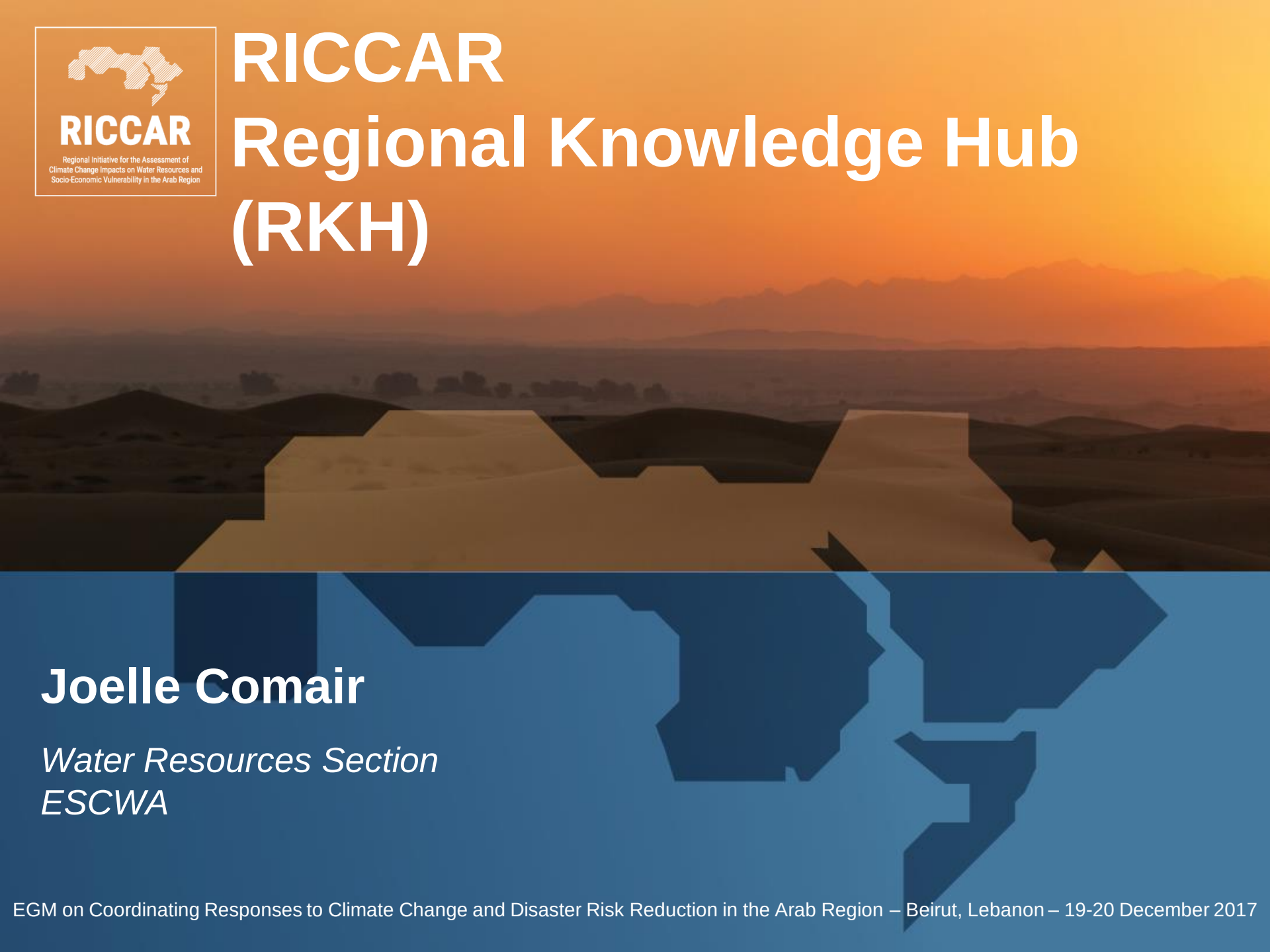


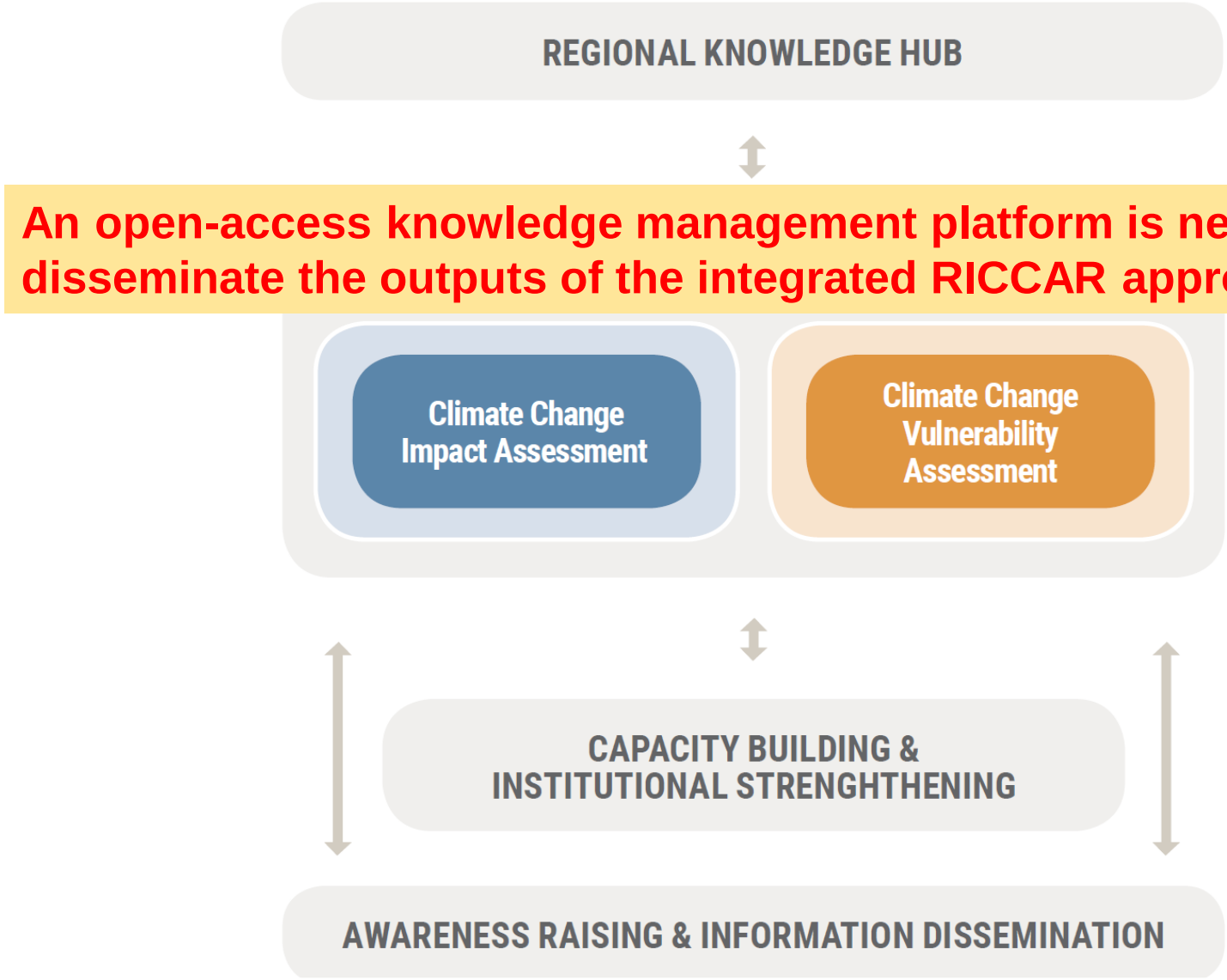
RICCAR Regional Knowledge Hub (RKH)

Joelle Comair

Water Resources Section
ESCWA

EGM on Coordinating Responses to Climate Change and Disaster Risk Reduction in the Arab Region – Beirut, Lebanon – 19-20 December 2017

