

Meteorological information for locust monitoring & control



locusts & systems

meteorological data

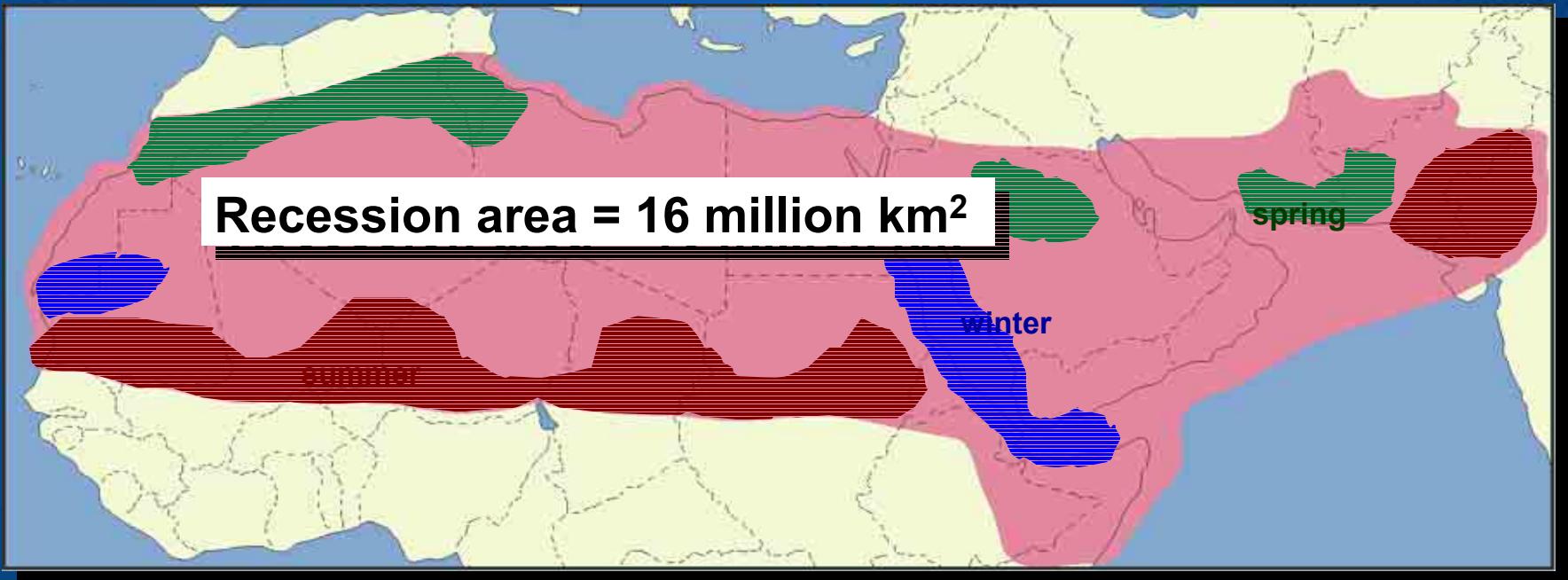
solutions & challenges



Keith Cressman
Locust Forecasting Officer

9 April 2006

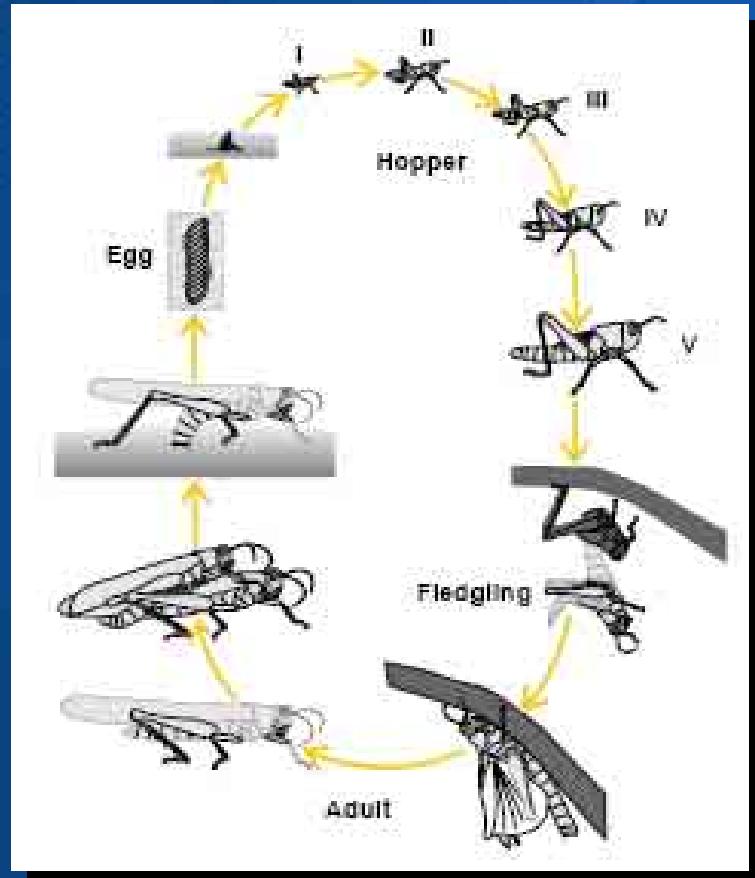
Desert Locust countries



Invasion area = 32 million km² (20% of world land mass)

25 key (front-line) countries

Desert Locust biology



25d 14d 30 days

summer (Sudan interior + IND/PAK)

winter (Red Sea coasts)

spring (PAK/IRN)

