



Climate change and clean energy in light of Covid-19 and oil price developments

WEBINAR

contact@eugcc-cleanenergy.net, 14 May 2020

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Outline

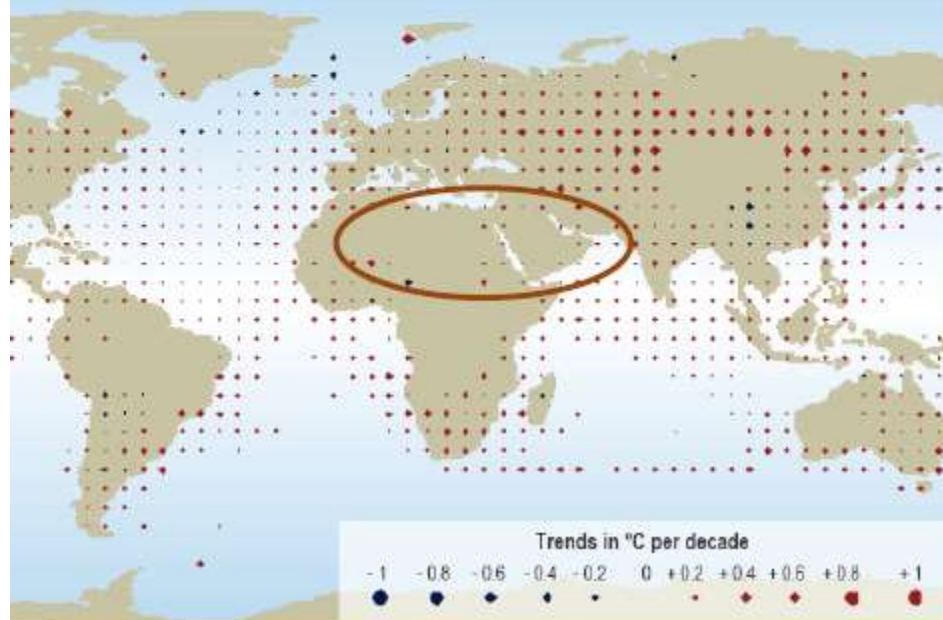
1. **Climate research gap over Arabia.**
2. **Recent climate change over Arabia.**
3. **Sea Surface Temperature increase and Tropical Cyclones impacts.**
4. **RICCAR project**

Outline

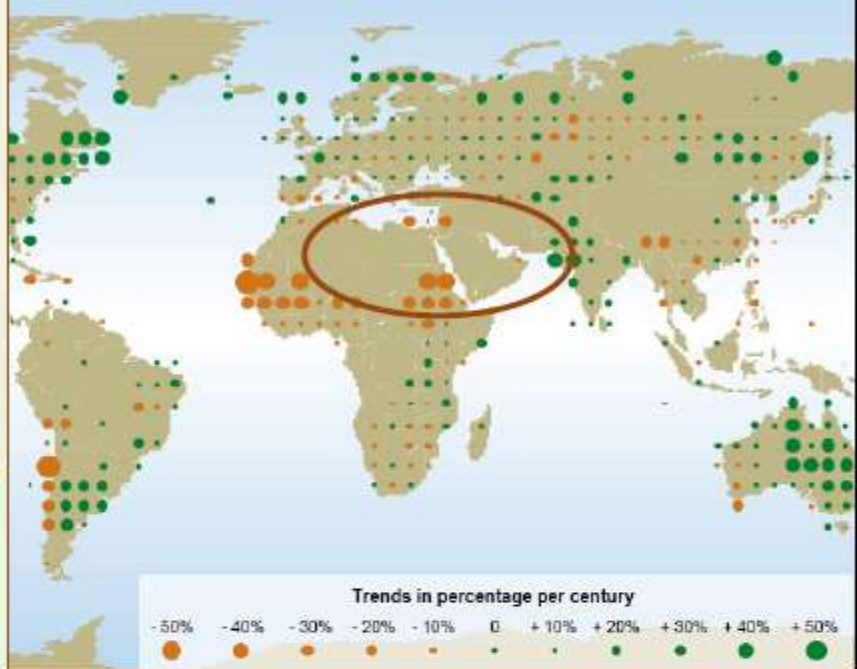
Climate research gap over Arabia.

Big gap on scientific information in the Arab Region

Annual temperature trends: 1901 to 2000



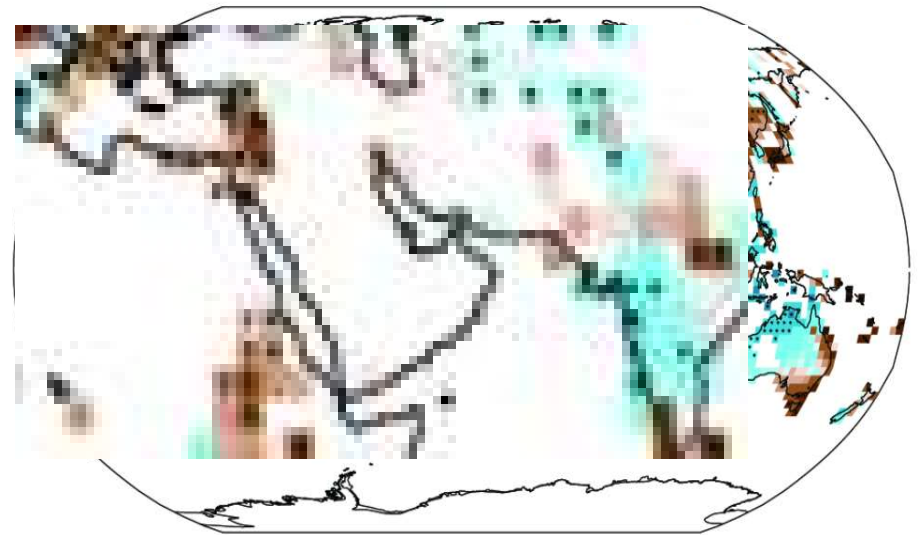
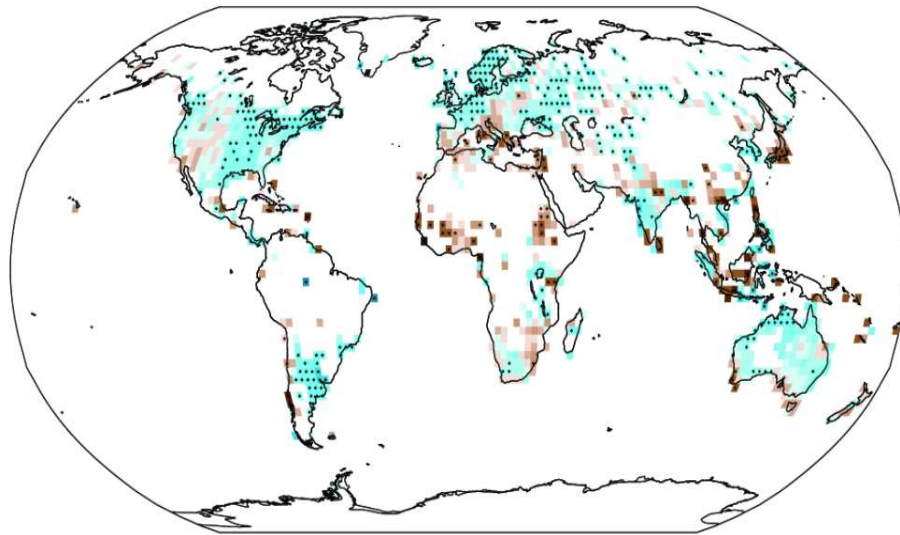
Annual precipitation trends: 1900 to 2000



