

ESTIMATION OF FRESHWATER DISCHARGE AND POLLUTANT LOADS FROM YANGTZE RIVER TO THE EAST CHINA SEA USING SATELLITE DATA

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The Yangtze (Changjiang) River is the major source of freshwater, sediments and nutrients that flow into the East China Sea. In order to determine the pollutant load from the Yangtze River it is essential to estimate river discharge firstly. The research described in this paper is the first to focus on the estimation of river discharge from very high-resolution satellite (QuickBird2) data. This approach is based on a series of simple procedures: water-surface width measurements coupled with river width-stage and stage-discharge rating curve derived from a field survey. By applying this approach, the discharge at Datong hydrological station, which is the lowest stations to the East China Sea, was estimated on January 12, 2003. The discharge estimated from the satellite imagery is $18333 \text{ m}^3/\text{s}$ that matches the ground measured discharge ($17700 \text{ m}^3/\text{s}$) very well. Based on the relationship between the river discharge and pollutant loads derived from historical data and 1998-1999 field surveys in the Yangtze Estuary, the pollutant loads of SS, COD, DIN, TN, TP from the Yangtze River flowing into the East China Sea at Datong station on January 12, 2003 were estimated to be 194451.1, 3454, 1271.4, 1575.8 and 193.2 ton, respectively. It suggests that if the high resolution satellite data are available through the whole season or year the pollutant loads from the Datong station flowing into the East China Sea can be easily estimated.

Key Words: East China Sea, Yangtze (Changjiang) River, freshwater discharge, satellite imagery, pollutant loads, human impacts