March 2021

No.3 Total:17

Aerospace Information Research Institute, Chinese Academy of Sciences

Key laboratory of Digital Earth Science, Chinese Academy of Sciences

Big Earth Data Science Engineering Project (CASEarth)

Sino-UK Crop Pest and Disease Forecasting & Management Joint Laboratory

Key Lab of Aviation Plant Protection, Ministry of Agriculture and Rural Affairs, P.R. China

National Engineering Research Center for Agro-Ecological Big Data Analysis & Application

Report of Monitoring and Assessment of Desert Locust in Africa and Asia

Early March 2021

Desert Locust monitoring and loss assessment in Kenya

Overview

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as GF series in China, MODIS and Landsat series in US, Sentinel series in EU), and self-developed models and algorithms for Desert Locust monitoring and forecasting, the research team constructed the 'Vegetation pests and diseases monitoring and forecasting system', which could regularly release thematical maps and reports on Desert Locust.

This report focuses on the dynamic updates of desert locust monitoring and loss assessment in Kenya from January to February 2021. The results showed that from January to February 2021, desert locusts in Kenya were mainly distributed in the northern and central regions. Compared with December 2020, the newly damaged vegetation area was 798.6 thousand hectares, including 95.4 thousand hectares of cropland, 312.9 thousand hectares of grassland, and 390.3 thousand hectares of shrub. According with the rain at the end of February, the local locusts continued to mature and about to start spring breeding in March. However, due to ground control operations, the number of locusts is expected to decrease significantly. The next three months will coincide with the important crop planting season in Kenya. It is still necessary to pay attention to the dynamics of the desert locust disaster in Kenya to prevent losses to agricultural and pasture production. The specific research results are as follows.

Content

Monitoring and assessment of Desert Locust in Kenya

In early and mid-January 2021, locust swarms in Ethiopia and Somalia continued to migrate to northern, central, and eastern Kenya,

resulting in an increase in the number of locusts. In late January, locusts in Somalia spread to Kenya along the Shabelle River. As the local locusts continued to mature and lay eggs, the number of locust swarms in the north, central and east of Kenya had further increased, and the locusts had begun to spread to the west. The monitoring results show that, in January, desert locusts in Kenya harmed about 604.2 thousand hectares of vegetation area, with an increase of 472.1 thousand hectares (including 49.5 thousand hectares of cropland, 199.7 thousand hectares of grassland, and 222.9 thousand hectares of shrub) (Figure 1). In early February, local locusts continued to spread to the west and northwest, but due to ground control operations, the number of locusts in Kenya decreased significantly. The monitoring results show that, in February, desert locusts in Kenya harmed about 518.5 thousand hectares of vegetation area, with an increase of 326.5 thousand hectares (including 45.9 thousand hectares of cropland, 113.2 thousand hectares of grassland, and 167.4 thousand hectares of shrub) (Figure 2).

The result of research shows that, compared with December 2020, desert locusts in Kenya newly harmed about a total of 798.6 thousand hectares of vegetation are a in January and February 2021, including 95.4 thousand hectares of cropland, 312.9 thousand hectares of grassland, and 390.3 thousand hectares of shrub, accounting for 1.8%, 1.6% and 1.1% of the total cropland, grassland, and shrub in Kenya, respectively. The affected areas were mainly located in the central and northern parts of Kenya. Among them, North Eastern Province was the largest affected area (with an affected area of 342.1 thousand hectares), followed by Eastern Province (with an affected area of 251.0 thousand hectares), again were Rift Valley Province and Coast Province (with affected area of 136.3 and 67.7 thousand hectares). The affected area in Central Province was small (with an affected area of 1.5 thousand hectares).

This study also used Sentinel-2 satellite remote sensing data to monitor the desert locust damage in the severely affected vegetation areas in central Kenya (Figure 3). The data acquisition time is February 2021, and the spatial resolution is 10m. The study area is located at the junction of Rift Valley Province and Eastern Province, about 24 kilometers northeast of Isiolo, and about 46 kilometers southwest of Nanyuki. The vegetation types include grassland, shrub, and cropland, with a total area of 222.2 thousand hectares, including 37.2 thousand hectares of cropland, 100.4 thousand hectares of grassland, and 84.6 thousand hectares of shrub. The monitoring results showed that the damaged area of vegetation in the study area was 27.5 thousand hectares, accounting for 12.4% of the study area's total area. Among them, grassland was the largest damage area with 14.9 thousand hectares, followed by shrub with 11.1 thousand hectares, and farmland was the smallest affected area with 1.5 thousand hectares, accounting for 14.8%, 13.1%, and 4.0% of the total area of grassland, shrub, and cropland in the study area, respectively. The results of the study show that the desert locust disaster in Kenya is still severe, and continuous monitoring of the locust situation is needed to ensure Kenya's agricultural production and food security.

