

科学出版社
出版
中国地理学会环境遥感分会
中国科学院遥感与数字地球研究所
主办

JOURNAL OF REMOTE SENSING

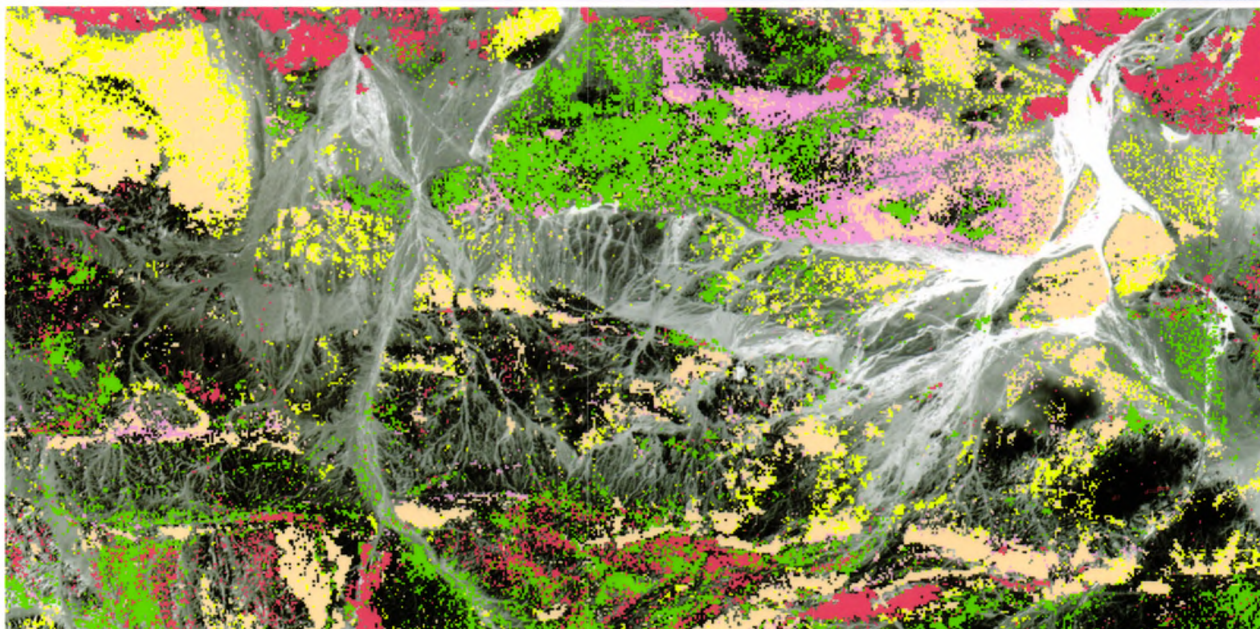
遥感学报

2014年

Vol.18 第18卷 增刊

ISSN 1007-4619 CN11-3841 / TP CODEN YXAUAB

天宫一号遥感应用专刊



中铝白云母 贫铝白云母 富铝白云母 白云石 绿泥石

遥感学报

Yaogan Xuebao

第 18 卷 增刊 2014 年

目 次

序言	(1)
综述	
天宫一号高光谱成像仪遥感应用	高铭, 张善从, 李盛阳 (2)
光谱成像技术	
高光谱成像仪发展简况	颜昌翔 (11)
可编程红外焦平面光谱成像技术研究	庄晓琼, 王晟玮, 王跃明 (20)
红外遥感器自身引起的背景辐射研究	陈永和, 陈洪达, 傅雨田 (25)
红外焦平面探测器信息获取与预处理电路设计	范文龙, 董峰, 傅雨田 (30)
天宫一号超光谱仪红外谱段的实验室定标	黄小仙, 傅雨田 (35)
地面处理技术	
基于高性能计算平台的天宫一号遥感数据地面预处理系统	张万峰, 赵灵军, 刘志文 (42)
天宫一号高光谱数据辐射校正的 CUDA 并行优化	赵海娜, 吴远峰, 张兵 (49)
天宫一号高光谱成像仪系统光谱辐射校正	张文娟, 吴远峰, 刘良云, 张兵, 李绪志, 张九星 (56)
天宫一号高光谱成像仪严密成像几何模型研究	刘志文, 刘定生, 魏静波 (62)
高光谱红外谱段交叉定标与近海遥感应用试验	邢前国, 娄明静, 张九星, 李绪志, 宁吉才, 高志强 (68)
遥感应用	
面向地质应用的天宫一号成像光谱数据评价	林健, 闫柏琨, 董新丰, 杨苏明, 杨日红, 崔静, 郭鼎, 王润生 (74)
天宫一号高光谱数据相关检测法蚀变信息提取	张艮中, 吴太夏, 刘佳, 张立福, 童庆禧 (84)
天宫一号高光谱数据的船只检测实验	邹亚荣, 赵巍, 阎宇 (92)
利用天宫一号高光谱数据识别植被类型的评估研究	范应龙, 谭炳香, 东启亮 (98)
面向对象规则和支持向量机的天宫一号高光谱影像分类	李雪轲, 王晋年, 张立福, 吴太夏, 杨杭, 刘凯, 姜海玲 (107)
基于天宫一号高光谱数据与 Landsat TM 数据的湿地利用变化监测	胡勇, 刘良云 (116)
利用天宫一号和 Landsat 7 对地观测数据的森林变化检测	庞勇, 张连华, 李增元, 覃先林, 李绪志, 张九星, 刘志文 (121)
利用天宫一号高光谱红外谱段估算青藏高原地表通量与蒸散量	仲雷, 马耀明, 秦军, 傅云飞, 冯璐, 潘晓 (126)
天宫一号数据地表温度反演及其在城市热岛效应中的应用	历华, 杜永明, 柳钦火, 徐大琦, 曹彪, 蒋金雄, 王合顺 (133)
应用天宫一号高光谱红外谱段数据反演地表温度产品及验证	于文凭, 马明国 (144)
天宫一号空间应用推广服务平台介绍	(152)

JOURNAL OF REMOTE SENSING

(Vol.18 Sup 2014)

CONTENTS

Overview

Tiangong-1 hyperspectral remote sensing and application
..... GAO Ming, ZHANG Shancong, LI Shengyang (10)

Spectral Imaging Technology

A brief introduction to the development of hyperspectral imager YAN Changxiang (19)
Study on programmable infrared hyperspectral imaging technology
..... ZHUANG Xiaoqiong, WANG Shengwei, WANG Yueming (24)
