



# Report of Monitoring, Early Warning and Assessment of Desert Locust

[2024] NO.12 Total 63  
December 2024

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, Somalia and Saudi Arabia (November 2024)

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 November 2024, desert locusts were primarily distributed along the central Red Sea coastal and inland areas of Eritrea, the northwestern Gulf of Aden coastal areas of Somalia, and the central and southern Red Sea coastal areas of Saudi Arabia. These areas experienced significant threats to vegetation, impacting 16.8 thousand hectares, 18.8 thousand hectares, and 19.1 thousand hectares, respectively. It is anticipated that, over the next two months, locust infestations in inland Sudan will persist, with some locusts migrating to the northern Red Sea coastal areas of Eritrea for overwintering and reproduction, leading to a slight increase in locust numbers there. Increased rainfall in the Gulf of Aden and Red Sea coastal areas will promote robust vegetation growth and create favorable conditions for desert locust survival and reproduction. As a result, locusts in Somalia and Saudi Arabia are expected to migrate toward the coastal areas, where locust numbers are expected to rise further. This period marks the main harvest season for food crops in Eritrea, the primary growing season for food crops in Somalia, and both the main growing and harvest seasons for food crops in Saudi Arabia. Therefore, continuous monitoring of desert locust dynamics is essential to prevent recurrent losses in agricultural and pastoral production. The specific research results are as follows.

## ■ 1. Desert Locust Monitoring and Loss Assessment in Eritrea

In November 2024, desert locusts in Eritrea were primarily distributed along the central Red Sea coastal and inland areas. These regions experienced abundant rainfall and robust vegetation growth, providing favorable conditions for locusts to lay eggs and reproduce, resulting in a slight increase in their population. Monitoring results indicated that desert locusts affected 16.8 thousand hectares of vegetation in Eritrea in November, including 4.3 thousand hectares of farmland, 5.8 thousand hectares of grassland, and 6.7 thousand hectares of shrubland (Figure 1), accounting for 0.98%, 0.12%, and 0.51% of the total areas of farmland, grassland, and shrubland, respectively. The Semien Keih Bahri region experienced the most extensive damage, with 8.1 thousand hectares affected, followed by the Debub region, with 7.2 thousand hectares impacted. The Gash-Barka region was also affected, with 1.5 thousand hectares of vegetation impacted.

