



اجتماع الشراكة العربية التاسع للحد من مخاطر الكوارث
أنشطة الإسكوا حول الحد من مخاطر الكوارث
2023-21 نوفمبر 2023
مصر

9th Arab Partnership Meeting for Disaster Risk Reduction

21 – 23 November 2023
Egypt

Presented by: Tarek Sadek, UN-ESCWA

With inputs from: Sara Hess, Marlene Ann Tomaszkiwicz, Hasan Awad, Youssef Chaitani and Raffaele BERTINI, UN ESCWA



- I. Estimating Loss and Damage due to Sea Level Rise in Alexandria, Egypt
- II. Advance evidence-based policymaking: Joint measures for combatting sand and dust storms in the Mashreq
- III. Building Science-Policy Interface through RICCAR Regional Climate Model results for the Mashreq Domain for the ensemble of six SSP5-8.5 projections
- IV. ESCWA's Arab Risk Monitor



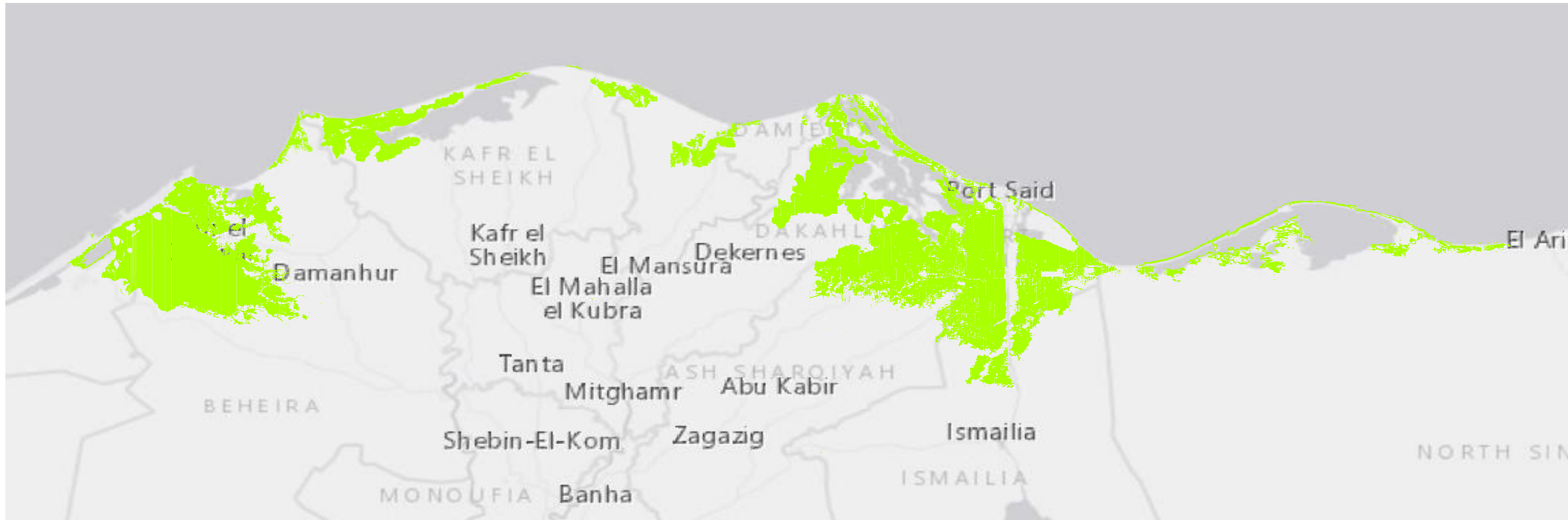


Cost Estimate of Loss and Damage due to Sea Level Rise

- Loss and damage costs are presented for three different scenarios in the case of Alexandria, Egypt: 30% total inundation and destruction of the sector assets in question, 50% inundation, and 100% inundation. 100% inundation assumes total loss of assets, which would require complete reconstruction, if possible.
- The housing, transportation, and agriculture sectors were chosen as the focus of the costing exercise given their contributions to the economy of Alexandria and data availability.
- Agriculture contributed 16% to Alexandria's GDP in 2021, real estate ownership 7%, and transportation 6%, according to data from the Ministry of Planning and Economic Development of Egypt. These 3 sectors contribute a combined 29% of GDP, indicating that the L&D estimates presented here represent a lower bound of potential costs.
- Going forward, new assumptions will be incorporated to estimate economic impacts in a context of long-term economic growth. A discount rate will also be applied for future losses, given that the losses associated with sea level rise will occur over 40 years.
- The estimates herein are thus a lower bound.



