

Radiation Budget Studies in the Yellow River Basin

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Shortwave and longwave radiation budgets are important for evaluating the energy and water cycles on the earth's surface. Large scale data with high resolution of 10 km are needed for the Yellow River project. Utilization of satellite data, particularly of cloud, is indispensable for this purpose. It is also suitable for the project because some of the satellite data are available for the last two decades. For example, ISCCP DX data are available, in which surface radiation budgets are 1 degree by 1 degree and daily although the archived period is limited. Therefore, some new improvements are needed for 10 km spatial resolution even if the radiative transfer technique is applied to cloud and other atmospheric data for estimating surface radiation budgets. On the other hand, direct measurements of radiation on the ground surface are quite poor to cover the whole Yellow River basin so that those measurements are used to validate results estimated from satellite remote sensing. Most of shortwave radiation measurements are sunshine duration in China. Statistical approach may be useful to merge these ground based measurements and satellite data. The status of satellite data such as ISCCP and some example of statistical approach to compare the satellite data and ground based measurements will be introduced and discussed in the workshop.