Desert Locust phase change



Individual locusts
= no threat

solitarious

Desert Locust phase change



solitarious



transiens

**Individual locusts
= no threat**

**Grouping & concentration
= increasing threat**

Desert Locust phase change



solitarious



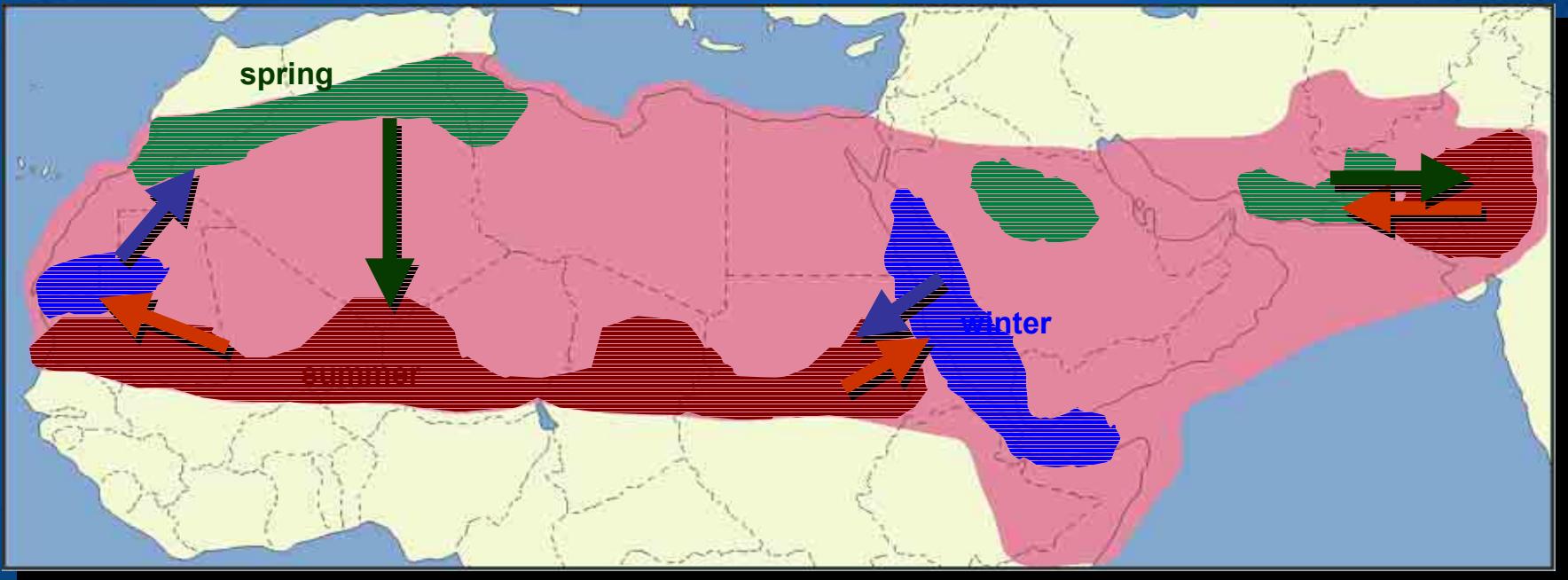
transiens

hopper bands & swarms (gregarious)
= THREAT!



gregarious

Desert Locust migration



recessions: move within regions

outbreaks/upsurges/plagues: move across continents

Desert Locust programmes

National (Locust Control Centres)	Outputs
<ul style="list-style-type: none">• assess situation• forecasts (short)• plan surveys and control ops	<p>field data</p> <p>10-day sit reps</p> <p>monthly bulletins</p>
Regional (FAO Commissions)	
<ul style="list-style-type: none">• national strengthening	
International (FAO HQ)	
<ul style="list-style-type: none">• assess situation• forecast (6 weeks – 6 months)• advise NLCCs / donors	<p>monthly bulletins</p> <p>interim updates</p> <p>warnings</p>

Desert Locust information flow

International - FAO Desert Locust Information Service (DLIS)

(RAMSES data files, reports)