RICCAR Implementation Framework



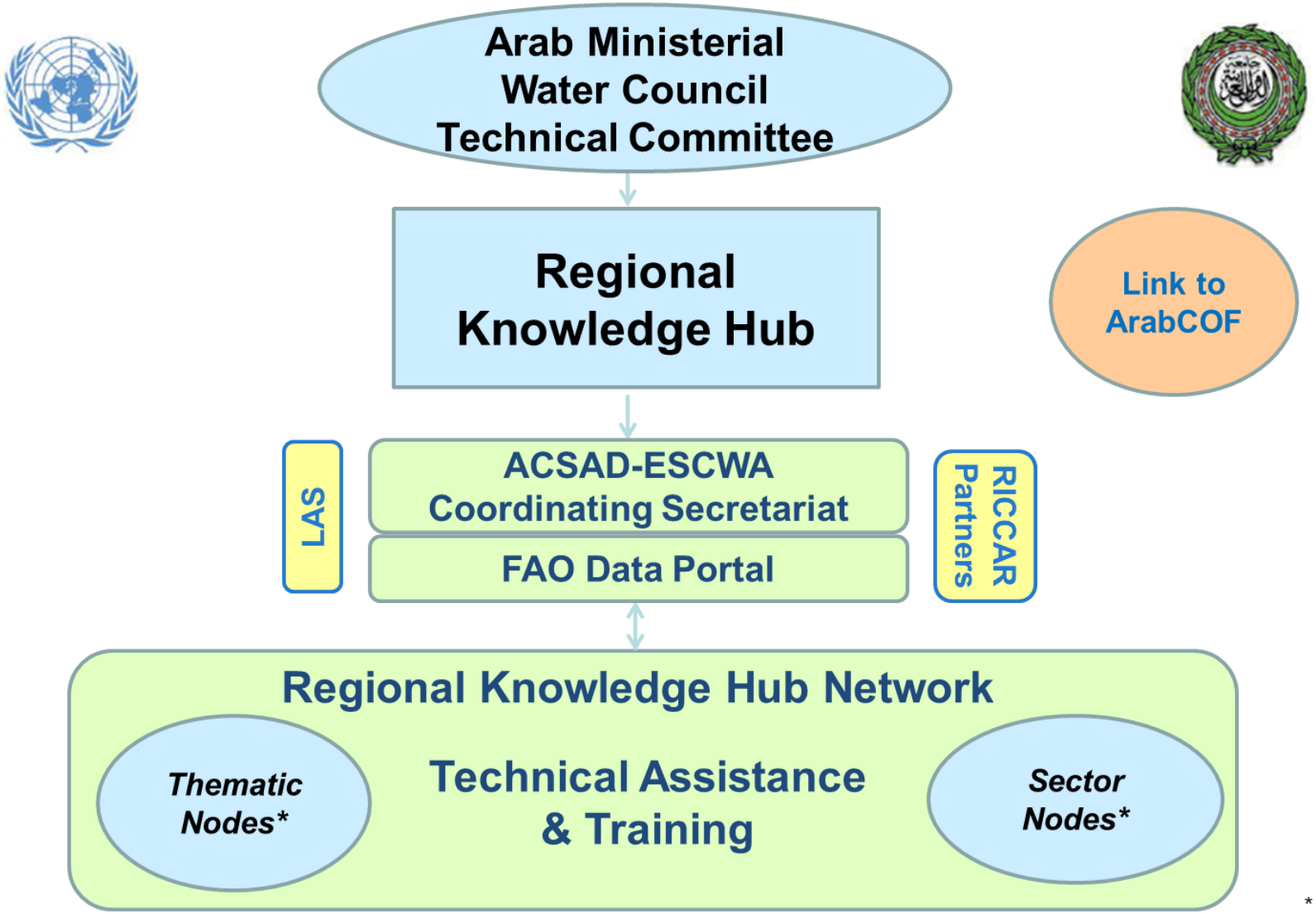
General Objectives

Main objective: **to provide an interactive, online platform that provides easy access to information and analysis on knowledge products related to climate change and water resources in the Arab Region**.

Ultimately:

- To provide **access to information** that can facilitate cooperation, coordination, dialogue and exchange among Arab countries.
- To support **regional networking and exchange**
- To support **awareness raising** for national and local stakeholders
- To provide **capacity building support**

Governance Structure



* tbc

RICCAR

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

RKH Development
Components & Contents

RKH Components

Linked

WEBSITE

- Updated version of the RICCAR website at ESCWA to www.riccar.org
- Access to all reports and technical materials
- Resources on activities & events
- Requests tools for inquires and support

DATA PORTAL

- Comprehensive RICCAR maps & data repository
- Search, visualize maps, access data, export maps and data in different forms
- Developed with FAO and GeoNode Platform – which will allow linkages to other databases through a common platform

Website Contents Summary

WEBSITE

- **RICCAR Overview**
  -Objectives
  -Mandates
  -Announcements
- **Partners**
  -List of partners & donors with their websites links
- **Picture Board/ Image Gallery**
- **Knowledge Resources**
  -Reports
  -Studies and technical material
  -Training Materials
  -Booklets
  -Brochures
- **Events calendar (past, present, upcoming)**
- **Event pages, including meetings/workshops materials:**
  -Photos
  -Information note
  -Agenda
  -Presentations
  -Documents
  -Meeting reports
- **Access link to the RKH data portal**
- **Contact information/requests form** for support and services
- **Site search function & index**

Data Portal Contents Mapping

DATA PORTAL

3 main outputs & inputs from:

Regional Climate Modelling (RCM)

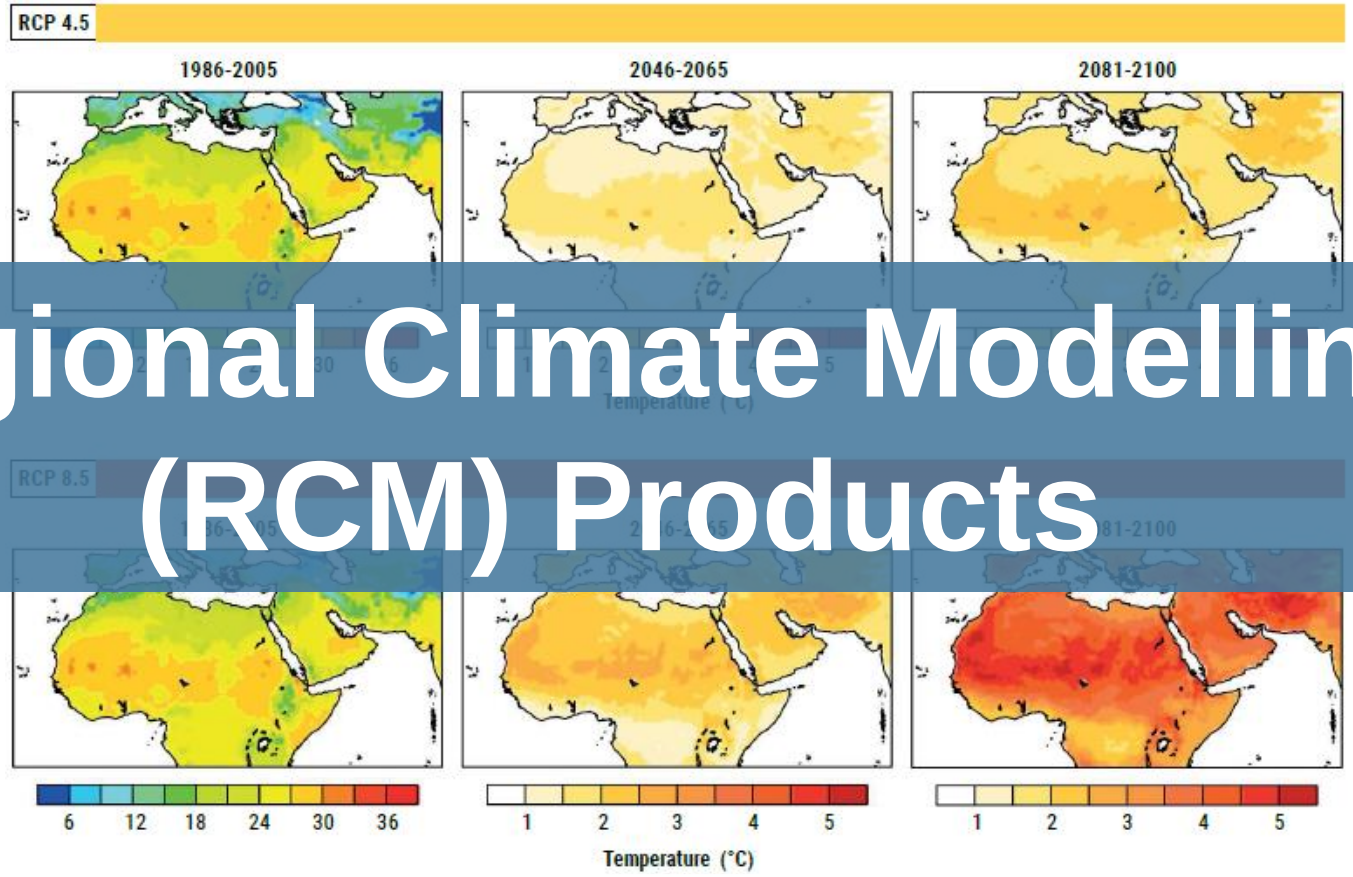
Regional Hydrological Modelling (RHM)

