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SENDAI FRAMEWORK
FOR DISASTER RISK REDUCTION 2015-2030

اجتماع الشراكة العربية التاسع للحد من مخاطر الكوارث
أنشطة الإسكوا حول الحد من مخاطر الكوارث
23-21 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 Tomaszkiewicz, Hasan Awad, Youssef Chaitani and Raffaele BERTINI, UN ESCWA

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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.

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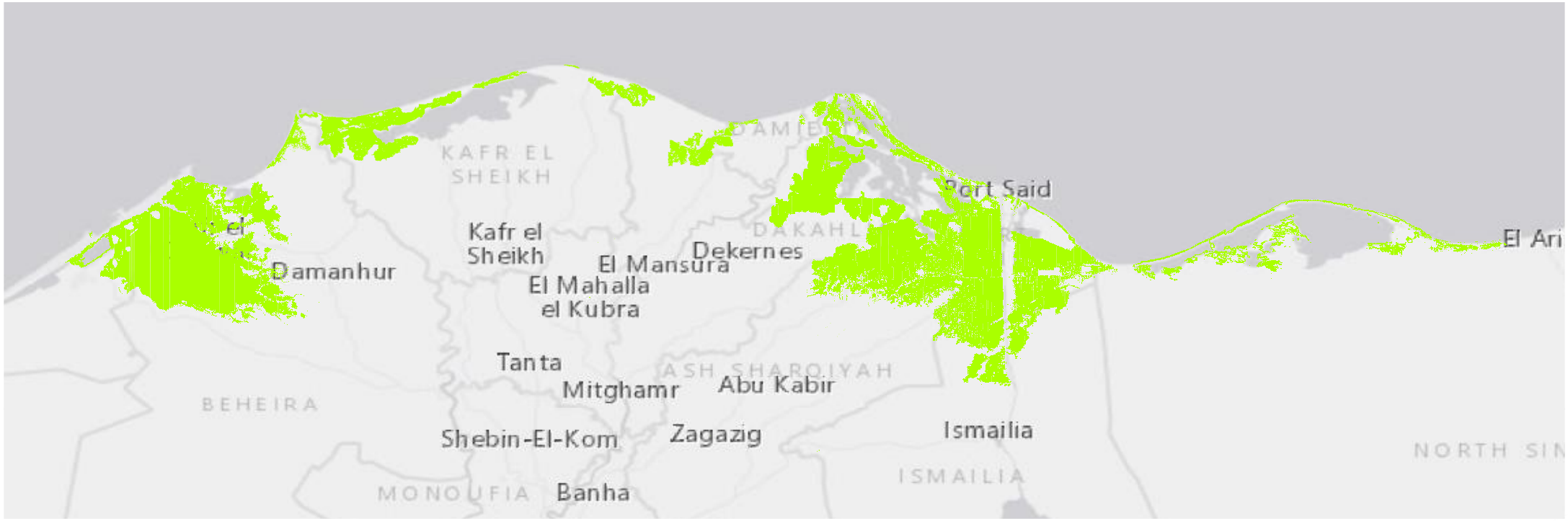
Land projected to be below annual flood level due to 30 cm sea level rise(light green), Mediterranean Coast, Egypt



Close Up of Projected SLR Impact Area (Alexandria, 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

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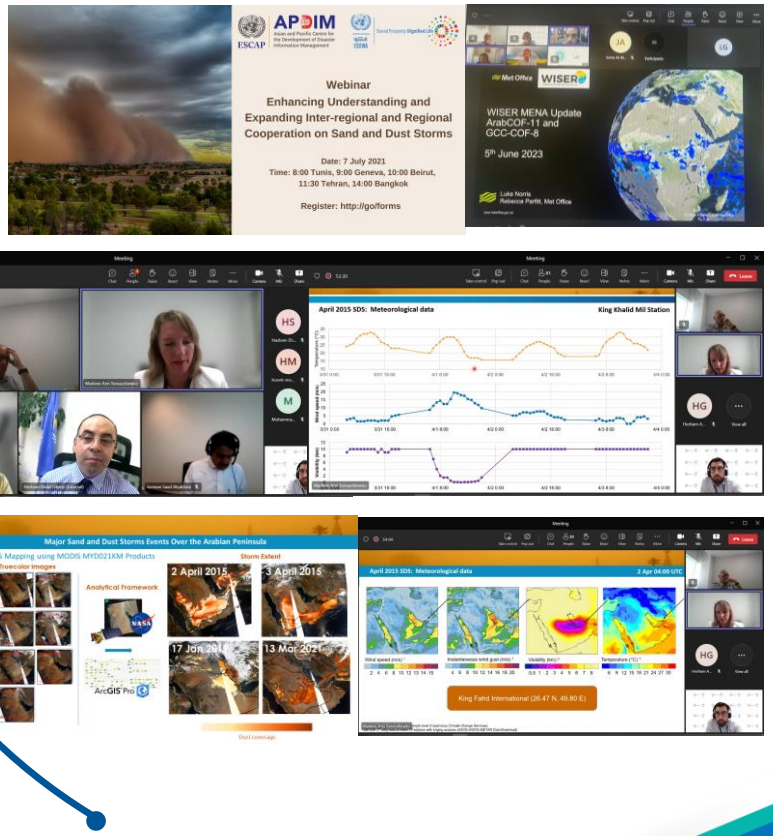
Combating SDS in the Mashreq domain