Land projected to be below annual flood level due to 30 cm sea level rise (light green), Mediterranean Coast, Egypt





Transportation Sector Damages

- Damages were calculated by multiplying the length of the transportation type in the projected inundated area by the estimated per unit new construction costs for the type of transport in question.
- A total of 1,150 kilometers of rail, motorways, motorway links, primary, secondary, and tertiary roadways and links, and trunk links were identified in the projected area of inundation. The cost per km construction of four roadway projects in Egypt from 2007-2020 (inflation-adjusted) was averaged to obtain a per unit cost of new construction of \$1.08 million per km.
- Per table 1, the cost of damage to the roadway network associated with sea level rise in Alexandria is estimated between \$505 million to \$1.7 billion.
- Table 1 – Estimated damage to the Alexandria Transport Network due to Sea Level Rise

Damage scenarios	30%	50%	100% (Total damage)
1,251 km * cost per km (\$1.08 mn USD)	\$505,050,048	\$841,750,080	\$1,683,500,160



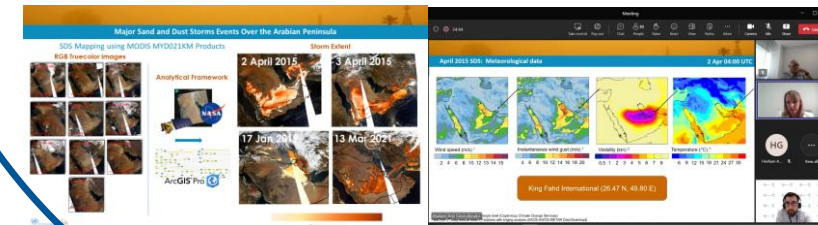
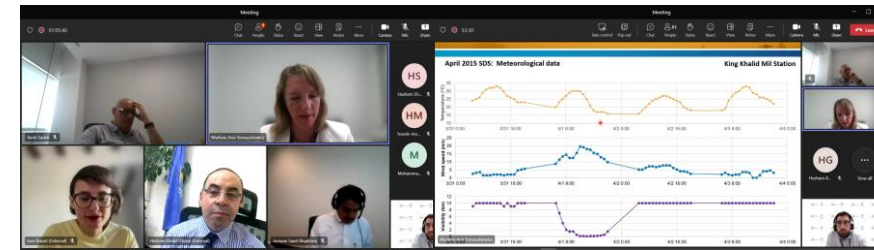
Combating SDS in the Mashreq domain

Combating SDS Demands Regional & Inter-regional Assessments

- Understanding Transboundary Dimensions
- Identifying Required Actions Across Sectors

Key Initiatives by ESCWA, ESCAP & WMO

- Co-Leading the UN Coalition on Combating Sand and Dust Storms' Working Group on Regional Cooperation and Mediation
- Joint Inter-regional Webinar (7 July 2021)
- Presentation of Technical Work by ESCAP and ESCWA
- Participation of Technical Experts, International Partners, and Government Representatives
- Convened the 11th Arab Climate Outlook Forum (ArabCOF-11), The 8th GCC Climate Outlook Forum (GCC-COF-8), The 19th PRESANORD Session on 05 June 2023
- Keynote Presentation at the International Conference on Combating Sand and Dust Storms in Tehran, September 2023
- Webinar on Sand and Dust Storms organized by WMO (25 Sept 2023)