Integrated Vulnerability Assessment (VA)

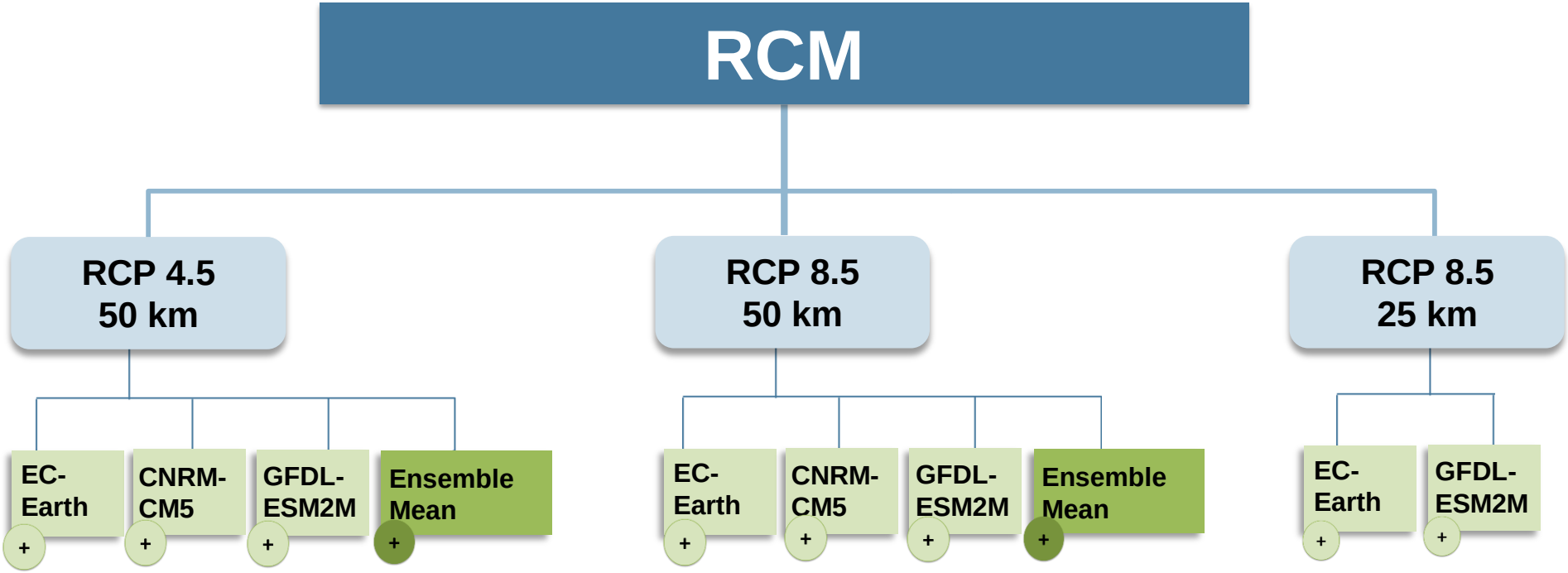
Other related contents:

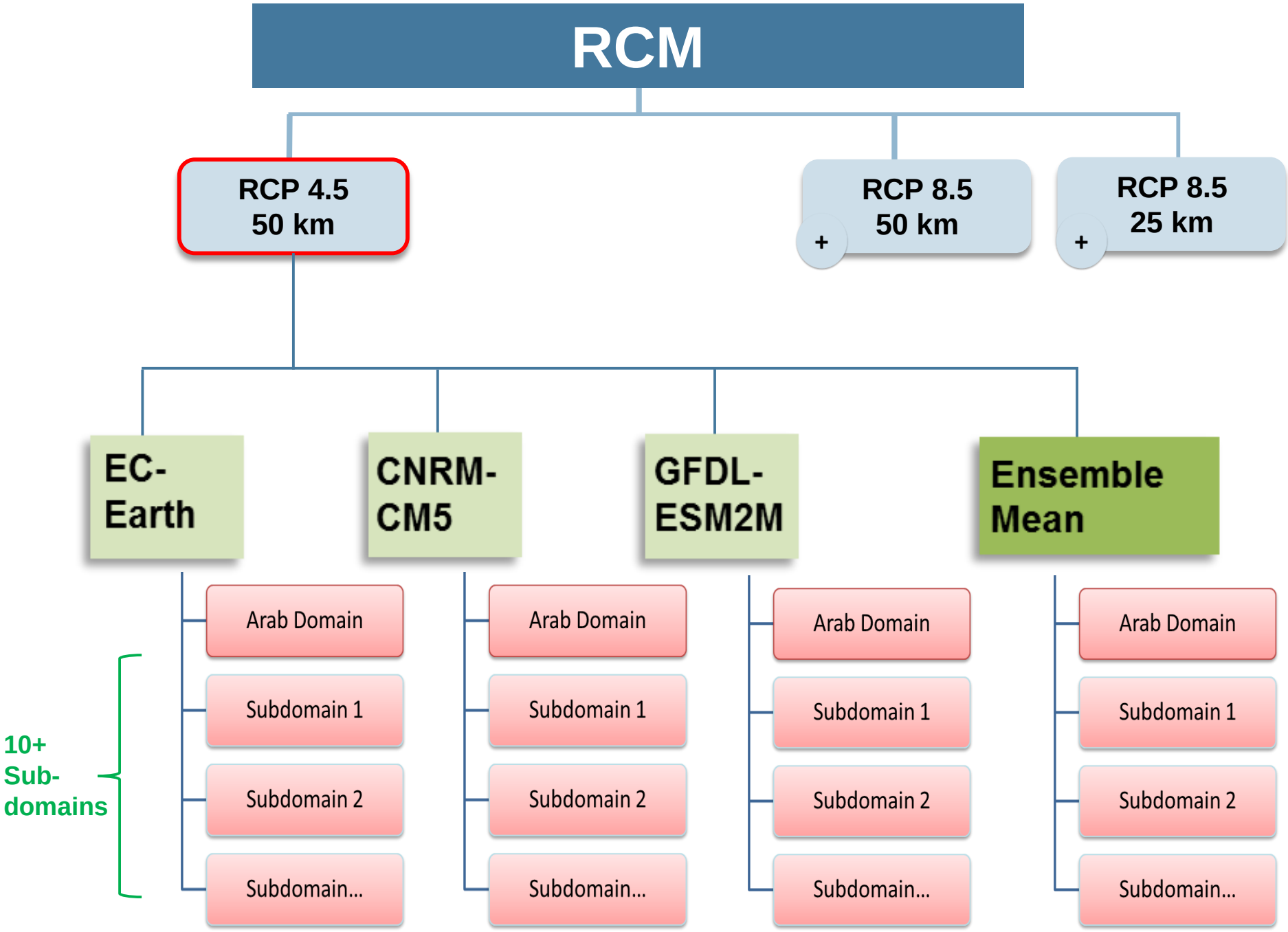
- Link to www.riccar.org and related content
- Link to other databases managed by FAO
- Link to CORDEX
- Link to other data portals used in generating the outputs (e.g., WATCH, HydroSheds, Aquastat, UNstat, GRDC …)
- Interactive component for data exporting and visualization

