

Land Surface Albedo Determination: Remote Sensing, Ground and Statistical Validation

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SUMMARY

Surface albedo has been documented as one of the Essential Climate Variables (ECV) of the Global Climate Observing System (GCOS). It governs the Earth's Radiation Budget which has been complemented with the recent launched of Landsat 8 that is specifically design to archive data for the climate studies. The availability of surface albedo data at both temporally and spatially is needed. This paper discussed the development of a model (Nii) to determine land surface albedo from the climatic variables. The model generated in this study makes possible for continuous observation of land surface albedo through relative model established from the Multiple Regression method. Thus, it is an alternative way to depict land surface albedo considering the establishment of albedometer or mounting this instrument to existing monitoring station might incur monetary obligation. This finding have make possible the use of remote sensing historical data to be utilised as well as where the area that the radiation network has yet been established for the study in related to energy budget where land surface albedo is essential. It was found that the model is able to explain 82.2% of land surface albedo variances. Using internal validation method (Bootstraps) it was found that an equal standard error of the original and bootstrapped regression (0.001), thus highlight the adequacy samples population used to develop this model. The model is also validated using correspondence ASTERvnir Albedo and insitu measurements. Using this data, the Mean Absolute Error (MAE) was computed and indicated as low as 0.0689, relative standard error (RSE) is 0.023, root mean square error (RMSE) is 0.0478 and MSE is 0.00002. Further testing was recommended on the time series analyses of LSA through the selected multiple dates involving image Landsat and ASTER to test the flexibility of air temperature as the negative predictor of land surface albedo.