Major Sand and Dust Storms Events Over the Arabian Peninsula

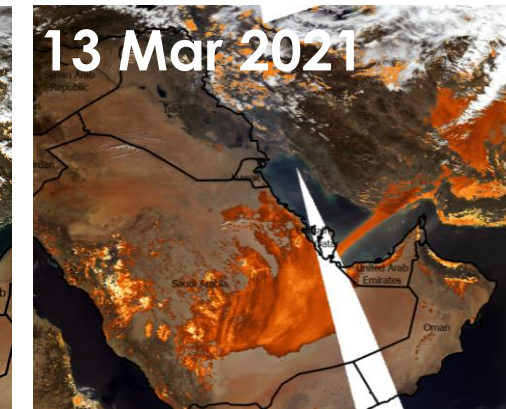
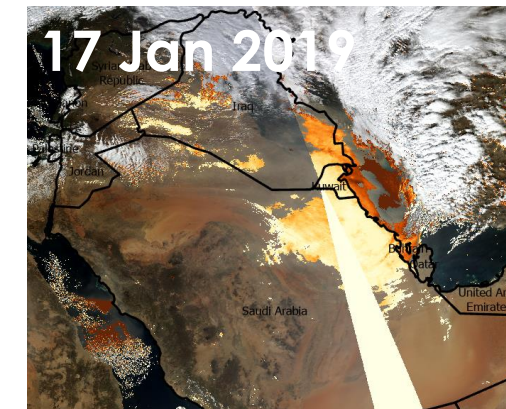
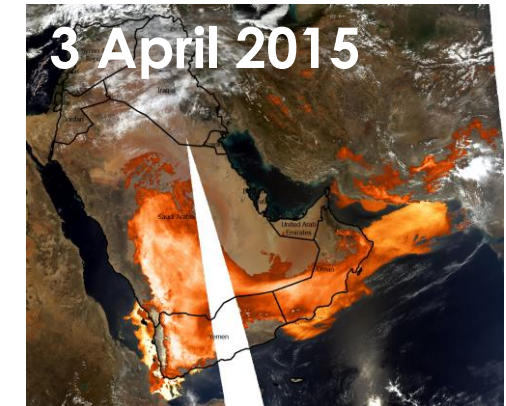
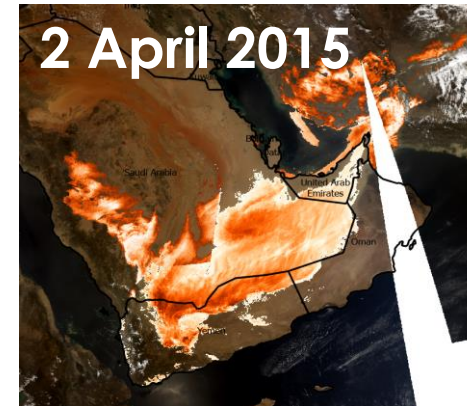
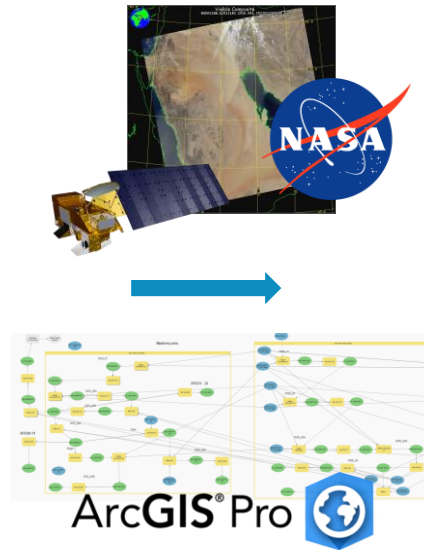
SDS Mapping using remote sensing data (NASA MODIS MYD021KM Products)

Storm Extent

RGB Truecolor images



Analytical Framework



Dust coverage



Major Sand and Dust Storms Events Over the Arabian Peninsula

ESCWA Sand and Dust Storms Dashboard

Sand and Dust Storms Dashboard

Sand and Dust Storms Statistical Dashboard

My Site Reader

Remove this site banner with a paid plan

Country

- Kuwait
- Bahrain
- Iraq
- Jordan
- Lebanon

ICAO

- OKAS
- OKKK

Date

- 5/19/2022
- 5/20/2022
- 5/21/2022
- 5/22/2022
- 5/23/2022

Time

- 10:56:00 AM
- 11:39:00 AM
- 11:55:00 AM
- 12:54:00 PM
- 1:58:00 PM


Introducing ESCWA's Observation Dashboard, providing a comprehensive view of meteorological data during sand and dust storms. This interactive tool showcases curated METAR observations, offering valuable insights into weather conditions before, during, and after the storms. Enhance preparedness and response measures with this dynamic resource.

Observation stations

- **OTBD:**
Station name: Doha Intl Airport
Country: Qatar
- **ORBI:**
Station name: Baghdad Intl
Country: Iraq
- **OBBI:**
Station name: Bahrain Intl Arp
Country: Bahrain
- **OTHH:**
Station name: Doha Hamad Intl
Country: Qatar
- **OSLK:**
Station name: Latakia
Country: Syria, Syrian Arab Republic
- **OSDI:**
Station name: Damascus (Civ/Mi)
Country: Syria, Syrian Arab Republic
- **ORSU:**
Station name: Sulaymaniyah
Country: Iraq
- **ORMM:**
Station name: Basrah/Maghal
Country: Iraq
- **OLBA:**
Station name: Beirut (Civ/Mil)
Country: Lebanon
- **OKBK:**
Station name: Kuwait Intl (Mil)
Country: Kuwait
- **OJAQ:**
Station name: Aqaba Intl Airpo
Country: Jordan
- **OJAM:**
Station name: Amman/King Abdul
Country: Jordan


Stations Countries

True-color satellite image of a clear day




Earthstar Geographics | Powered by Esri

Sand and Dust Storm Events (True-color images)



Earthstar Geographics | Powered by UN... Powered by Esri

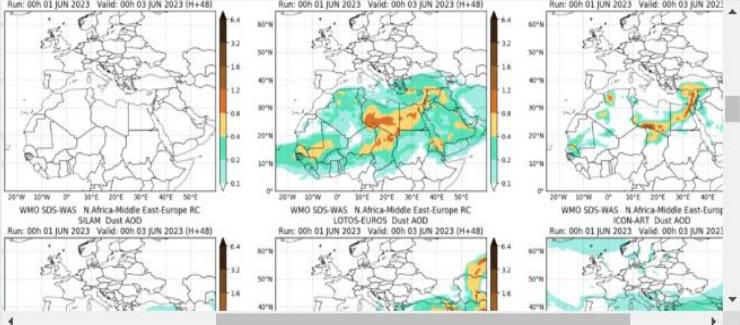
Storms Extent Mapping: GDDI Visualization



Earthstar Geographics | Powered by UN... Powered by Esri

True Color Images

These true-color images depict sand and dust storms that have occurred over the past 15 years. They were generated using ArcGIS Pro and NASA MODIS MYD021KM data, specifically utilizing bands 1, 3, and 4. These images provide valuable insights into the extent and impact of these storms. By analyzing their geographical coverage, intensity, and temporal patterns, we gain a better understanding of the dynamics surrounding sand and dust storms.

