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

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Aerospace Information Research Institute, Chinese Academy of Sciences
Big Earth Data Science Engineering Project (CASEarth)
Key laboratory of Digital Earth Science, Chinese Academy of Sciences
National Engineering Research Center for Agro-Ecological Big Data Analysis & Application
State Key Laboratory of Remote Sensing Science
China Biodiversity Conservation and Green Development Foundation
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

Desert Locust Monitoring and Loss Assessment in Saudi Arabia, Eritrea and Somalia (December 2023)

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, etc), 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 Saudi Arabia, Eritrea and Somalia. The remote sensing monitoring results showed that, in December 2023, desert locusts were primarily distributed in the western coastal areas of the Red Sea in Saudi Arabia, the central region of Eritrea, and the northwestern region of Somalia. They posed a threat to vegetation areas, with respective impacts on an area of 15.6 thousand hectares, 9.1 thousand hectares, and 15.4 thousand hectares. It is expected that in the next two months, a decrease in rainfall is anticipated along the western coastal areas of the Red Sea in Saudi Arabia and the northwestern region of Somalia. These conditions are unfavorable for the survival and reproduction of desert locusts, leading to a reduction in locust population. In contrast, the central region of Eritrea is expected to experience abundant rainfall, creating favorable conditions for small-scale reproduction of desert locusts, resulting in an increase in locust population in that region. This period is the main growing and harvesting seasons for crops in Saudi Arabia and Somalia. It is still necessary to pay continuous attention to the dynamics of the desert locust disaster to prevent losses to agricultural and pasture production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Saudi Arabia

In December 2023, there was abundant rainfall along the western coastal areas of the Red Sea in Saudi Arabia, fostering robust vegetation growth. These favorable conditions facilitated the egg-laying and reproduction of desert locusts, leading to a further increase in the population of locusts in that region. The monitoring results showed that in December, the total damaged vegetation area was 15.6 thousand hectares in Saudi Arabia, including 3.2 thousand hectares of cropland, 4.6 thousand hectares of grassland, and 7.8 thousand hectares of shrub (Figure 1), accounting for 1.46%, 0.24%, and 0.19% of the total area of the cropland, grassland, and shrub, respectively. Compared with November 2023, the newly damaged vegetation area in Saudi Arabia was 1.7 thousand hectares, including 0.9 thousand hectares of cropland, 0.5 thousand hectares of grassland, and 0.3 thousand hectares of shrubs. Makkah had the largest area of vegetation affected, with 6.0 thousand hectares. Followed by Jizan, with 5.5 thousand hectares. The affected areas of vegetation in Asīr province were 4.1 thousand hectares.