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)



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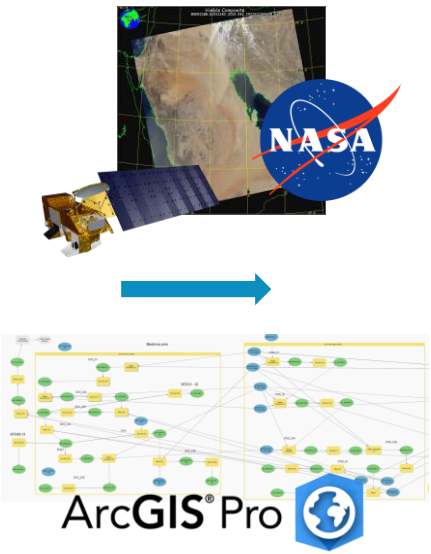
Major Sand and Dust Storms Events Over the Arabian Peninsula

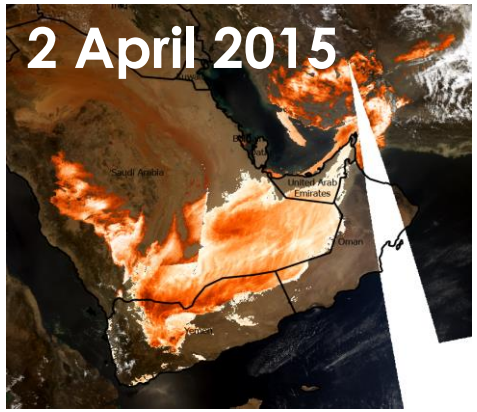
SDS Mapping using remote sensing data (NASA MODIS MYD021KM Products)

