

Individual Evaluation Form

Proposal Number: 07-CCSP_07-0001

Organization Name: LMD/IPSL

Principal Investigator: Emily Chien

Evaluation Summary

Solicitation Title: Earth Science Document Review
Solicitation Number: NNH07ZDA001R
Evaluation Status: Submitted (07/31/2007 @ 10:07:18 EDT by Pierre-Philippe MATHIEU)
Review: CCSP - ENERGY CHAPTER ONLY [CCSP ENERGY]
Reviewer: Pierre-Philippe MATHIEU (Reviewer)

Overall Grade:

Evaluation Criteria

Question 1 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

Ok

Question 2 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

OK

Question 3 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

Need for more detailed information regarding Earth Observation data needs and associated accuracy (see below).

Question 4 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

Need for more discussion regarding mix of energy options and also the grid (see below).

Question 5 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

Ok

Question 6 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

Ok

Question 7 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

Ok

Question 8 : Please distinguish issues you consider to be of general/major concern(s) from other, less significant point(s).

HOMER is a computer model that simplifies the task of evaluating design options for power systems for remote, stand-alone, and distributed generation applications. HOMER's optimization and sensitivity analysis algorithms allow users to evaluate the economic and technical feasibility of a large number of technology options and to account for variation in technology costs and energy resource availability. HOMER DSS is an integrated application linking the energy model HOMER with a Geographical Information System fed by Earth Observation (EO) data from satellites. It is worth noting at this point, that the terminology of HOMER DDS is a bit confusing as HOMER already refers to the end-user model alone. The proposal looks very interesting as it explores the potential to improve the mapping of $\zeta_{available}$ renewable energy resources by using long-term and wide-area observations from space, which are essential to accurately capture the spatial and temporal variability of resources.

However the proposal could be improved by discussing in more details the role of EO data in particular regarding, - Mapping of renewable resources associated with a wider mix of energy options. In particular the hydropower energy sector, where EO can provide useful information (e.g. on precipitation, characteristics of the basin, topography, water level, river network and stability of reservoir), and that could be used also to store energy from other renewables. - Optimizing maintenance of power plants. In particular, long-term EO data sets on metocean conditions are essential to estimate types of vessels and their availability for maintenance of offshore platforms. - Designing the grid and assess the costs of the production (e.g. transport of energy, placing cables undersea for offshore platforms). More information should also provided on - Uncertainty related to the weather generator, discussing inherent limitations (e.g. in case of climate trends, high climate variability) and possible alternative (e.g. numerical models). - Uncertainty related to the boundary layer model used to transform surface wind data up to the hub height. The type of model and relying assumptions should be presented. - Type of EO data. In particular, regarding wind, the data needs related to offshore and onshore wind energy should be clearly separated as they are very different. In particular, coastal wind can be measured by EO (combining Scatterometers and Synthetic Aperture Radar to capture the temporal and spatial variability of the wind field) but not onshore, where roughness measured from space could play an important role. Also regarding solar energy, the needs for direct and diffused radiance should be discussed separately and in more details. - Accuracy of EO data. It would be great to have a synoptic data grouping all data needs by categories (e.g. types of data, near-real time vs. archive) and quantifying the accuracy of each EO data stream.