Observed change in annual precipitation over land

1901–2010

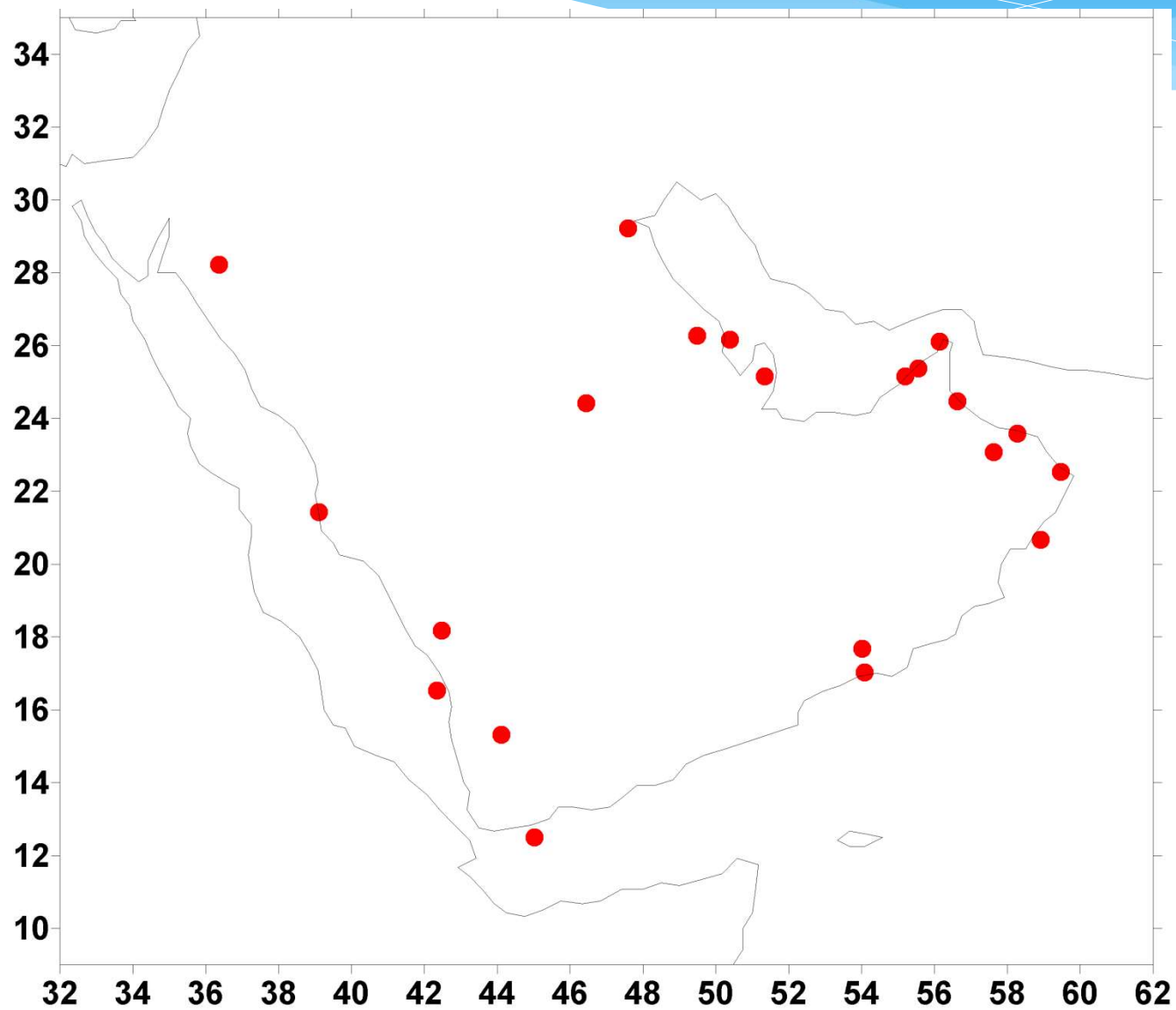
1951–2010



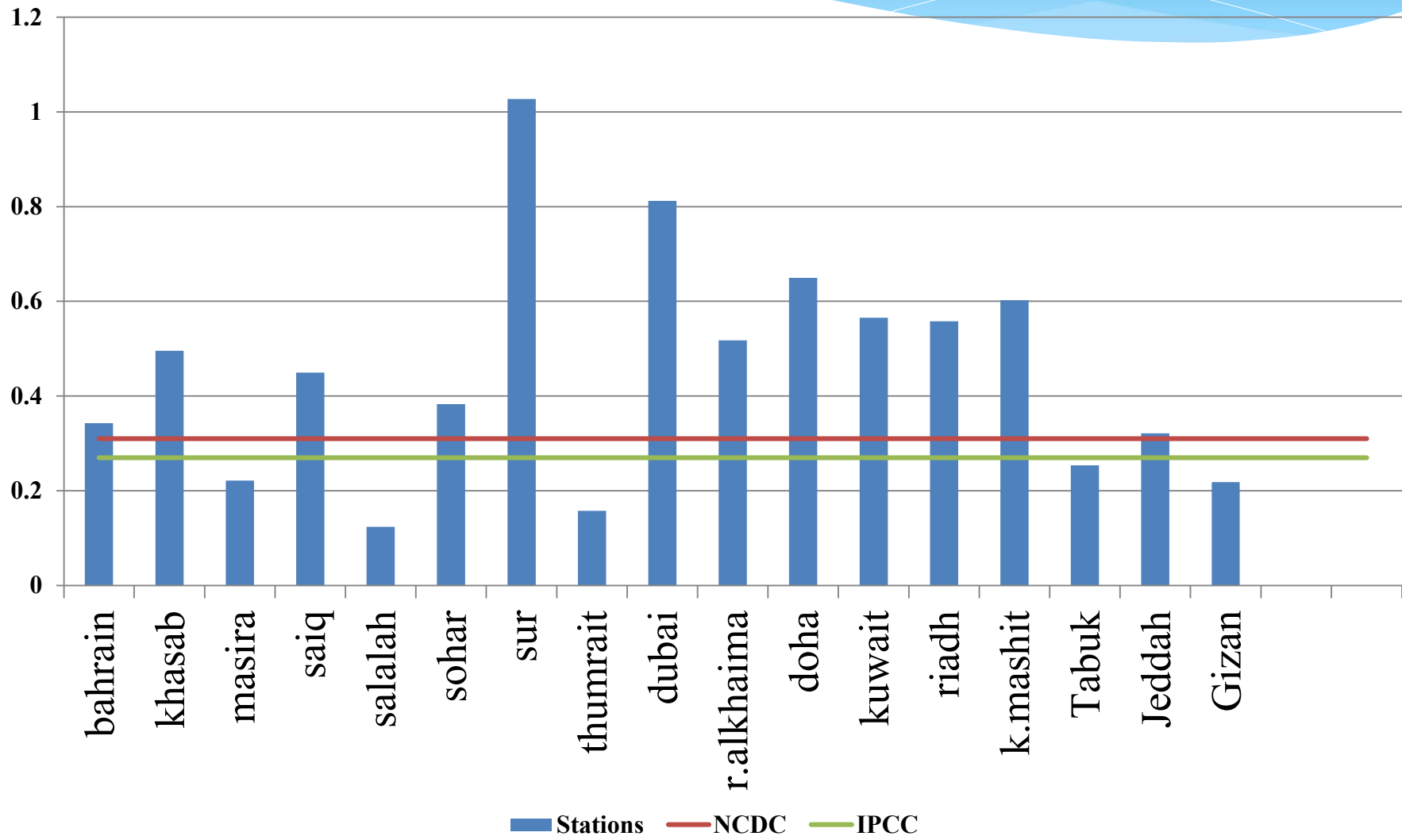
Outline

Recent climate change over Arabia.