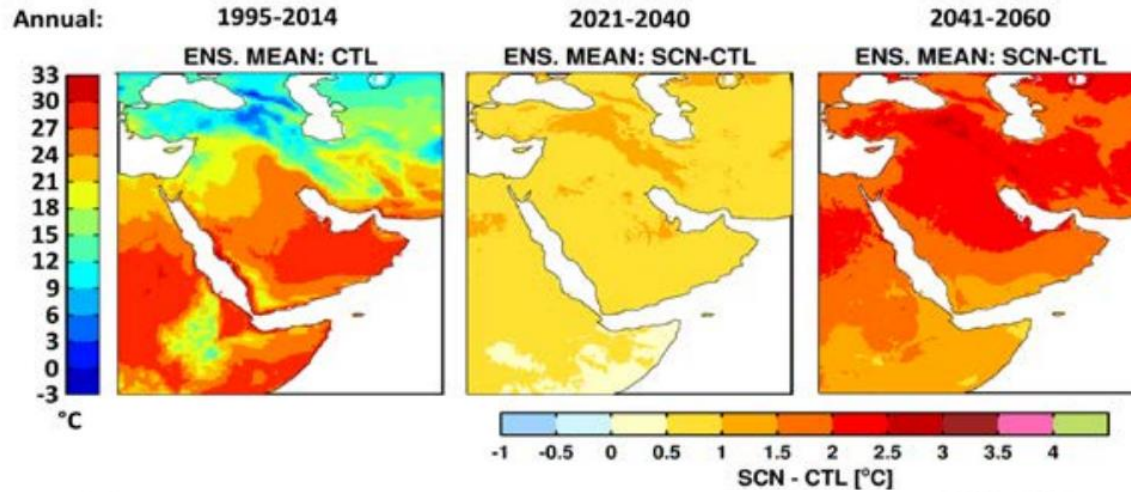


True-color images GDDI

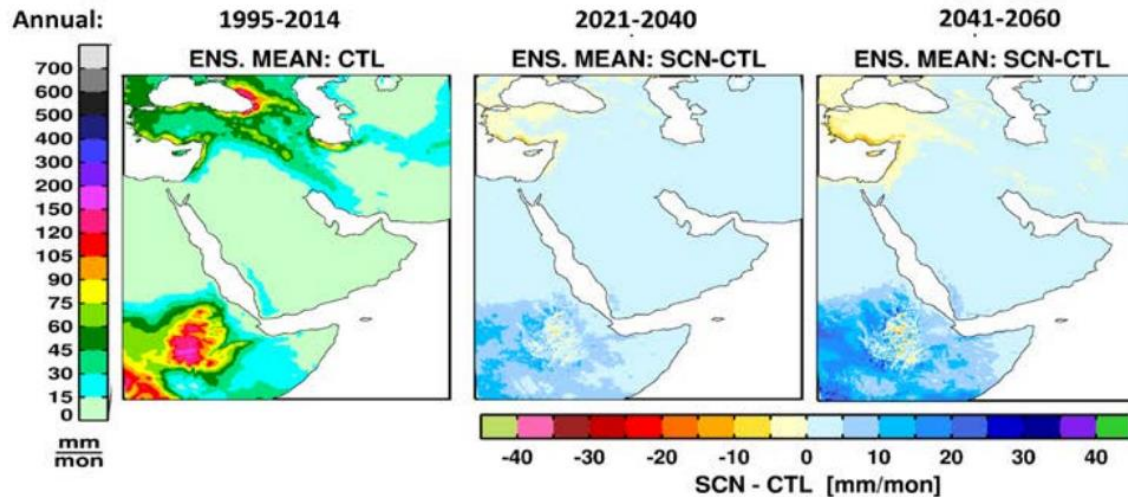


Building science-policy interface through RCM results for the Mashreq domain for the ensemble of six SSP5-8.5 projections

Mean temperature change (°C)



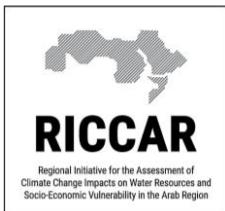
Mean precipitation change (mm/month)



