HelioClim-3 and CAMS-RAD in a nutshell

From MSG: 3 km at nadir, every 15 min, Feb. 2004 onwards
- All radiation components over a horizontal, fix-tilted and normal plane (tracker 2D)
- Updated in real time. Irradiation forecasts available. Duplicated servers for a robust service. Available via the SoDa website (www.soda-pro.com)
- HelioClim-3 is based on the Heliosat-2 method (cloud index)
- Version 5 of HelioClim-3 (Nov. 2014) combines the cloud index with Copernicus McClear service providing irradiation in cloud-free conditions
- CAMS-RAD is based on Heliosat-4 method, combining McClear and cloud properties from APOLLO (DLR)

IN-SITU MEASUREMENTS
- Hourly global irradiation on horizontal plane (GHI)

QUALITY CHECK, VALIDATION PROTOCOL AND RESULTS
- Quality Check (EU-funded FP7 ENDORSE project)
  - Only keep in-situ GHI measurements above 50 Wh/m²
  - Discard non plausible data (extremely rare and physical possible limits)
- Compute difference: database - measurements
- Compute: bias, Root Mean Square Error (RMSE), and correlation coefficient (CC)

Example of graph for the station of Adam Airport, hourly values

CONCLUSION
- Three databases reproduce very well the hourly changes (correl. coeff. > 0.97)
- There is a tendency to underestimate (negative bias) for each database
- RMSE varies between 11% and 17%, which is very good for hourly values
- For a given station, performances vary only slightly from database to database. Conversely, for a given database, performances vary more from station to station. This relates to the specifics of the method behind each database
- The three databases are reliable sources to assess the solar potential in this region