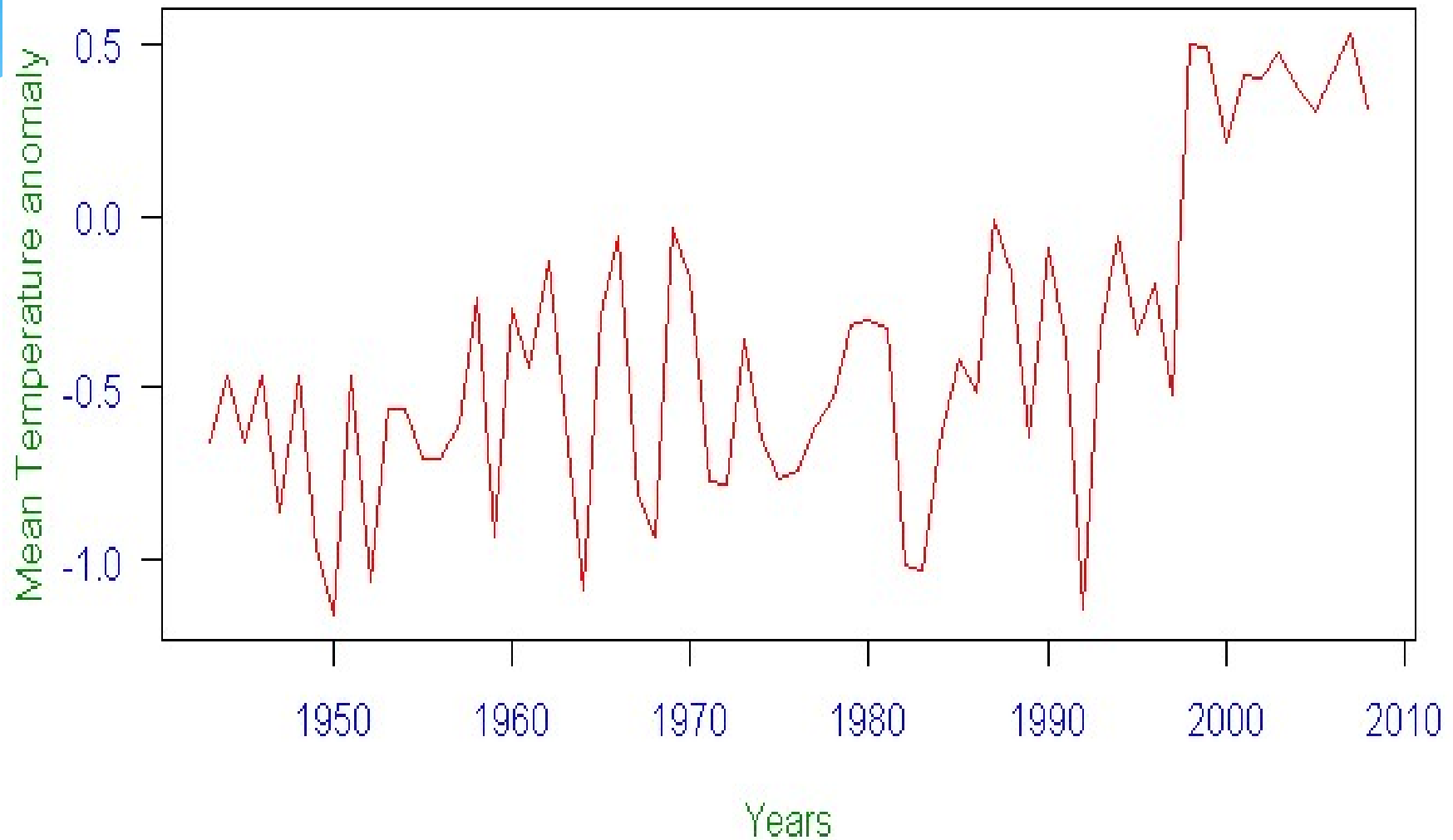
The Study Stations Distribution



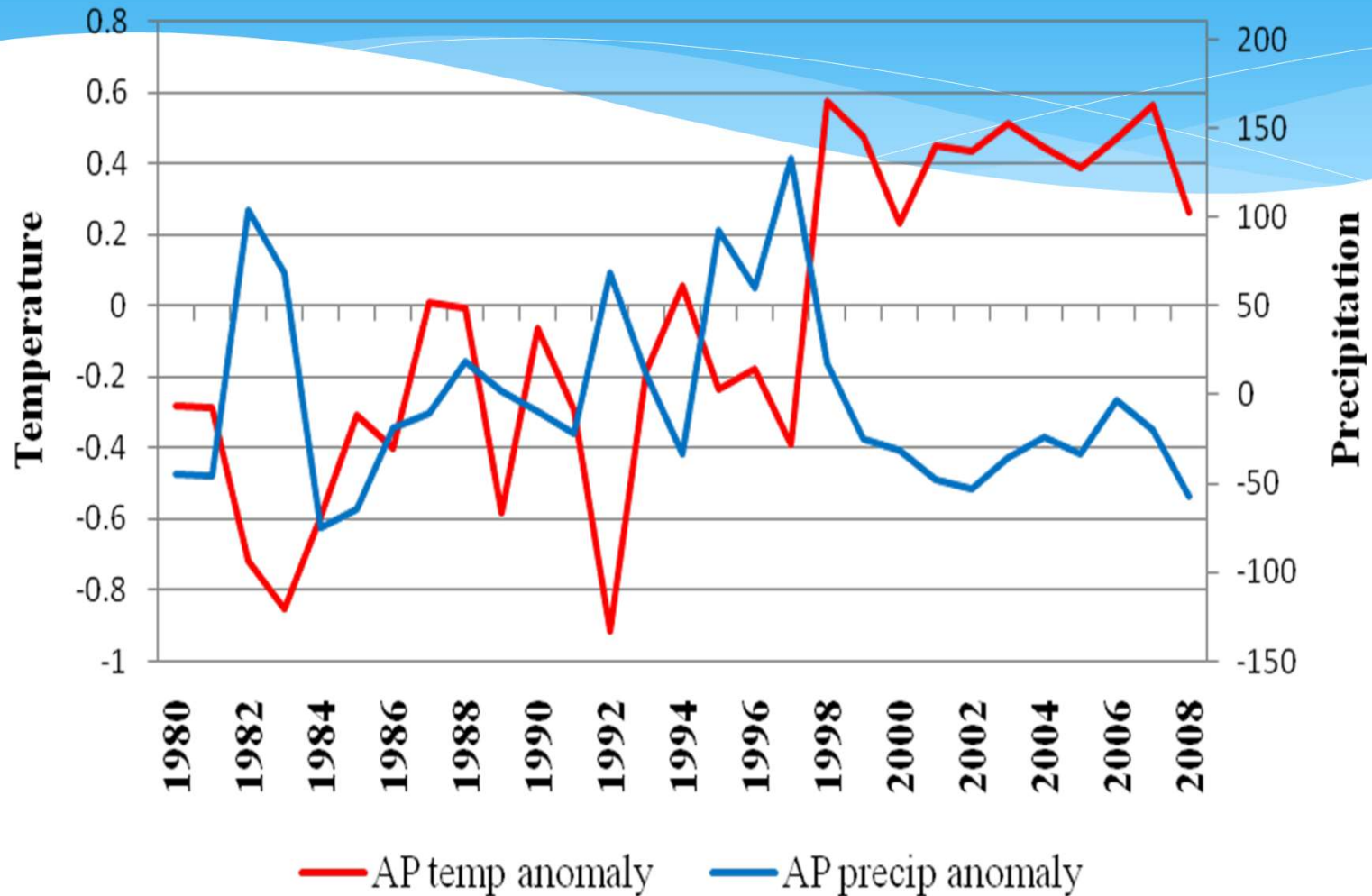
Station to NCDC, IPCC mean annual temperature trends in AP 1980-2008



