



东亚低纬地区大气臭氧时空分布特征

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Characteristics of temporal-spatial distribution of atmospheric ozone over the low-latitude regions in East Asia

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- 摘要
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全文: PDF (5365 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 利用1979~1992年和1997~2008年2个时间段(分别称为 I 期和 II 期)的TOMS臭氧总量月平均网格资料,对东亚低纬地区大气臭氧的分布变化和纬度带特征进行了较为详细的对比研究.结果表明:① II 期较 I 期区域大气臭氧浓度水平整体降低;区域臭氧浓度普遍低于同纬度其它区域,受地形和环流影响显著;② I 期和 II 期区域平均及纬带平均臭氧浓度均表现为不同的季节和年际变化特征,南北有别,近赤道纬带和较高纬带有异;③ I 期和 II 期区域平均臭氧浓度时间序列除典型的年变化周期外,还有略低于QBO振荡的1.3~2.3a主周期,而区域赤道纬度带臭氧浓度QBO振荡却特别明显.值得注意的是,该1.3~2.3a主周期呈现区域南北半球部分的跷跷板式强弱振荡.

关键词: 臭氧总量 趋势分析 亚印太交汇区 小波分析 极差

Abstract: Based on total ozone monthly mean grid data derived from TOMS(Total Ozone Mapping Spectrometer) during the periods of 1979 to 1992 (defined as I period) and 1997 to 2008 (II period),the characteristics of temporal-spatial distribution and latitude-band of atmospheric ozone over the low-latitude regions in East Asia have been comparatively studied in detail.The results showed that,① compared to the I period,the overall level of the regional atmospheric ozone concentration during II period has been reduced;regional ozone concentrations are generally lower than other regions of the same latitude,which bears significant relationship with the topography and atmospheric circulation;②the regional and the latitude-band averaged ozone concentration during I and II periods shows different seasonal and interannual variation characteristics.And the difference not just exist in north and south area,but also near-equatorial latitude band and high latitude band;③ except for the annual cycle,the temporal distribution of the regional averaged ozone over the studied area has a 1.3—2.3 a main cycle,the length of which is slightly lower than Quasi-biennial oscillation(QBO).While for the Equatorial latitude-band,there exists a maintained evident QBOperiod.It should be noted that,the 1.3—2.3 a cycle shows a seesaw effect between northern and southern hemispheres.

Key words:

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