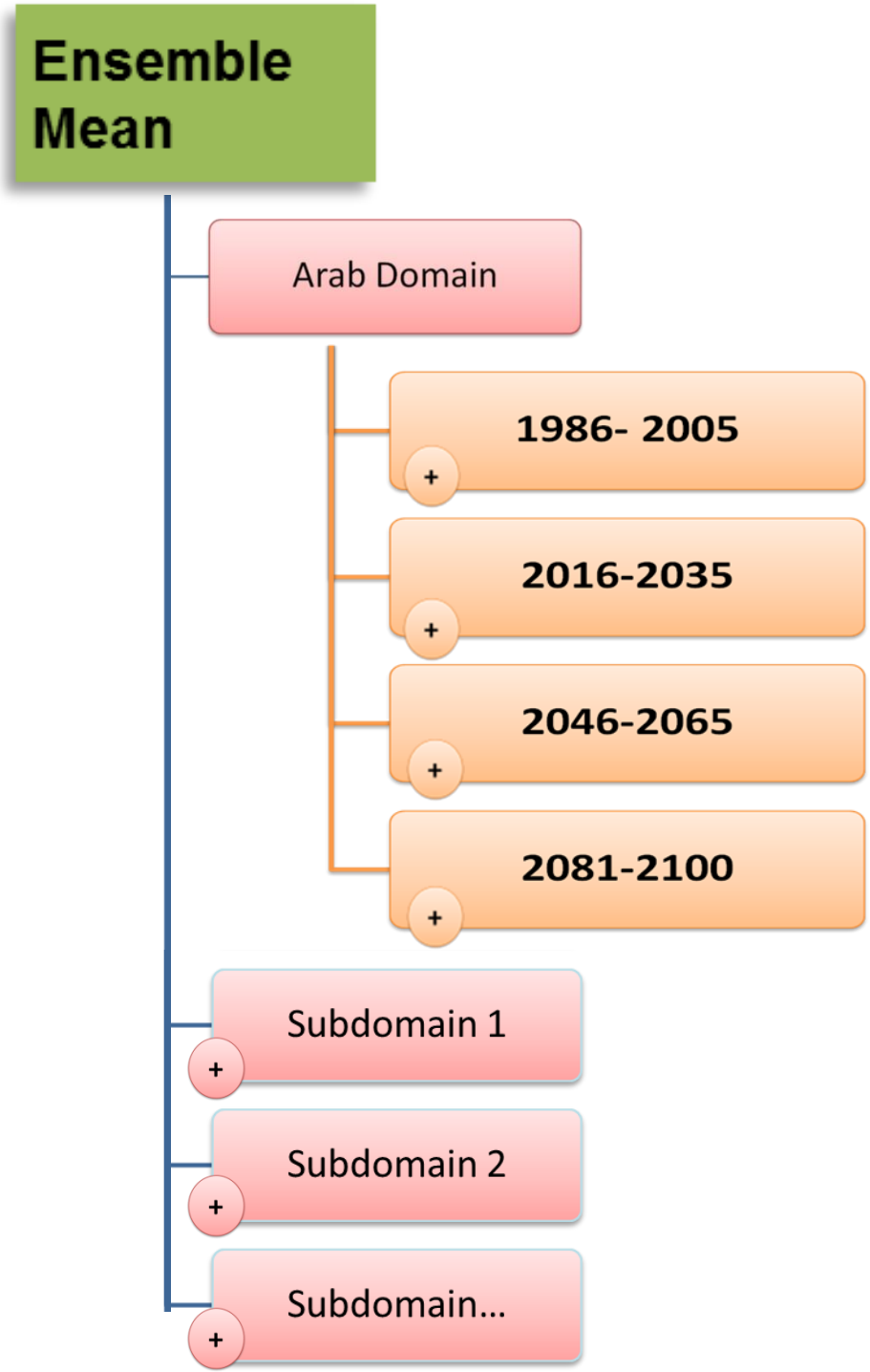
Data Portal — RCM Mapping



Regional Climate Modelling (RCM) Products


RCM
RCP 4.5
50 km
RCP 8.5
50 km
RCP 8.5
25 km
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
EC-Earth
GFDL-ESM2M


RCM
RCP 4.5
50 km
RCP 8.5
50 km
+
RCP 8.5
25 km
+
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
Arab Domain
Subdomain 1
Subdomain 2
Subdomain...
Arab Domain
Subdomain 1
Subdomain 2
Subdomain...
Arab Domain
Subdomain 1
Subdomain 2
Subdomain...
Arab Domain
Subdomain 1
Subdomain 2
Subdomain...
10+
Sub-
domains

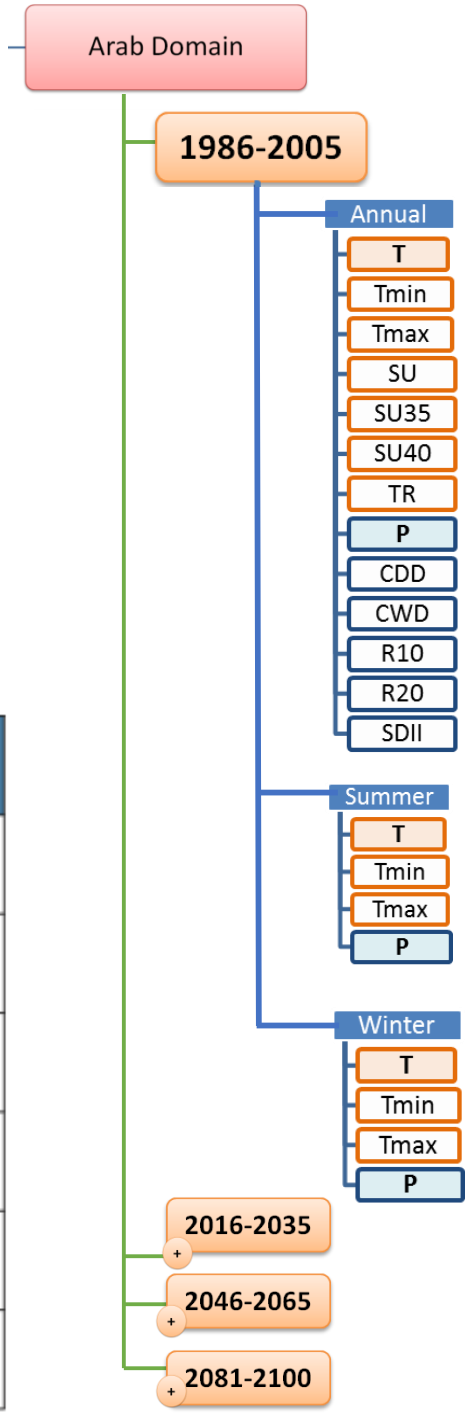


RKH offers Maps for 20-year period & Daily Data Sets from 1986-2100

3-hourly datasets available from SMHI

Extreme temperature indices	
Index	**Full name**
SU	Number of summer days
SU35	Number of hot days
SU40	Number of very hot days
TR	Number of tropical nights

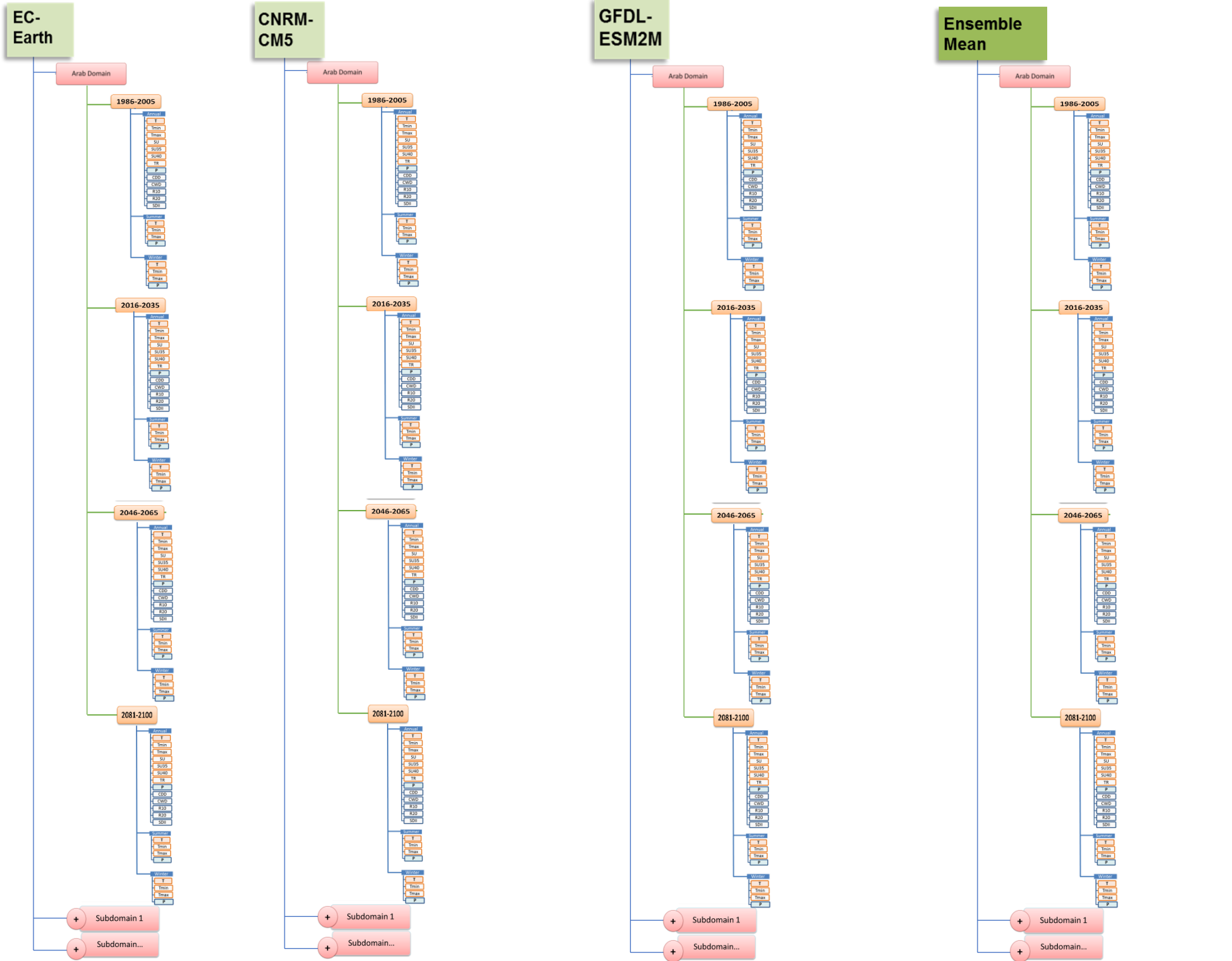
Extreme precipitation indices	
Index	**Full name**
CDD	Maximum length of dry spell
CWD	Maximum length of wet spell
R10	Annual count of 10 mm precipitation days
R20	Annual count of 20 mm precipitation days
SDII	Simple precipitation intensity index