All AP Annual Mean temperature Anomaly



What Happened on and after 1998?



Almazroui (2012)

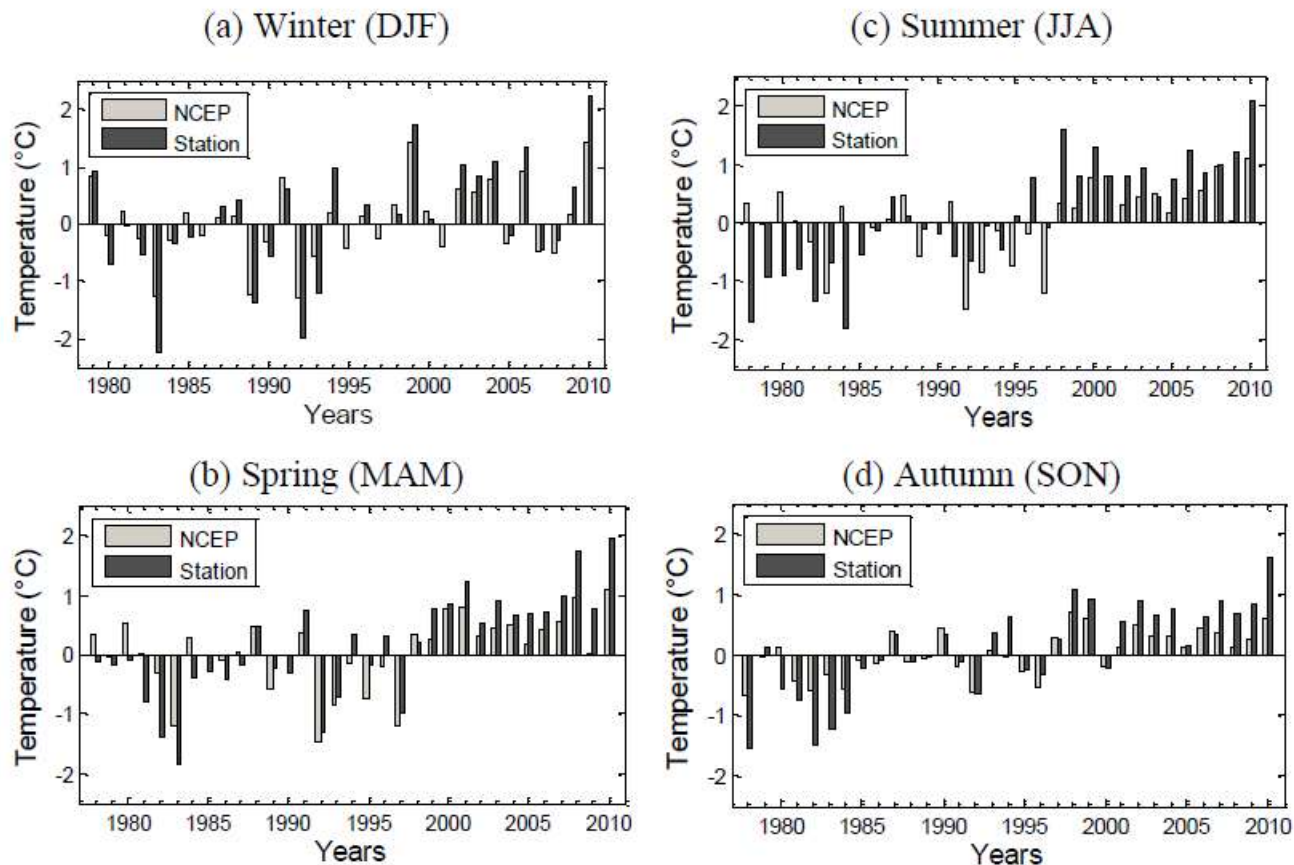
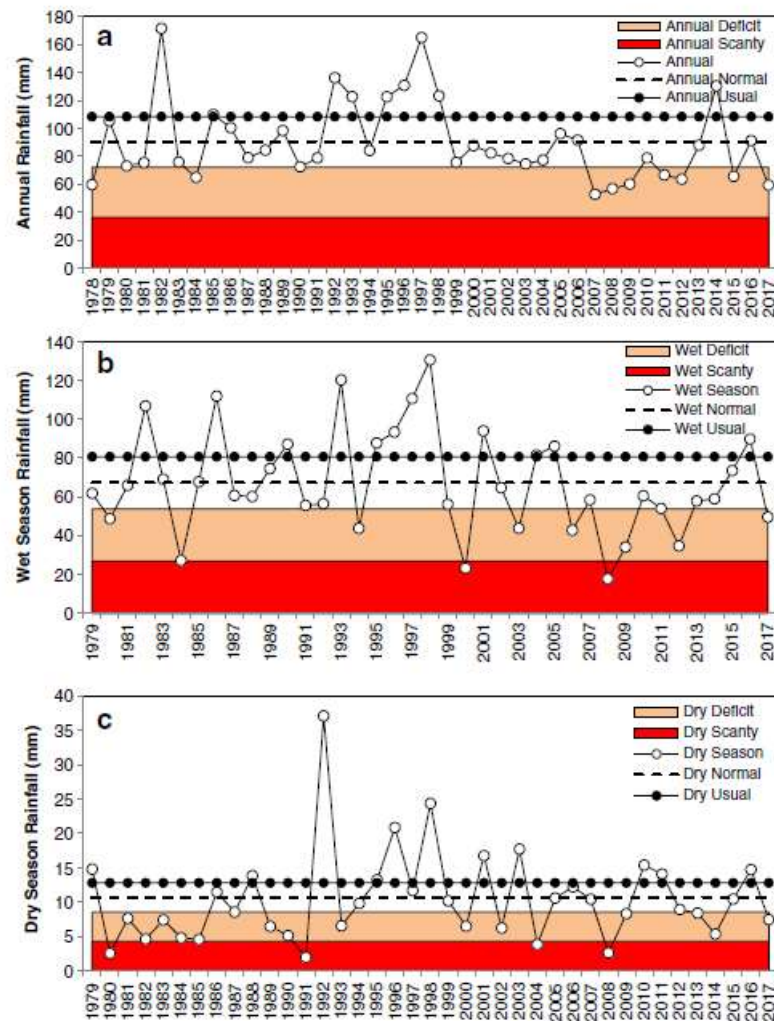


