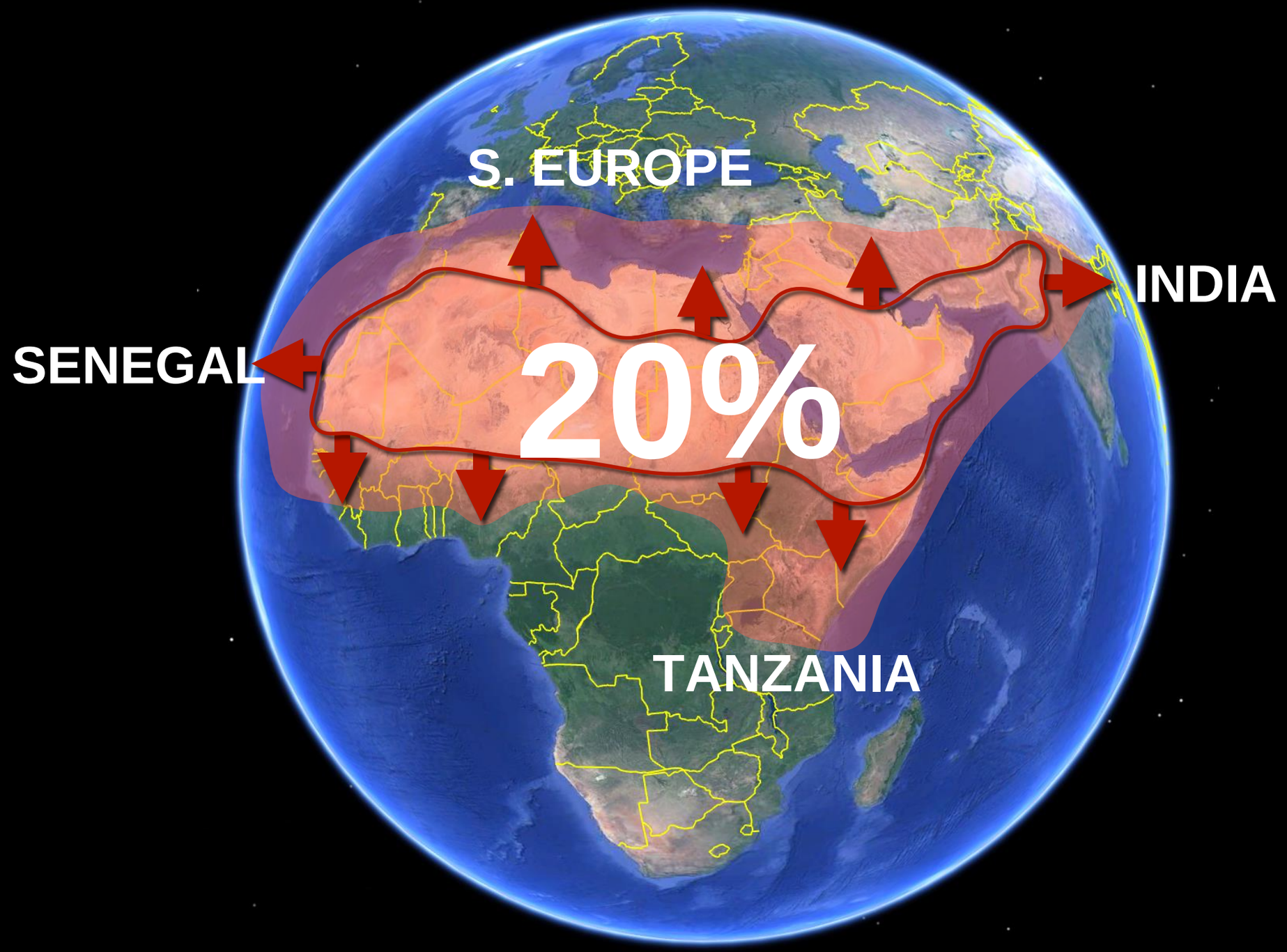
Desert Locust Early Warning System

Keith Cressman
December 2020


S. EUROPE
INDIA
SENEGAL
20%
TANZANIA

TOYOTA

1 day → 5 days

swarm

Amsterdammers

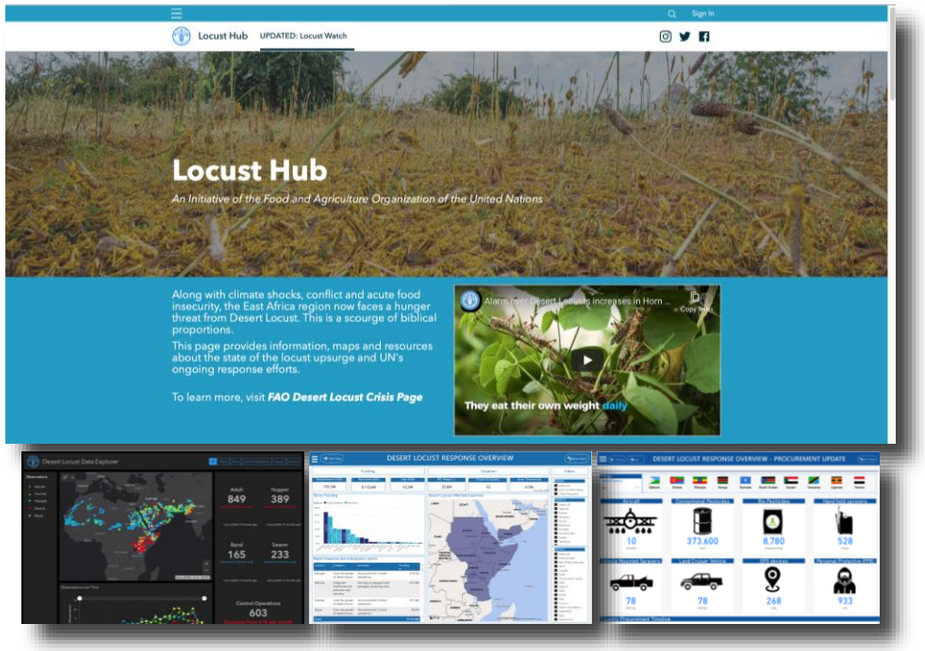
FAO Desert Locust Information Service

RAW DATA

- geospatial survey & control data

(Nat'l teams -> Nat'l Locust Units -> DLIS -> Public)

