

利用中欧洲数据开展农作物分类研究

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摘要: 龙计划第 4 期项目 (项目号 32194) 旨在联合利用中欧的高中低分辨率卫星数据开展农业监测和农作物分类研究。该项目由两个子项目组成, 子项目一主要是利用高分辨率的卫星数据, 子项目二主要是利用中低分辨率的卫星数据。子项目一的名称为利用中欧时间序列高分辨率卫星数据开展农作物分类研究, 哨兵 2 号和高分一号是主要的数据源, 目标是充分利用哨兵 2 号和高分一号数据的优势更好的制作农作物分布图, 研究重点是利用 Sent2Agri 项目的技术方法在中国的研究区开展应用推广研究。子项目二的名称为利用 PROBA-V 和风云卫星中分辨率数据开展作物监测研究, 充分利用两个中低分辨率的卫星数据开展大范围的农业监测研究。在该项目的支持下, 研究团队研发了处理双方卫星数据和从中提取信息的技术方法, 并在宁夏黄河灌区利用上述数据进行了农作物分类制图, 利用哨兵 2 号和高分一号的分类精度可达 94-97%, 利用 PROBA-V 和 FY3B-MERSI 的分类总体精度可达 88%。农作物分类的技术方法在 Sent2Agri 项目的技术方法的基础上得到提高和改善。

关键词: 农作物制图; 分类; 高分; 哨兵; Sent2Agri; 龙计划

Crop Mapping with combined use of European and Chinese Satellite Data

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Abstract: This Dragon 4 project 32194 was to investigate the methodology of combined use of European and Chinese high and Medium Satellite data to assess crop and produce crop maps. This project was composed of two subprojects. One was focusing on the high-resolution satellite data and another was focusing on the medium resolution satellite data. The first subproject was entitled crop mapping with time series of high resolution European and Chinese satellite data. The Sentinel-2 and GF-1(GaoFen or high resolution in English) onboard European and Chinese satellites, respectively, were supposed to use as both have quite similar spectral bands. This subproject aimed to take both advantages of Sentinel-2 and GF-1 data to produce a better and earlier crop mapping. The team was supposed to apply and adapt the crop mapping approach of ESA (European Space Agency) Sent2Agri project to a Chinese site with time series of European and Chinese satellite images. The second subproject was entitled assessing crops with PROBA-V (PProject for On-Board Autonomy–Vegetation) and FY-3 MERSI (Fengyun, Wind and Cloud in English, Medium Resolution Spectral Imager) data. The PROBA-V and FY3-MERSI both have quite similar channels and their own advantages. The new development of this kind of medium resolution satellite data in Europe and China was providing us an opportunity to investigate the possibility and the potential of using both PROBA-V and FY-3 MERSI Data for the crop assessment for large area. This subproject was going to focus on the crop mapping with both satellite data. The team developed the methods to handle both data and then get the information retrieved. With the implementation of this dragon project, the crop type maps were produced in the irrigated area in Northwest China with the sentinel 2A/B,GF-1,PROBA-V and FY3B-MERSI. The overall accuracies of resulting crop type maps from S-2 and GF-1 reached 94-97% while the overall accuracies from PROBA-V and FY3B-MERSI reached 88%. The methodology for the crop type classification was improved and benefited from the Sent2Agri system.

Keywords: Crop Mapping; Classification; GF; Sentinel; Sent2Agri; Dragon Program