Fig. 4. Area averaged mean temperature anomalies obtained from the observed and the NCEP data for the (a) Winter, (b) Spring, (c) Summer and (d) Autumn seasons. The anomaly is taken with respect to the reference period 1978-2010.

AlMazroui (2019)

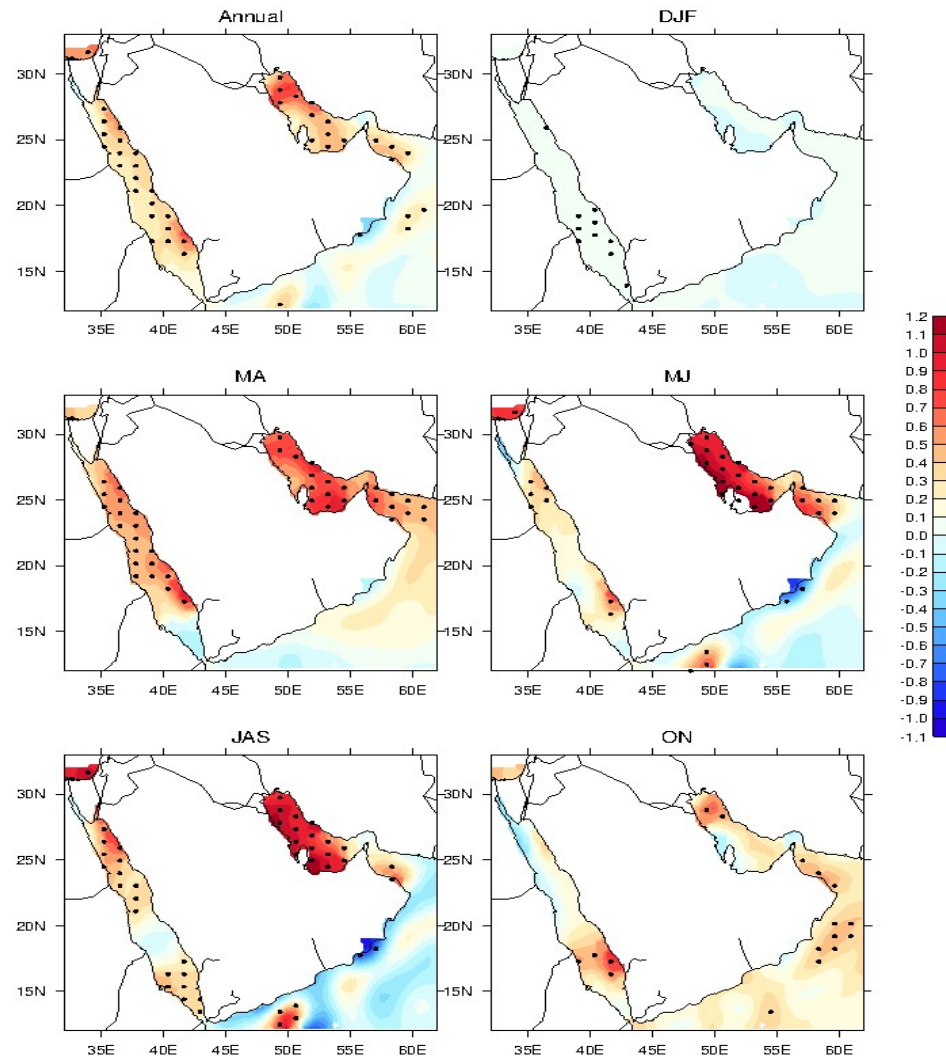
Fig. 4 The time sequences of a annual, b wet season, and c dry season rainfall (mm) with their classes obtained from the observed dataset. The normal (country average from 27 stations), deficit (20% below normal), scanty (60% below normal), and surplus (within $\pm 20\%$ of normal) are used to identify drought year over the country



