

## Flood Classification and Monitoring by Using of TRMM/TMI Microwave Data

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TRMM/TMI is a new kind of microwave image unit, and has a great potential application in land characters analysis, especially on flood classification and monitoring. In our work, the wetness index analysis method of flood classification and monitoring by using of TRMM/TMI microwave data was tested during the summer of 1998 over Boyang and Tongting lake area in China. To accomplish this, we have analysed the characters of TRMM/TMI channels first by using of VIDSORT model; and then developed a set of wetness indexes by combining three channels of TRMM/TMI together. We have tried three kind of wetness index, they are:

1. Soil wetness index:  $SWI = Hf(H) - Lf(H)$ ;
2. Polarization ratio:  $PR = (Tbv - Tbh) / (Tbv + Tbh)$ ;
3. Basist Wetness Index:

$$BWI = c1 * (Tb(v2) - Tb(v1)) + c2 * (Tb(v3) - Tb(v2))$$

( $c1; c2$  is consent)

According to our analysis results, the wetness PR19 and BWI10 are better than the other indexes. So we chose the best wetness indexes (PR19 and BWI10) which is sensitive with the land surface wetness changes to do our flood classification and monitoring. In our Cal./Val. Test, the data of China ESAR aboard on the plane and Canadian Radar-SAR aboard on the Radarsat was used, and we got a 70% to 80% Cal/Val results. At the same time we also have a try to retrieve the surface microwave emissivity from TMI data, just following the concept of BWI. We use the emissivity results to do our classification, and we also got a good result. Our future work will focus on investigating the possible improvements to the algorithm and extend testing of the algorithm to other regions.