standard OpenJump RAMSES GIS + Postgis database

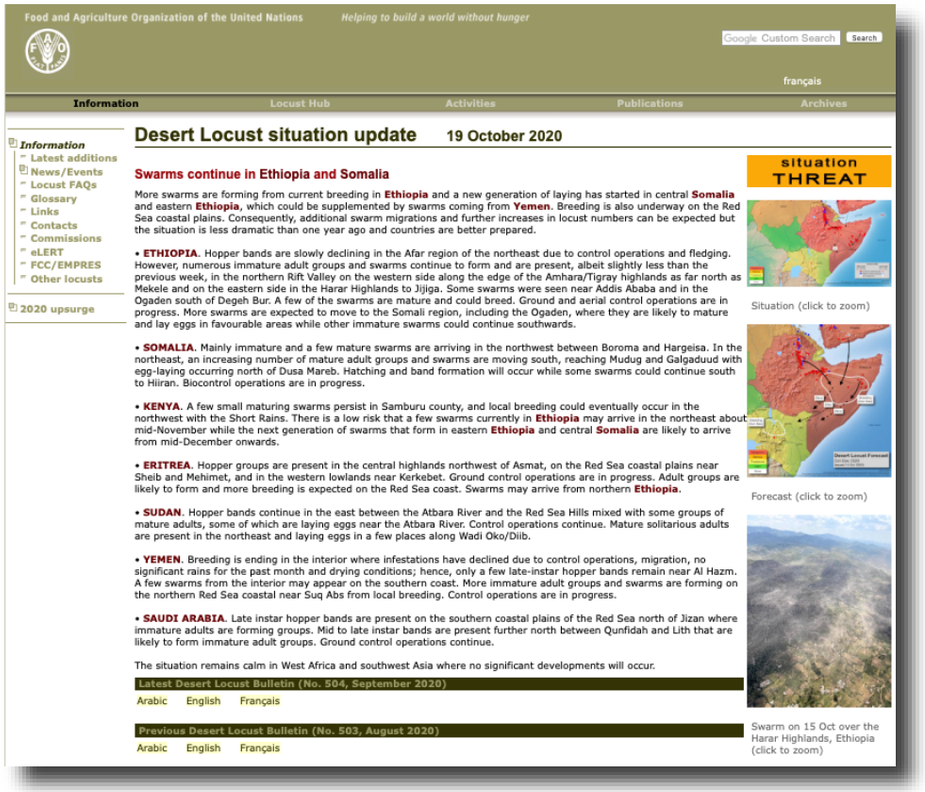


FAO/ESRI Locust Hub

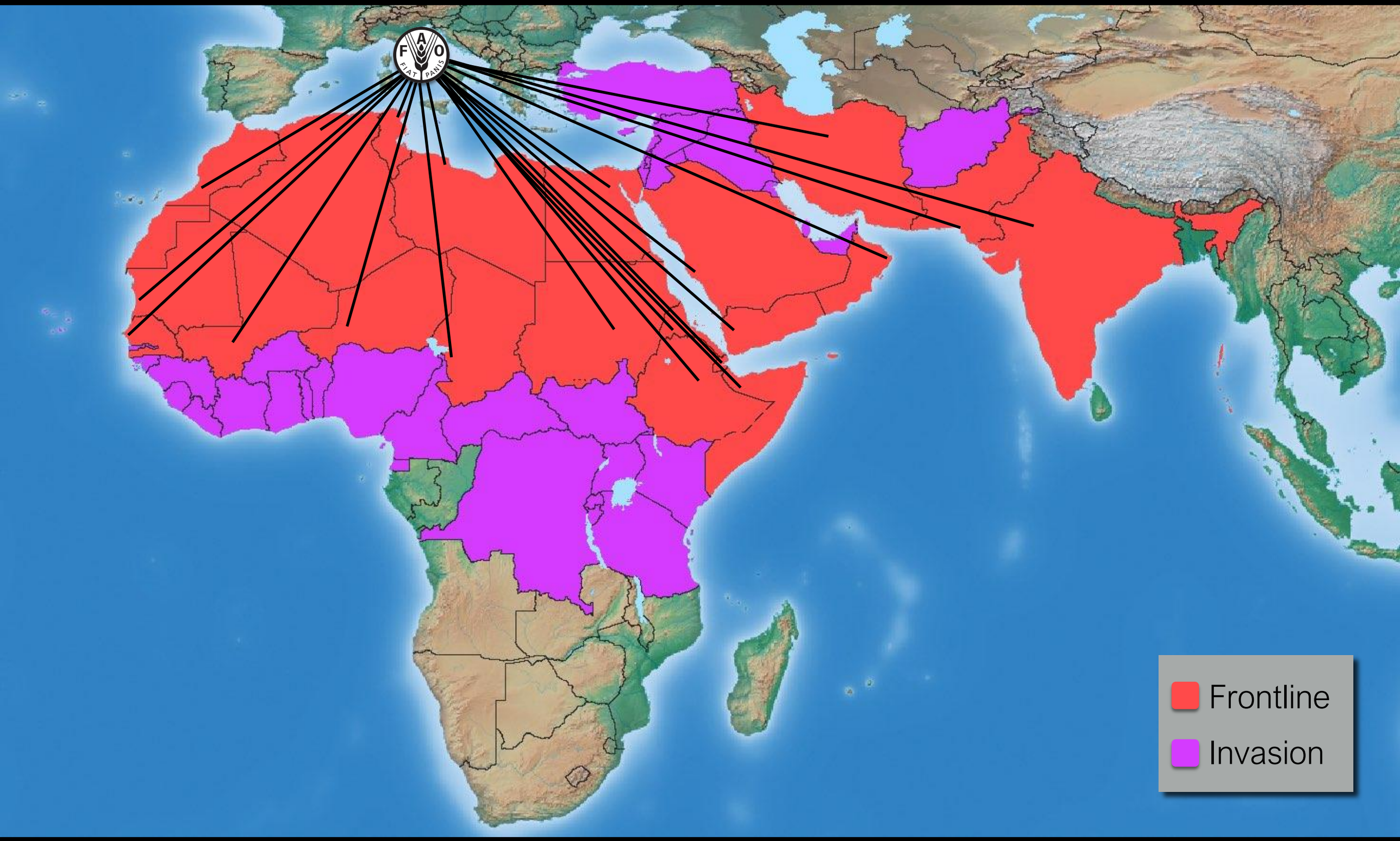
VALUE-ADDED PRODUCTS

- monthly bulletins (since 1978)
- updates
- situation/forecast maps

ArcInfo SWARMS GIS + Oracle database (from 1980s)