National - Locust Control Centre

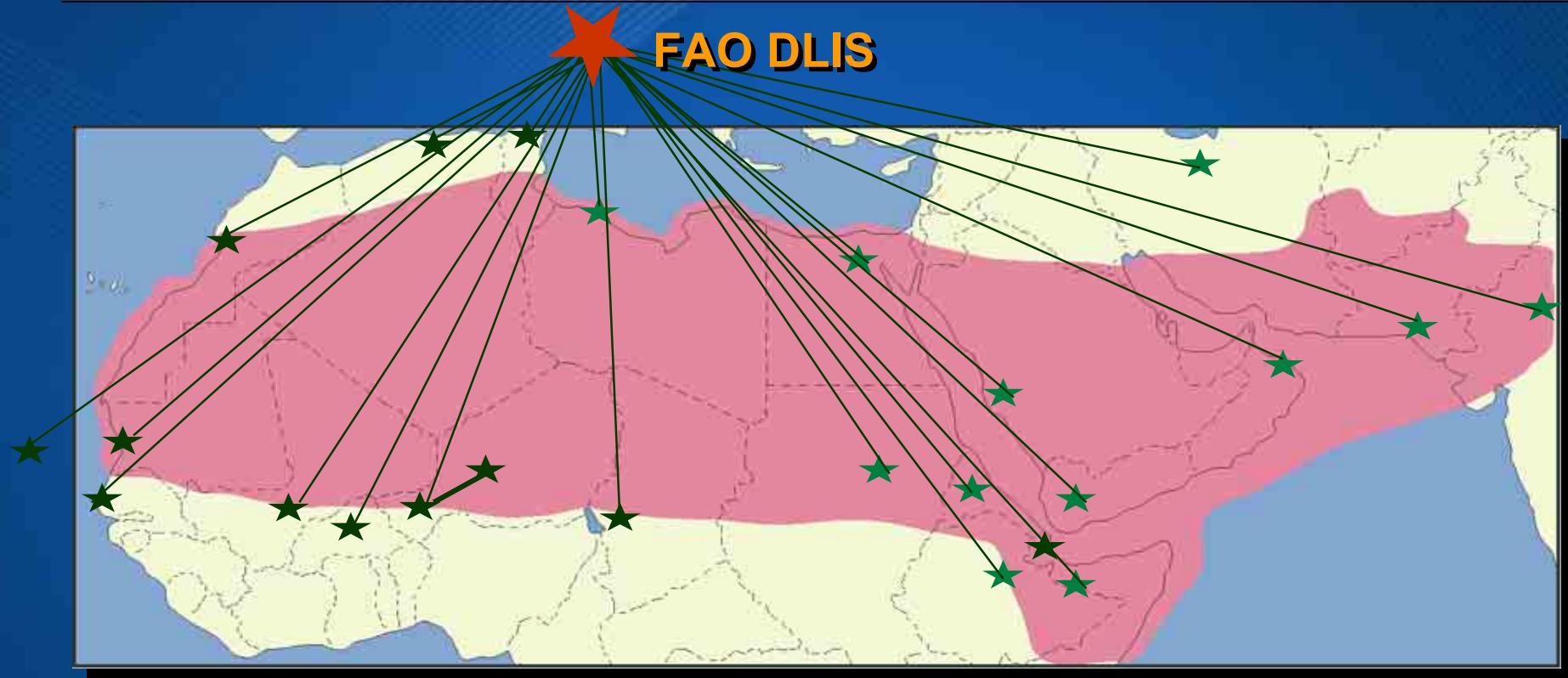
(forms, eLocust2 data files)



Field - survey and control teams



Desert Locust network



Direct two-way communication

National Locust Control Centres FAO DLIS

Weather data and Desert Locusts

	Data	Actual	Forecast	Use
Rainfall	total	daily decadal monthly	+1 day +10 day +30 day seasonal	breeding migration planning
Temperature	min/max	daily decadal monthly	+1 day +10 day +30 day seasonal	maturity migration planning
Wind	direction	12 h		
	speed			
	height			

Weather thresholds

Rain > 25 mm in two consecutive months
unusual events



Temp > 20°C (egg & hopper development)
> 20°C (take-off)
> 18°C (sustained flight)
0 - 50°C (survival range)
13 - 45°C (active range)



Wind < 10 m/s (take-off; control limits)
10 - 2000 m (migration heights)

Who collects & needs weather data?



Survey teams (on site)
collect rain data



Control teams (on site)
wind direction & speed



NLCCs
analysis & planning field ops



FAO DLIS
analysis & forecasting

Tools available to NLCCs

rainfall station reports

estimate / forecast rains

- US Navy
- NOAA Africa data
- IBIMET
- other web sites

vegetation imagery (SPOT/MODIS)

