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Tropical Trends in Surface Radiation Budgets in the Context of Global Trends

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For assessment of variability and trends in the Earth Radiation Balance, information is needed at climatic time scales. Satellite observations have been instrumental for advancing the understanding of radiative balance at global scale, however, the length of available satellite records is limited due to the frequent changes in the observing systems. In this paper we report on an effort to synthesize satellite observations from independent sources to estimates shortwave and longwave surface radiative fluxes at climatic time scales and use them to learn about their variability and trends with a focus on the tropics. From a comparison with similar global trends an attempt will be made to learn about possible causes of what is observed. The radiative fluxes were derived in the framework of the MEaSURES and NEWS programs; they are evaluated against ground observations and compared to independent satellite and model estimates. Attention is given to updates of knowledge on the radiative balance as compared to what is known from shorter time records.