Report of Monitoring, Early Warning and Assessment of Desert Locust

[2025] NO.03 Total 66
March 2025

Aerospace Information Research Institute, Chinese Academy of Sciences
State Key Laboratory of Remote Sensing Science
The International Research Center of Big Data for Sustainable Development Goals (CBAS)
Key Laboratory of National Forestry and Grassland Administration on Forest and Grassland Pest Monitoring and Warning
National Engineering Research Center for Agro-Ecological Big Data Analysis & Application
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 Eritrea, Ethiopia and Saudi Arabia (February 2025)

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.

The remote sensing monitoring results showed that, in February 2025, desert locusts were primarily distributed along the northern Red Sea coastal and central inland regions of Eritrea, the northern and eastern areas of Ethiopia, and the northern Red Sea coastal areas of Saudi Arabia, affecting 18.5, 15.8, and 23.0 thousand hectares of vegetation, respectively. Over the next two months, Eritrea is expected to experience limited rainfall, leading to drier conditions that are unfavorable for locust egg-laying and reproduction, resulting in a decline in local locust populations. Due to the influence of locust migration from northwestern Somalia, locust numbers in eastern Ethiopia are likely to increase slightly as they congregate. Meanwhile, locusts in the northern Red Sea coastal areas of Saudi Arabia are expected to migrate inland for spring breeding, leading to a decline in coastal locust numbers. This period coincides with Ethiopia's main planting and growing season, as well as Saudi Arabia's primary growing and harvest season for food crops. Therefore, continuous monitoring of desert locust dynamics remains essential to prevent recurring damage to agricultural and pastoral production. The specific results are as follows:

■ 1. Desert Locust Monitoring and Loss Assessment in Eritrea

In February 2025, Eritrea experienced limited rainfall and arid conditions, which were unfavorable for desert locust egg-laying and reproduction, leading to a decline in locust populations. The locusts were primarily distributed along the northern Red Sea coastal and central inland regions. Monitoring results showed that in January, desert locusts affected 18.5 thousand hectares of vegetation in Eritrea, including 4.2 thousand hectares of farmland, 7.7 thousand hectares of grassland, and 6.6 thousand hectares of shrubland (Figure 1), accounting for 0.96%, 0.16%, and 0.50% of the country's total farmland, grassland, and shrubland, respectively. The Debub region recorded the most extensive damage, with 8.1 thousand hectares of affected vegetation, followed by the Semien Keih Bahri region with 5.6 thousand hectares. The Gash-Barka region was also impacted, with 4.8 thousand hectares of affected vegetation.