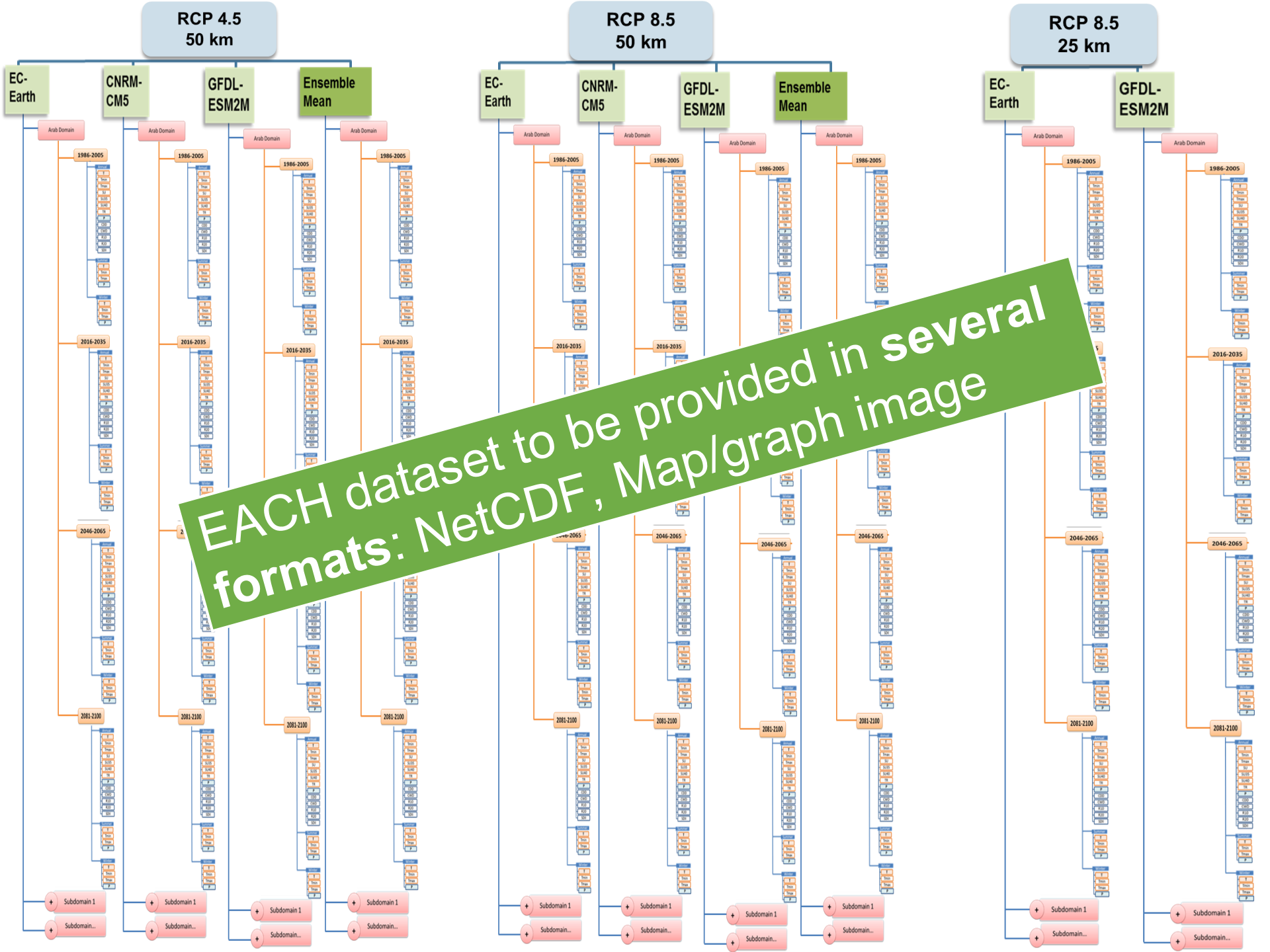


Temperature

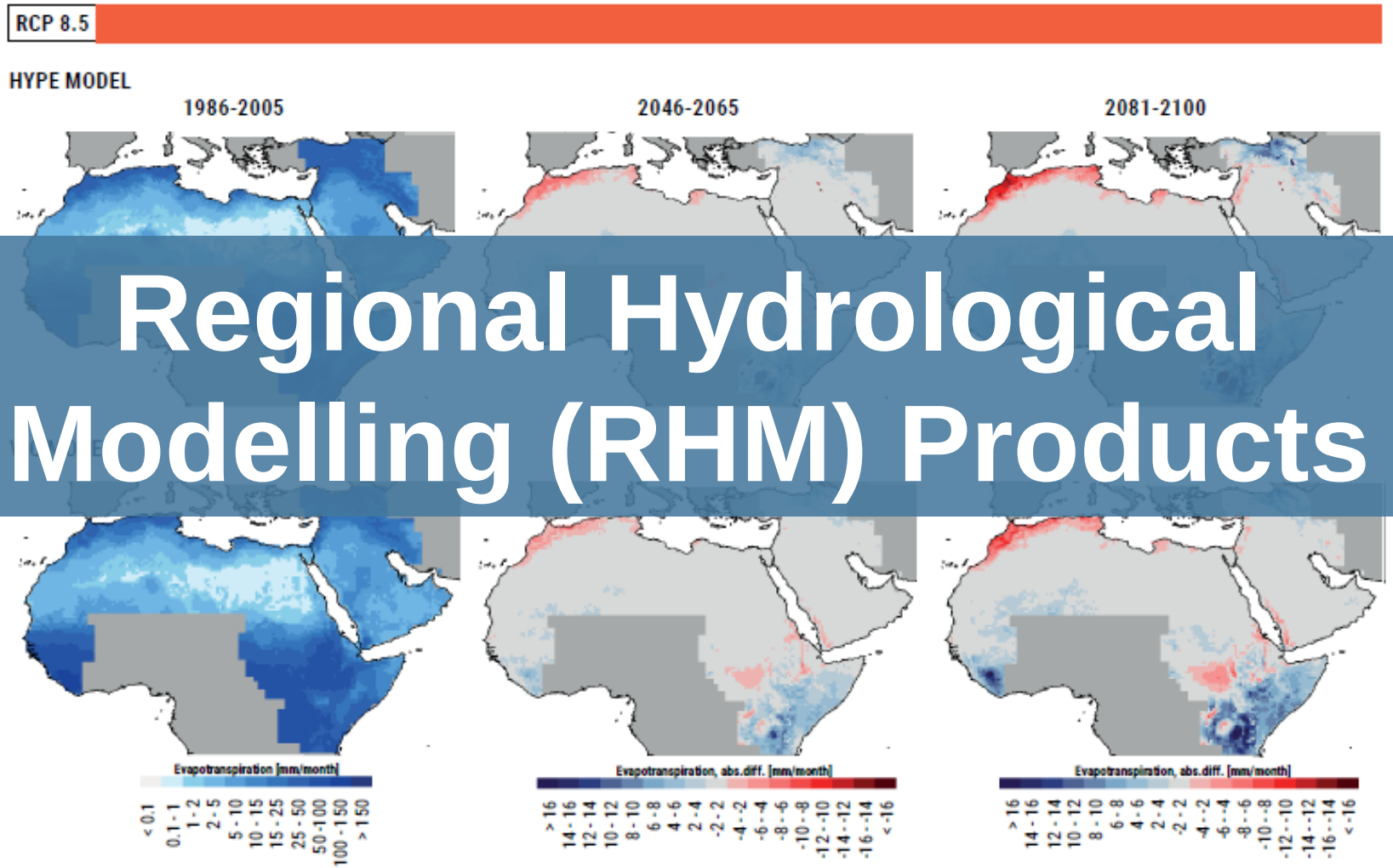
Precipitation

Extreme Climate Indices

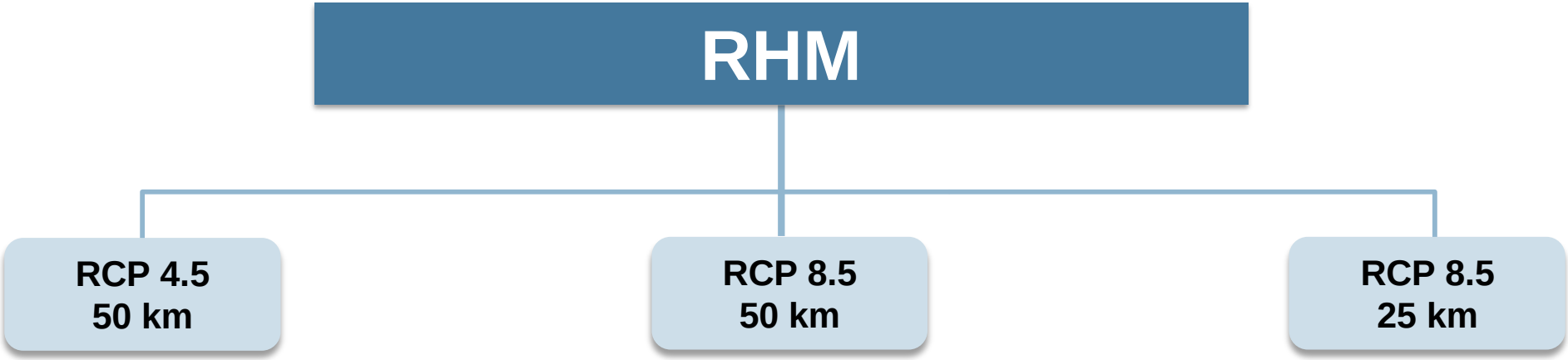

EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
Arab Domain
1986-2005
2016-2035
2046-2065
2081-2100
Annual
T
Tmin
Tmax
SU
SU35
SU40
TR
P
CDD
CWD
R10
R20
SDII
Summer
Winter
Subdomain 1
Subdomain...


RCP 4.5
50 km
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
RCP 8.5
50 km
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
RCP 8.5
25 km
EC-Earth
GFDL-ESM2M
Arab Domain
1986-2005
2016-2035
2046-2065
2081-2100
Subdomain 1
Subdomain...
EACH dataset to be provided in several formats: NetCDF, Map/graph image

