

## ***Interactive comment on “Channel selection method for hyperspectral atmospheric infrared sounder using AIRS data based on layering” by Shujie Chang et al.***

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Received and published: 30 August 2019

A spectral study method based on AIRS ultra-high spectral resolution atmospheric detection instrument data is a good research paper. In order to improve atmospheric detection capabilities, some countries and organizations have loaded such instruments on their own satellites in recent years, such as IASI/METOP in Europe, CrIS/NPOESS in the US, GIIRS and HIRAS/FY in China. This type of instrument greatly improves the atmospheric detection capability. It has thousands of spectral channels, distribution dependence of height, and there is a correlation between the channels. There are many redundant information, which makes the atmospheric parameter inversion time

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too long and unstable. In order to improve the aging time without losing the accuracy of the inversion, it is important to select the spectral channel reasonably. In recent years, many scholars have invested in research in this area and have achieved some gratifying results. The characteristics of this paper are based on the observational information content of satellite instruments. The AIRS data is used to propose an improved effective spectral channel selection method for atmospheric temperature profile inversion. The experimental verification shows that the distribution of the weight function of the spectral channel is continuous, and the temperature accuracy of the statistical method inversion is significantly improved compared with other methods, especially the improvement of the accuracy of the upper atmosphere. The method proposed in this paper is feasible and is conducive to promoting the wide application of ultra-high spectral data.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-183, 2019.

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