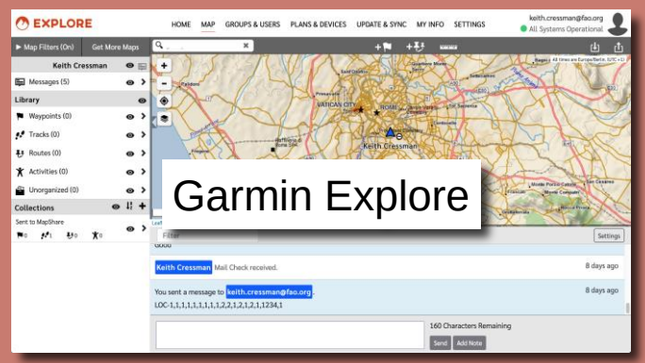


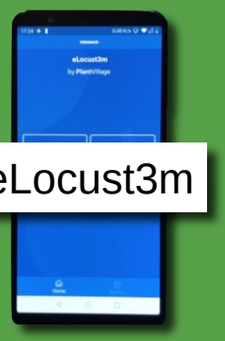
FAO Locust Watch

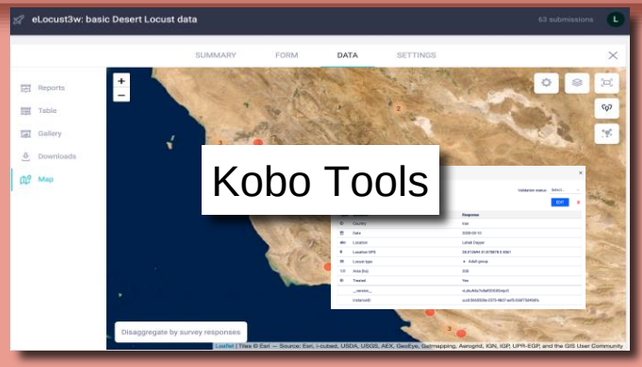


DESERT LOCUST EARLY WARNING NETWORK

Locust Watch / Hub







Digital field tools

Intermediary cloud platforms

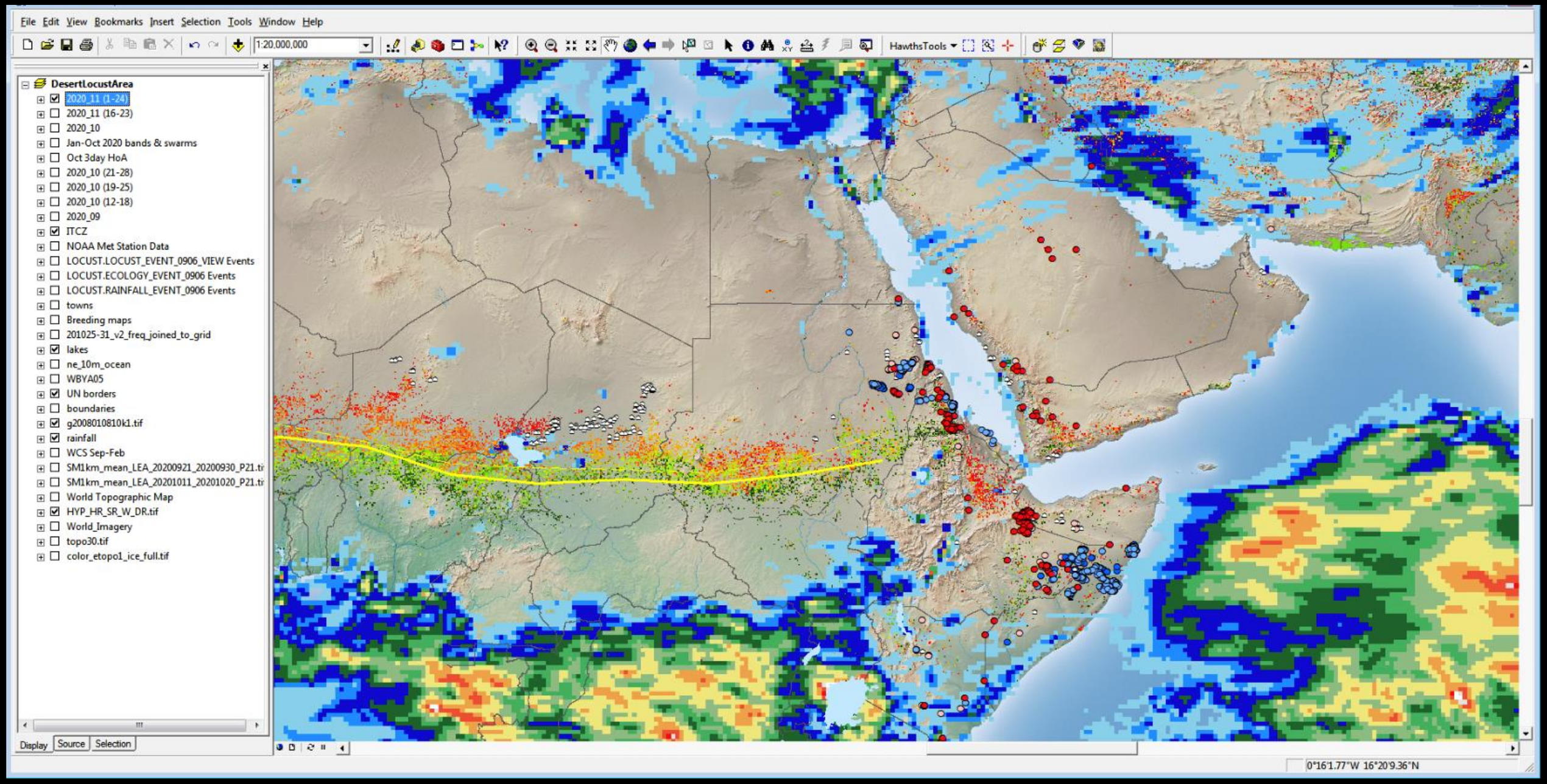