Comprehensive analysis shows that in March 2021, local locusts will continue to mature and begin spring breeding. However, as ground control operations continue, the size and number of desert locust swarms in Kenya have significantly decreased compared to the same period of last year. Forecasts show that the rainfall in Kenya will decrease in March and April, the environment will be drier, and the reproduction of locusts will be further restricted. The next three months will coincide with the important crop planting season in Kenya. If not properly controlled, locusts will bring a major threat to agricultural and pasture production. Ground surveys and control actions are required to ensure the safety of agricultural and pasture production.

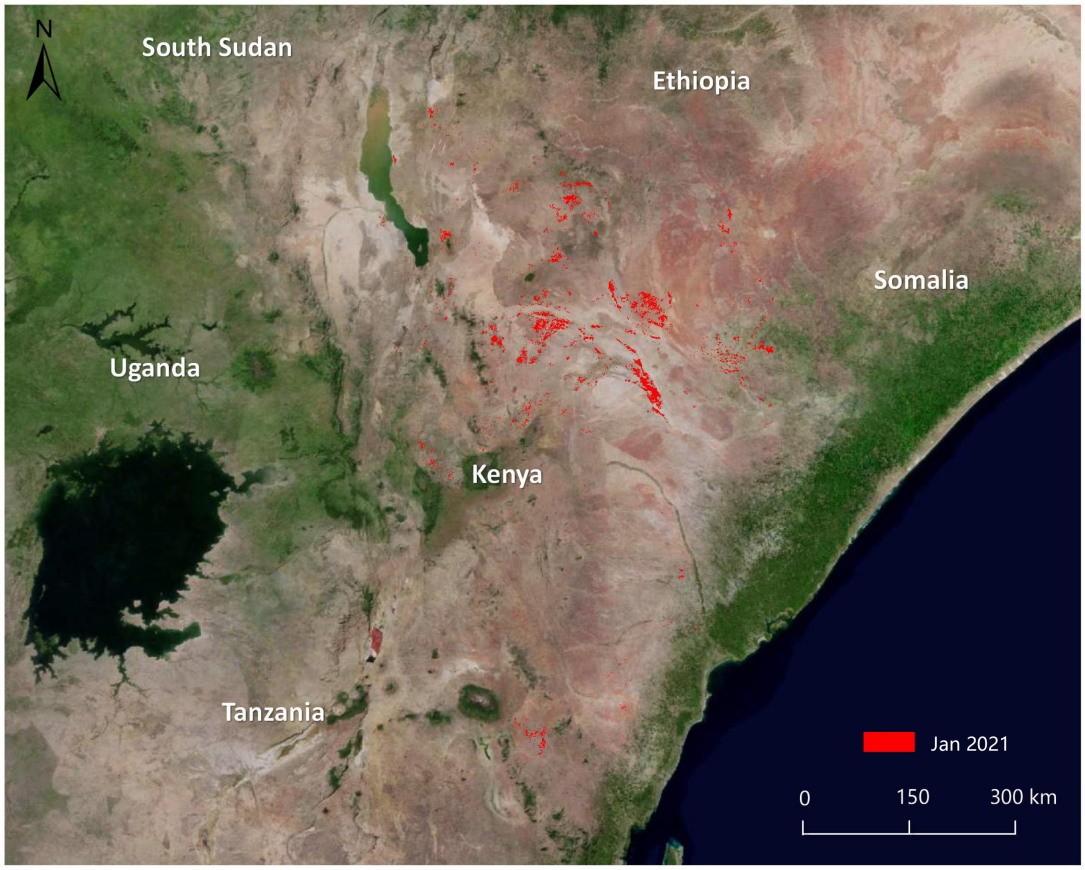

Figure 1 *Monitoring of Desert Locust damage in Kenya (January 2021)*

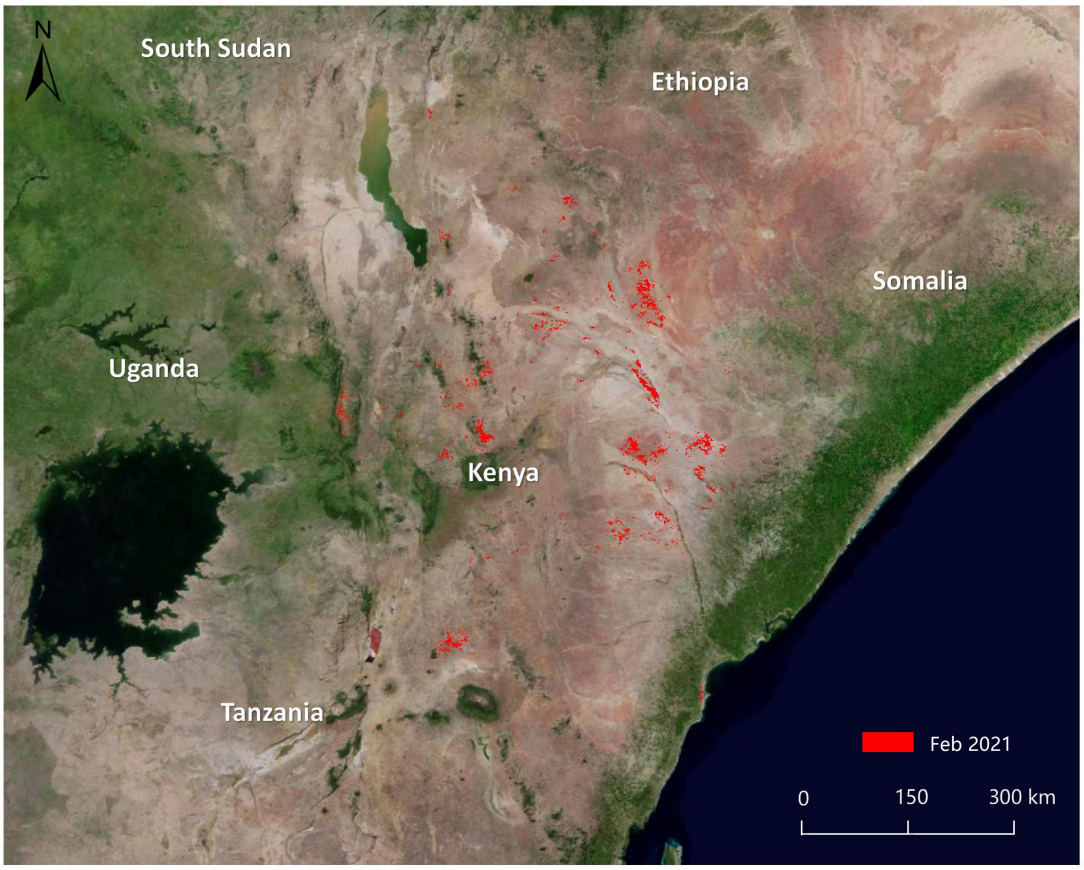

Figure 2 *Monitoring of Desert Locust damage in Kenya (February 2021)*

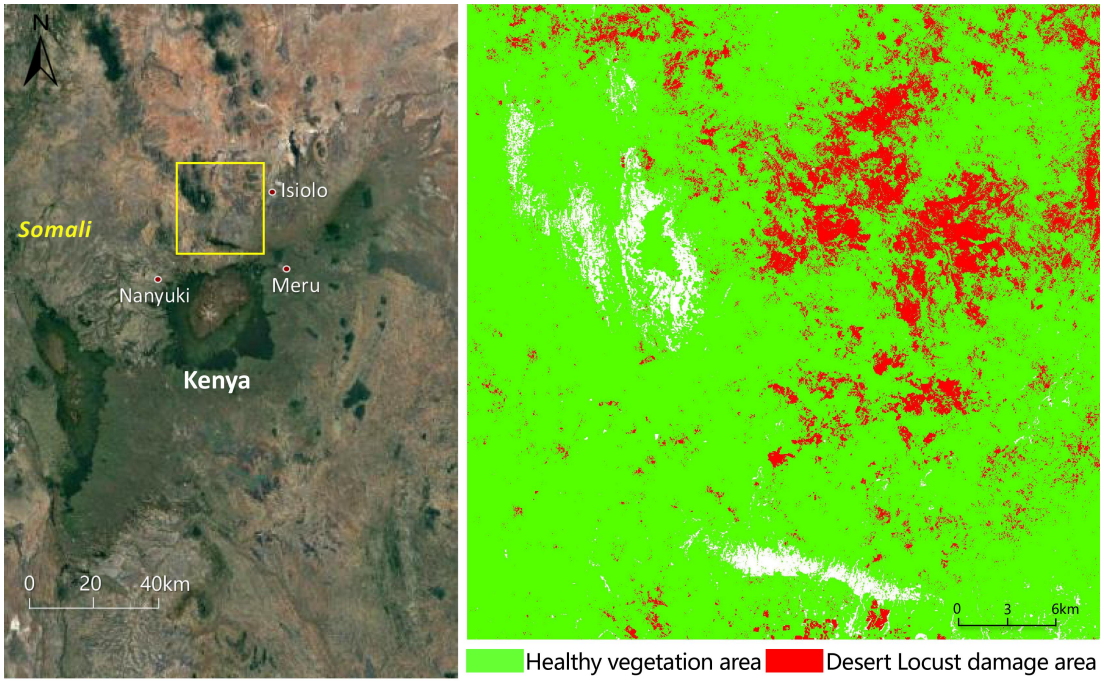

Figure 3 *Monitoring of Desert Locust damage in the key damage area of Kenya based on Sentinel-2 images (February 2021)*

