

A preliminary analysis of the total column water vapour retrieved from COSMIC data

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Abstract Using the total column water vapour from the Constellation Observing System for Meteorology, Ionosphere and Climate (COSMIC) wet profile data, this paper analyses the distribution of the COSMIC soundings in southwest China and its adjacent area (the study area), and the water vapour distribution of the study area, in order to study the methods of analysing regional water vapour with COSMIC data. The analysis shows that according to the high-resolution of COSMIC soundings, COSMIC data will complement the lack of operational meteorological stations in the study area and provide more water vapour information. The analysis of the water vapour graph from COSMIC data shows that in southwest China and its adjacent area, the total column water vapour is influenced significantly by the topography and the altitude. The Tibetan Plateau is a large dry region, and its water vapour structure is obviously different from its surroundings. Further analysis shows that the water vapour accumulation over the Tibetan Plateau is through the following accesses: the Great Yalu Zangbu Canyon all the year round, southwest of the Himalayas from June to August, the northern areas in July, and some small local areas by heat convection from May to September. The water vapour over the north of the Bay of Bengal is relatively short in January, increases obviously in April, and reaches a maximum in July.

Key words GPS RO; COSMIC; total column water vapour; water vapour; Tibetan Plateau