



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

[2023] NO.07 Total 46
July 2023

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 Yemen, Saudi Arabi, and India (June, 2023)

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, and Sentinel series in EU, 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 dynamics of desert locust monitoring and loss assessment in Yemen, Saudi Arabia, and India. The remote sensing monitoring results showed that, in June 2023, the desert locusts were mainly distributed in western and inland regions of Yemen, the western coastal areas and inland regions of Saudi Arabia, as well as northwestern India near the Indo-Pakistan border. The total damaged vegetation areas in Yemen, Saudi Arabia, and India were 24.1, 16.0, and 2.35 thousand hectares, respectively. It is expected that in the next two months, Saudi Arabia will experience high temperatures and dry conditions, while the meteorological conditions in Yemen will be more suitable for the survival of desert locusts. As a result, some locust swarms in Saudi Arabia will migrate southward to the inland areas of Yemen, leading to a decrease in the number of locusts within Saudi Arabia and an increase in the number of locusts in Yemen. Due to the tropical cyclones, the vegetation in northwestern India will gradually increase, providing favorable conditions for the survival of locusts, leading to an increase in the number of locusts. This period is an important growing season for crops in Yemen, and the planting and growing seasons for crops in Saudi Arabia and India. It is still necessary to pay continuous attention to the dynamics of the desert locust disaster in Yemen, Saudi Arabia, and India to prevent losses to agricultural and pasture

production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Yemen

The monitoring results showed that in June, the total damaged vegetation area was 24.1 thousand hectares in Yemen, including 6.2 thousand hectares of grassland and 17.9 thousand hectares of shrub (Figure 1), accounting for 2.1% and 0.4% of the total area of the grassland and shrub, respectively. Compared with May 2023, the newly damaged vegetation area was 7.0 thousand hectares, including 1.8 thousand hectares of grassland and 5.2 thousand hectares of shrub. Hajjah province had the largest area of vegetation affected, with 12.4 thousand hectares. Followed by Amrān province, with 5.8 thousand hectares of vegetation affected. The affected areas of vegetation in Al-Hudaydah, Ma'rib, Al Jawf, and San'a' provinces were 4.6, 0.6, 0.5, and 0.2 thousand hectares, respectively.

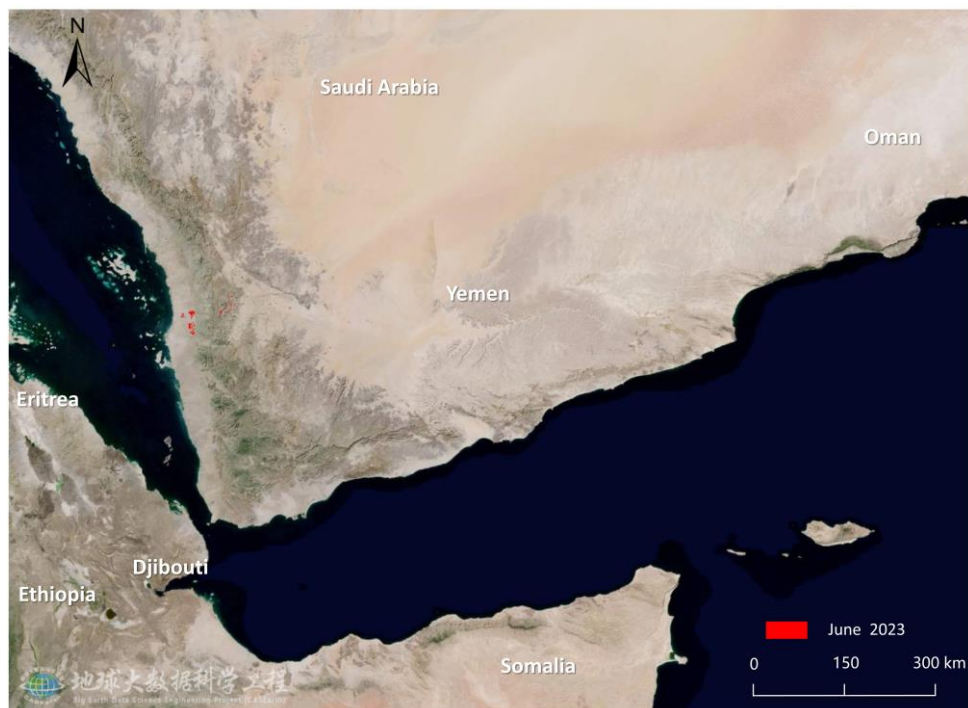


Fig. 1 Monitoring of Desert Locust damage in Yemen (June 2023)

