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On SRTM and ASTER global free digital elevation models for hydrological research

FENG LING[1,2], CHENG WANG[1] & QIUWEN ZHANG[1]

1 *College of Hydropower and Information Engineering, HuaZhong University of Science and Technology, Wuhan, China*
lllingfeng@yahoo.com.cn

2 *Institute of Geodesy and Geophysics, Chinese Academy of Sciences, Wuhan, China*

Abstract The relative advantages and limitations of SRTM and ASTER digital elevation model (DEM) data sets, both of which can be accessed freely with fine resolutions at near global coverage, are discussed. A SRTM voids-filling method based on digitized stream networks and a relative ASTER DEM mosaicking method are adopted to process both DEMs. Elevation values and several important hydrological parameters extracted from SRTM and ASTER are compared with those in the DEM derived from digital contours so as to assess the effects of both DEMs for hydrological research. The results show that although there are still many minor differences between these DEMs, both SRTM and ASTER are appropriate DEM sources for hydrological research after they are processed with the proposed methods.

Key words SRTM; ASTER; DEM; hydrology