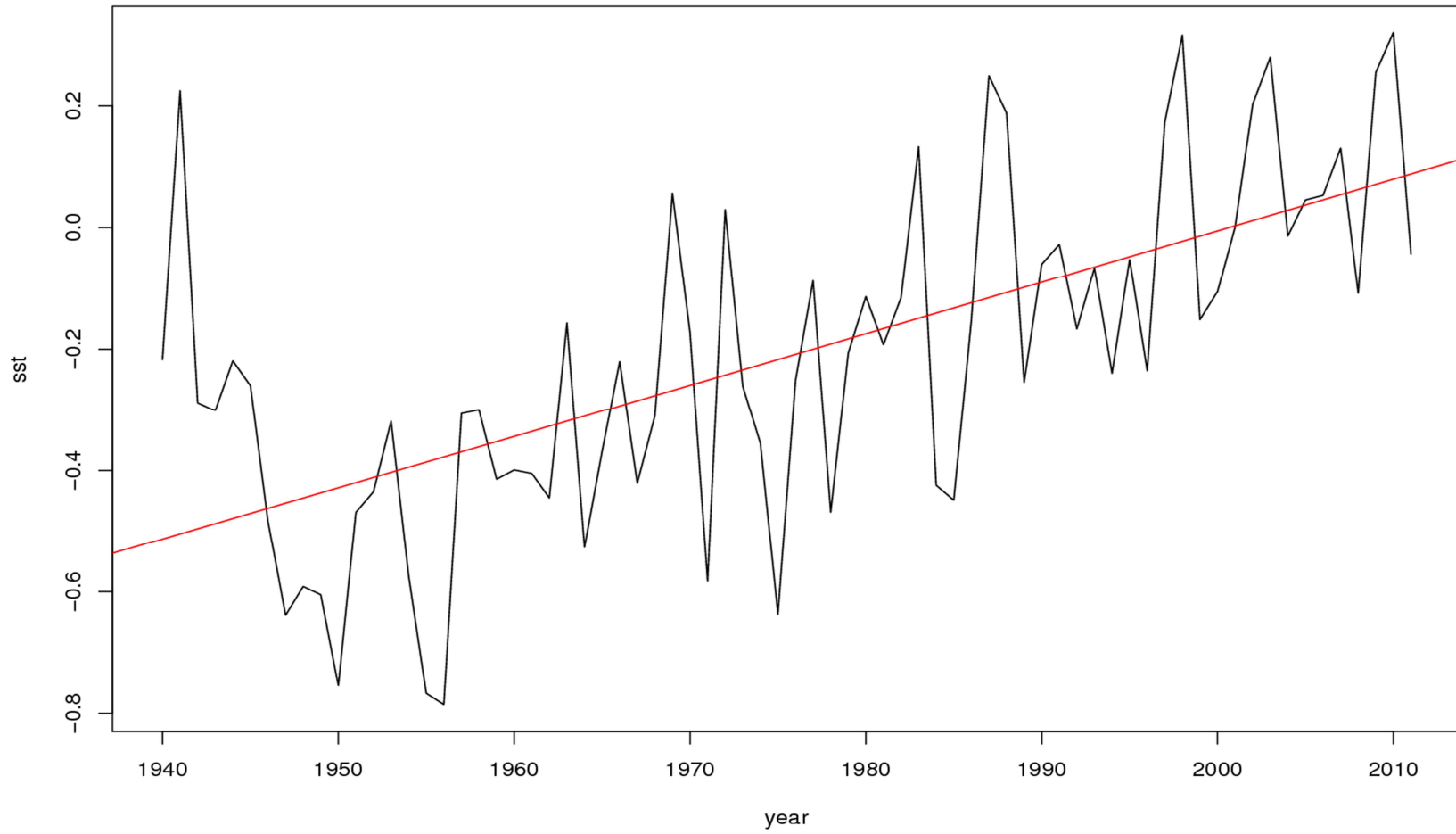
Outline

Sea Surface Temperature increase and Tropical Cyclones impacts.

Sea Surface Temperature Change



Indian Ocean anomaly 1986–2008 clim



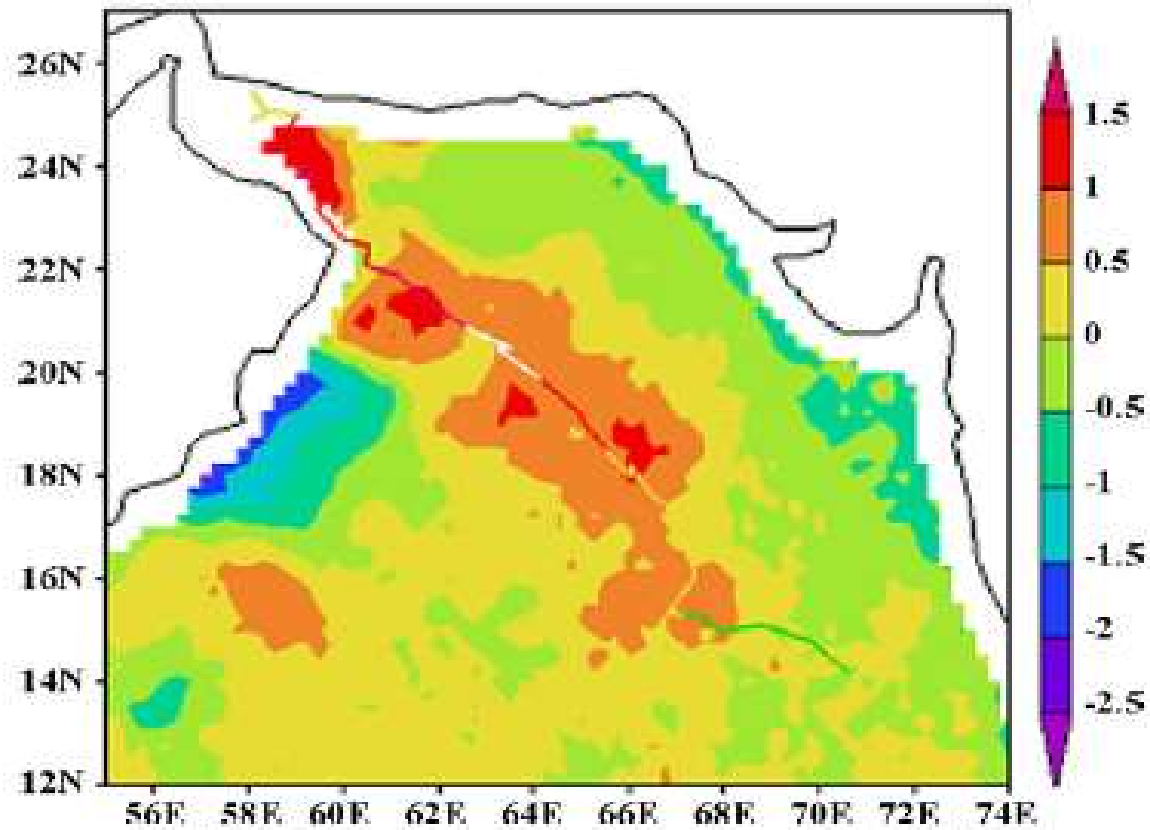


Fig. 4. TMI SSTA in relative to the 10-year (1998–2007) average on 4 June 2007 overlapped with the storm track, the locations and intensities of cyclone Gonu were indicated by lines of different colors for different stages. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of the article.)