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

In June 2023, due to control operations, the number of desert locusts within Saudi Arabia decreased. The remote sensing monitoring results showed that in June, the total damaged vegetation area in Saudi Arabia was 16.0 thousand hectares, including 6.0 thousand hectares of cropland, 4.2 thousand hectares of grassland, and 5.8 thousand hectares of shrub (Figure 2), accounting for 0.3%, 1.1%, and 0.3% of the total area of the cropland, grassland, and shrub in Saudi Arabia, respectively. Compared with May 2023, the newly damaged vegetation area was 14.9 thousand hectares, including 6.0 thousand hectares of cropland, 4.1 thousand hectares of grassland, and 4.8 thousand hectares of shrub. Al Qasīm province had the largest area of vegetation affected, with 9.4 thousand hectares. The affected areas of vegetation in Al Madīnah, Asīr, and Al Bāhah provinces were all 0.3 thousand hectares. The affected area of vegetation in Hā'īl was 0.2 thousand hectares.

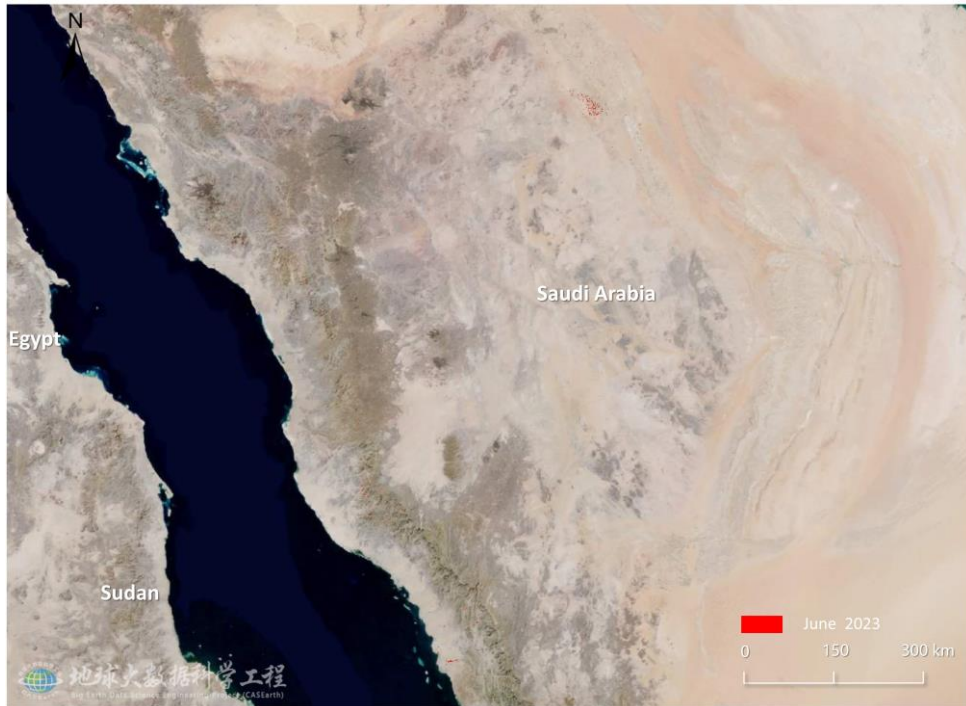


Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (June 2023)

3. Desert Locust Monitoring and Loss Assessment in India

In June 2023, desert locusts were primarily distributed in localized areas of northwestern Rajasthan, India. The total damaged vegetation area in India was 2.35 thousand hectares, including 0.88 thousand hectares of cropland, and 1.47 thousand hectares of grassland (Figure 3).