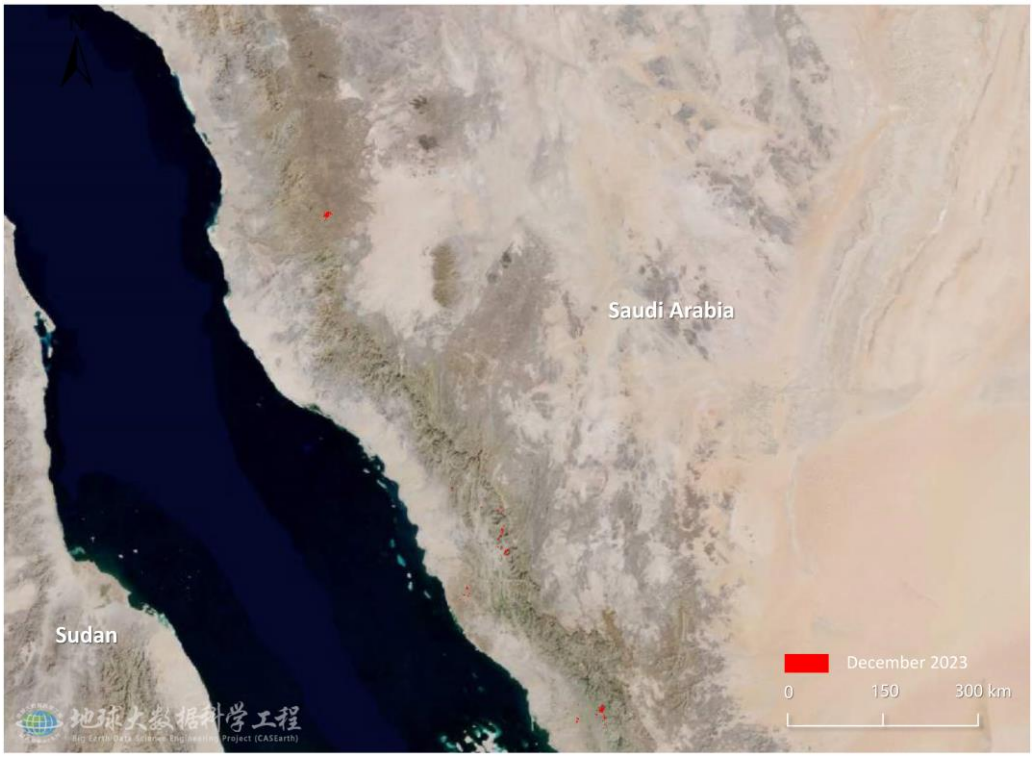

Fig.1 Monitoring of Desert Locust damage in Saudi Arabia (December 2023)

■ 2. Desert Locust Monitoring and Loss Assessment in Eritrea

In December 2023, due to control operations, there was a decrease in the number of desert locusts within Eritrea. The monitoring results showed that in December, the total damaged vegetation area was 9.1 thousand hectares in Eritrea, including 1.7 thousand hectares of cropland, 2.9 thousand hectares of grassland, and 4.5 thousand hectares of shrub (Figure 2), accounting for 0.39%, 0.06%, and 0.34% of the total area of the cropland, grassland, and shrub, respectively. Semien keih Bahri had the largest area of vegetation affected, with 7.2 thousand hectares. Followed by Debub, with 1.9 thousand hectares.

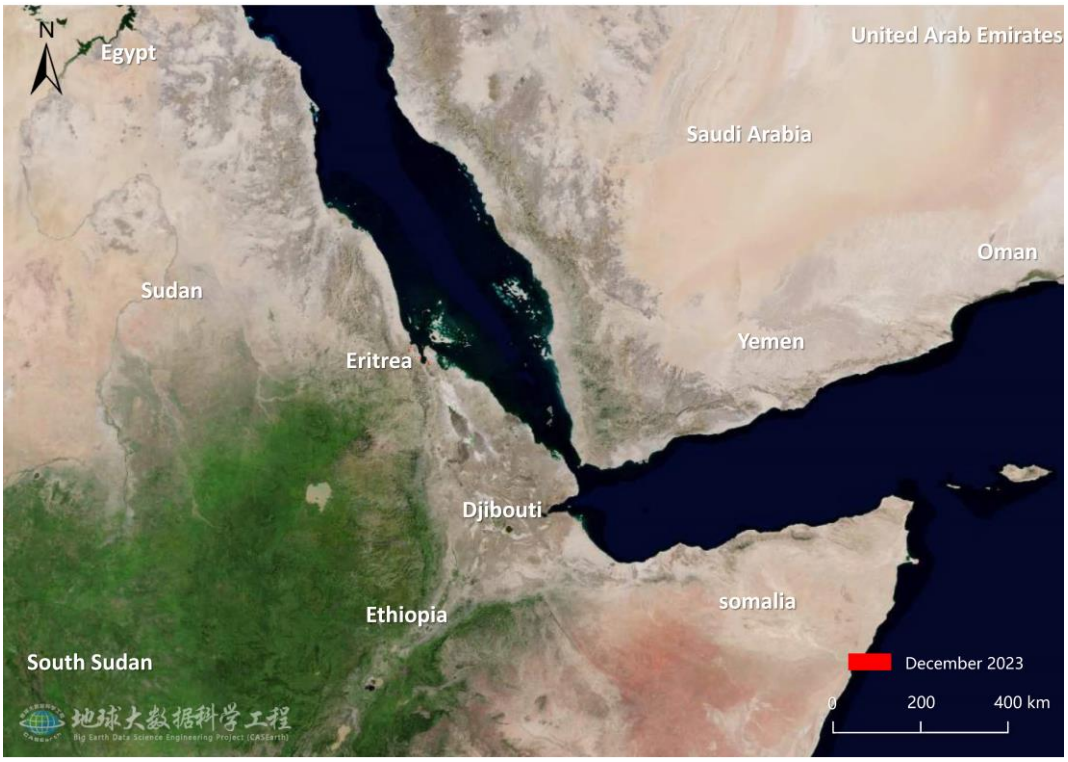

Fig.2 Monitoring of Desert Locust damage in Eritrea (December 2023)

