

农村发展—生态资源环境

2008年夏季昆明上空下平流层重力波统计特性

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摘要:

利用昆明探空站2008年夏季(6月至8月)垂直高分辨率的L波段探空资料,分析了昆明上空下平流层(21~28 km)惯性重力波的统计特性。分析结果表明:1)垂直波长主要集中在3.5~4 km之间,平均值约为3.53 km;水平波长主要集中在250~1250 km之间,平均值约为714 km;平均水平波长与平均垂直波长之比约为200:1。2)固有频率主要集中在1~2.5之间,平均值约为1.7,相当于固有周期17 h左右。3)重力波能量在垂直方向上主要向上传播,其出现频率达到86%;水平传播方向主要为偏东、偏北、西南、偏南和东南5个方向。4)垂直固有波速主要集中在-0.1~0 m/s之间,平均值约为-0.06 m/s;水平固有波速主要集中在10~20 m/s之间,平均值约为14.5 m/s。

关键词: 统计特性

Statistics of gravity waves in the lower stratosphere over Kunming during summer 2008

Abstract:

Abstract: The statistical characteristics of inertia gravity waves in the lower stratosphere (21~28 km) over Kunming are studied based on the high vertical resolution L-band radiosonde data in the summer (June to August) of 2008 from Kunming sounding station. The results show that: 1) The vertical wavelengths are mainly in the range of 3.5~4 km, with an average of about 3.53 km. The horizontal wavelengths are mainly distributed between 250~1250 km, with a mean value of about 714 km. The ratio of the mean horizontal to vertical wavelength is about 200:1. 2) The intrinsic frequency is mainly concentrated in 1~2.5, with an average of about 1.7, equivalent to an intrinsic period of 17 hours or so. 3) The gravity wave energies are mostly propagating upward in the vertical direction with an occurrence of 86%. The mean horizontal propagation directions of the gravity waves are mainly eastward, northward, southwestward, southward, and southeastward. 4) The vertical intrinsic phase speed is dominated by -0.1~0 m/s, with a mean value of about -0.06 m/s. The horizontal intrinsic phase speed mainly ranges from 10~20 m/s, with a mean value of about 14.5 m/s.

Keywords: statistical characteristics

收稿日期 2010-05-31 修回日期 2010-12-06 网络版发布日期 2011-03-31

DOI:

基金项目:

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