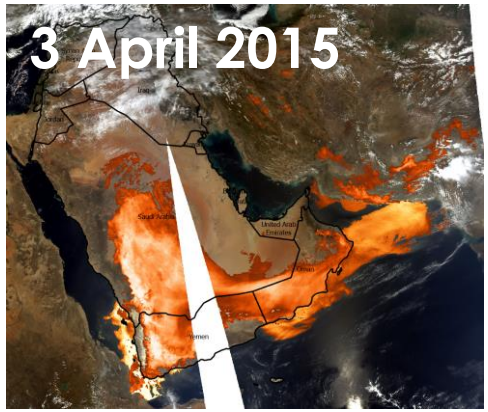
RGB Truecolor images

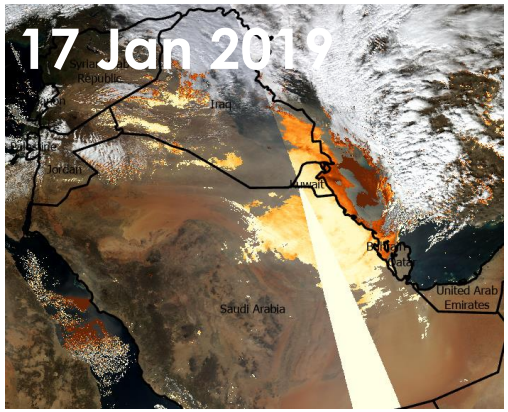
Analytical Framework

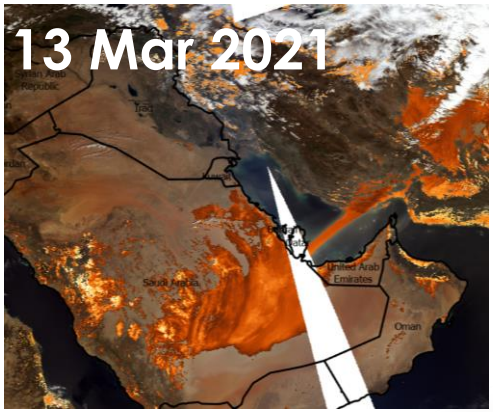


Storm Extent









Dust coverage

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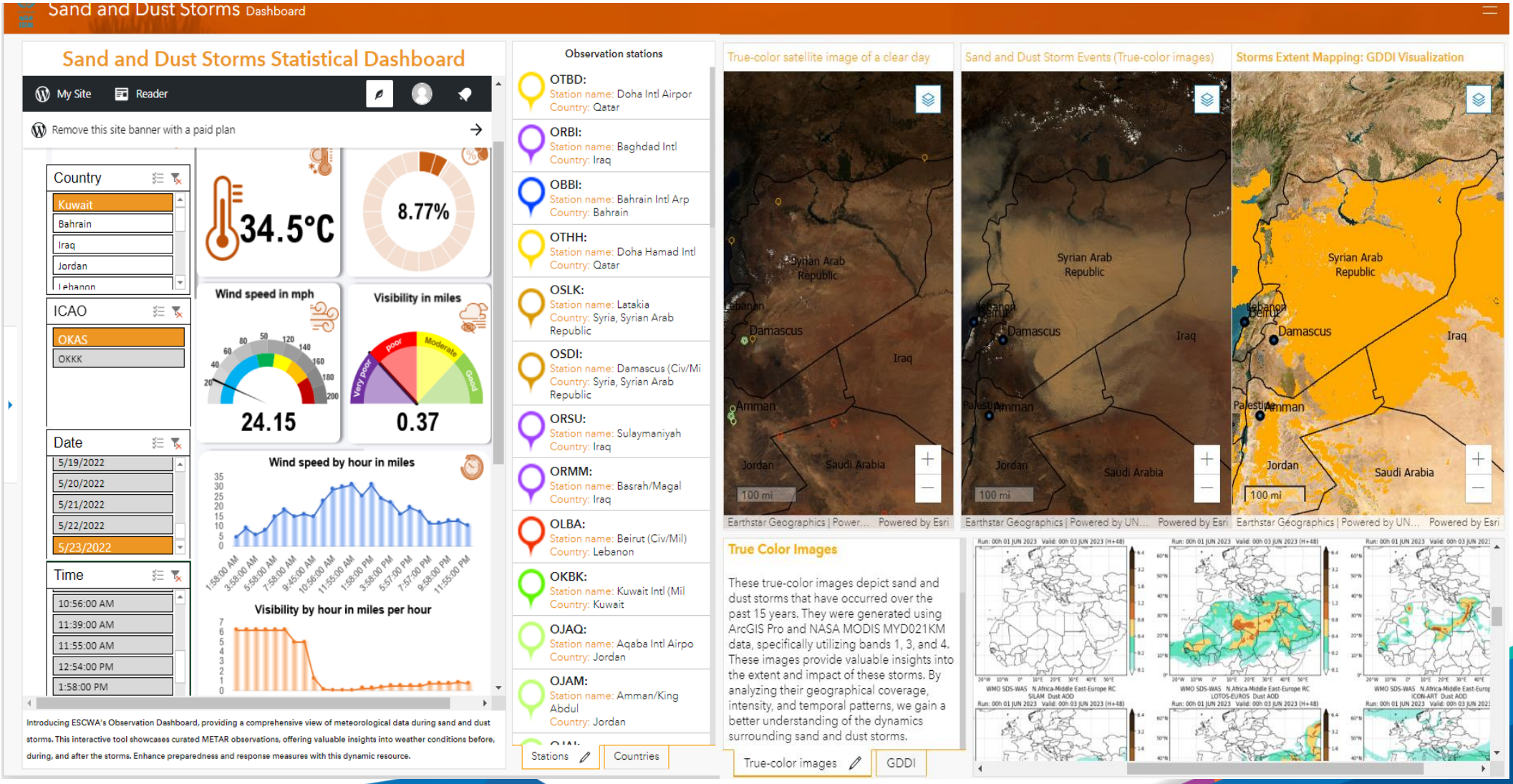
Major Sand and Dust Storms Events Over the Arabian Peninsula