Source
riccar.org



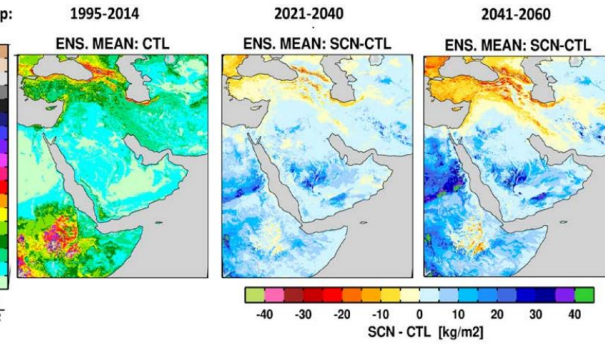
متوفر بالعربية
Available in Arabic



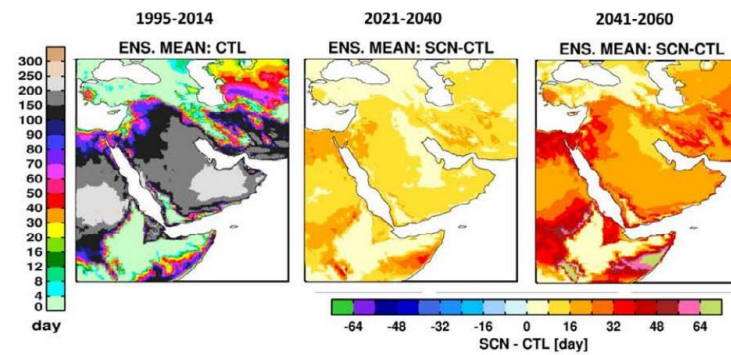


Building science-policy interface through RCM results for the Mashreq domain for the ensemble of six SSP5-8.5 projections

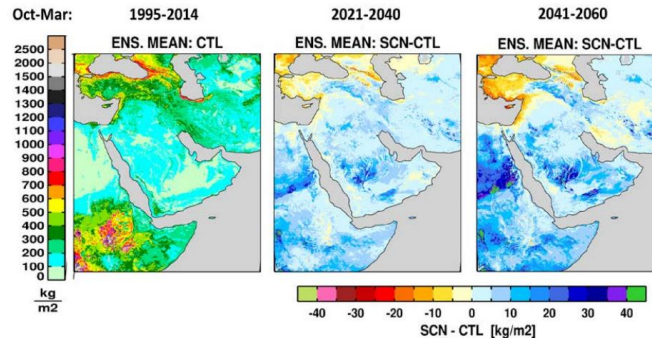
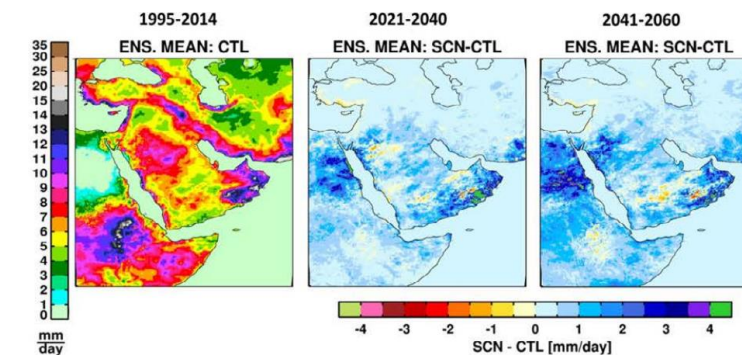
Soil moisture



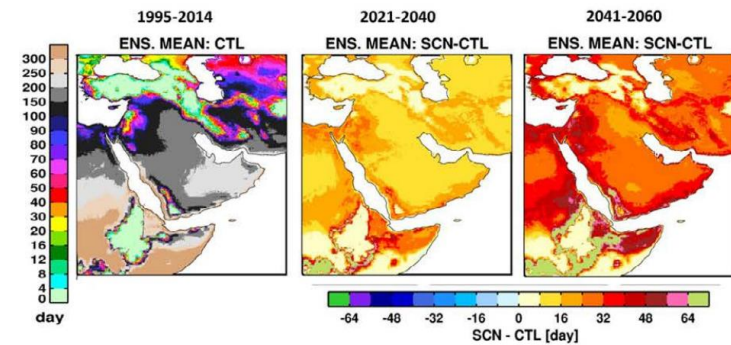
Change in the number of hot days (SU35)



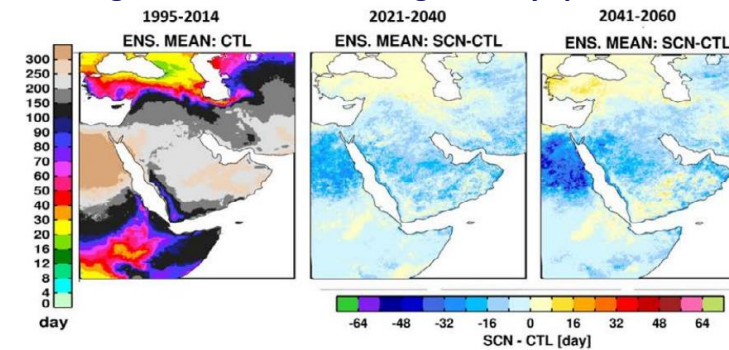
Change in the simple precipitation intensity index SDII



