whereas they were negligible at coarser scales.
- Impact is location-dependent but critical where persistent cloud formation aligns with fixed ground sites – especially on islands, land/water interface, and near complex terrain.
- Accurate correction requires geometry + cloud height, with optional empirical tuning using. Combined parallax and shadow corrections are expected to yield systematic accuracy gains in impacted locations.
- SolarAnywhere climate-ranking procedure's resolution will be enhanced
- The simple clear sky analysis applied here is effective at identifying and correcting measurement calibration drifts



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