

EXPERT MEETING ON METEOROLOGICAL INFORMATION FOR LOCUST CONTROL

(Geneva, 18-20 October 2004)

REPORT

The Expert Group Meeting on Meteorological Information for Locust Control was organized from 18 to 20 October 2004 in Geneva to discuss WMO's response to the current Desert Locust plague. Resources to organize this meeting were provided by the SG from the hold-back funds.

Background to the meeting:

The current Desert Locust plague in 2004 drew the attention of the world to the threat they pose to the food security of the affected countries, especially in the developing world. All the different phases in the life cycle of a locust require ideal meteorological conditions for it to evolve from the solitary phase to the gregarious phase and cause the widespread damage. The National Meteorological and Hydrological Services (NMHSs) in the locust-affected areas in Africa, the Middle East and Asia, as part of the multi-disciplinary teams addressing the locust problem at the national level, do provide information when required. However, it is important to develop clear guidelines on the exact nature of meteorological products that must be produced at regular intervals to assist the International Agencies such as FAO and the regional and national organizations in effective control of the locust problem.

Discussions during the meeting:

Four experts from AGRHYMET, FAO, Italy and India attended the meeting. The meeting reviewed the inter-relationships between weather, climate, locust outbreaks and their migration using appropriate case studies and elaborated the detailed meteorological information required for the different phases in the life-cycle of locusts to facilitate more effective locust control operations (please see the attached programme). I presented an overview of meteorological information required for locust control and pointed out the challenges and opportunities to improve existing methods of monitoring. Mr Keith Cressman from FAO made an interesting presentation on the current locust plague and pointed out the needs for meteorological information for more effective locust monitoring. *FAO's analysis points out that conditions are now favourable for the locust breeding conditions in North Africa in Spring 2005 which could bring more locust swarms into West Africa in the rainy season of 2005.*

Presentations from Drs J.R. Sharma (India), B. Sidibe (AGRHYMET) highlighted the regional needs for more effective meteorological monitoring and Prof. G. Maracchi (IBIMET, Italy) discussed the use of products of Numerical Weather Prediction Models (NWP), reanalysis and satellite data and the use of Local Area Models (LAM) and GIS to improve the monitoring and forecasting of locusts. H. Kontongomde from WCDMP presented information on Climate Database Management Systems of WMO.

Considerable time was devoted to discussing the data needs and design of a database on meteorological information for locust control. The meeting also discussed the contents of a guidance brochure for the NMHSs.

Conclusions of the meeting

- 1) There is a strong relationship between desert locust biology and behaviour and the different meteorological parameters including rainfall, temperature, wind etc.,

- 2) There are several constraints in most of the locust-affected countries regarding near-real time meteorological information. These include poor density of rainfall network, lack of use or poor use of meteorological information by national Locust Control Centres, variable quality of synoptic rainfall data provided on the GTS, and inadequate collaboration between the LCCs, and the NMHSs, international and regional institutions.
- 3) The lack of geospatial meteorological data for entire regions is a major draw back for monitoring the locust activity by different nations.
- 4) There are several tools and products such as Field Servers which could assist significantly in producing meteorological information for more effective monitoring of locusts.
- 5) There is a large amount of meteorological information available through Internet eg., the products of Numerical Weather Prediction Models (NWP), reanalysis and satellite data, which allows the preparation of specific tools through Local Area Models (LAM) and GIS to improve the monitoring and forecasting of locusts.

Recommendations of the meeting

- 1) NMHSs should strengthen collaboration with the National LCCs and provide near-real time rainfall and temperature data and forecasts, if any.
- 2) Meteorological observation networks could be supplemented by new tools such as “Field Servers” which offer a low cost option and can be combined with satellite data transmission systems to assist in locust monitoring and early warning, besides serving many other users eg., crop insurance, food security, drought monitoring etc.,
- 3) Since many of the national, regional and international organizations rely on real-time meteorological data from GTS for locust monitoring, it is essential that NMHSs ensure the provision of good quality synoptic data on GTS.
- 4) National LCCs are encouraged to make better use of geospatial data under Reconnaissance and Management System (RAMSES) GIS for effective monitoring of locusts.
- 5) Because of the current state of observation networks, it is important to promote the use of NWP products including the use of local models.
- 6) It will be useful to verify, through the Institute for Biometeorology of the National Research Council of Italy (IBIMET–CNR) and in cooperation with WMO, FAO, and the AGRHYMET Centre, the feasibility of an operational system that integrates the various data and products of LAM to provide better estimates of rainfall, temperature and wind to national, regional and international agencies.
- 7) Evaluations should be made, with the same institutions, of the improvements in seasonal forecasting (two months in advance) that can be facilitated by the use of new parameters such as Hydrological Onset and Withdrawal Index (HOWI) and geopotential position to provide operational products to national, regional and international agencies.
- 8) WMO and FAO should collaborate in the preparation and publication of a brochure that provides guidance to NMHSs and LCCs for more effective monitoring of locusts.
- 9) FAO/WMO Regional Workshops on Improved Meteorological Support to National LCCs should be organized for the Francophone and Anglophone countries which would bring together staff of NMHSs and the LCCs.

- 10) Considering the serious nature of the current locust emergency in West Africa and the need for improved user feedback to NMHSs in West Africa, meteorological information for locust monitoring should be the focus of PRESAO User Forum at the next session of PRESAO in 2005.
- 11) Increased efforts should be made to strengthen capacity building and research in improving meteorological information and products for locust monitoring.

Proposed follow-up action:

Given the possibility of locust attacks again in 2005, it is essential to undertake the following actions rapidly:

- 1) WMO and FAO should prepare and publish by April 2005, the guidance material on locust monitoring for NMHSs and the National Locust Control Centres (LCCs).
- 2) A circular letter should be sent by the SG to the countries affected by locusts regarding the provision of rainfall and temperature data in near-real time to National LCCs as well as to WMO. These data would also be made available on the WAMIS website of WMO.
- 3) FAO and WMO should jointly organize by April-May 2005, Regional Workshops on Improved Meteorological Support to National LCCs: one for the Francophone countries (at AGRHYMET) and the other for Anglophone countries (in Jodhpur, India).
- 4) Meteorological Information for Locust monitoring should be the focus of PRESAO User Forum at the next session of PRESAO in 2005.