Change in the number of tropical nights



Change in the maximum length of dry spell CDD



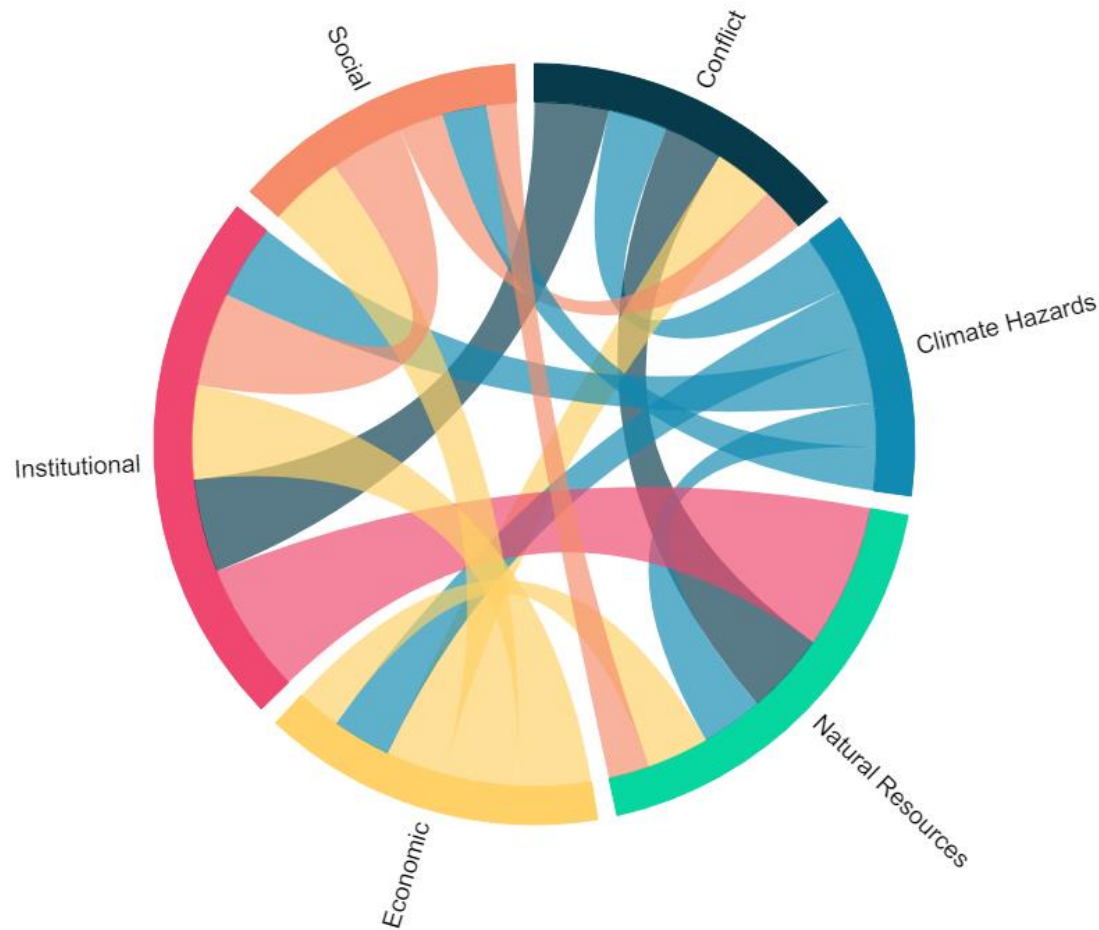


Arab Risk Monitor



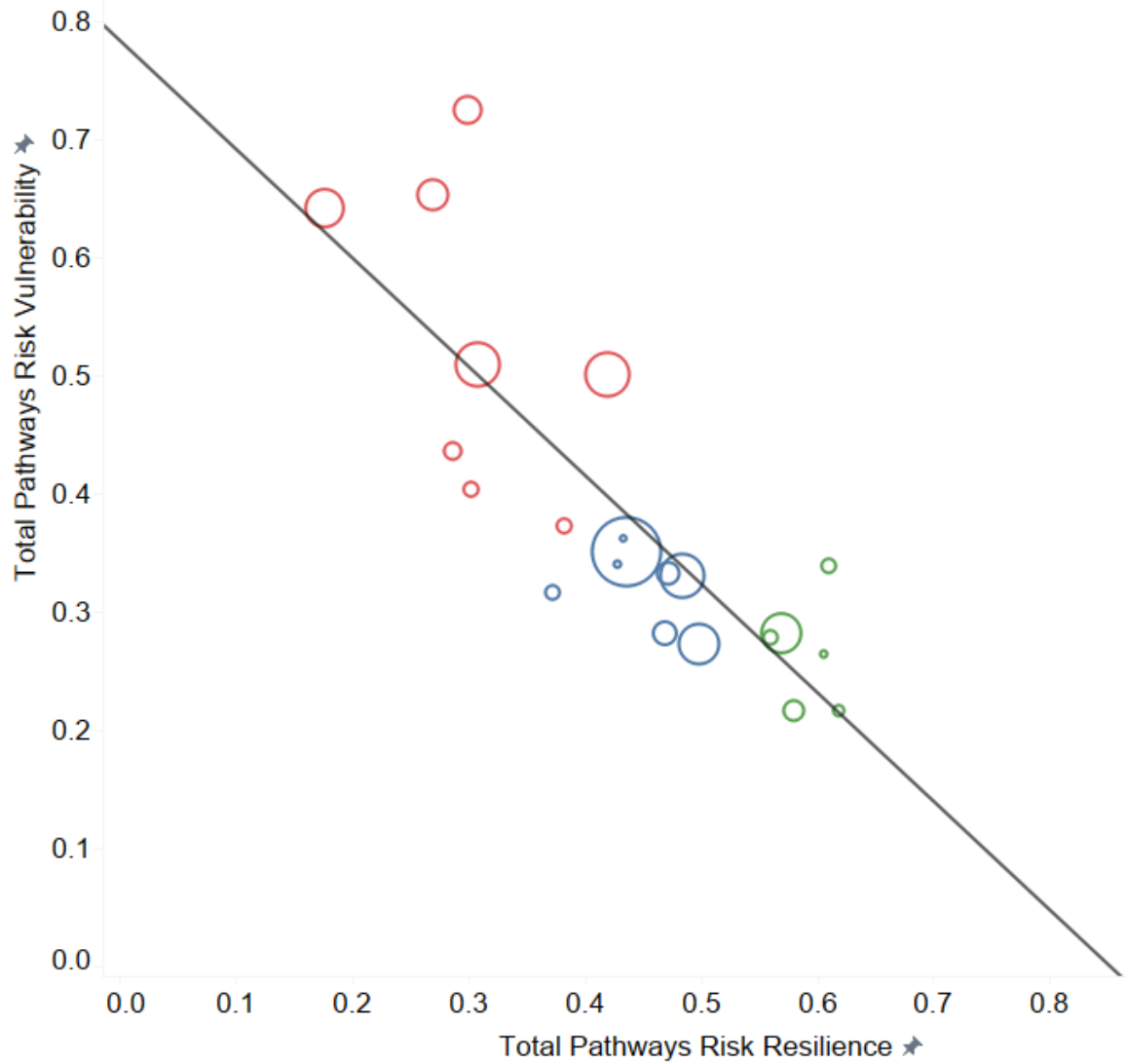


Risks are interconnected



Conflicts do not happen in a vacuum and their drivers are interlinked.