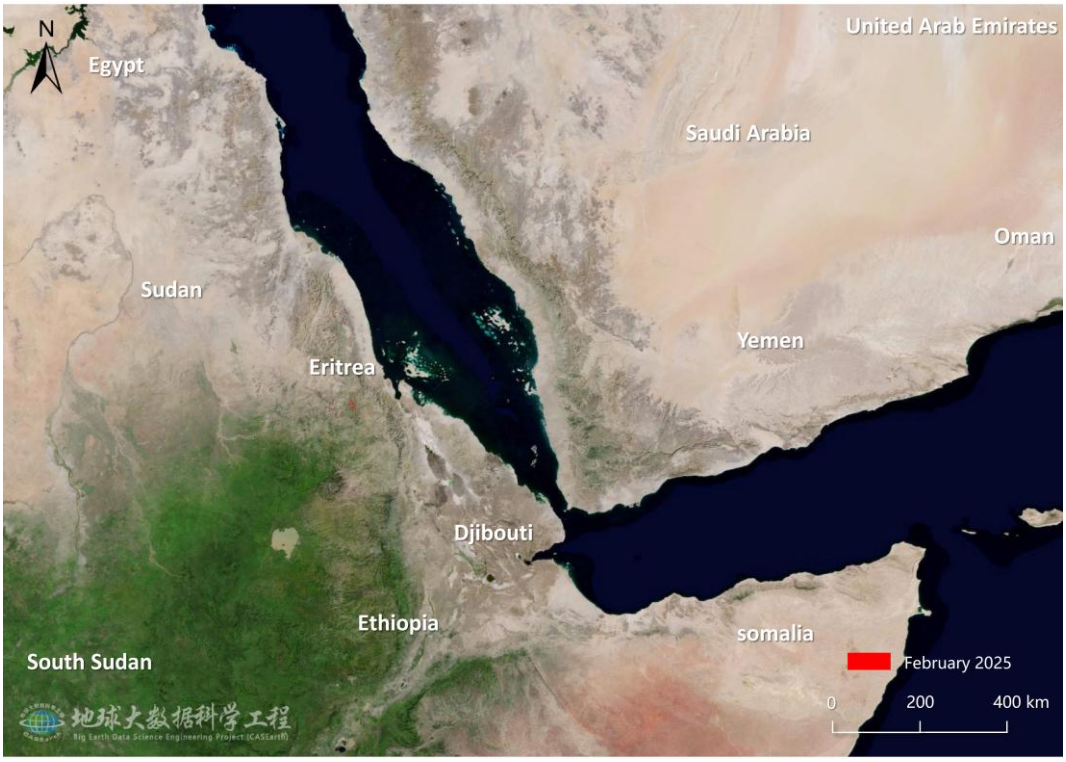

Fig.1 Monitoring of Desert Locust damage in Eritrea (February 2025)

■ 2. Desert Locust Monitoring and Loss Assessment in Ethiopia

In February 2025, influenced by locust migration from central inland Eritrea and northwestern Somalia, the desert locust population in Ethiopia increased compared to the previous months, primarily distributed in the northern and eastern regions of the country. Monitoring results showed that in February, desert locusts affected 15.8 thousand hectares of vegetation in Ethiopia, including 2.7 thousand hectares of farmland, 6.6 thousand hectares of grassland, and 6.5 thousand hectares of shrubland (Figure 2), accounting for 0.02%, 0.09‰, and 0.03% of the country's total farmland, grassland, and shrubland, respectively. The Afar region recorded the most extensive damage, with 9.5 thousand hectares of affected vegetation, followed by the Somali region with 4.1 thousand hectares. The Tigray region was also impacted, with 2.2 thousand hectares of affected vegetation.