ESCWA Sand and Dust Storms Dashboard



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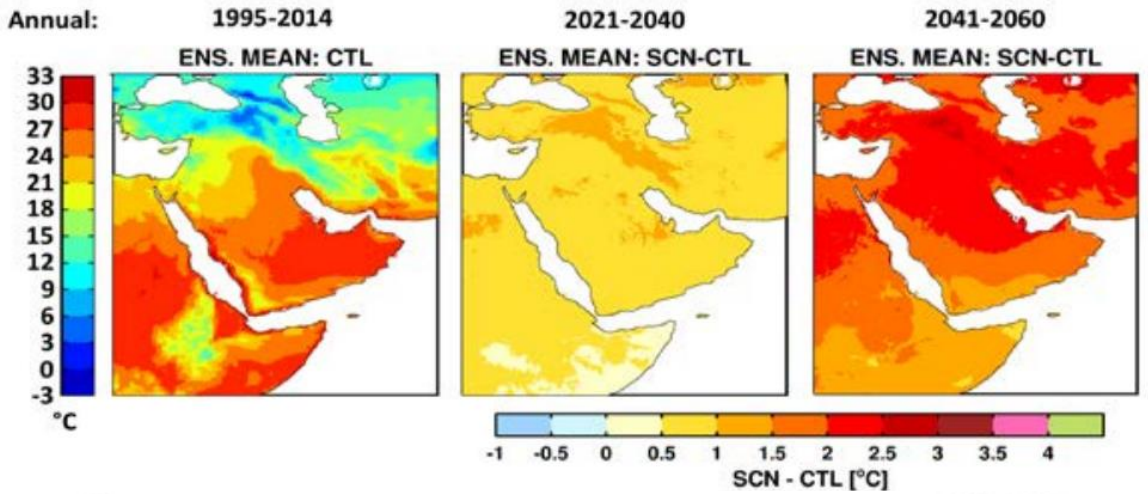
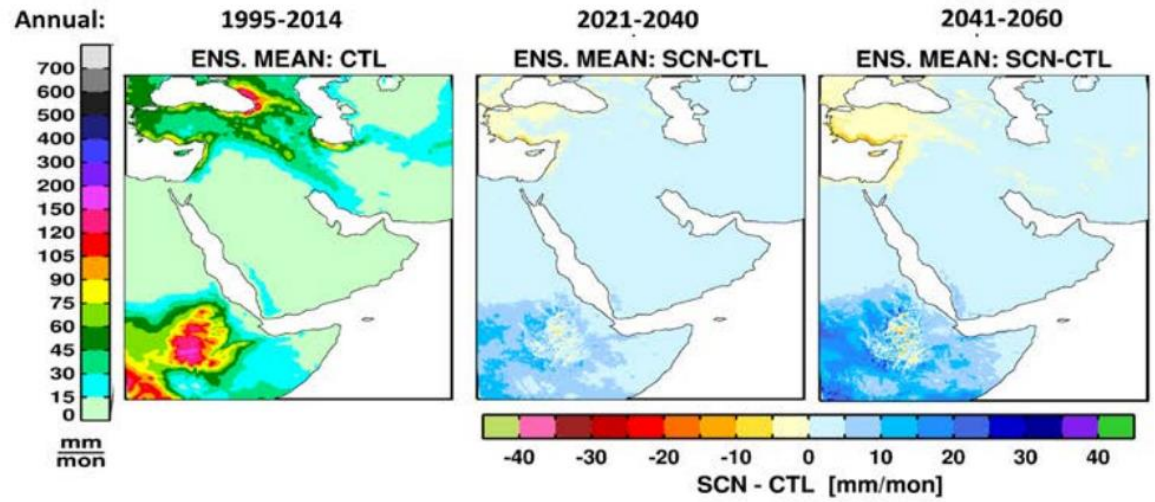
Building science-policy interface through RCM results for the Mashreq domain for the ensemble of six SSP5-8.5 projections

Mean temperature change (°C)

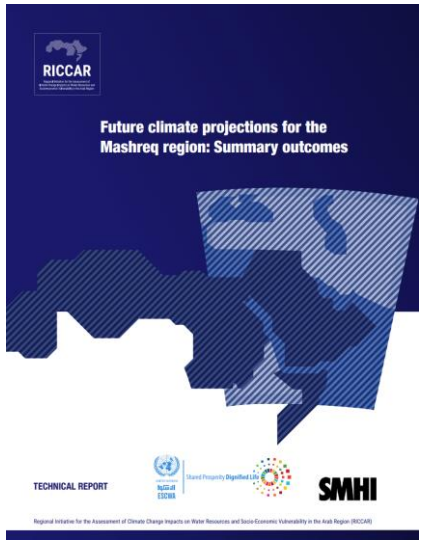


Mean precipitation change (mm/month)



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

Source
riccar.org



متوفر بالعربية
Available in Arabic

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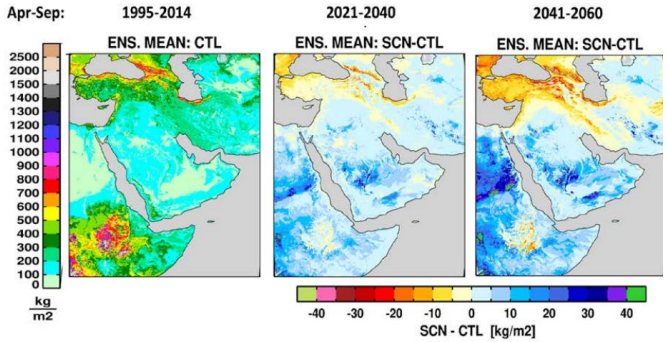
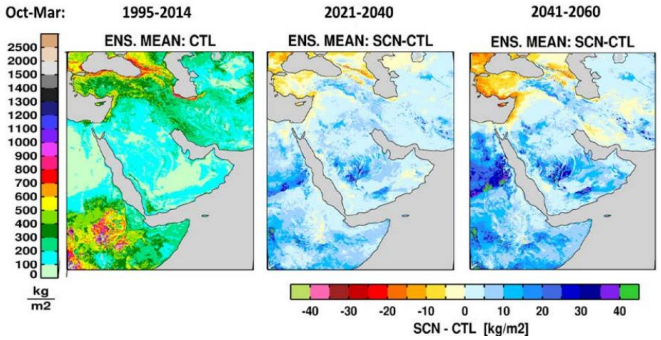
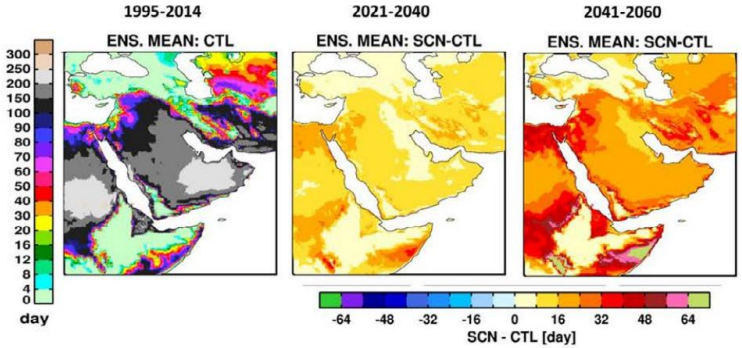
Soil moisture