Category 5 Tropical Cyclone “Gonu” 5th June 2007

* [GONU_03-08_June_2007_a.scr](#)



November 1993



November 1993



Outline

RICCAR project

Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR)



Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR)

ARAB CLIMATE CHANGE ASSESSMENT REPORT

TECHNICAL ANNEX

Regional Initiative for the Assessment of Climate Change Impacts on
Water Resources and Socio-Economic Vulnerability in the Arab Region

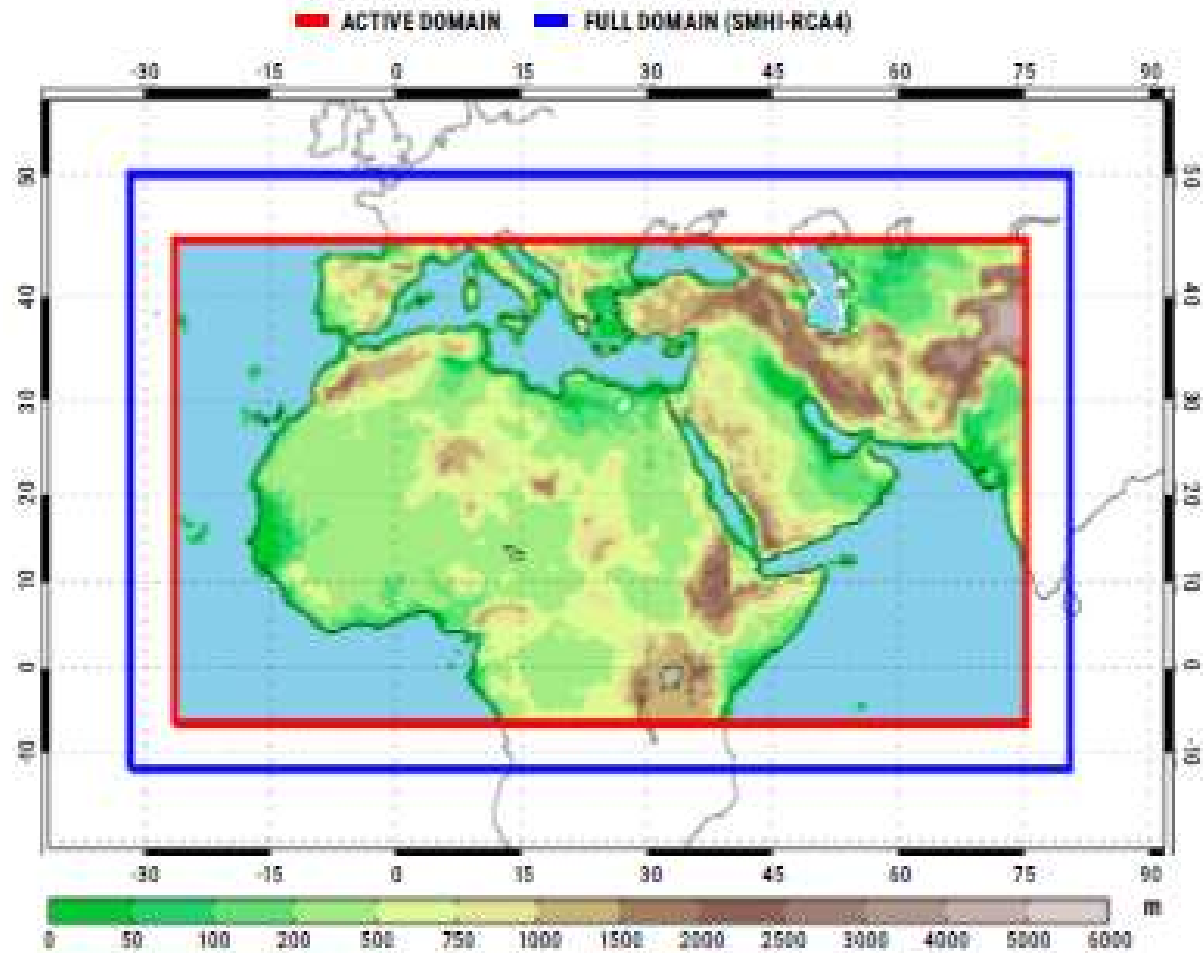
RICCAR PARTNERS



DONORS



FIGURE 3: CORDEX-MENA Domain



Note: The Active domain (red) contains the area where RCM results are considered usable. The Full domain (blue) indicates the actual area needed for the RCM (RCA4 in this case) to perform properly within the active domain. The area between Active and Full domain is a transition zone between the GCM driving boundaries and the RCM; using results from this zone should be avoided.



