

引用本文(Citation):

江芳, 王维和, 王咏梅, 王英鉴.FY-3气象卫星紫外臭氧总量探测仪辐亮度在轨定标与反演结果分析. 地球物理学报, 2012,55(3): 760-767,doi: 10.6038/j.issn.0001-5733.2012.03.005

JIANG Fang, WANG Wei-He, WANG Yong-Mei, WANG Ying-Jian.Calibration in-orbit and retrieval result study of FY-3 Total Ozone Unit (TOU).Chinese J.Geophys. (In Chinese),2012,55(3): 760-767,doi: 10.6038/j.issn.0001-5733.2012.03.005

FY-3气象卫星紫外臭氧总量探测仪辐亮度在轨定标与反演结果分析

江芳¹, 王维和², 王咏梅¹, 王英鉴^{1*}

1. 中国科学院空间科学与应用研究中心, 北京 100190;
2. 中国气象局中国遥感卫星辐射测量和定标重点开放实验室, 北京 100081

Calibration in-orbit and retrieval result study of FY-3 Total Ozone Unit (TOU)

JIANG Fang¹, WANG Wei-He², WANG Yong-Mei¹, WANG Ying-Jian^{1*}

1. Center for Space Science and Applied Research, Chinese Academy of Sciences, Beijing 100190, China;
2. Key Laboratory of Radiometric Calibration and Validation for Environmental Satellites, China Meteorological Administration (LRCVES/CMA), Beijing 100081, China

摘要

参考文献

相关文章

Download: PDF (705KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 FY-3气象卫星上搭载的紫外臭氧总量探测仪TOU是我国自主开发研制的首台用于全球臭氧总量定量测量的探测仪,自发射以来已成功在轨运行近两年.由于TOU发射前辐亮度定标存在偏差,为了得到高精度的产品,TOU必须进行在轨定标.本文介绍了基于辐射传输模式计算对TOU辐亮度进行在轨定标的方法,定标过程中用于模拟辐亮度计算的臭氧总量由与TOU观测时刻相近的国外臭氧总量探测仪器MetOp/GOME-2提供.文章将在在轨定标后TOU的反演结果与AURA/OMI以及地基的产品进行比较,结果表明,用辐射传输模式对TOU辐亮度进行在轨定标的方法是可行的,反演结果能够真实地反映臭氧的时空分布特性,在全球部分地基观测站所处的位置上对TOU,OMI以及地基的臭氧总量进行比较的结果表明,TOU与OMI的相对偏差均方根约为2.52%,TOU与地基以及OMI与地基观测结果之间的相对偏差均方根分别为4.45%和3.89%.

关键词 臭氧总量探测仪, 臭氧总量, 风云三号, 反演

Abstract: Ultraviolet Total Ozone Unit (TOU) is one of the main payloads on FY-3 satellite and the first instrument for daily global coverage of total ozone monitoring in China. TOU has been operating in-orbit about two years. Because pre-launch calibration has serious error in high ranges of radiance, an in-orbit calibration method based on radiative transfer model calculation was introduced in the paper, the total ozone column used to calculate the simulation radiance was produced from MetOp/GOME-2. The retrieval results were compared with AURA/OMI global ozone products and ground-based ozone measurement data, the results show that the calibration method is feasible and the spatial and temporal distribution characteristics are consistent with OMI and GOME-2 products. The quantitative comparisons with ground-based measurements and AURA/OMI ozone product were made over 74 stations, the TOU total ozone retrieval has a 2.52% RMS relative error compared with AURA/OMI ozone product. The TOU total ozone retrieval has a 4.45% RMS relative error compared with ground-based ozone product and the AURA/OMI total ozone retrieval has a 3.89% RMS relative error compared with ground-based ozone product.

Keywords Total Ozone Unit, Total column ozone, FY-3 satellite, Retrieval

Received 2011-06-28;

Fund:

国家自然科学基金(41005013)以及国家高技术研究发展计划项目(2008AA121703)资助.

About author: 江芳,女,1977年生,副研究员,主要从事中高层大气物理学研究.E-mail: jiangf@nssc.ac.cn

链接本文:

<http://118.145.16.227/geophy/CN/10.6038/j.issn.0001-5733.2012.03.005> 或 <http://118.145.16.227/geophy/CN/Y2012/V55/I3/760>

[查看全文](#) [下载PDF阅读器](#)

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

- [江芳](#)
- [王维和](#)
- [王咏梅](#)
- [王英鉴](#)

