

## **4.162 Production of high potential temperature airmass just below the tropopause associated with the Asian monsoon.**

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Abstract:

In this paper, we will present the formation process of high potential temperature airmass just below the tropopause associated with the hydroclimatological aspects of Asian monsoon system. Huge amount of air mass with higher potential temperature accumulated in a gigantic anticyclone, Tibetan High, over the Tibetan Plateau over the period just coincide with the summer monsoon season, which is synclonized with the meridional temperature reversal over the Asian monsoon region. Such prominent accumulation of airmass and temperature reversal does not be found in other areas including southern hemisphere in austral summer.

Such huge amount of high potential temperature airmass (HPTM) over the Tibetan Plateau is attributed to the large amount of production of HPTM associated with the Asian monsoon system. Especially, the convective activity over the North and Northeastern Indian Subcontinent just to the south of the Tibetan Plateau plays important role in this process, which is supposed to carry the high equivalent potential temperature airmass (HEPTM) produced in the atmospheric boundary layer over the North and Northeastern Indian Subcontinent land surface to the upper troposphere. This is strongly supported by several findings from the field of atmospheric chemistry. However, from the view point of the atmospheric dynamics, it is not clarified yet.

In the present study, we firstly discuss about the climatological seasonal variation of the structure of upper tropospheric HPTM to show the special importance of the area just to the south of the Tibetan Plateau. Next, we analyze the seasonal and intraseasonal variability of HPTM and HEPTM over this region. Finally, we will discuss about the impact of the Post MAHASRI project, which will be launched within 2018, to the observational research on the hydroclimate process in the atmospheric boundary layer over the Asian monsoon region.