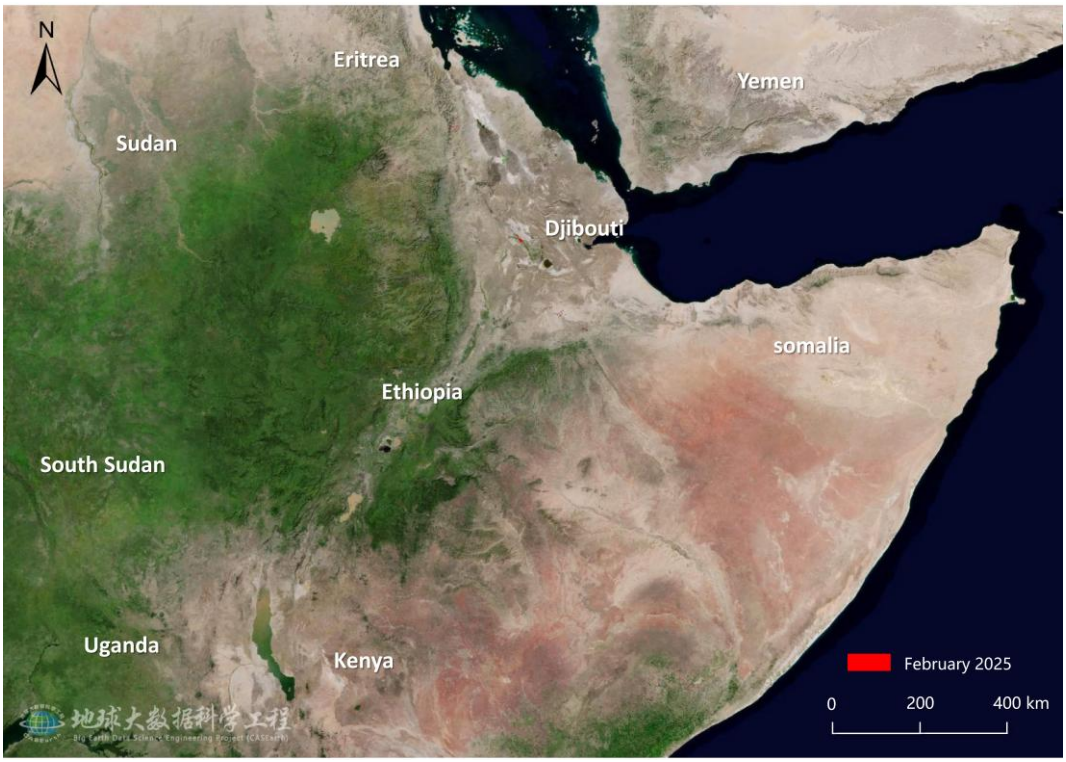

Fig.2 Monitoring of Desert Locust damage in Ethiopia (February 2025)

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

In February 2025, abundant rainfall along the northern Red Sea coastal areas of Saudi Arabia created favorable conditions for desert locust egg-laying and reproduction, leading to an increase in locust populations. Monitoring results showed that in February, desert locusts affected 23.0 thousand hectares of vegetation in Saudi Arabia, including 2.1 thousand hectares of farmland, 6.3 thousand hectares of grassland, and 14.6 thousand hectares of shrubland (Figure 3), accounting for 0.96%, 0.32%, and 0.36% of the country's total farmland, grassland, and shrubland, respectively. The Al Madinah region recorded the most extensive damage, with 11.3 thousand hectares of affected vegetation, followed by the Makkah region with 5.2 thousand hectares. The Al Bahah and Jizan regions were also impacted, with 3.8 thousand hectares and 2.7 thousand hectares of affected vegetation, respectively.

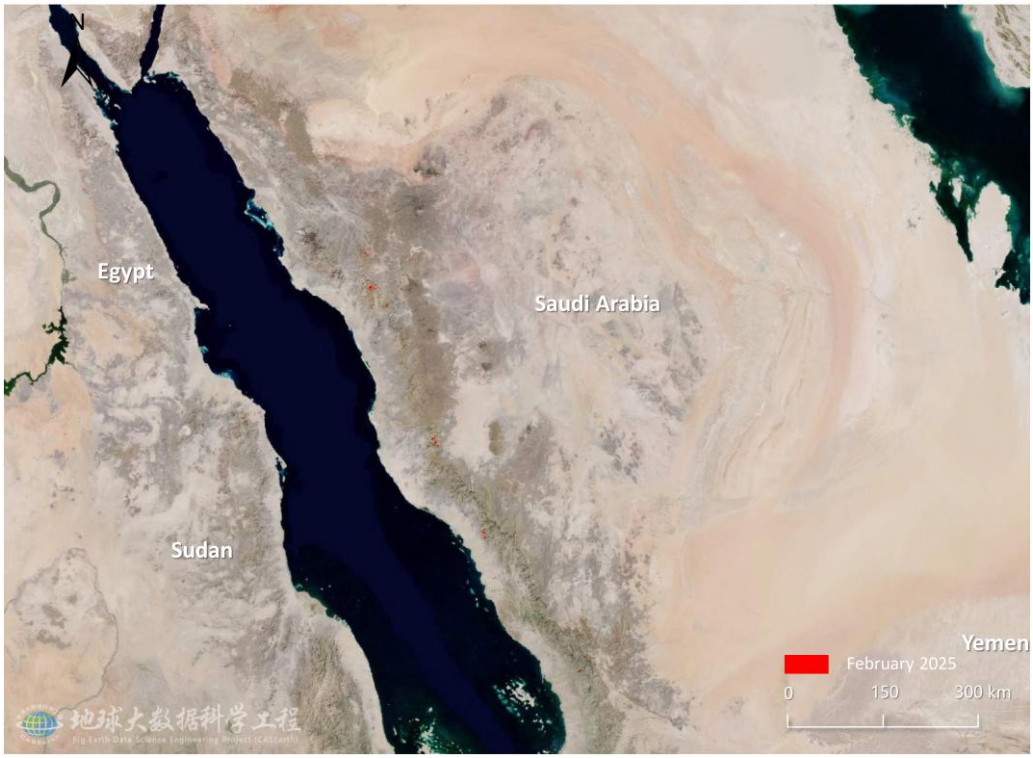

Fig.3 Monitoring of Desert Locust damage in Saudi Arabia (February 2025)