RAMSES GIS

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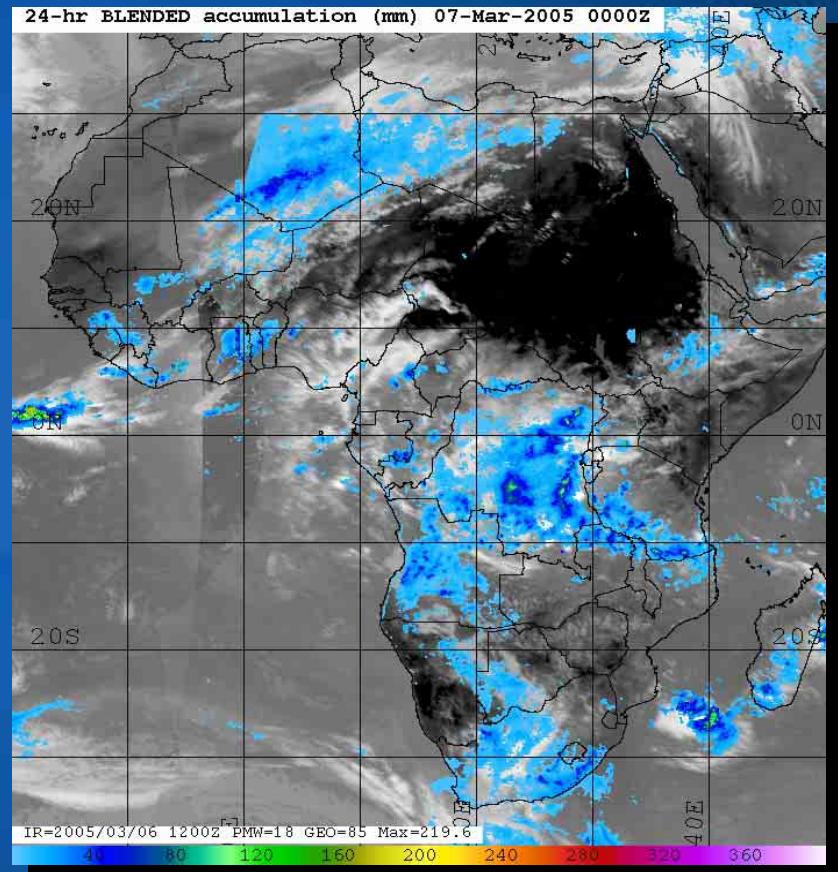
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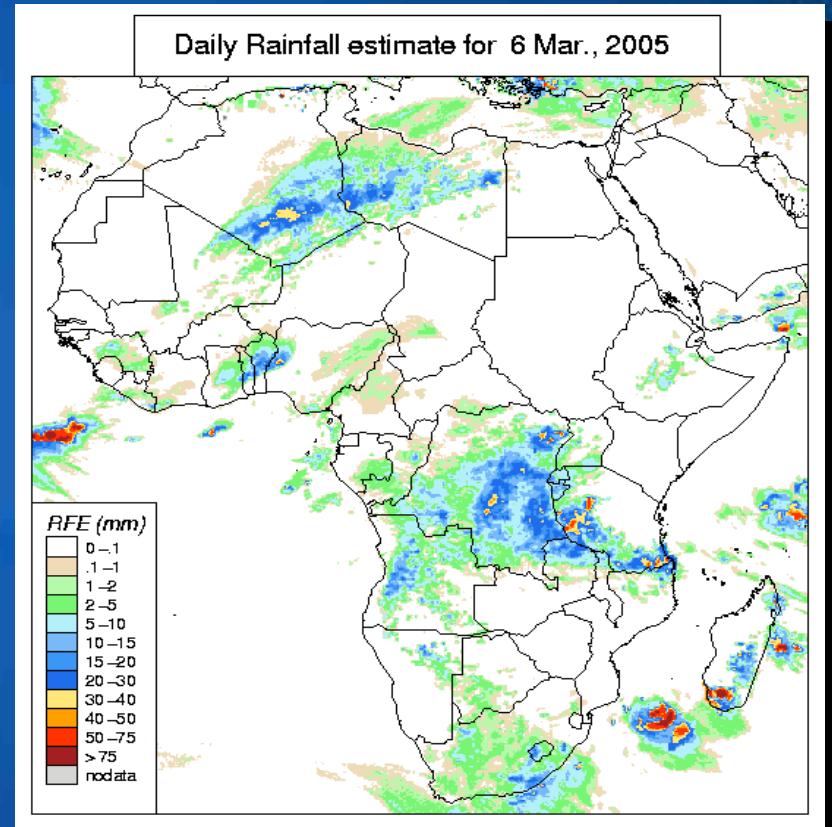
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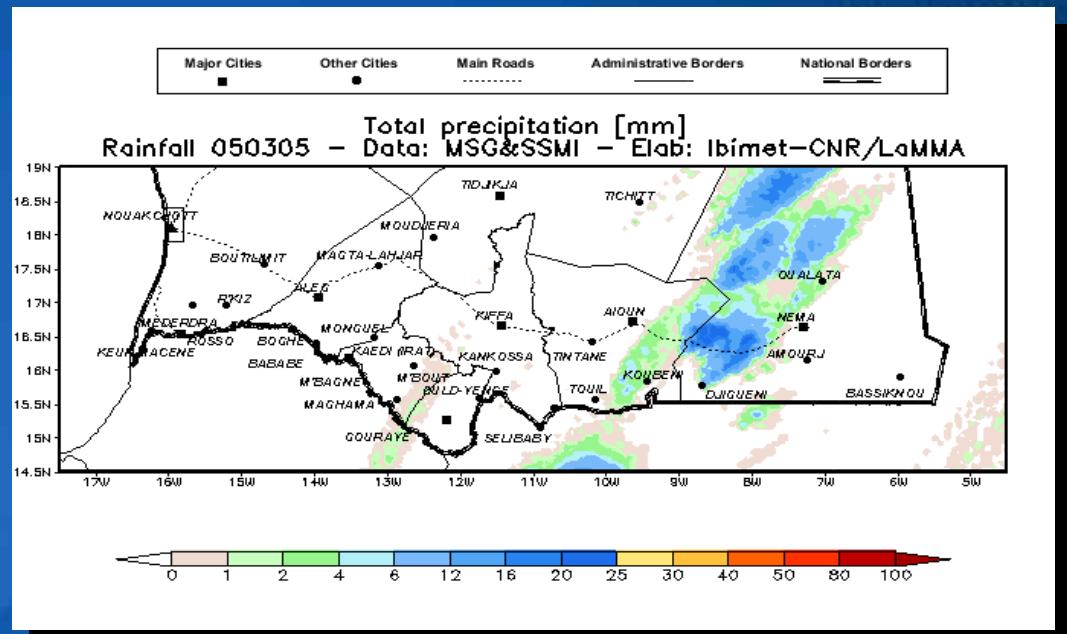
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RAMSES GIS

Niamey, Niger

Local Time: 10:37 AM WAT [Set My Timezone](#)

 Tropical Weather: South Indian Ocean: [Tropic](#)

Current Conditions

Updated: **7:00 AM WAT on April 11, 2005**

Observed at Niamey-Aero, Niger ([History](#))