Study on background of space infrared optical system caused by self-emission
..... CHEN Yonghe, CHEN Hongda, FU Yutian (29)
Information acquisition and pre-processing circuit design of infrared focal plane detector
..... FAN Wenlong, DONG Feng, FU Yutian (34)
Calibration for the thermal band of hyperspectral imager in Tiangong-1 HUANG xiaoxian, FU Yutian (41)

Ground Processing Technology

Tiangong-1 ground-based remote sensing data preprocessing system for high-performance computing platform
..... ZHANG Wanfeng, ZHAO Lingjun, LIU Zhiwen (48)
Parallel computing for Tiangong-1 hyperspectral image radiometric normalization using CUDA
..... ZHAO Haina, WU Yuanfeng, ZHANG Bing (55)
Tiangong-1 hyperspectral imager radiometric and spectral correction
..... ZHANG Wenjuan, WU Yuanfeng, LIU Liangyun, ZHANG Bing, LI Xuzhi, ZHANG Jiuxing (61)
Rigorous geometric model of Tiangong-1 hyperspectral spectrometer
..... LIU Zhiwen, LIU Dingsheng, WEI Jingbo (67)
Radiometric cross-calibration of Tiangong-1 and MODIS infrared bands and applications in monitoring
coastal sea surface temperature
..... XING Qianguo, LOU Mingjing, ZHANG Jiuxing, LI Xuzhi, NING Jikai, GAO Zhiqiang (73)

Application of Remote Sensing

Evaluating of Tiangong-1 imaging spectrometer data oriented to geological applications LIN Jian,
..... YAN Bokun, DONG Xinfeng, YANG Suming, YANG Rihong, CUI Jing, GUO Ding, WANG Runsheng (83)
Alteration information extraction of Tiangong-1 hyperspectral data based on band correlation detection
..... ZHANG Genzhong, WU Taixia, LIU Jia, ZHANG Lifu, TONG Qingxi (91)
Ships detection from the Tiangong-1 hyperspectral data ZOU Yarong, ZHAO Wei, YAN Yu (97)

(to be continued to Inside Back Cover)

