

## **QuikSCAT/SeaWinds Application to Asian Monsoon Flood Mapping**

**Son V. NGHIEM, W. Timothy LIU, Wu-Yang TSAI, and Xiaosu XIE**  
*Jet Propulsion Laboratory, California Institute of Technology, MS 300-235*  
*4800 Oak Grove Drive, Pasadena, California 91109*  
*Tel: 818-354-2982, Fax: 818-393-3077*  
*E-mail: nghiem@solar.jpl.nasa.gov*

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The launch of the wide-swath SeaWinds scatterometer on QuikSCAT last June (1999) was at the time when severe and widespread floods started to occur early this year over various countries in the Asian summer monsoon region. Heavy monsoon rains since June have devastated large areas of Asia this summer. Dramatic monsoon flood mapping results derived from QuikSCAT/SeaWinds backscatter data are presented in this paper.

The basis for the mapping of flood inundated urban and crop-land areas is the enhancement of the horizontal-polarization backscatter compared to the vertical-polarization return [Nghiem *et al.*, IGARSS, Hamburg, Germany, 1999]. In particular for the QuikSCAT/SeaWinds scatterometer, its very wide-swath and the separation in incidence angles of the inner horizontal and the outer vertical beams make the sensor appropriate for the flood mapping simultaneously over many countries in the Asian monsoon flood region. Such an application to the large-scale flood mapping is unprecedented in coverage and temporal resolution, which are important because of the extensive spatial extent and the transient short-time scale of monsoon flooding events.

QuikSCAT/SeaWinds backscatter data acquired over Asia shows extensive floods in Anhui, Zhejiang, Jiangsu, and other provinces in the Yangtze river basin. According to the *United Nations Office for the Coordination of Humanitarian Affairs* (UN-OCHA), 100 million people in China have been affected by this year's floods. QuikSCAT/SeaWinds data over India reveal the North Bihar flood. Triggered by torrential monsoon rains, this flood was the worst in more than a decade, affecting 5 million people and inundating more than 2700 villages over 21 districts [Agence France-Presse, AFP Aug.-Sep. 1999]. Since July, the scatterometer flood mapping indicates the flood situation in India has been worsened and spanned extensive regions from West Bengal, through Bihar, to Uttar Pradesh, and up to Himachal Pradesh. In Bangladesh, the flooding got worse as indicated by QuikSCAT/SeaWinds data. Further intensification of the monsoon has brought heavy downpours throughout most of Bangladesh which led to more significant rises in major rivers, floods, and severe erosion [International Federation of Red Cross, IFRC, Sep. 1999]. Monsoon floods are also observed over many Asian countries including Nepal, Pakistan, Vietnam, Laos, Thailand, and Cambodia (worst flooding in 20 years).