Elevation: 732 ft / 223 m



81 °F / 27 °C

Widespread Dust

Humidity: 11%

Dew Point: 36 °F / 2 °C

Wind: 5 mph / 7 km/h from the East

Wind Gust: -

Pressure: 29.70 in / 1006 hPa

Visibility: 5.0 miles / 8.0 kilometers

UV: 0 out of 16

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RAMSES GIS

	Monday Clear. High: 109° F / 43° C Wind ESE 4 mph / 7 km/h
	Monday Night Clear. Low: 84° F / 29° C Wind South 2 mph / 3 km/h
	Tuesday Clear. High: 109° F / 43° C Wind WNW 2 mph / 3 km/h
	Tuesday Night Clear. Low: 84° F / 29° C Wind WNW 2 mph / 3 km/h
	Wednesday Clear. High: 109° F / 43° C Wind NNW 4 mph / 7 km/h
	Wednesday Night Clear. Low: 84° F / 29° C Wind South 2 mph / 3 km/h
	Thursday Clear. High: 107° F / 42° C Wind West 2 mph / 3 km/h
	Thursday Night Clear. Low: 80° F / 27° C Wind SW 2 mph / 3 km/h
	Friday Scattered Clouds. High: 107° F / 42° C Wind SW 2 mph / 3 km/h
	Friday Night Clear. Low: 82° F / 28° C Wind SW 8 mph / 14 km/h
	Saturday Scattered Clouds. High: 102° F / 39° C Wind SW 8 mph / 14 km/h
	Saturday Night Clear. Low: 86° F / 30° C Wind SW 8 mph / 14 km/h
	Sunday Clear. High: 98° F / 37° C Wind SW 4 mph / 7 km/h
	Sunday Night Clear. Low: 87° F / 31° C Wind SSW 8 mph / 14 km/h

