利用多源卫星数据提取农作物生长信息支持农业生产管理

范锦龙 [1], Pierre Defourny[2]

1:国家卫星气象中心,中国; 2: Universite Catholique de Louvain, Belgium

摘要：当前，遥感发展进入一个新的阶段，10-30 米分辨率的卫星数据可以方便免费获得，如中国的高分卫星系列和欧洲的哨兵卫星系列的数据，因此，开展农业监测有更多的数据源可以选择，农业监测的能力也得到不断增强和改善。但是中国的农业种植模式是多样性的，存在大的田块种植单一作物，也存在小田块插花种植多种作物，这个现状成为卫星数据的在农业领域应用的一个制约因子。在应用时，不得不在卫星数据的空间分辨率和研究区的地块大小之间做出合理的取舍。通常比较而言，中国的田块小，欧洲的田块大，中国研究人员希望使用更高分辨率的卫星数据开展农业监测。此项研究选择了 8 个典型研究区，代表中国主要的种植模式，作物类型包括小麦、玉米、水稻、甘蔗和蔬菜，这些研究区也代表北方或南方的平原区、山区、灌溉农业和雨养农业。哨兵 1、2 号和高分 1、3、6 号卫星数据及其它中国的卫星数据将用于此项研究，LAI/FPAR/FCOVER/NDVI 等参数将基于这些数据进行提取，农作物分类将开展研究。通过此项联合研究，推动中欧年青科技工作者积极参与和交流互访，在卫星数据处理方法、参数提取算法方面能得到有效交流和互鉴，从而在精细尺度更好的支持农业监测。

关键词：作物分类、农业监测、高分、哨兵、龙计划

Retrieving the crop growth information from multiple source satellite data in support of the agricultural management

Jinlong Fan[1], Pierre Defourny[2]

1: NSMC, China, People's Republic of; 2: Universite Catholique de Louvain, Belgium

Abstract: Remote sensing community has entered into a new era with the huge volume of satellite images at around 10 to 30 meter resolution fully and open available, including the sentinel series satellite in Europe and GF series satellite in China. These satellites brought more data options for the application in agricultural monitoring. The capability of agricultural monitoring in general is expected to be enhanced and improved with these satellite data in term of the monitoring spatial extent and the quality of the retrieved crop growth information. However, the agricultural cultivation is diverse in China and the rest of the world. There are existing large fields with mono crop and small fields with multiple strips of various crop types. This fact is impacting on the application of satellite data for agricultural monitoring. Therefore, the compromise of application has to be made between the optimized spatial resolution of satellite data and the field size of the study area. In general, the field size is quite small in many parts of farm land in China in comparison with that in Europe. The fine resolution satellite data are always expected to be used in the agricultural monitoring in China. In this study, 8 study sites are selected representing the major cropping systems, including winter wheat, maize, rice, sugarcane and vegetables. These sites also are representing the agricultural systems in the flat area or in hilly area, irrigated or rainfed, in the North and the South. The Sentinal1/2 and GF1/3/5/6, CBERS data are to be mainly data sources to support this study. The remote sensing parameters, like LAI/FPAR/FCOVER/NDVI are being retrieved with the adapted algorithm. The crop classification algorithm is applied to make crop type maps. Through this joint project and the heavy involvement of young scientists from Europe and China, the satellite data finely processing and information retrieval algorithm is being exchanged and it is expected to bring a step forwards to support agricultural monitoring at fine scale.

Keywords: Crop Mapping; Agricultural Monitoring; GF; Sentinel; Dragon Programme