Rv4.1
National GIS

Country analysis & planning

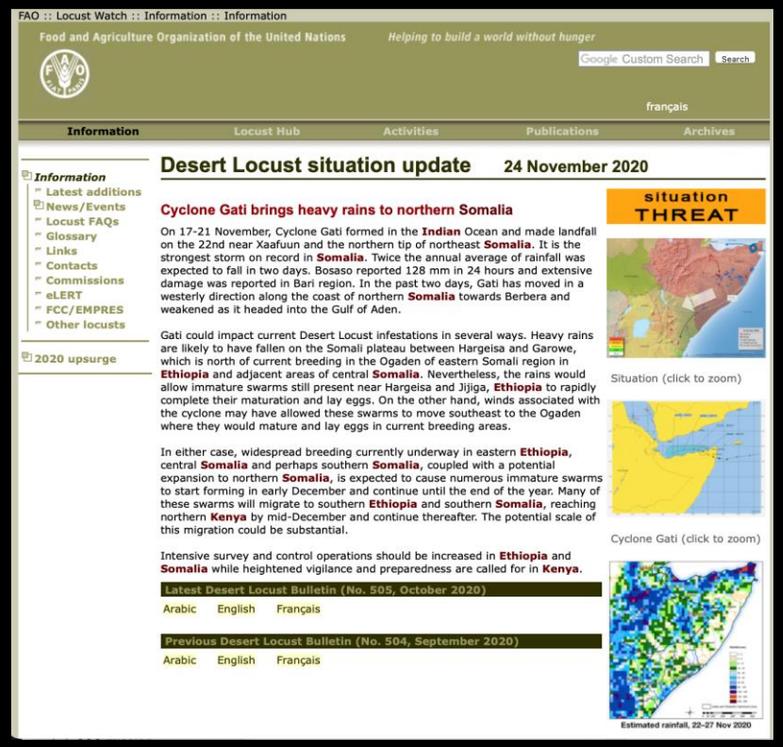
SWARMS
DLIS GIS

Global analysis & forecasting

- rainfall estimates (IRI)
- green vegetation (MODIS)
- soil moisture (iSARDSAT)
- *winds (ECMWF)*
- *sub/seasonal precipitation (WCS)*