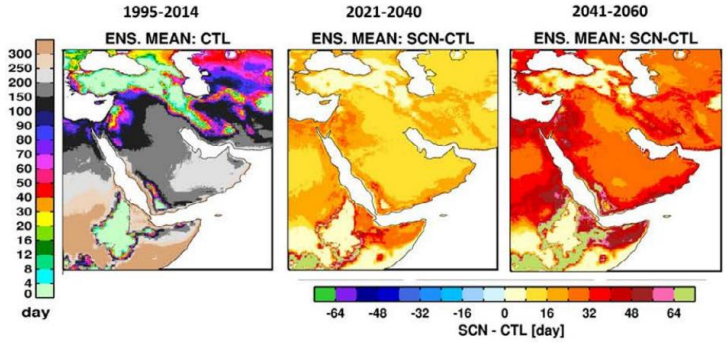




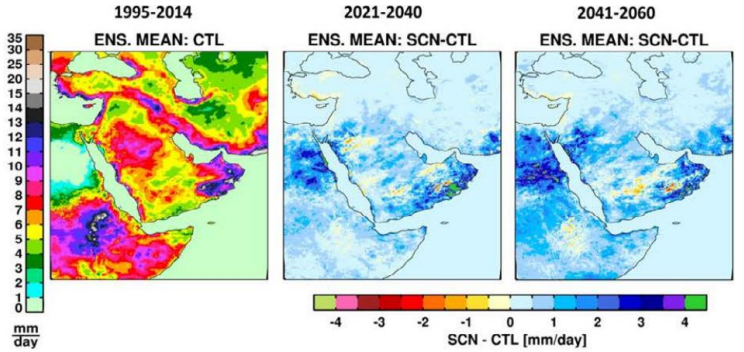
Change in the number of hot days (SU35)