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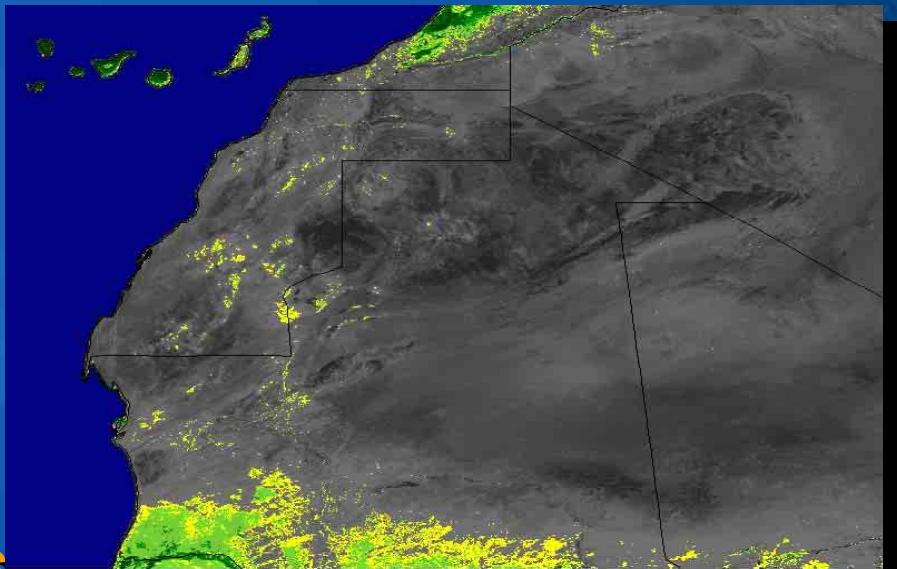
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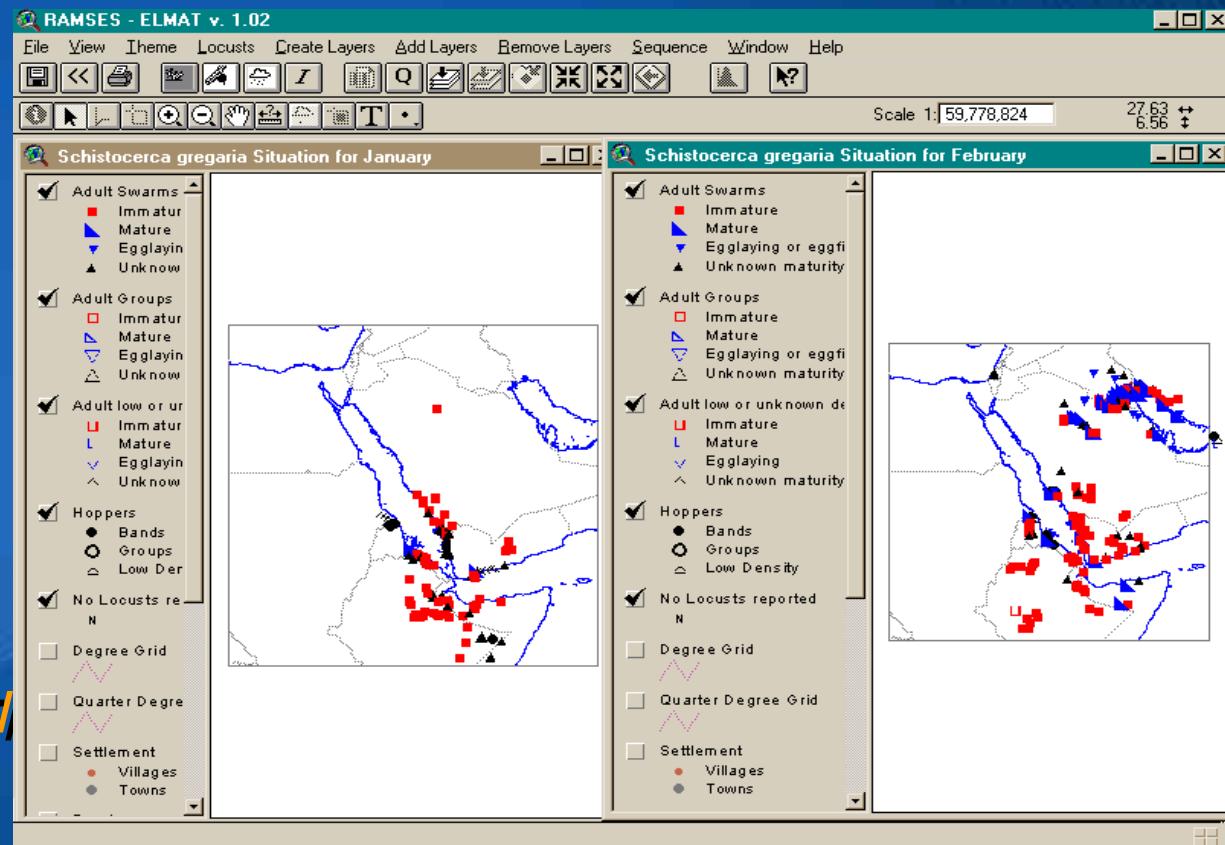
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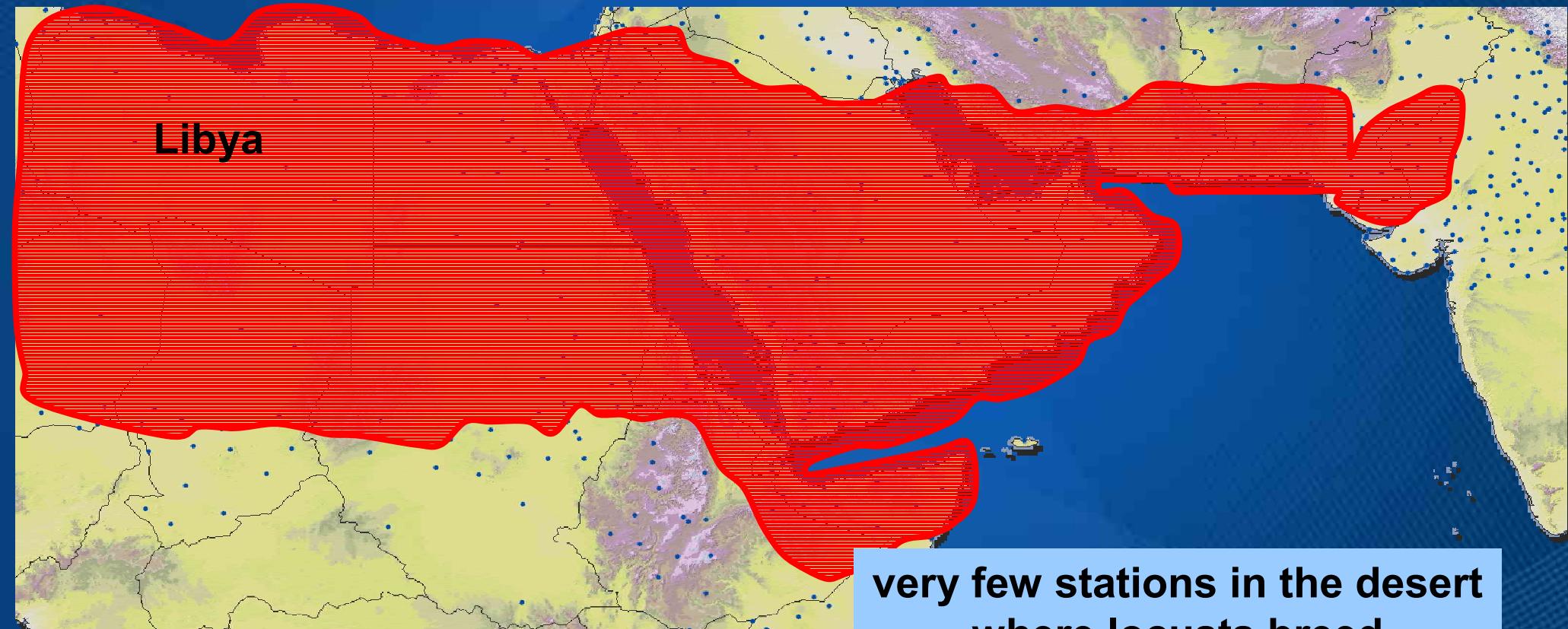
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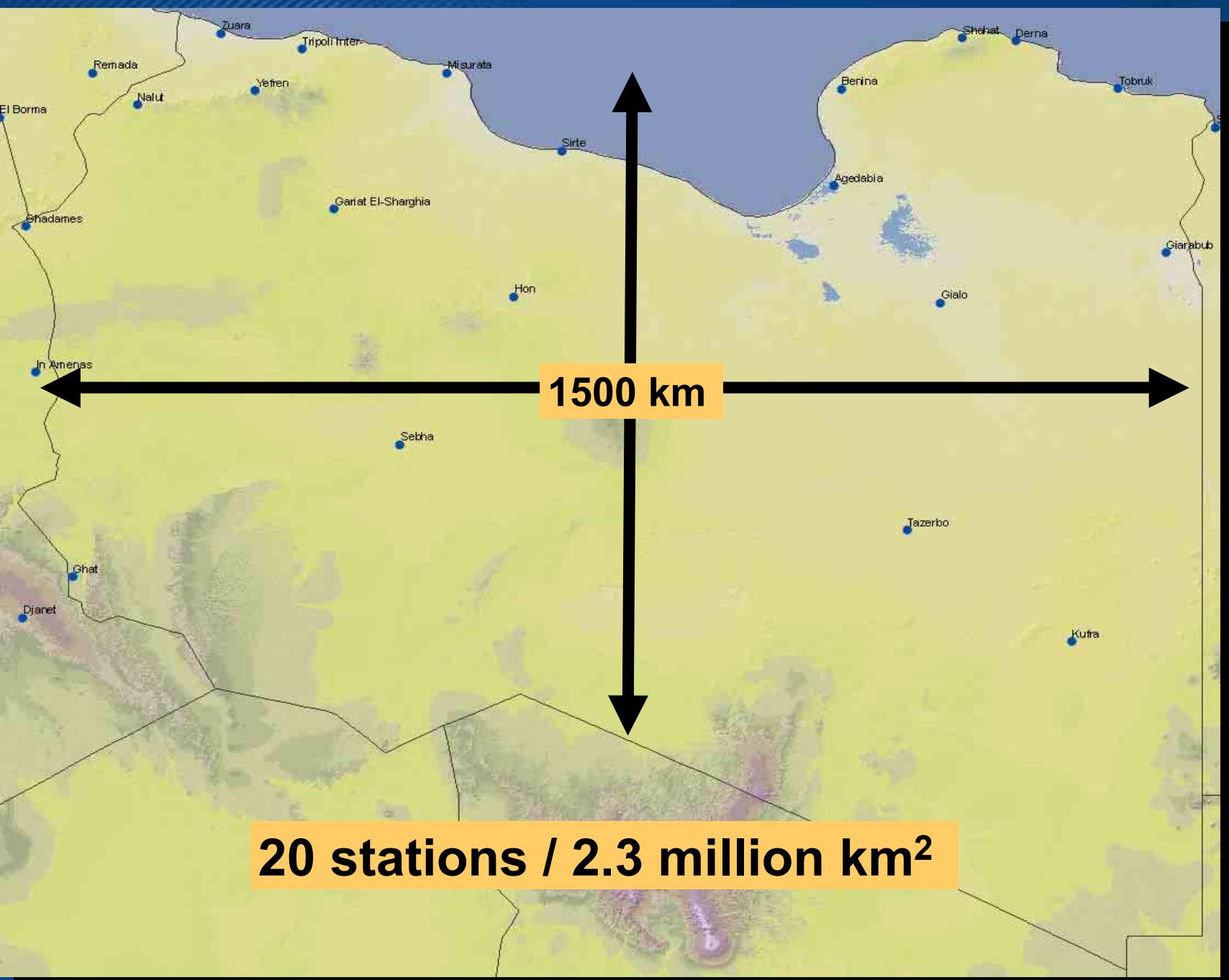
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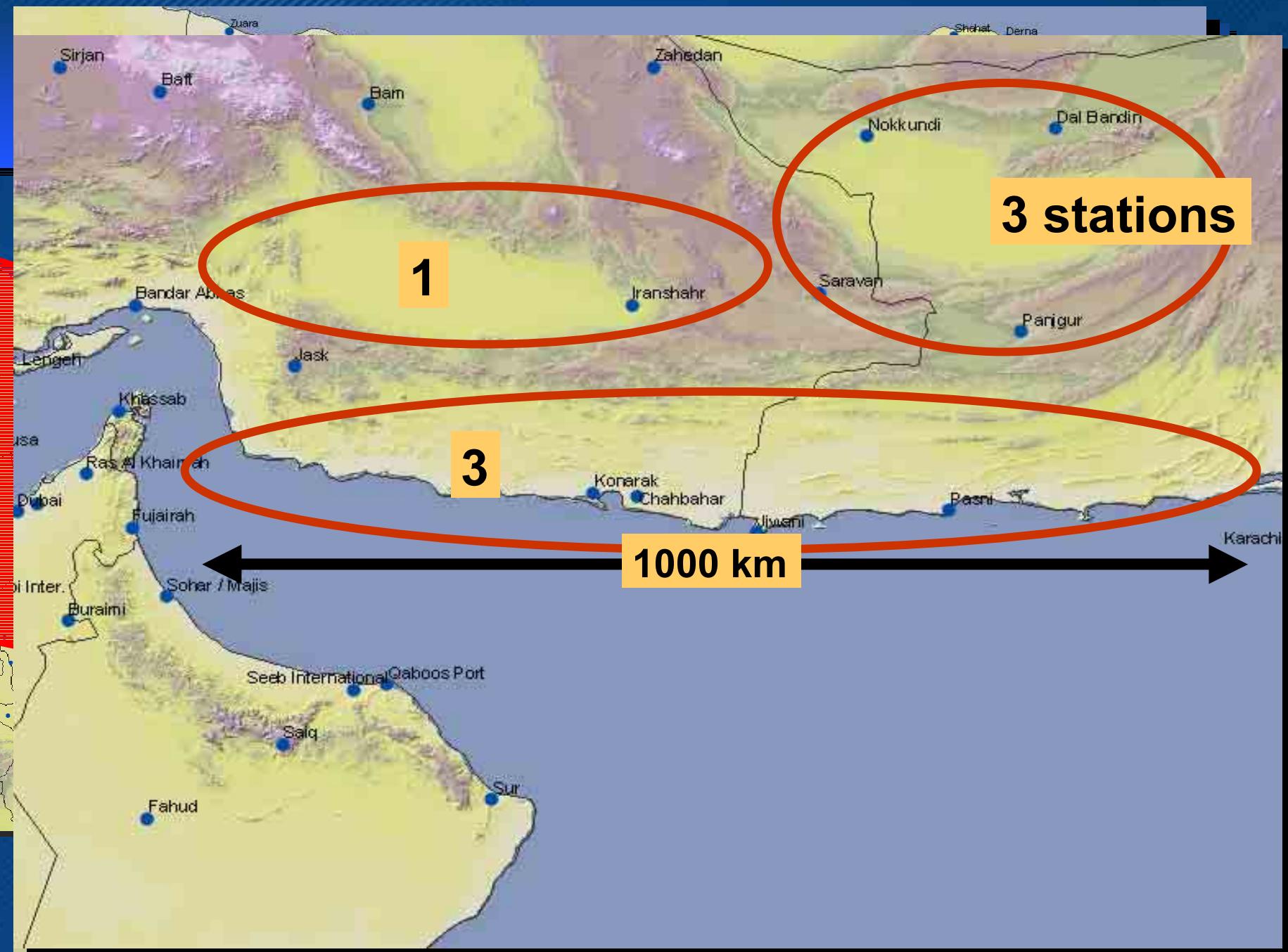