SWARMS GS at FAO HQ



FAO :: Locust Watch :: Information :: Information

Food and Agriculture Organization of the United Nations — *Helping to build a world without hunger*

Google Custom Search — Search

français

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Desert Locust situation update 24 November 2020

situation THREAT

Cyclone Gati brings heavy rains to northern Somalia

On 17-21 November, Cyclone Gati formed in the **Indian** Ocean and made landfall on the 22nd near Xaafuun and the northern tip of northeast **Somalia**. It is the strongest storm on record in **Somalia**. Twice the annual average of rainfall was expected to fall in two days. Bosaso reported 128 mm in 24 hours and extensive damage was reported in Bari region. In the past two days, Gati has moved in a westerly direction along the coast of northern **Somalia** towards Berbera and weakened as it headed into the Gulf of Aden.

Gati could impact current Desert Locust infestations in several ways. Heavy rains are likely to have fallen on the Somali plateau between Hargeisa and Garowe, which is north of current breeding in the Ogaden of eastern Somali region in **Ethiopia** and adjacent areas of central **Somalia**. Nevertheless, the rains would allow immature swarms still present near Hargeisa and Jijiga, **Ethiopia** to rapidly complete their maturation and lay eggs. On the other hand, winds associated with the cyclone may have allowed these swarms to move southeast to the Ogaden where they would mature and lay eggs in current breeding areas.

In either case, widespread breeding currently underway in eastern **Ethiopia**, central **Somalia** and perhaps southern **Somalia**, coupled with a potential expansion to northern **Somalia**, is expected to cause numerous immature swarms to start forming in early December and continue until the end of the year. Many of these swarms will migrate to southern **Ethiopia** and southern **Somalia**, reaching northern **Kenya** by mid-December and continue thereafter. The potential scale of this migration could be substantial.

Intensive survey and control operations should be increased in **Ethiopia** and **Somalia** while heightened vigilance and preparedness are called for in **Kenya**.

Latest Desert Locust Bulletin (No. 505, October 2020)
Arabic English Français

Previous Desert Locust Bulletin (No. 504, September 2020)
Arabic English Français

Situation (click to zoom)

Cyclone Gati (click to zoom)

Estimated rainfall, 22–27 Nov 2020

Food and Agriculture Organization of the United Nations

No. 505 2 NOVEMBER 2020

Desert Locust Bulletin

General situation during October 2020
Forecast until mid-December 2020

WESTERN REGION: CALM

SITUATION. Small-scale breeding in **Mauritania**, **Niger**, **Chad**, and **Algeria**.
FORECAST. Locusts will decline in summer areas. Small-scale breeding in northwest **Mauritania**.

CENTRAL REGION: THREAT

SITUATION. Numerous swarms in northeast **Ethiopia** (335 453 ha treated) that moved north to Eritrea, south to Rift Valley, and east to Somali region; swarms in northeast **Somalia** (12 974 ha) moved south; swarms arrive in Ogaden and central Somalia, lay and new hatching; hopper bands in eastern **Sudan** (52 912 ha); summer breeding ends in Yemen interior; hopper bands on Red Sea coast of **Eritrea** (10 354 ha), **Yemen** (4 609 ha), **Saudi Arabia** (21 290 ha), and Sudan; residual swarms maturing in northwest **Kenya** (318 ha).
FORECAST. More hatching and band formation in eastern **Ethiopia** (Ogaden) and **Somalia** with new swarms forming in early December that will threaten southeast Ethiopia, southern Somalia, and northeast Kenya. Local breeding in northwest **Kenya**. Breeding to continue along both sides of Red Sea in **Eritrea**, **Sudan**, **Saudi Arabia**, and **Yemen** with possibility of hopper band and swarm formation, especially in Yemen.

EASTERN REGION: CALM

SITUATION. Limited control operations against residual infestations in **Pakistan** (220 ha); no locusts in **India**; small adult groups in southeast **Iran** (40 ha).
FORECAST. Low numbers of adults are likely to persist in southeast **Iran** and southwest **Pakistan**; no significant developments.

