

北京边界层大气污染物的垂直廓线监测与分析

朱燕舞^{1,2}, 刘文清², 谢品华², 窦科², 秦敏², 司福祺^{2*}

1 合肥工业大学化学工程学院, 合肥 230009

2 中国科学院环境光学与技术重点实验室, 中国科学院安徽光学精密机械研究所, 合肥 230031

Monitoring and analysis for vertical profiles of air pollutants in boundary layer of Beijing

ZHU Yan-Wu^{1,2}, LIU Wen-Qing², XIE Pin-Hua², DOU Ke², QIN Min², SI Fu-Qi^{2*}

1 School of Chemical Engineering, Hefei University of Technology, Hefei 230009, China

2 Key Lab of Environmental Optics and Technology, Chinese Academy of Sciences, and Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Hefei 230031, China

摘要

参考文献

相关文章

Download: PDF (3287KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要

基于扫描差分光学吸收光谱 (DOAS) 系统, 于2007年8月27日~9月4日期间对北京市朝阳区大气污染物SO₂, HCHO, O₃和NO₂的垂直分布进行了连续监测, 并对污染物垂直廓线进行了分析, 详细探讨了SO₂垂直分布特征以及夜间NO对O₃的滴定作用. 结果表明, SO₂浓度通常没有明显垂直分层分布特征, 但在清晨风速较低时呈现负梯度变化. 研究发现夜间O₃、NO和NO₂之间存在稳态作用, 表明城市区域O₃的滴定主要来自于地面NO的直接排放, 显示出NO的滴定作用对夜间O₃、NO和NO₂的垂直变化起到重要作用.

关键词: 扫描差分吸收光谱 (DOAS) 垂直廓线 大气污染物 监测

Abstract:

Based on the scanning differential optical absorption spectroscopy (DOAS) system, vertical distribution of air pollutants (SO₂, HCHO, O₃ and NO₂) were observed continuously from Aug 27, 2007 to Sep 4, 2007 in Chaoyang District of Beijing and their vertical profiles were analyzed. The typical vertical variation characteristic of SO₂ and nocturnal NO titration to O₃ were discussed. The results indicated that the gradient of SO₂ was not obvious, and the negative gradient appeared during the morning hours when wind speed was low. The measurement also clearly showed the dominant role of NO titration for vertical variations of nocturnal chemistry in urban areas and O₃ concentrations was mainly influenced by the direct emissions of NO.

Keywords: Scanning different optical absorption spectroscopy (DOAS) Vertical profile Air pollutant Monitor

Received 2009-07-06;

Fund:

国家自然科学基金项目 (40675072), 国家高技术研究发展计划 (863) 项目 (2006AA06A301) 资助.

Corresponding Authors: 朱燕舞 Email: yanwuzhu@sina.com

About author: 朱燕舞, 女, 1977年生, 博士, 毕业于中国科学院安徽光学精密机械研究所, 主要从事环境监测研究工作.

引用本文:

朱燕舞, 刘文清, 谢品华, 窦科, 秦敏, 司福祺. 北京边界层大气污染物的垂直廓线监测与分析[J] 地球物理学报, 2010, V53(6): 1278-1283

ZHU Yan-Wu, LIU Wen-Qing, XIE Pin-Hua, DOU Ke, QIN Min, SI Fu-Qi. Monitoring and analysis for vertical profiles of air pollutants in boundary layer of Beijing[J] Chinese Journal Geophysics, 2010, V53(6): 1278-1283

链接本文:

<http://www.geophy.cn/CN/10.3969/j.issn.0001-5733.2010.06.005> 或 <http://www.geophy.cn/CN/Y2010/V53/I6/1278>

Service

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- Email Alert
- RSS

作者相关文章

- 朱燕舞
- 刘文清
- 谢品华
- 窦科
- 秦敏
- 司福祺