

Balance of the solar radiation in agroforestry systems in Central AmazoniaCorreia, F.W.S. ⁽¹⁾ Macêdo, J.L.V. ⁽²⁾ and Schroth, G. ⁽³⁾

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Micrometeorological observations have been used to study the radiation balance over recultivation areas of the SHIFT Project in the Central Amazon, during the dry season. The site was first cleared of primary forest to make way for an experimental rubber plantation which was abandoned soon after. Later, the secondary forest which had evolved was cleared and burnt to establish the plantation systems. The radiation balance was compared with measurements obtained in a adjacent forest (Ducke Reserve). The performance of 5 methods for estimating the long-wave atmospheric radiation flux ($L\downarrow$) were analyzed. However, the estimates from these formulations underestimate $L\downarrow$ values, when compared to the measurements. Using local coefficients, the estimate of $L\downarrow$ from the equation proposed by Swinbank (1963) showed better results, followed. In addition, the discrimination among the 5 models considered, using the Box and Hill algorithm, showed best adjust with the Idso and Jackson formulation, than the estimate obtained from the formulations proposed by Swinbank, Satterlund, Brutsaert and Brunt. Mean daily albedo of the recultivation area was 14%, agreeing well with other tropical forest measurements. forest. The difference in the daily pattern of incoming solar radiation ($K\downarrow$) between the sites was found to be 7% higher at the recultivation area. Approximately 55% of $K\downarrow$ reaches the surface, while this value was much less at forest (10%). The net radiation measurements on the basis of $K\downarrow$, showed excellent accuracy. In contrast, the albedo estimated in terms of the sun's elevation angle must be considered with caution. Therefore, the variability in micrometeorological variables results from changes in land use and vegetation cover in tropical forest areas.