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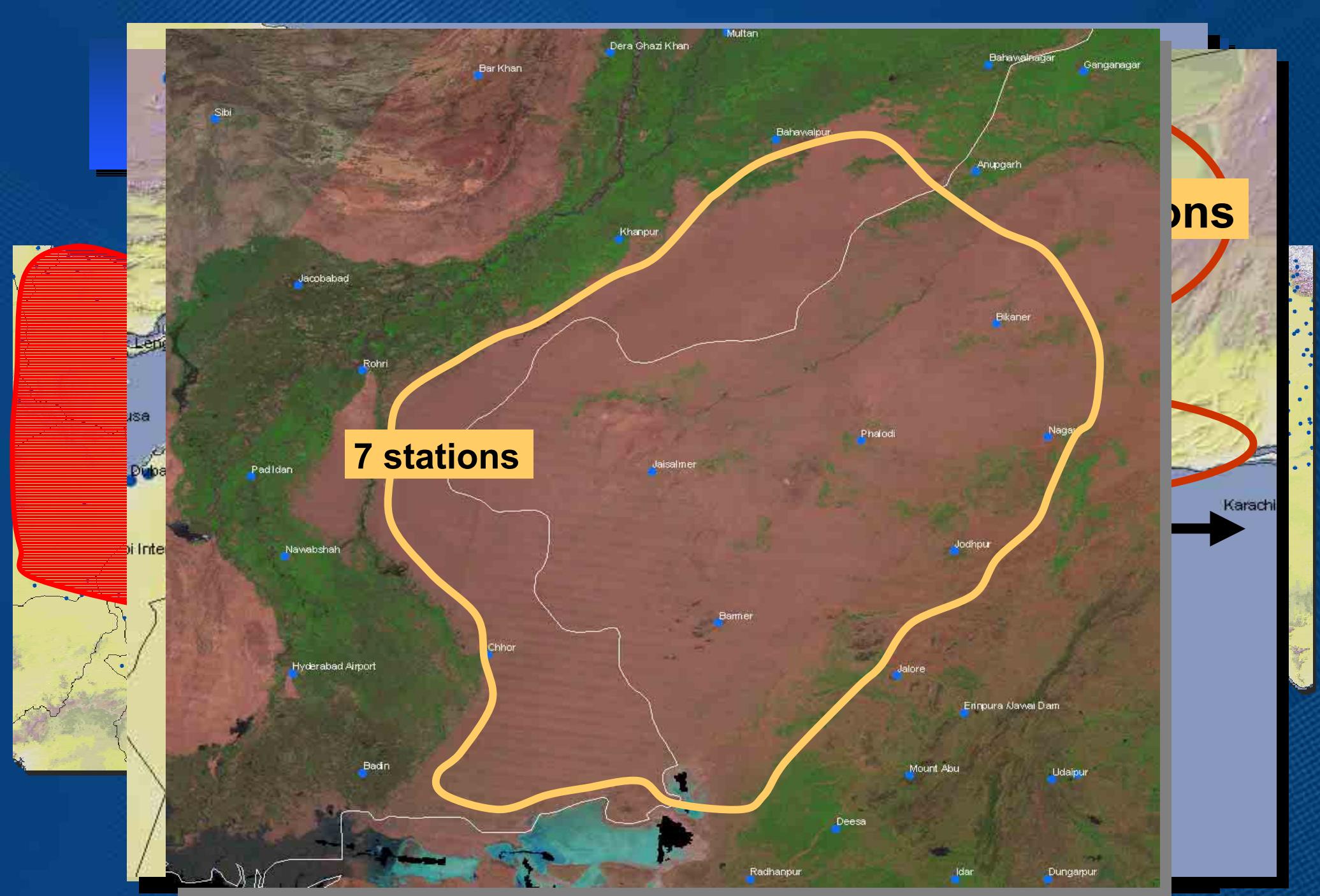


Primary rainfall stations (GTS)









Current weaknesses

- **poor rain station coverage**
- **national station data incomplete / errors**
- **NLCC does not use data**
- **weak NLCC / NMHS link**

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62650	7	10	12	24	722
62660	7	10	12	24	622
62660	7	10	21	24	700
62660	8	10	0	24	600
62680	7	10	21	24	622
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Potential solutions

- increase rain data?
- reduce transmission errors?

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62650	7	10	12	24	722
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This workshop's challenges ...

- what decisions do NLCCs make that require meteo data ?
- what data is needed (frequency, type, format) ?
- what can NMHSs provide ?
- how can any gaps be filled ?