Accepted Manuscript

Development of a method for mapping monthly average hourly diffuse erythemal ultraviolet radiation

P. Choosri, S. Janjai, M. Nunez, S. Buntoung, W. Chanalert

PII: S1364-6826(17)30099-8

DOI: 10.1016/j.jastp.2017.06.003

Reference: ATP 4605

To appear in: Journal of Atmospheric and Solar-Terrestrial Physics

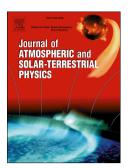
Received Date: 10 February 2017

Revised Date: 22 May 2017

Accepted Date: 4 June 2017

Please cite this article as: Choosri, P., Janjai, S., Nunez, M., Buntoung, S., Chanalert, W., Development of a method for mapping monthly average hourly diffuse erythemal ultraviolet radiation, *Journal of Atmospheric and Solar-Terrestrial Physics* (2017), doi: 10.1016/j.jastp.2017.06.003.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Development of a method for mapping monthly average hourly diffuse erythemal ultraviolet radiation P. Choosri^a, S. Janjai^{a,*}, M. Nunez^b, S. Buntoung^a, W. Chanalert^a ^a Laboratory of Tropical Atmosperic Physics, Department of Physics, Faculty of Science, Silpakorn University, Nakhon Pathom 73000, Thailand ^b School of Land and Food, University of Tasmania, Hobart 7001, Australia Abstract In this study, a model for calculating monthly average hourly diffuse erythemal solar ultraviolet (EUV) radiation under all sky conditions in Thailand was developed. The model is a function of air mass, aerosol optical depth and satellite-derived cloud index, as these parameters are sensitive to diffuse EUV radiation. Diffuse EUV irradiance were measured using UV-biometers equipped with shade ball during April, 2011 to March, 2014 at four stations in Thailand. Data from these stations were used to formulate the model. The model was validated using an independent dataset (April, 2014 - March, 2016) at the same sites. The modeled diffuse EUV irradiance showed good agreement with that from the ground-based measurements, with root mean square difference (RMSD) of 12.7% and mean bias difference (MBD) of -2.8%. The use of satellite data provided a simple and practical method to calculate monthly average hourly diffuse EUV irradiance over Thailand. Spatial monthly distributions are shown as maps. Keywords: mapping; diffuse radiation; satellite data; solar ultraviolet radiation *Corresponding author. Tel.: +66-34-270 761; Fax: +66-34-271 189 E-mail address: serm.janjai@gmail.com (S. Janjai)

Download English Version:

https://daneshyari.com/en/article/5487584

Download Persian Version:

https://daneshyari.com/article/5487584

Daneshyari.com