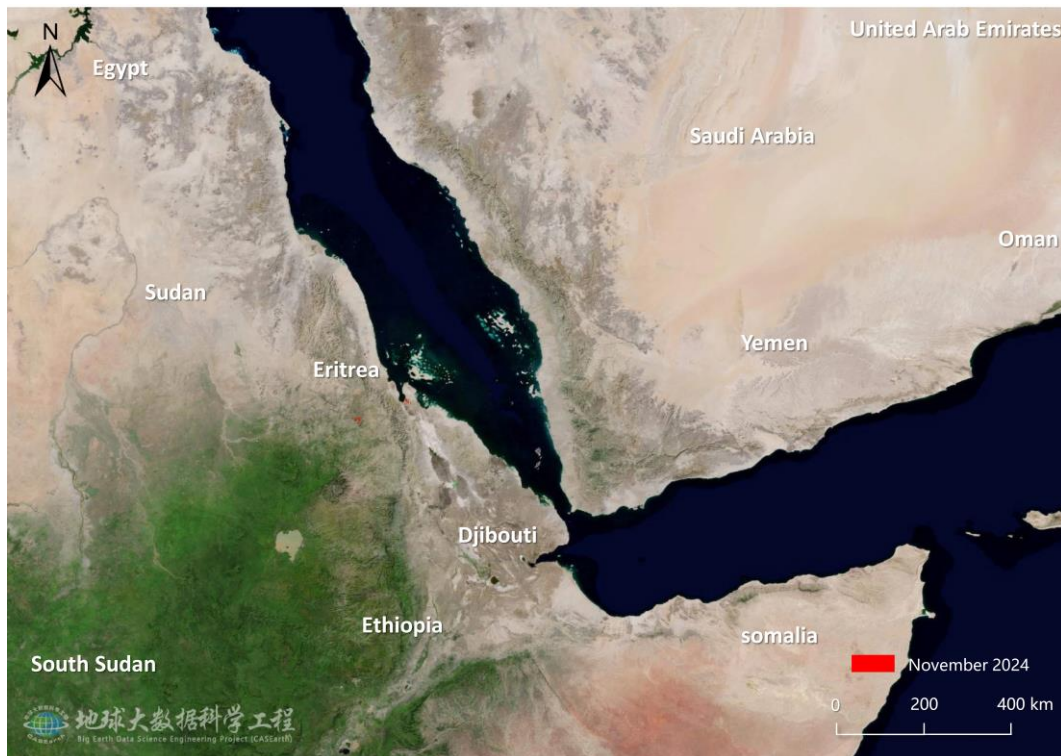


Fig.1 Monitoring of Desert Locust damage in Eritrea (November 2024)

## ■ 2. Desert Locust Monitoring and Loss Assessment in Somalia

In November 2024, increased rainfall along the northwestern Gulf of Aden coastal areas in Somalia created favorable conditions for desert locusts to lay eggs and reproduce, leading to a rise in their population in the region. Monitoring results indicated that desert locusts affected 18.8 thousand hectares of vegetation in Somalia in November, including 7.2 thousand hectares of grassland and 11.6 thousand hectares of shrubland (Figure 2), accounting for 0.03% and 0.06% of the total areas of grassland and shrubland, respectively. Compared to October, an additional 2.3 thousand hectares of vegetation were affected, including 1.3 thousand hectares of grassland and 1.0 thousand hectares of shrubland. The Sanaag region experienced the most extensive damage, with 6.8 thousand hectares affected,

followed by the Awdal region, with 4.6 thousand hectares impacted. The Togdheer and North-West regions were also affected, with 4.1 thousand hectares and 3.3 thousand hectares of vegetation impacted, respectively.

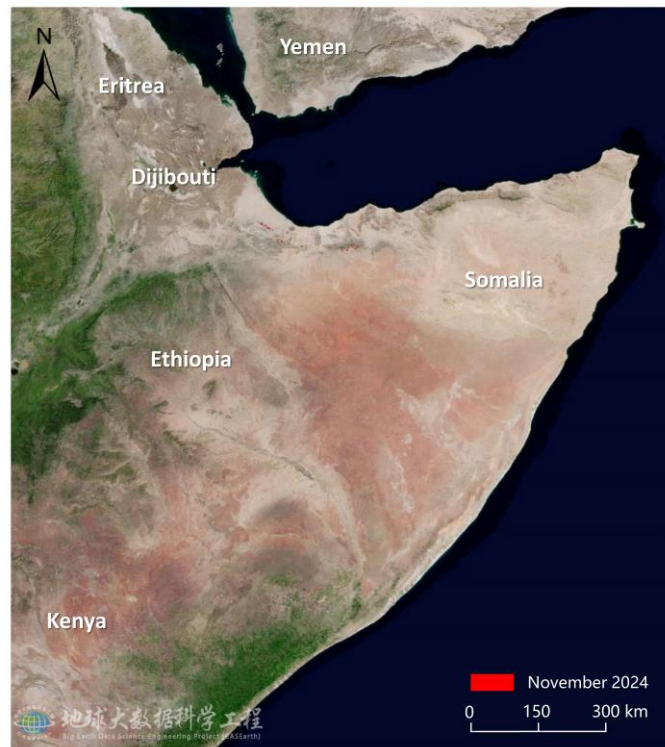


Fig.2 Monitoring of Desert Locust damage in Somalia (November 2024)

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

In November 2024, abundant rainfall along the central and southern Red Sea coastal areas of Saudi Arabia created favorable conditions for desert locusts to lay eggs and reproduce, leading to a population increase in the region. Monitoring results indicated that desert locusts affected 19.1 thousand hectares of vegetation in Saudi Arabia in November, including 4.2 thousand hectares of farmland, 5.7 thousand hectares of grassland, and 9.2 thousand hectares of shrubland (Figure 3), accounting for 1.92%, 0.29%, and 0.22% of the total areas of farmland, grassland, and shrubland, respectively. The Makkah region experienced the most extensive damage, with 7.7 thousand hectares affected, followed by the Jizan region, with 6.5 thousand hectares impacted. The Asir and Al Bahah regions were also affected, with 3.2 thousand hectares and 1.7 thousand hectares of vegetation impacted, respectively.