■ 3. Desert Locust Monitoring and Loss Assessment in Somalia

In December 2023, the northwestern region of Somalia exhibited healthy vegetation growth, providing favorable conditions for the egg-laying and reproduction of desert locusts. Consequently, the locust population in that region increased. The monitoring results showed that in December, the total damaged vegetation area was 15.4 thousand hectares in Somalia, including 3.8 thousand hectares of grassland and 11.6 thousand hectares of shrub (Figure 3), accounting for 0.01% and 0.06% of the total area of the grassland and shrub, respectively. Compared with November 2023, the newly damaged vegetation area in Somalia was 2.2 thousand hectares, including 1.1 thousand hectares of grassland and 1.1 thousand hectares of shrubs. North-West had the largest area of vegetation affected, with 9.5 thousand hectares. Followed by Togdheer, with 4.6 thousand hectares. The affected areas of vegetation in Sanaag were 1.3 thousand hectares.

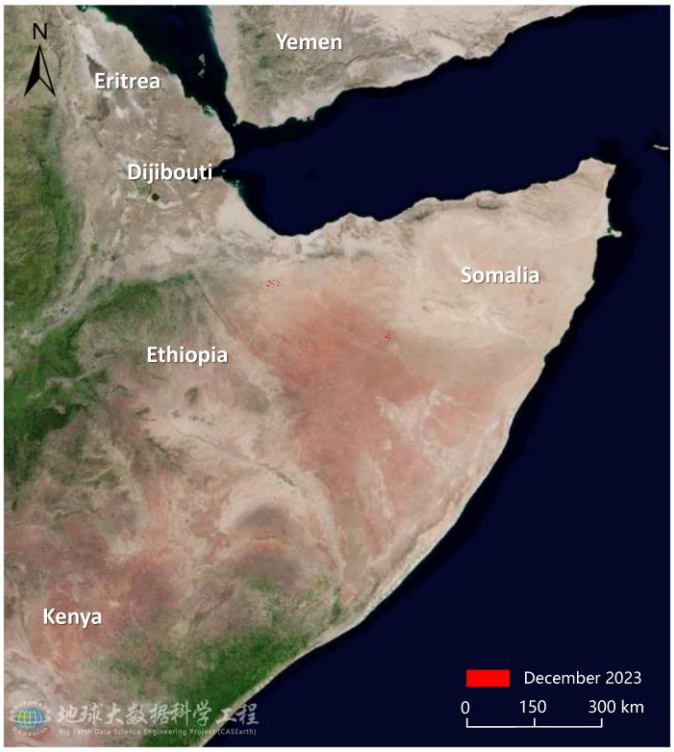

Fig.3 Monitoring of Desert Locust damage in Somalia (December 2023)

The comprehensive analysis shows that, in the next two months, a decrease in rainfall is anticipated along the western coastal areas of the Red Sea in Saudi Arabia and the northwestern region of Somalia. These conditions are unfavorable for the survival and reproduction of desert locusts, leading to a reduction in locust population. In contrast, the central region of Eritrea is expected to experience abundant rainfall, creating favorable conditions for small-scale reproduction of desert locusts, resulting in an increase in locust population in that region. It is still necessary to continue to pay attention to the dynamics of the desert locust disaster in Saudi Arabia, Eritrea and Somalia to prevent repeated losses to agricultural and pasture production.

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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, Huifang Wang, 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, RuiQi Sun, Yingxin Xiao, Zhuoqing Hao, Jing Guo, Mingxian Zhao, Kehui Ren, Xiangzhe Cheng, 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, Yunli Han, Yuzhen Zou, Lu Li, Xinyu Chen, Yunlei Xu, Jing Wang, Qibao Lu, Fanchu Kong, Juncheng Shang.

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, Jinfeng Zhou, Dongmei Yan, Xiangtao Fan, Jianhui Li, Jie Liu, Tianhua Hong,Yubin Lan, Jingfeng Huang, Huo Wang, 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, Jiali Shang, Hugh Mortimer, Jon Styles, Andy Shaw, Jadu Dash.

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Contact Us

Tel: +86-010-82178178 Fax: 010-82178177 Email: rscrop@aircas.ac.cn
Address: No.9 Dengzhuang South Road, Haidian District, Beijing 100094, China
Websites: http://www.rscrop.com / http://desertlocust.rscrop.com Post Code: 100094