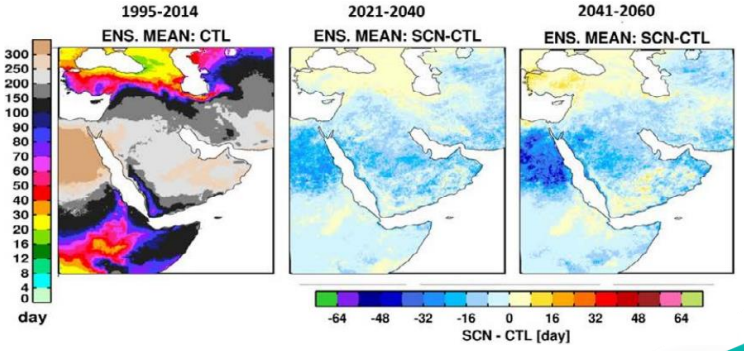
Change in the number of tropical nights



Change in the simple precipitation intensity index SDII



Change in the maximum length of dry spell CDD



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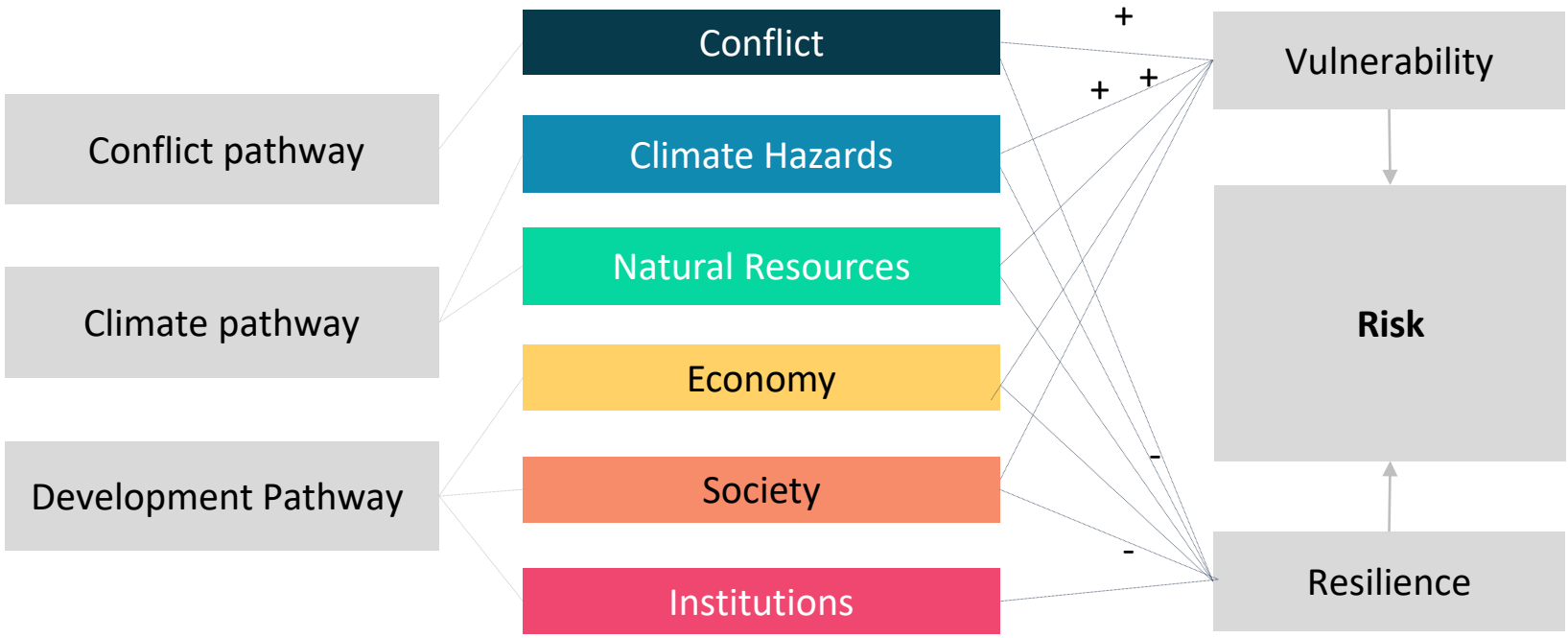
Arab Risk Monitor