Contact us

Aerospace Information Research Institute
Chinese Academy of Sciences
No.9 Dengzhuang South Road, Haidian District,
Beijing 100094, P.R.China.
http://www.rscrop.com/
http://www.rscropmap.com

Chinese English

The Vegetation Pests and Diseases Monitoring and Forecasting system are available under:
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Mission statements: As the science and knowledge service, the Sino-UK Crop Pest and Disease Forecasting & Management Joint Laboratory is to support independent evidence for crop monitoring.

Supported by the Strategic Priority Research Program of the Chinese Academy of Sciences (XDA19080304), National Key R&D Program of China (2017YFE0122400, 2016YFB0501501), National Natural Science Foundation of China (61661136004, 41801338, 41801352, 41871339), Beijing Nova Program of Science and Technology (Z191100001119089), National special support program for high-level personnel recruitment (Wenjiang Huang), and Youth Innovation Promotion Association CAS (2017085).

Citation

Report of Monitoring and Assessment of Desert Locust in Africa and Asia, (2021). Desert Locust monitoring and loss assessment in Kenya. Beijing, China: RSCROP. DOI: 10.12237/casearth.6048341d819aec524b683bcf.

Contact us **Email:** rscrop@aircas.ac.cn

Corresponding author

Professor Wenjiang Huang

Aerospace Information Research Institute, Chinese Academy of Sciences

Email: huanwj@aircas.ac.cn

Tel: +86-10-82178178

FAX: +86-10-82178177

Main contributors

This report was released by Professor Wenjiang Huang's and Associate Professor Yingying Dong's research team in Aerospace Information Research Institute, Chinese Academy of Sciences.

Chinese contributors: Wenjiang Huang, Yingying Dong, Longlong Zhao, Huichun Ye, Mingquan Wu, Kun Wang, Xiaoping Du, Changyong Dou, Jun Yan, Jingcheng Zhang, Bei Cui, Linsheng Huang, Dailiang Peng, Hong Chang, Yun Geng, Chao Ruan, Huiqin Ma, Anting Guo, Linyi Liu, Naichen Xing, Yue Shi, Qiong Zheng, Yu Ren, Hansu Zhang, Tingguang Hu, Yanru Huang, Yu Jin, Chao Ding, Biyao Zhang, Zhongxiang Sun, Xiangmei Qin, Xueling Li, , Yingxin Xiao, Zhuoqing Hao, Kang Wu, Yong Liu, Bo Wu, Weiping Kong, Juhua Luo, Jinling Zhao, Dongyan Zhang, Xiaodong Yang, Yanhua Meng, Wenjie Fan, Yue Liu, Gang Sun, Bin Wu, Qing Zhang, Dacheng Wang, Wei Feng, Xianfeng Zhou, Qiaoyun Xie, Muyi Huang, Jing Jiang, Zhaochuan Wu, Cuicui Tang, Fang Xu, Jianli Li, Wenjing Liu, Junjing Lu, Furan Song, Qingsong Guan, Qinying Yang, Chuang Liu.

Foreign contributors: Belinda Luke, Bethan Perkins, Bryony Taylor, Hongmei Li, Wenhua Chen, Pablo Gonzalez-Moreno, Sarah Thomas, Timothy Holmes, Stefano Pignatti, Giovanni Laneve, Raffaele Casa, Simone Pascucci, Martin Wooster, Jason Chapman.

Advisory Experts: Bing Zhang, Gensuo Jia, Jihua Wang, Qiming Qin, Puyun Yang, Guofei Fang, Shouquan Chai, Yuying Jiang, Jingquan Zhu, Dongmei Yan, Xiangtao Fan, Jianhui Li, Jie Liu, Yubin Lan, Jingfeng Huang, Anhong Guo, Zhanhong Ma, Yilin Zhou, Xiongbing Tu, Wenbing Wu, Feng Zhang, Zhiguo Wang, Lifang Wu, Dong Liang, Yanbo Huang, Chenghai Yang, Liangxiu Han, Ruiliang Pu, Hugh Mortimer, Jon Styles, Andy Shaw, Jadu Dash.