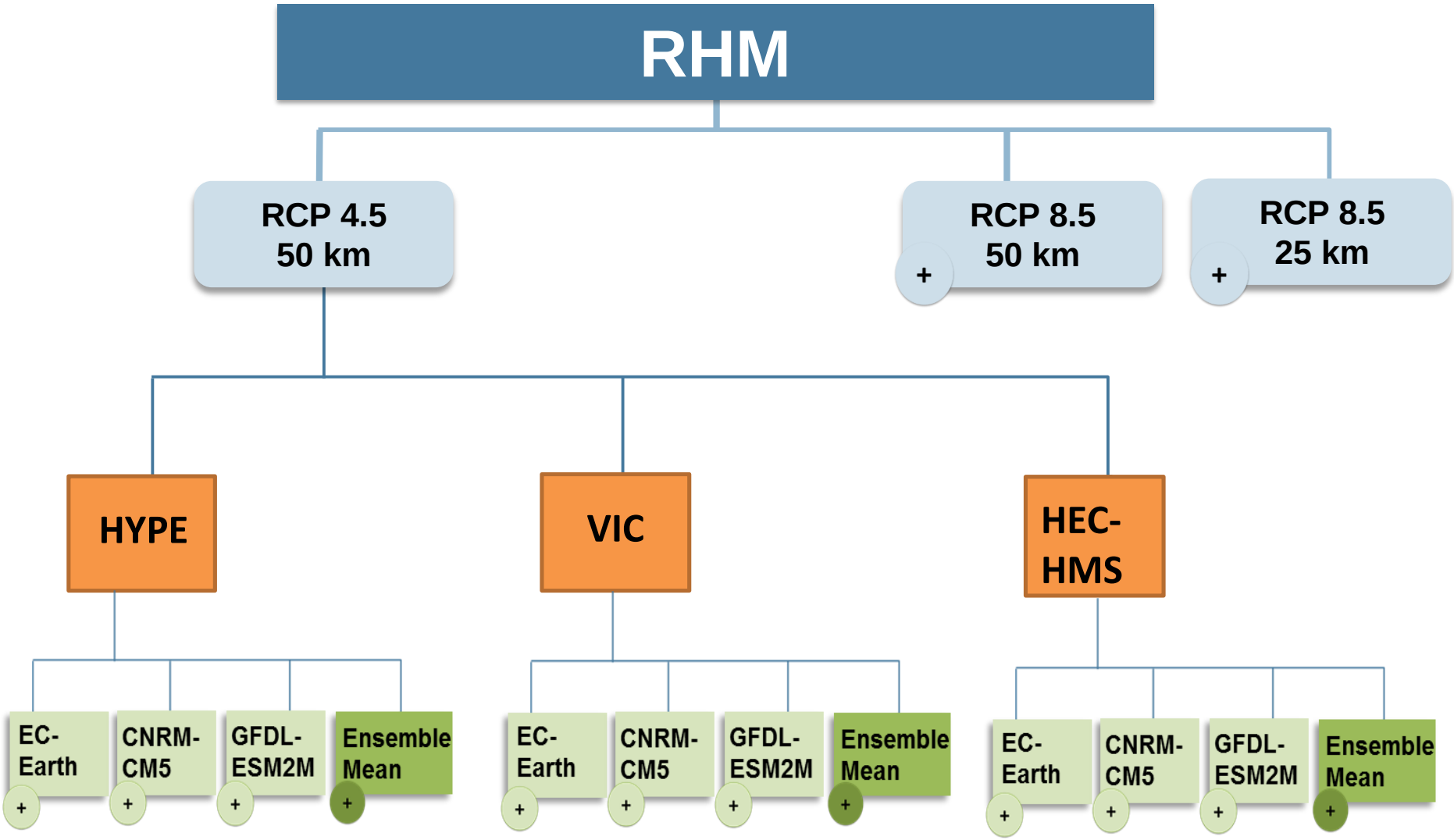
Data Portal — RHM Mapping

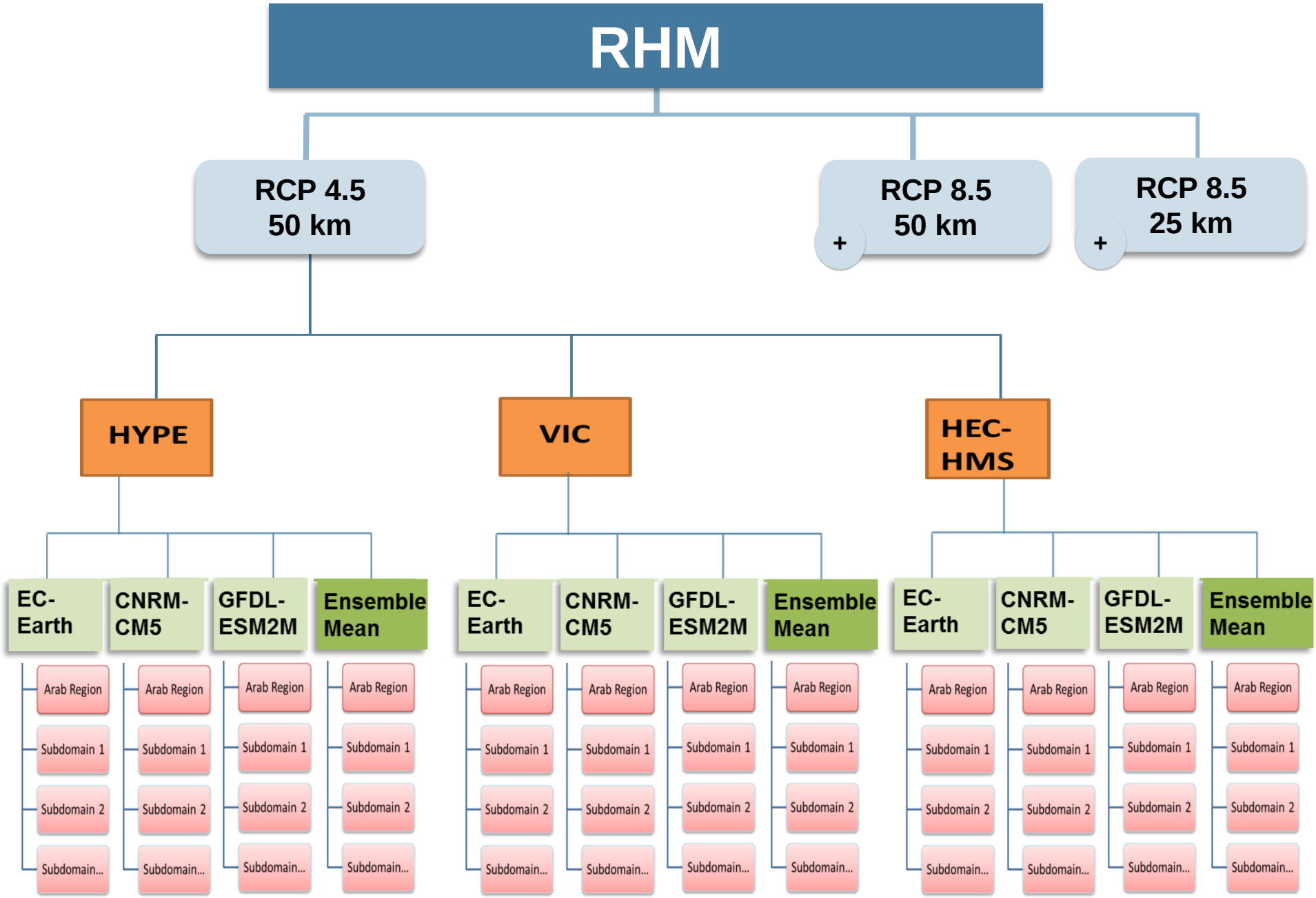


Regional Hydrological Modelling (RHM) Products



Given focus on Water and use for Hydrological & Agricultural modeling, only the Bias Corrected Datasets are available on the RKH and in assessment outputs


RHM
RCP 4.5
50 km
RCP 8.5
50 km
RCP 8.5
25 km
HYPE
VIC
HEC-
HMS
EC-
Earth
CNRM-
CM5
GFDL-
ESM2M
Ensemble
Mean
EC-
Earth
CNRM-
CM5
GFDL-
ESM2M