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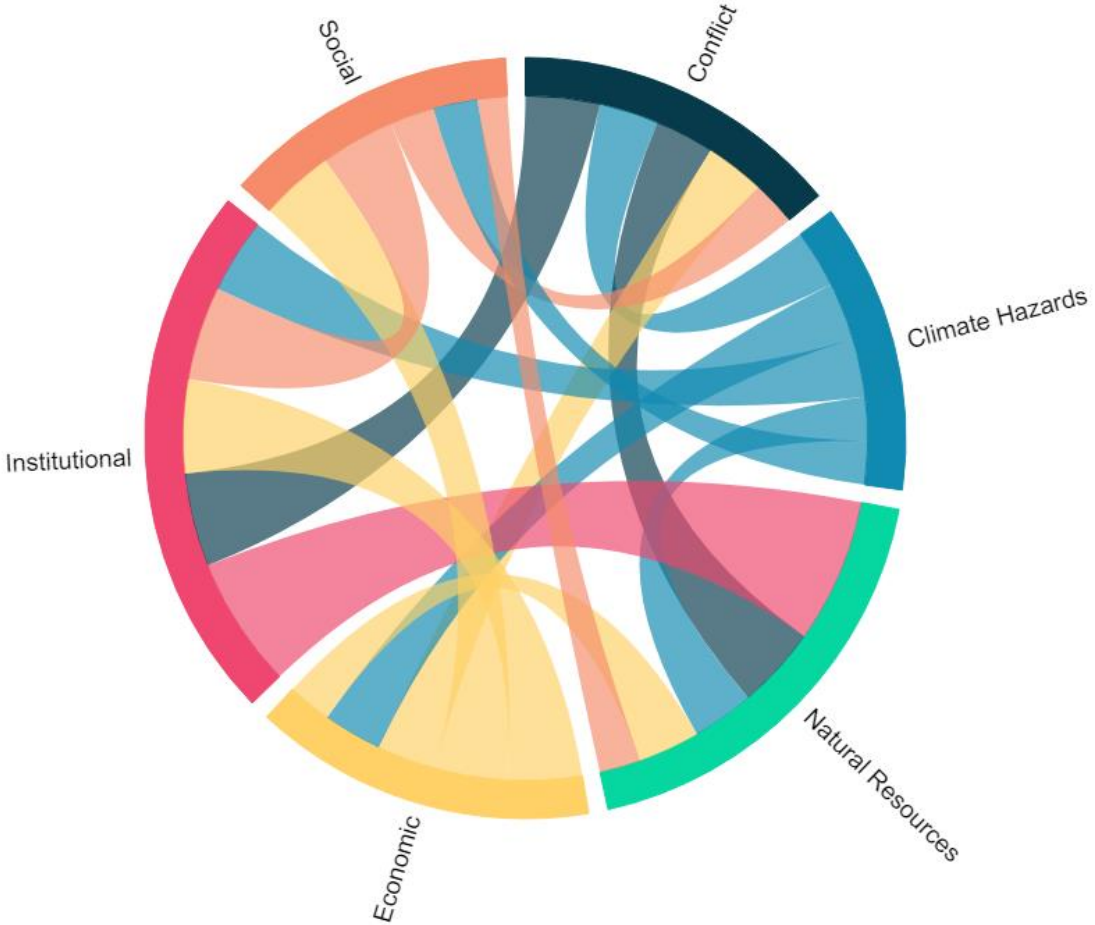
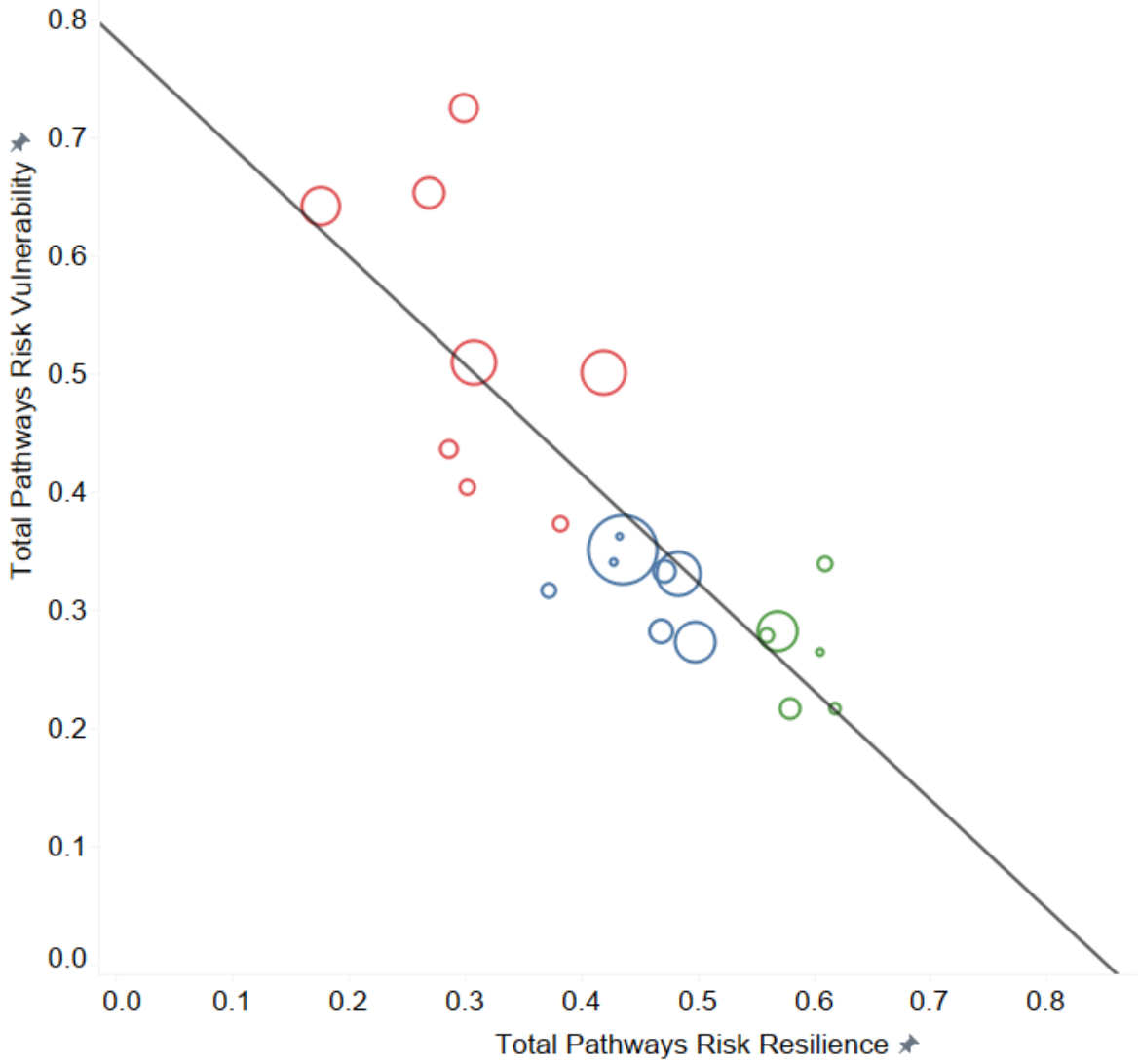
Risks are interconnected

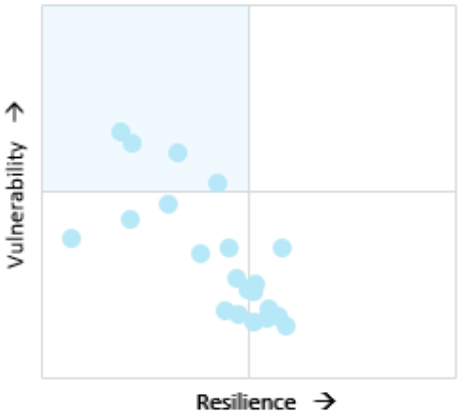


Conflicts do not happen in a vacuum and their drivers are interlinked.

