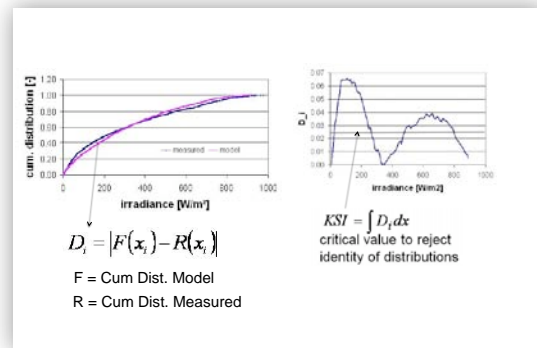# IEA Solar Heating and Cooling Programme

Task 36: Solar Resource Knowledge Management
Operating Agent: Dave Renné (NREL, USA)

Subtask A: Standard Qualification for Solar Resource Products

This Subtask provides the user community with benchmarked, standardized, validated worldwide solar resource data sets. "First order" benchmarking involves the use of root mean square and mean bias differences, expressed in percentages. "Second order" involves Kolmogorov-Smirnoff (KSI) statistics, which investigate the distances in values within cumulative distribution functions of both modeled and measured data (see Figure to right). In general, satellite-derived irradiance data, especially DNI data, do not show the same distribution properties as ground measured data.

Subtask Lead: Hans-Georg Beyer (University of Agder, Norway)

$$D_i = |F(x_i) - R(x_i)|$$

F = Cum Dist. Model
R = Cum Dist. Measured

$$KSI = \int D_i dx$$

critical value to reject identity of distributions

Subtask B: Common Structure for Archiving and Accessing Data Products

This Subtask provides a user-oriented information system, such as a distributed data system or a Web portal, for archiving and accessing solar resource data. The Figure shows a prototype, developed under the MESoR Project, that is considered a technology demonstrator, free of rights, and based on COTs (components-off-the-shelf). The left part will be maintained by Armines until 2015, and will provide access to several services for free, and access to other commercial services on a demonstration modes. The right part will access Web services of the various providers on a free or commercial basis.

Subtask Lead: Lucien Wald (Armines, France)
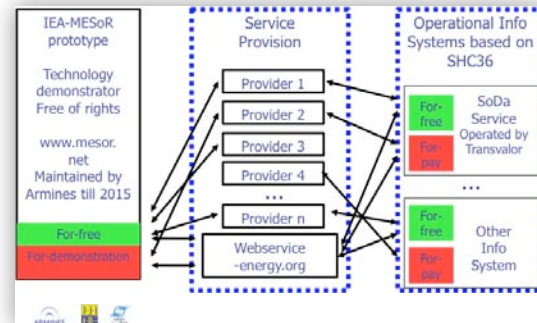
Subtask C: Improved Techniques for Solar Resource Characterization and Forecasting

This Subtask conducts essential R&D to improve the accuracy and the spatial and temporal coverage of current techniques, including the introduction of solar resource forecasting products. Specific work activities include improving satellite retrieval methods for solar products, conducting climatological analysis of solar resources, and evaluating solar resource forecasting procedures. Task participants in the table are applying consistent benchmarking methods for comparing forecasting schemes. The results below the table show recent examples for Canadian stations comparing the Canadian GEM forecasting model with ECMWF and "persistence". Generally all forecasting schemes are significant improvements over persistence, and, in general the schemes work better in sunnier climates (such as Spain) than in cloudier climates (central Europe).

Subtask Lead: Detlev Heinemann (University Oldenburg, Germany)
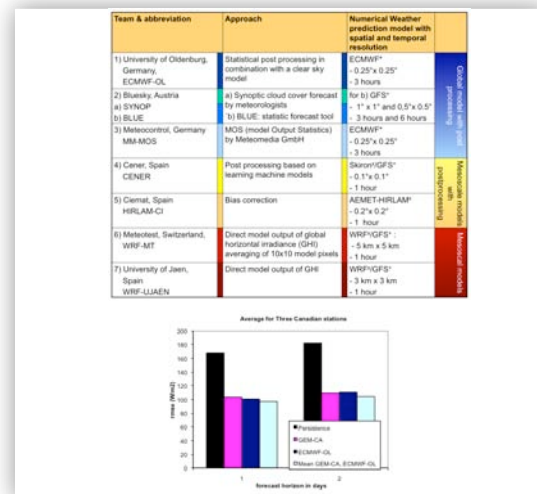
Task 36 is also Task 5 in SolarPACES and a collaborative task with PVPS. Task 36 ends on 30 June 2011, but then a new Task will be implemented titled "Solar Resource Assessment and Forecasting".

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