October 2020: swarms, adult groups, hopper bands, hopper groups, non-gregarious

Epicentre shifting to eastern Ethiopia and Somalia
As anticipated, numerous swarms formed in northeast Ethiopia during October. The situation improved by the end of the month due to intensive control operations, and as swarms moved north into the highlands and to Eritrea, south into the Rift Valley, and further east. Consequently, the epicentre will shift to the Somali region in eastern Ethiopia and adjacent areas of Somalia where control operations are in progress. Another generation of breeding started in this vast area where mature swarms in northeast Somalia moved southwards and laid eggs that are hatching and hopper bands are forming. More bands will form during November and a new generation of immature swarms will form in early December that are expected to move south and threaten southeast Ethiopia, southern Somalia, and northeast Kenya. The swarms that moved to Eritrea are likely to reach the Red Sea coast where control operations are in progress against hopper bands. Control continued against hopper bands in eastern Sudan and on the Red Sea coast in Yemen and southwest Saudi Arabia. Breeding ended in the Yemen interior and swarms moved to the coast. Winter breeding along both sides of the Red Sea could cause hopper bands and swarms to form, especially in Yemen. The situation will continue to remain calm in other regions and no significant developments are expected.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.
Telephone: +39 06 570 52420 (7 days/week, 24 hr) **Internet:** www.fao.org/ag/locusts
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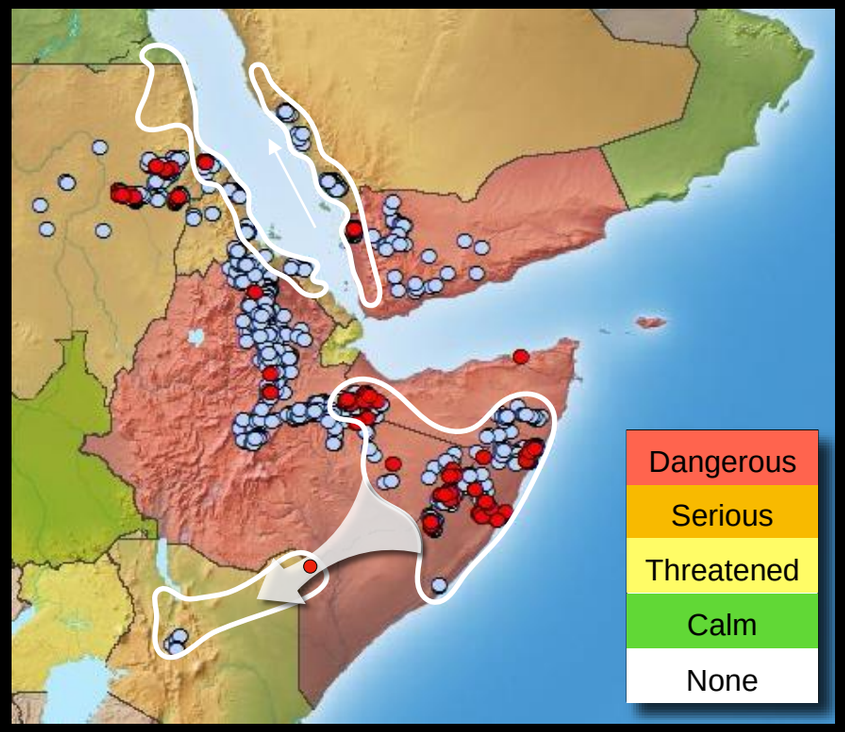
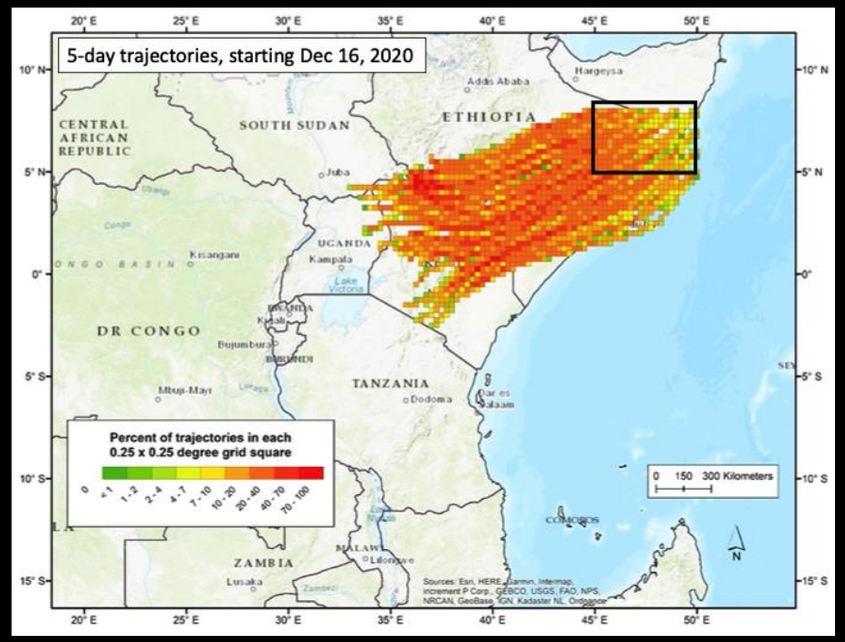
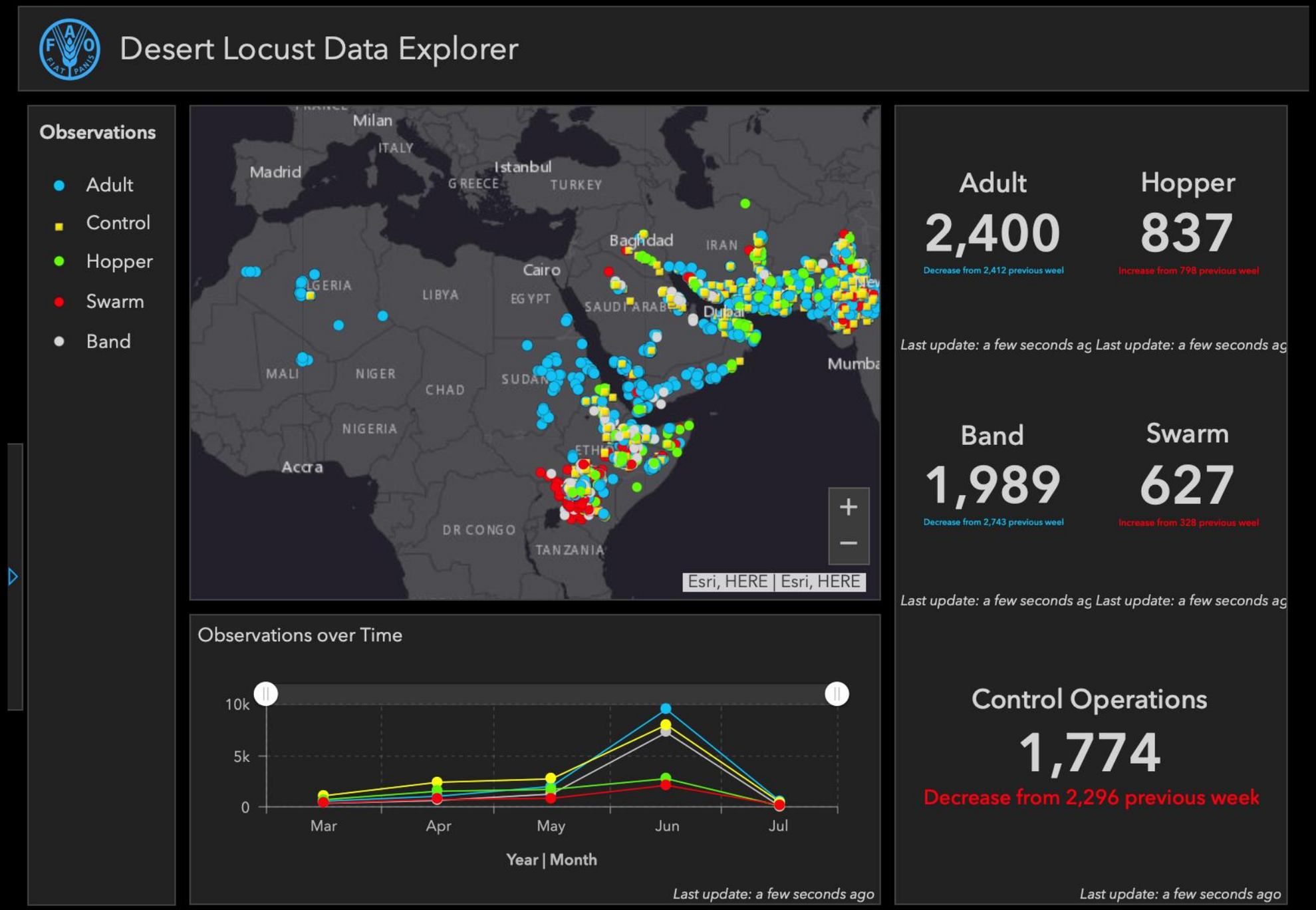