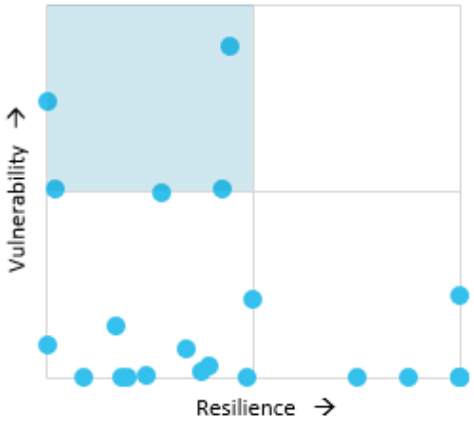
Conflicts is interconnected with the climate hazards and natural resources management.


Total Pathways Risk Vulnerability
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
Total Pathways Risk Resilience
Country Classification
Fragile and conflict-affected situations
Gulf Cooperation Council countries
Other Arab countries

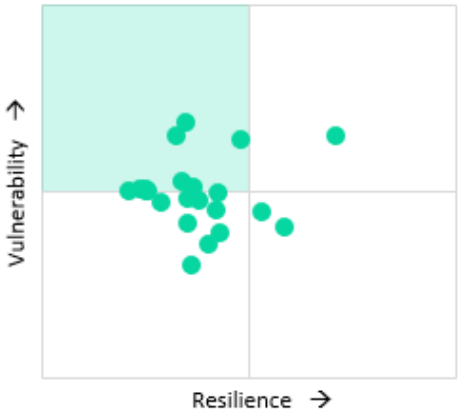
Conflict



Climate hazards

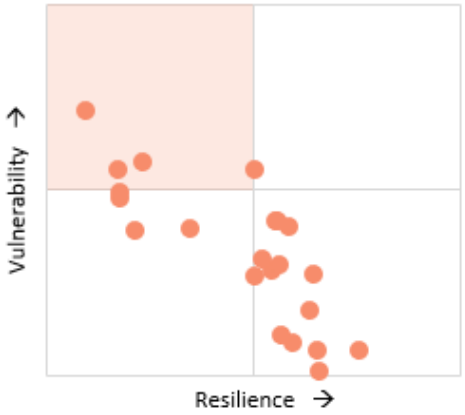


Natural resources

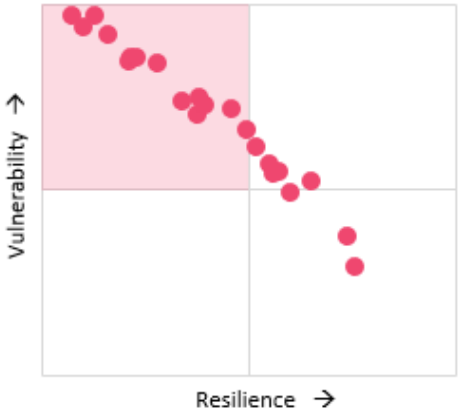


Economy

Society



Institutions



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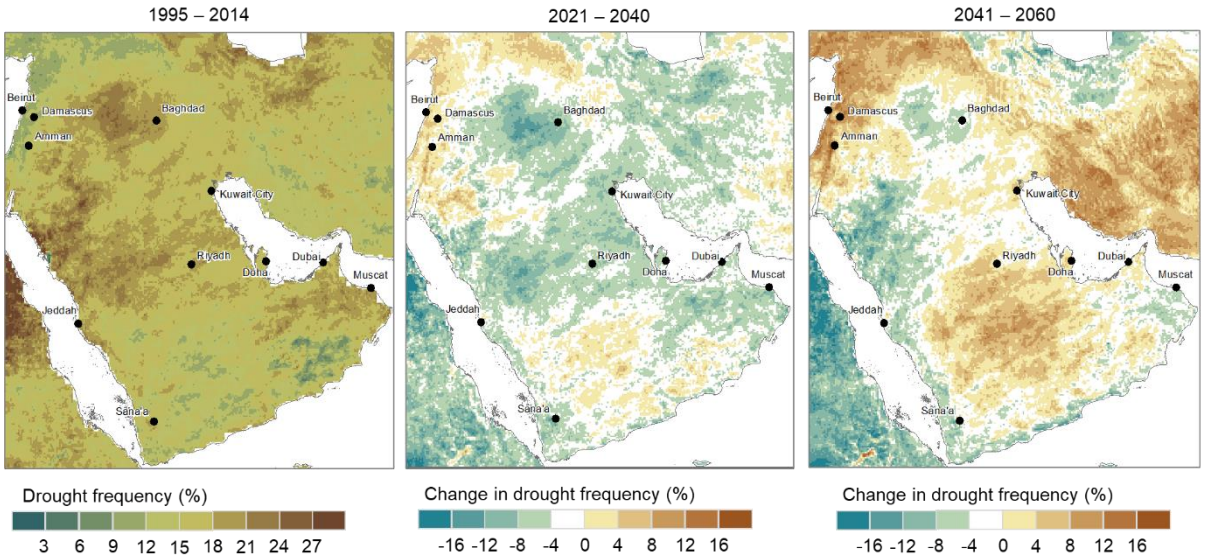
Regional Assessment Report 2024

- 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



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