Ensemble
Mean
EC-
Earth
CNRM-
CM5
GFDL-
ESM2M
Ensemble
Mean


RHM
RCP 4.5
50 km
RCP 8.5
50 km
RCP 8.5
25 km
+
+
HYPE
VIC
HEC-HMS
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
Arab Region
Subdomain 1
Subdomain 2
Subdomain...

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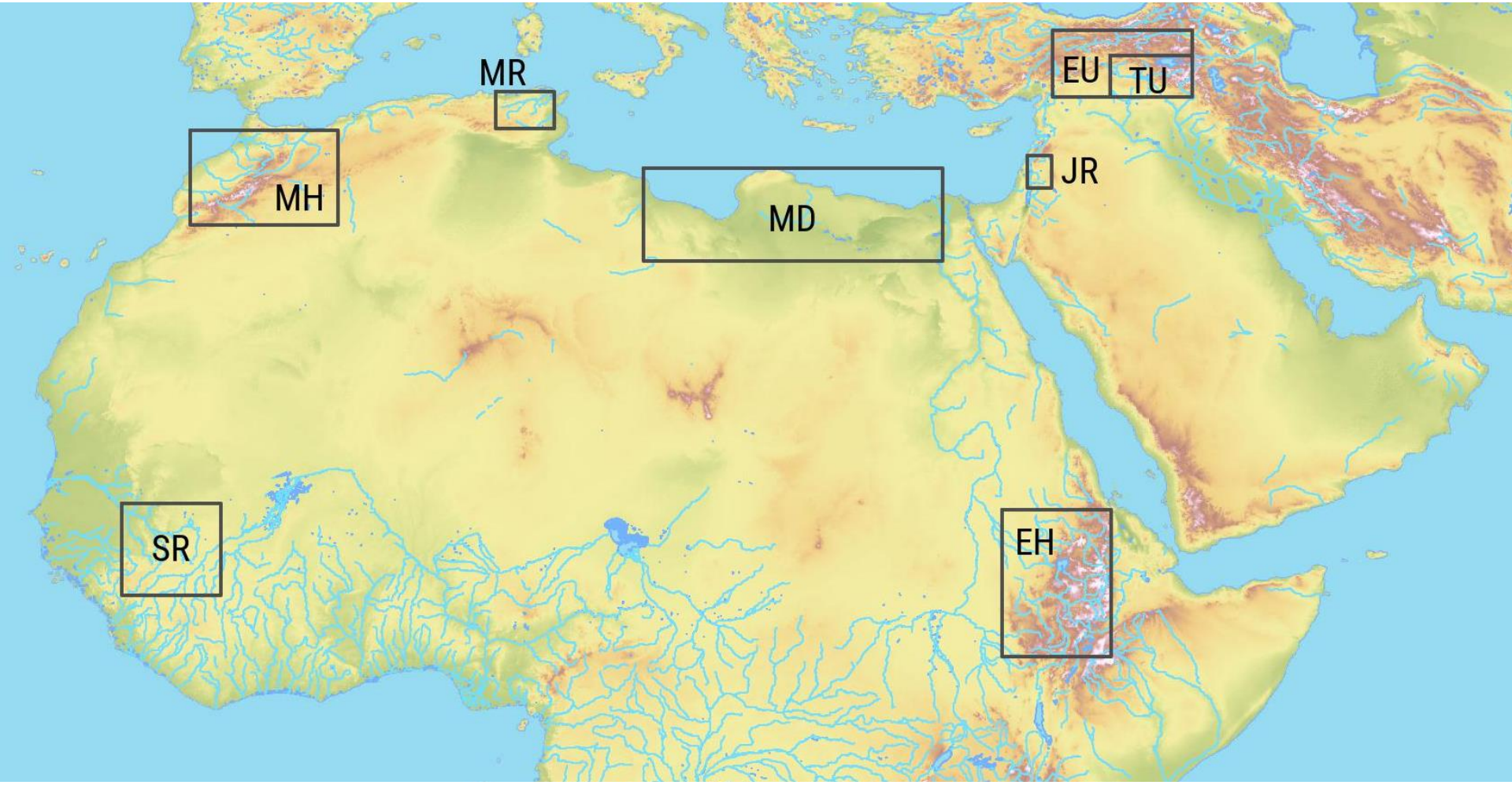
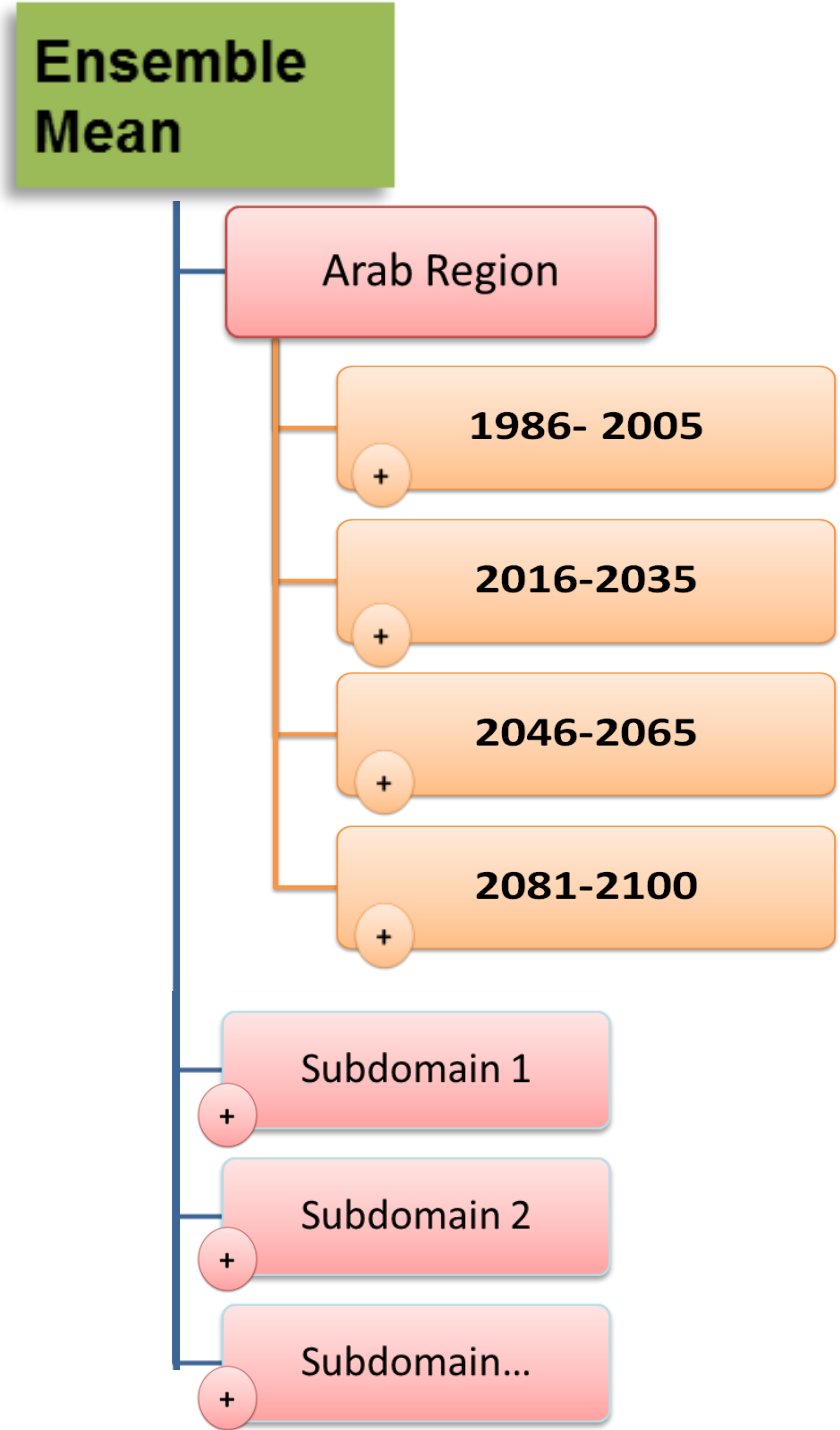
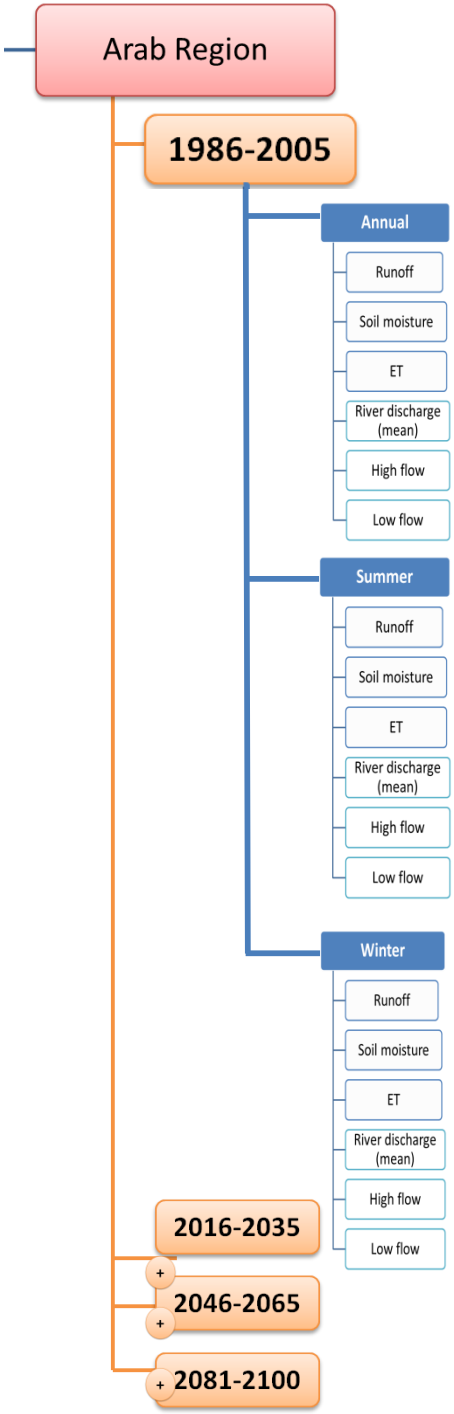
Locations of subdomains for hydrological analysis