Conflicts is interconnected with the climate hazards and natural resources management.

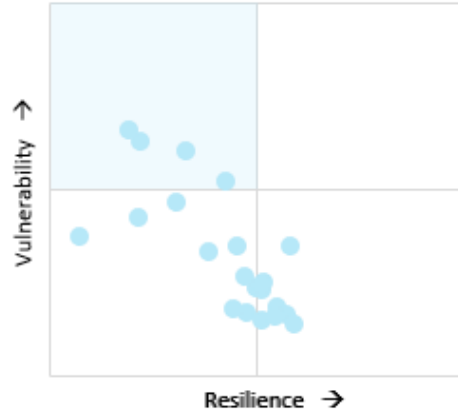


Country Classification

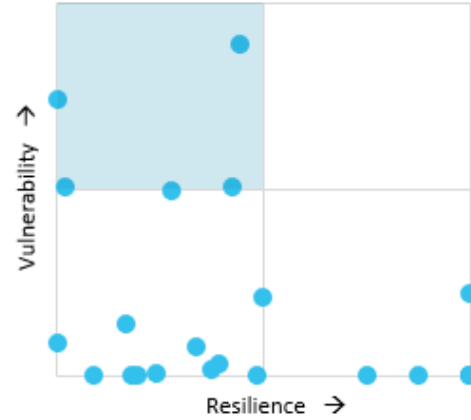
- Fragile and conflict-affected situations
- Gulf Cooperation Council countries
- Other Arab countries