Assessing classification capacity of hyperspectral data of Tiangong-1 based on See5.0	
.....	<i>FAN Yinglong, TAN Bingxiang, DONG Qiliang</i> (106)
A combined object-based segmentation and support vector machines approach for classification of Tiangong-1 hyperspectral image	
.....	<i>LI Xueke, WANG Jinnian, ZHANG Lifu, WU Taixia, YANG Hang, LIU Kai, JIANG Hailing</i> (115)
Monitoring wetlands changes using Tiangong-1 hyperspectral data and landsat TM imagery	
.....	<i>HU Yong, LIU Liangyun</i> (120)
Forest change detection using Tiangong-1 and Landsat 7 earth observation data	
.....	<i>PANG Yong, ZHANG Lianhua, LI Zengyuan, QIN Xianlin, LI Xuzhi, ZHANG Jiuxing, LIU Zhiwen</i> (125)
Estimation of turbulent heat fluxes and evapotranspiration over the Tibetan Plateau from Thermal IR imaging based on Tiangong-1	
.....	<i>ZHONG Lei, MA Yaoming, QIN Jun, FU Yunfei, FENG Lu, PAN Xiao</i> (132)
Land surface temperature retrieval from Tiangong-1 data and its applications in urban heat island effect	
.....	<i>LI Hua, DU Yongming, LIU Qinhuo, XU Daqi, CAO Biao, JIANG Jinxiong, WANG Heshun</i> (143)
Retrieving the high-spatial-resolution land surface temperature products from the thermal infrared domain of the Tiangong-1	
.....	<i>YU Wenping, MA Mingguo</i> (151)



封面说明

About the Cover

天宫一号卫星高光谱影像数据

The hyper spectral image acquired by Tiangong-1 satellite

天宫一号高光谱成像是中国自主研制的目前空间分辨率和光谱分辨率综合指标最高的高光谱成像仪。封面图片为天宫一号卫星获取的内蒙古额济纳旗西部地区的影像数据，上图为高光谱短波红外波段影像，下图为矿物成分信息空间分布图。天宫一号高光谱数据可广泛应用于矿物分布调查、森林资源详查、水文生态监测、海岛海岸带环境监测、土地利用和城市环境监测等领域。

Tiangong-1 hyper spectral imager is a new generation of aerospace remote sensing equipment, which is independently developed by China and has the highest comprehensive index of spatial and spectral resolution. The cover shows the data captured by Tiangong-1 satellite in the western region of Ejinaqi, Inner Mongolia, northern China. The top image is high spectral shortwave infrared spectral image and the bottom image is the spatial distribution map of mineral composition. These data are also expected to play a significant role in mineral distribution investigation, detailed investigation of forest resources, hydrology ecological monitoring, environmental monitoring coastal islands, land use, urban environmental monitoring and other fields.

遥感学报

JOURNAL OF REMOTE SENSING

YAOGAN XUEBAO (双月刊 1997年创刊)

第18卷 增刊 2014年6月25日

(Bimonthly, Started in 1997)

Vol.18 Sup. June 25, 2014

主 管 中国科学院
主 办 中国科学院遥感与数字地球研究所
中国地理学会环境遥感分会
主 编 顾行发
编 辑 《遥感学报》编委会
北京市安外大屯路中国科学院遥感与数字地球研究所
邮编：100101 电话：86-10-64806643
http://www.jors.cn
E-mail:jrs@irsa.ac.cn
出 版 科 学 出 版 社
印刷装订 北京科信印刷有限公司
总 发 行 科 学 出 版 社
北京东黄城根北街16号
邮政编码：100717
电话：86-10-64017032
E-mail:sales_journal@mail.sciencep.com
国外发行 中国国际图书贸易总公司
北京 399 信箱 邮政编码：100044

Superintended by Chinese Academy of Sciences
Sponsored by Institute of Remote Sensing and Digital Earth,CAS
The Associate on Environment Remote Sensing of China
Editor-in-Chief GU Xing-fa
Edited by Editorial Board of Journal of Remote Sensing
Add: P.O.Box 9718, Beijing 100101, China
Tel: 86-10-64806643
http://www.jors.cn
E-mail: jrs@irsa.ac.cn
Published by Science Press
Printed by Beijing Kexin Printing Co. Ltd.
Distributed by Science Press
Add: 16 Donghuangchenggen North Street,
Beijing 100717, China
Tel: 86-10-64017032
E-mail: sales_journal@mail.sciencep.com
Overseas distributed by China International Book Trading Corporation
Add: P.O.Box 399, Beijing 100044, China

中国标准连续出版物号：ISSN 1007-4619

CN 11-3841/TP

国内邮发代号：82-324

国外发行代号：BM 1002

定价：70.00元

ISSN 1007-4619

CODEN YXAUAB

国内外公开发行