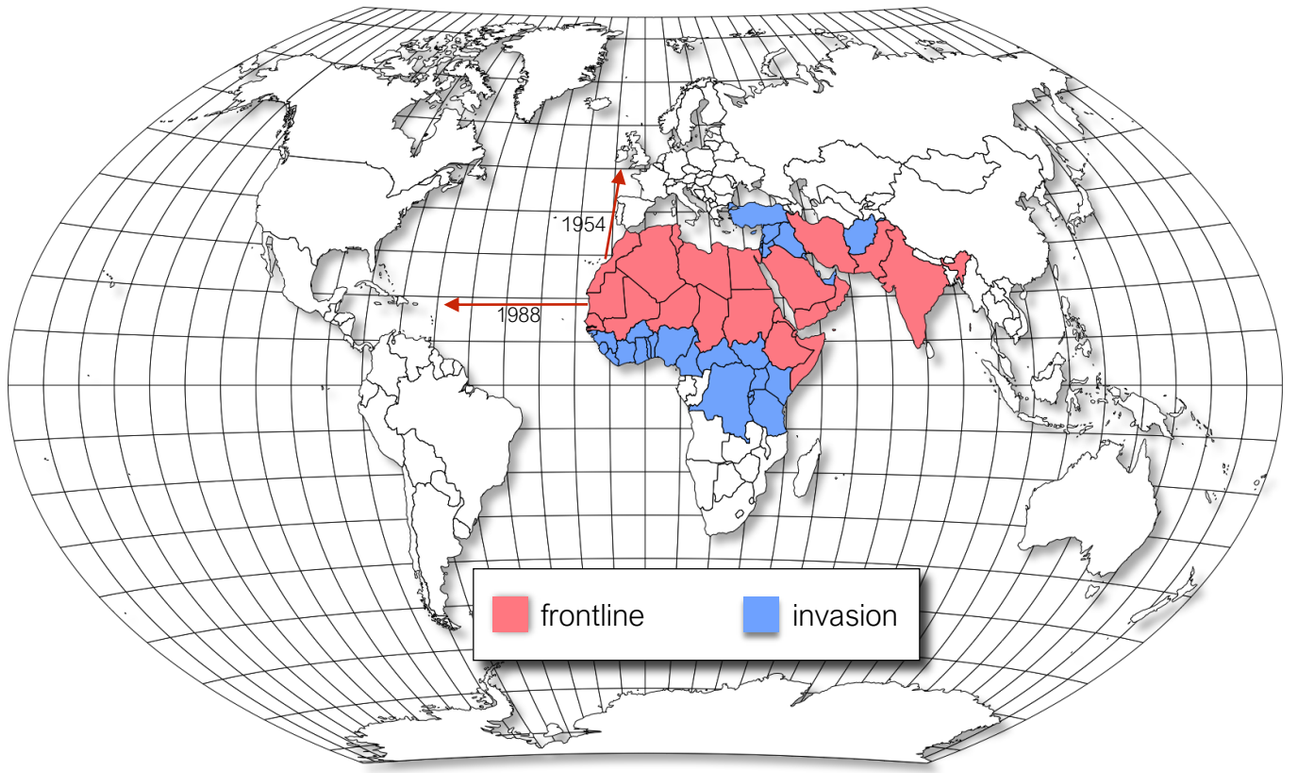


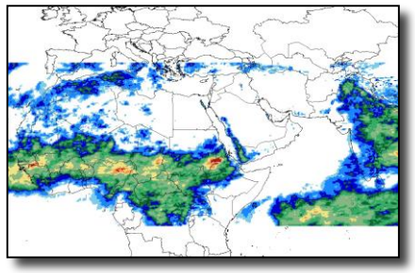
www.fao.org/ag/locusts



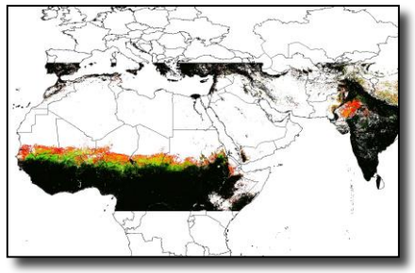
https://locust-hub-hqfao.hub.arcgis.com

Geo

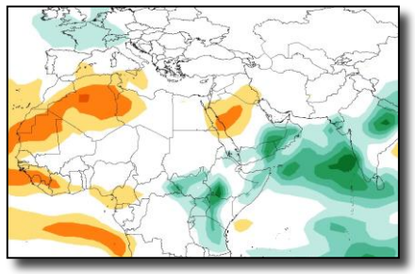




Rainfall estimates 0.25 sq. deg
(daily, decadal, monthly)



Dynamic greenness 250m
(decadal)



2-week precip & temp anomaly
6-month precip & temp anomaly
(biweekly, monthly forecasts)

remote sensing

Data

survey & control data
by field officers (eL3)

frontline: 400 teams
invasion: 2000+ teams

data management & analysis
by national locust information officer
(Rv4 GIS)

frontline: 20 countries
invasion: 25+ countries

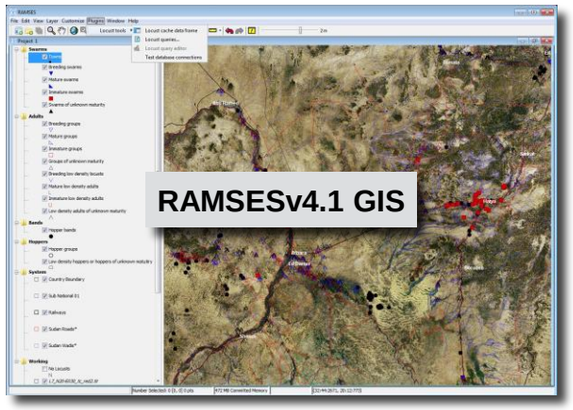
situation assessment, analysis & forecasting
by DLIS
(SWARMS GIS)

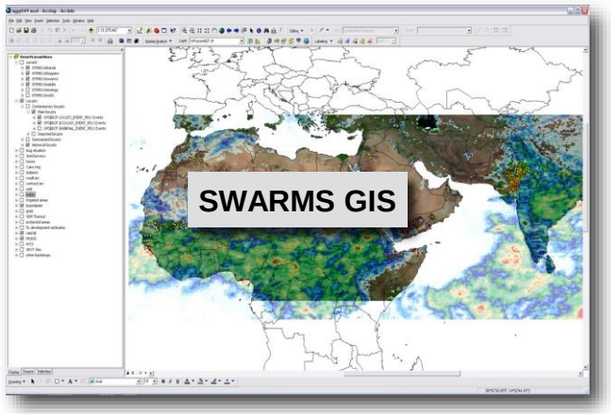
50 countries

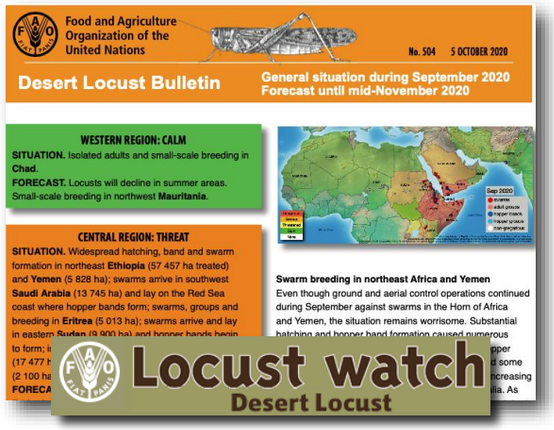
monthly bulletins
6-week forecasts
updates
warnings
alerts
(LocustWatch)
(social media)

countries, donors, UN, public

Tools







Challenges

- Data
- Tools
- Standardisation
- Training
- Outputs
- Time
- Internet

Food and Agriculture Organization
of the United Nations

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