The occurrence and propagation characteristics of large-scale atmospheric gravity waves observed by OH and OI airglow and GPS TEC during the substorms

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Using the data of hydroxyl(OH) and atomic oxygen(OI) airglow observations of three-field photometer from the University of Adelaide's Buckland Park and the data of GPS(global position system) total electronic content(TEC) employed by IGS web site, we report the statistical study of propagation of TIDs and atmospheric gravity waves(AGWs) over Adelaide(34.5˚S,138.5˚E), Australia. Both of the airglow and TEC data are selected over the years from 1995 to 2002, and the observations of 557.7 nm airglow intensity emitted by OI at heights about 97km while the 730.0 nm airglow intensity emitted by OH about 87 km. The propagation and variation features of TIDs and AGWs associated with substorms is analyzed. This paper also presents a preliminary analysis of the coupling relation between the TIDs and AGWs.