



### 穿越东亚不同定义对流层顶质量和臭氧通量的分析

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### The study and analysis on two kinds of cross-tropopause fluxes of mass and ozone in East Asia

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**摘要** 选取动力学和热力学定义的对流层顶作为平流层和对流层之间的分界,并利用等熵坐标下的Wei公式对东亚地区穿越对流层顶的质量和臭氧通量进行了分析,结果发现对流层顶的选择对于研究平流层与对流层交换方面的作用至关重要.东亚地区质量和臭氧通量交换在整体上具有明显的年代际变化特征,1958~2001年近44a的通量交换距平变化可以分为3个比较稳定的时段:即1958~1971,1972~1985和1986~2001年.在这3个时段中,通量交换距平分布表现为“负正负”的变化趋势,说明在东亚地区质量和臭氧净通量交换情况为先增强后减弱.东亚地区平流层和对流层之间质量和臭氧交换正距平区在东北平原和华北平原附近经历了一个逐渐增强的变化过程,表明这些区域在东亚地区平流层和对流层之间的质量和臭氧通量交换中扮演着越来越重要的角色.

**关键词:** 等熵坐标 热力学对流层顶 动力学对流层顶 质量通量 臭氧通量

**Abstract:** By selecting the definition of dynamical and thermal tropopause as the boundaries between the stratosphere and troposphere, This article has used the Wei-formula in the isentropic coordinates, analyzed the fluxes of mass and ozone cross-tropopause in the East Asian region and found that the fluxes of mass and ozone in the East Asian region, overall the exchange of mass and ozone flux had obvious inter-decadal variation, the 44 years' change can be divided into three relatively stable time: years of 1958—1971, 1972—1985 and 1986—2001. In the three time, the distribution of mass exchange anomaly performed “-+-”, the trend shows that the situation of mass flux exchange in the East Asian region first to enhancement after weakening. Near the Tarim Basin is the transmission gradually increased, and stratospheric and tropospheric mass exchange near the Northeast China Plains and the North China Plain of the East Asian region had also gone through a process of gradually increased, indicating that these regions in the mass exchange played an increasingly important role.

**Key words:**

收稿日期: 2009-05-06;

**引用本文:**  
王卫国, 梁俊平, 王颢樾等. 穿越东亚不同定义对流层顶质量和臭氧通量的分析[J]. 云南大学学报(自然科学版), 2010, 32(2): 186-195 .

\$author.xingMing\_EN, \$author.xingMing\_EN, \$author.xingMing\_EN et al. The study and analysis on two kinds of cross-tropopause fluxes of mass and ozone in East Asia[J]. , 2010, 32(2): 186-195 .

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编辑出版：云南大学学报编辑部（昆明市翠湖北路2号，650091）

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