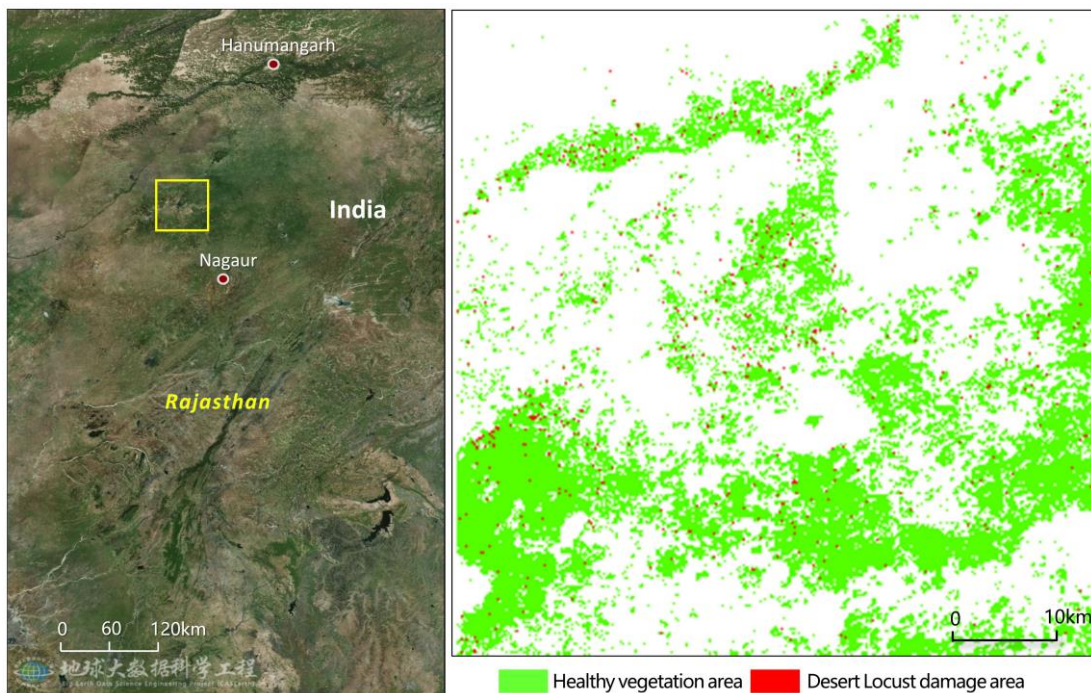



Fig. 3 Monitoring of Desert Locust damage in India (June 2023)



The comprehensive analysis shows that, in the next two months, the temperature in Saudi Arabia will continue to rise, accompanied by drought conditions. Meanwhile, the climate in Yemen will be more suitable and vegetation relatively abundant. As a result, locust swarms in Saudi Arabia will migrate southward to the inland areas of Yemen, leading to a decrease in the number of locusts within Saudi Arabia and an increase within Yemen. Due to the impact of tropical cyclones, vegetation in northwestern India will increase. The conditions will be favorable for the maturation, egg-laying, and reproduction of locusts in the area, and lead to a further increase in the number of locusts. It is still necessary to continue to pay attention to the dynamics of the desert locust disaster in Yemen, Saudi Arabia, and India to prevent repeated losses to agricultural and pasture production.

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.

Funding Information

Strategic Priority Research Program of the Chinese Academy of Sciences (XDA19080304), National Key R&D Program of China (2017YFE0122400 and 2021YFE0194800), National Natural Science Foundation of China (42071320 and 42071423), Beijing Nova Program of Science and Technology (Z191100001119089), International Partnership Program of Chinese Academy of Sciences (183611KYBS20200080), Alliance of International Science Organizations (ANSO-CR-KP-2021-06), GEO Community Activities "Global Crop Pest and Disease Habitat Monitoring and Risk Forecasting", Dragon 5 "Application of Sino-Eu Optical Data Into Agronomic Models to Predict Crop performance And to Monitor And Forecast Crop Pests And Diseases" (57457).

Citation

Report of Monitoring and Assessment of Desert Locust in Africa and Asia, (2023). *Desert Locust Monitoring and Loss Assessment in Yemen, Saudi Arabia, and India (June, 2023)*. Beijing, China: RSCROP.

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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