FIGURE 274

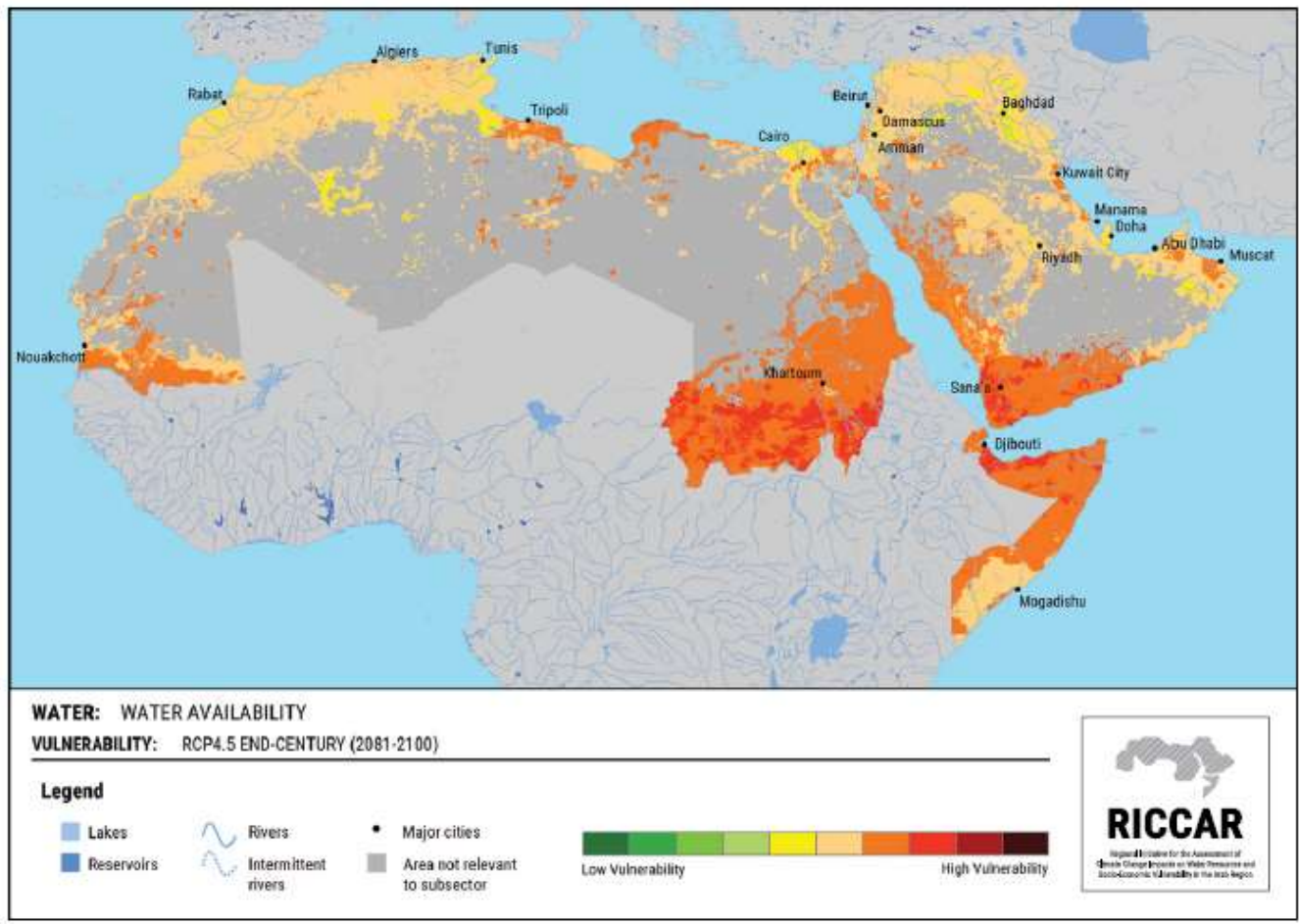
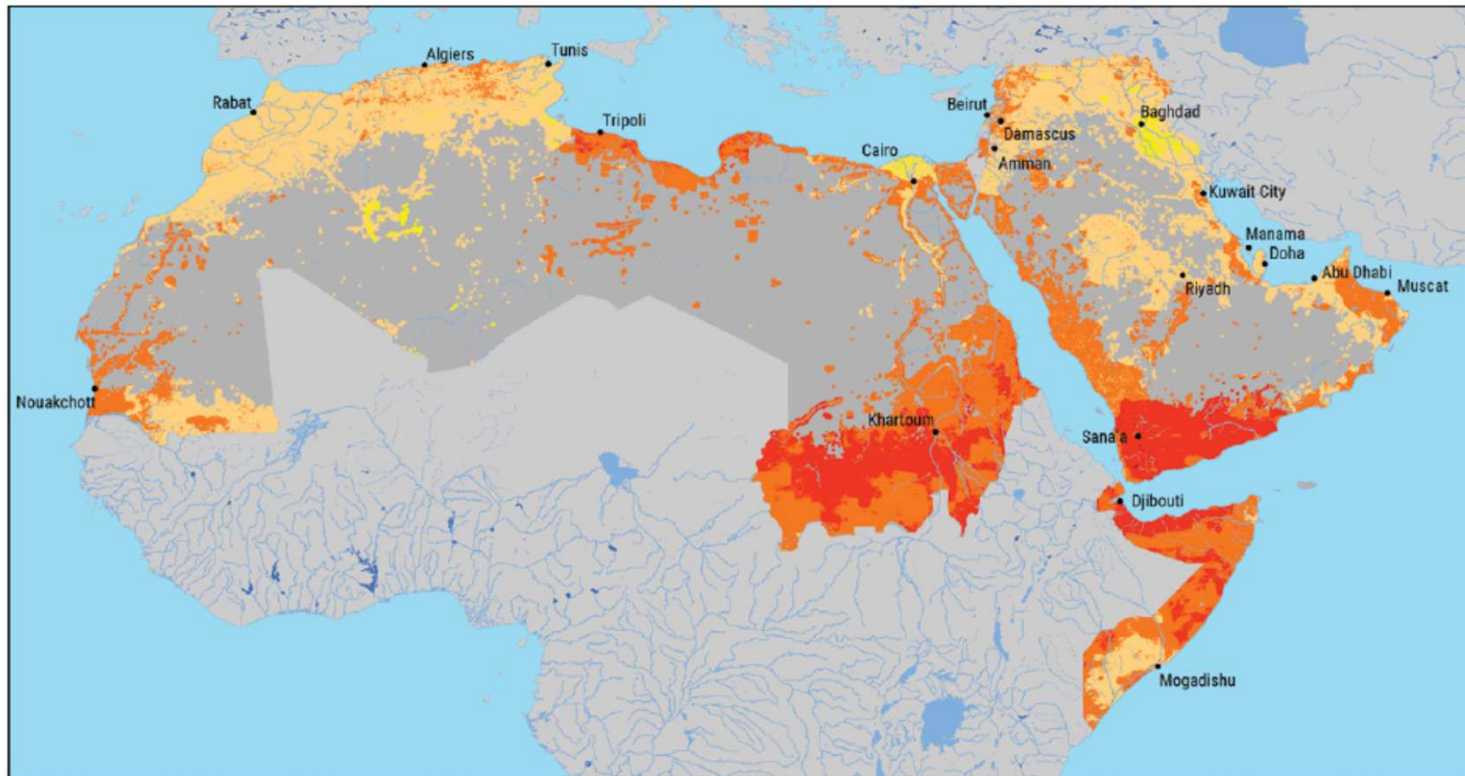


FIGURE 277



WATER: WATER AVAILABILITY

VULNERABILITY: RCP8.5 END-CENTURY (2081-2100)

Legend

Lakes
Reservoirs

Rivers
Intermittent rivers

Major cities
Area not relevant to subsector



Final remarks

- * There is research gap in climate studies over Arabia.
- * The general temperature trends over Arabia during the last 30-50 years is warming.
- * Precipitation has decreased with increase extreme events.
- * Year 1998 has marked a critical climate shift in the region.
- * Tropical cyclones became more frequent and intense over southern Arabia.
- * RICCAR project provides very informative and tailored impacts and vulnerability assessment of climate change over all the Arab countries.