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HelioClim-4, a successful and sustainable business service based on CAMS radiation service

ICEM 2017, 27-29 June 2017, Bari, Italy

HelioClim-4 (HC4) = CAMS radiation enhanced with several value-added post-processing layers

Horizon
- CAMS radiation components are horizon free data (gray + yellow values).
- HC4 proposes an option to take into account (yellow values + a fraction of gray values) the shadowing effect due to the far horizon computed from SRTM

Evaluation of the performance
18 stations (hourly data) => 4 groups (A, B, C, D):
- 17 non-shadowed pyranometers (pyr.) measuring Global Tilted Irradiation (GTI) 25° South => evaluate the performance of fix-tilted data in HC4
- 1 pyr. measuring GHI with a discriminant horizon => horizon

Statistical results (bias in %, Standard Deviation STD in %, Root Mean Square Error RMSE in % and Correlation Coefficient CC) are provided for both HC4 CASE 1 and CASE 2, and for HC3v5

Conclusions
- HC4 is fairly close to HC3v5 in most cases
- HC4 Case 1 returns better results than Case 2: the use of an empirical algorithm should be avoided
- Improvement when horizon is taken into account

Data on every plane orientation
- CAMS radiation service: all components on horizontal plane + Direct Normal Irradiation.
- HC4: all the irradiation components in all plane orientations: fox tilted, 2D Sun tracking, 1D Sun tracking (North-South or East-West axis), tilt or azimuth tracking

Two models tested to compute fix-tilted components:
- CASE 1: Exploit all CAMS radiation components (GHI and BHI)
- CASE 2: Exploit only GHI, and use an empirical model (Ruiz-Arias et al.) to compute BHI prior transfer on the tilted plane

Perspectives
- Reliable precursor of service
- Further development: e.g. modulate HC4 value with the height of the selected point inside a Meteosat pixel