The comprehensive analysis suggests that, in the next two months, Eritrea is expected to experience limited rainfall, leading to drier conditions that are unfavorable for locust egg-laying and reproduction, resulting in a decline in local locust populations. Due to the influence of locust migration from northwestern Somalia, locust numbers in eastern Ethiopia are likely to increase slightly as they congregate. Meanwhile, locusts in the northern Red Sea coastal areas of Saudi Arabia are expected to migrate inland for spring breeding, leading to a decline in coastal locust numbers. Continuous monitoring of desert locust dynamics in Eritrea, Ethiopia and Saudi Arabia is essential to prevent repeated losses in crop growth and agricultural production.

·NO. 20250303066

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, Biyao Zhang, Linyi Liu, Kun Wang, Quanjun Jiao, Xiangmei Qin, Gang Sun, Yanli Zhang, Jingcheng Zhang, Yantao Zhou, Linsheng Huang, Longlong Zhao, Anting Guo, Xueling Li, Yanru Huang, Hansu Zhang, Binxiang Qian, Zhuoqing Hao, Jing Guo, Rui Hou, Mingxian Zhao, Kehui Ren, Xiangzhe Cheng, Bohai Hu, Minghao Wang, Yan Zhang, Xuanli He, Chao Ruan, Huiqin Ma, Yue Shi, Naichen Xing, Qiong Zheng, Xiaoping Du, Huichun Ye, Bei Cui, Huifang Wang, Yu Ren, Chao Ding, Ruiqi Sun, Yingxin Xiao, Weiping Kong, Juhua Luo, Jinling Zhao, Dongyan Zhang, Xiaodong Yang, Yanhua Meng, Yue Liu, Wei Feng, Xianfeng Zhou

Foreign Contributors

Belinda Luke, Bethan Perkins, Qiaoyun Xie, Yue Shi, 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, Tianhua Hong,Yubin Lan, Jingfeng Huang, Huo Wang, Anhong Guo, Zhanhong Ma, Yilin Zhou, Xiongbing Tu, Wenbin Wu, Feng Zhang, Zhiguo Wang, Lifang Wu, Dong Liang, Stefano Pignatti , Giovanni Laneve , Liangxiu Han, Yanbo Huang, Chenghai Yang, Jiali Shang, Jadu Dash, Hugh Mortimer、Jon Styles、Andy Shaw.

Funding Information

National Key Research and Development Program of China (2023YFB3906203 and 2021YFE0194800), National Natural Science Foundation of China (42071320, 42071423 and 32271986), Alliance of International Science Organizations (ANSO-CR-KP-2021-06), GEO Community Activities "Global Crop Pest and Disease Habitat Monitoring and Risk Forecasting", etc.

Citation

Report of Monitoring, Early Warning and Assessment of Desert Locust, (2025). *Desert Locust Monitoring and Loss Assessment in Eritrea, Ethiopia and Saudi Arabia.* Beijing, China: RSCROP.

Disclaimer

This report is a product of the Vegetation Remote Sensing & Pest and Disease Application Research Team of the Aerospace Information Research Institute, Chinese Academy of Sciences. The analyses and conclusions in the report do not represent the views of the Chinese Academy of Sciences or the Aerospace Information Research Institute. Users can legally quote the data in this report and indicate the source. However, any judgments, inferences or opinions made based on the report do not represent the views of the Team. The data published in this report are for reference only. The Team does not bear any legal responsibility arising from the use of the report. Official Chinese boundaries are used in the report.

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