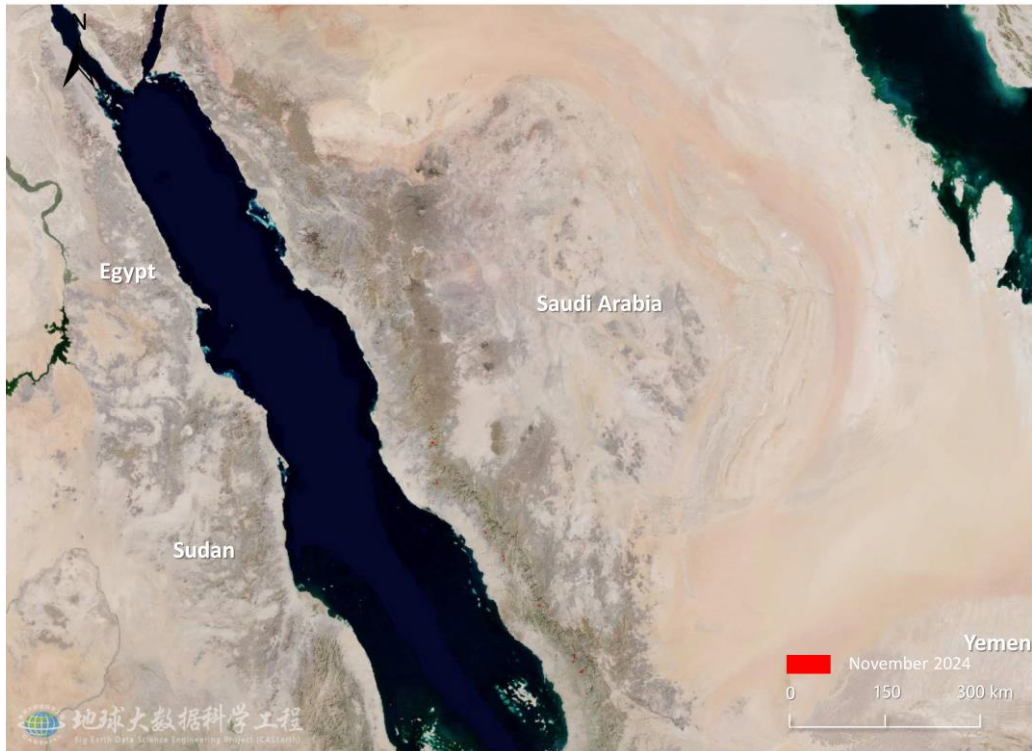


Fig.3 Monitoring of Desert Locust damage in Saudi Arabia (November 2024)

The comprehensive analysis suggests that, in the next two months, locust infestations in inland Sudan will persist, with some locusts migrating to the northern Red Sea coastal areas of Eritrea for overwintering and reproduction, leading to a slight increase in locust numbers there. Increased rainfall in the Gulf of Aden and Red Sea coastal areas will promote healthy vegetation growth and create favorable conditions for desert locust survival and reproduction. As a result, locusts in Somalia and Saudi Arabia are expected to migrate toward the coastal areas, where locust numbers are expected to rise further. Continuous monitoring of desert locust dynamics in Eritrea, Saudi Arabia, and Yemen is essential to prevent repeated losses in crop growth and agricultural production.

·NO. 20240312063

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, (2024). *Desert Locust Monitoring and Loss Assessment in Eritrea, Somalia 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