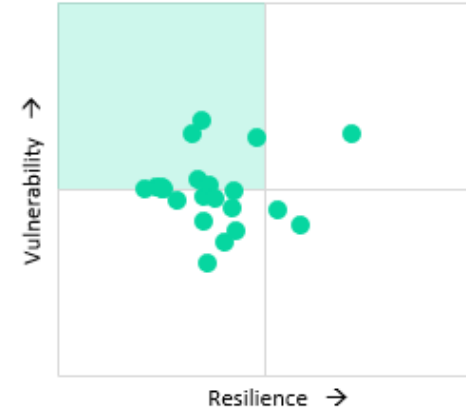
Conflict



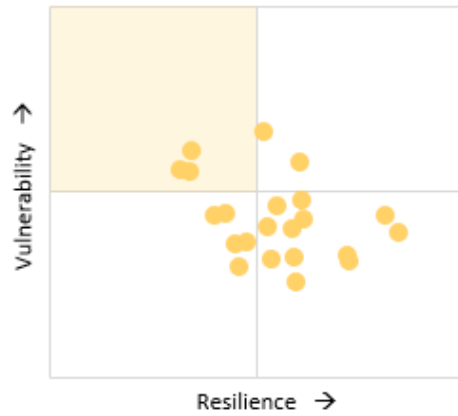
Climate hazards



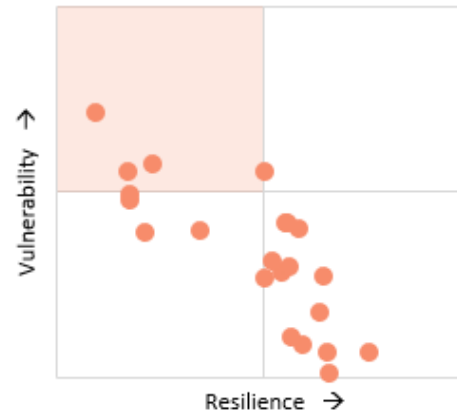
Natural resources



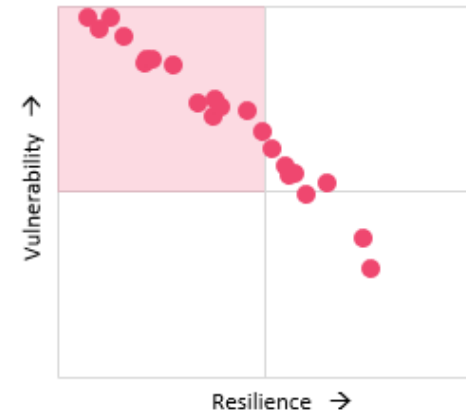
Economy



Society



Institutions



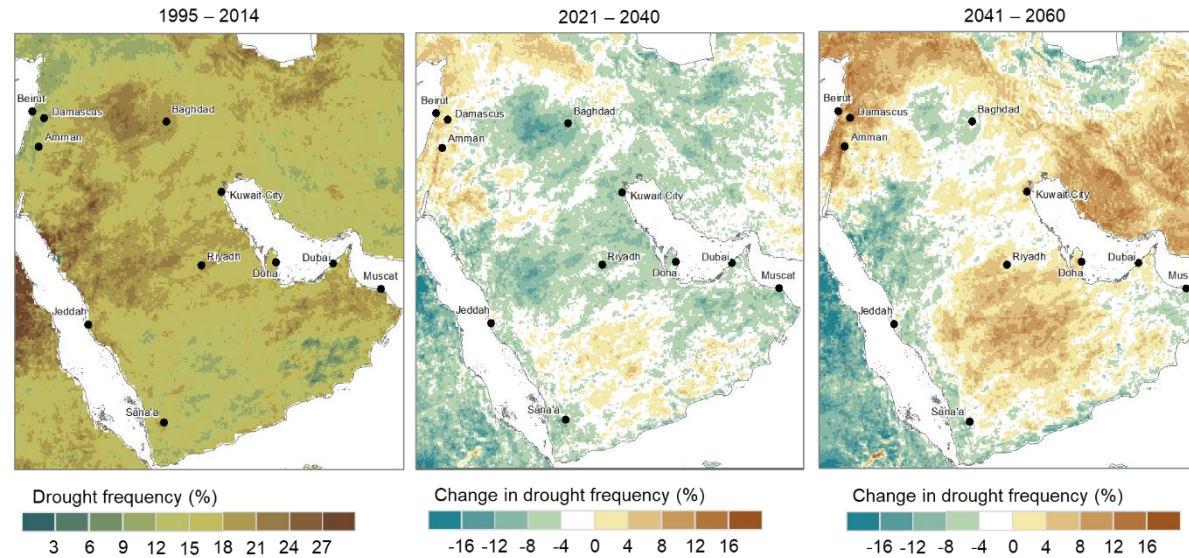
Regional Assessment Report 2024

- ESCWA is a contributing author to chapters:

1 – Risk landscape in Arab states

3 – The impact of changing climate on drought and comprehensive risk management to tackle climate change

- Calculate drought frequency and intensity based on 12-month Standardized Precipitation Index (SPI-12) using Mashreq Domain data SSP5-8.5 scenario





THANK YOU.....

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