

遥感图像双角度偏振大气校正仪

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Double-angle polarized atmospheric corrector for remote sensing images

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摘要 图/表 参考文献 相关文章 (15)

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摘要 研制了一种双角度偏振大气校正仪航空样机用于卫星遥感图像数据的定量化。该仪器通过时间同步和空间覆盖的探测方式获取被校正图像对应的角度、光谱、偏振三个维度的大气信息,实现气溶胶和水汽的高精度参数的反演;将反演获取的大气参数作为输入条件,利用辐射传输模型进行遥感图像的高精度大气校正。仪器采用天底(0°)和前向(55°)两个方向观测,具有8个探测波段,覆盖可见到短波红外(0.49~2.25 μm)波段,其中5个波段具备偏振探测能力;采用高精度一体化结构设计保证各偏振探测通道的视场重合精度,降低偏振探测目标不一致引起的偏振测量误差。实验室定标和测试结果表明,偏振波段的视场重合度优于95%,偏振测量精度优于1%(偏振度DoLP=0.3),满足仪器设计指标要求。

关键词 : 偏振遥感, 大气校正仪, 偏振测量, 气溶胶, 遥感图像

Abstract : A double-angle polarizing atmospheric corrector (DPAC) on an airborne platform is established for the quantification of remote sensing data. This sensor acquires spectral, angle and polarization information in image areas by time synchronization and space covering to implement the high-precision retrieval of aerosols and water vapors. Then, by taking these atmospheric parameters obtained by atmospheric retrieval as an input, the high-precision atmospheric correction for optical remote sensing images is achieved with a radiation transfer model. The DPAC has two detecting directions, one is along the nadir angle (0°) and the other is a forward angle (55°). It covers 8 wavebands ranging from 0.49 μm to 2.25 μm, among which five wavebands are designed for polarizing measurement. To overcome the polarization measurement errors caused by detection target inconsistent, the higher precision and integrated structure is designed to ensure the field overlap accuracy of polarization detection channels. The results of lab calibration and test show that the viewing field coincidence is better than 95% and the polarization accuracy is better than 1% (DoLP=0.3), which meets the requirements of the DPAC for specifications.

Key words : polarization remote sensing atmospheric corrector polarization measurement aerosol remote sensing image

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