Ensemble Mean
Arab Region
1986- 2005
2016-2035
2046-2065
2081-2100
Subdomain 1
Subdomain 2
Subdomain…

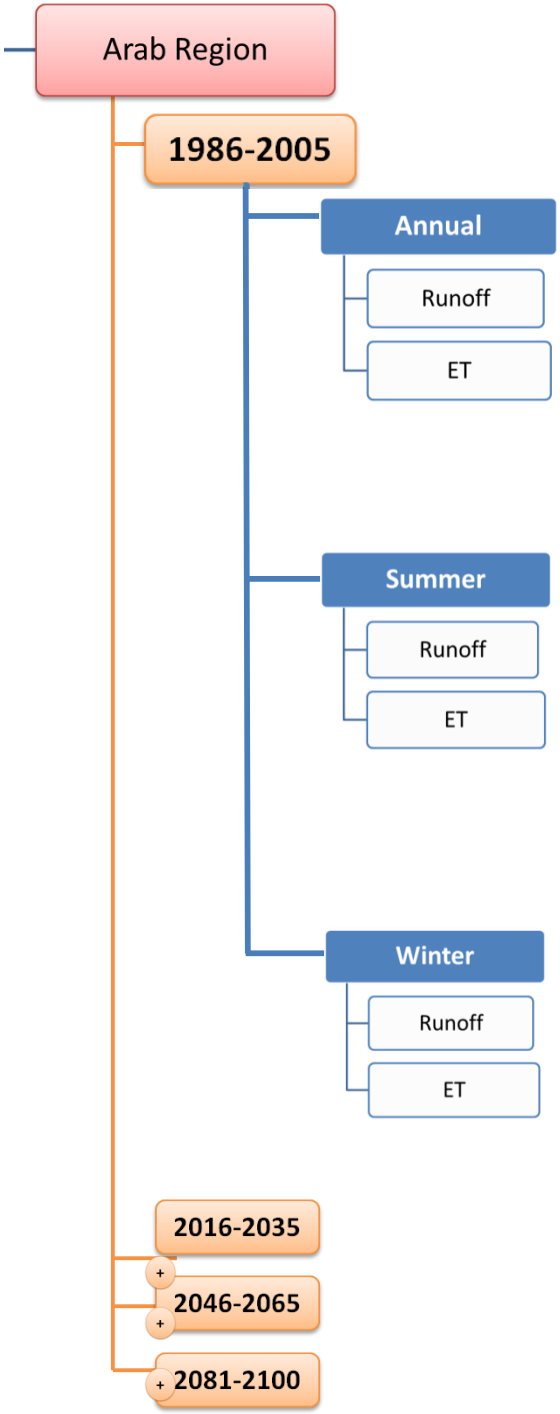
HYPE



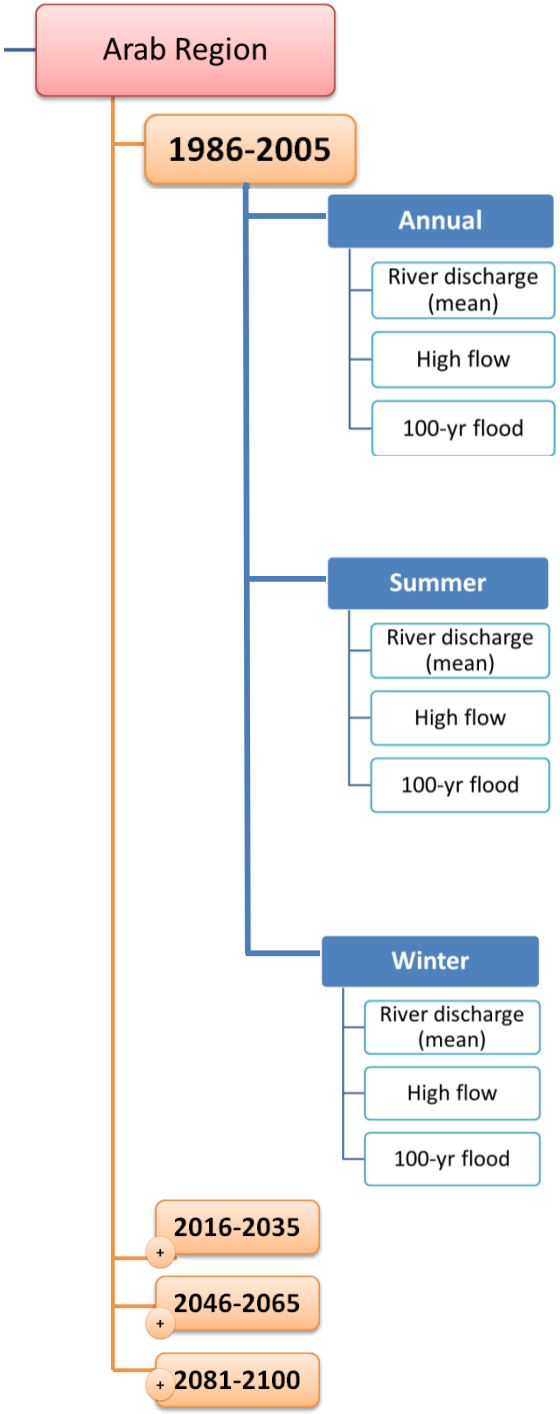
Hydro Parameters presented as Annual and Seasonal outputs

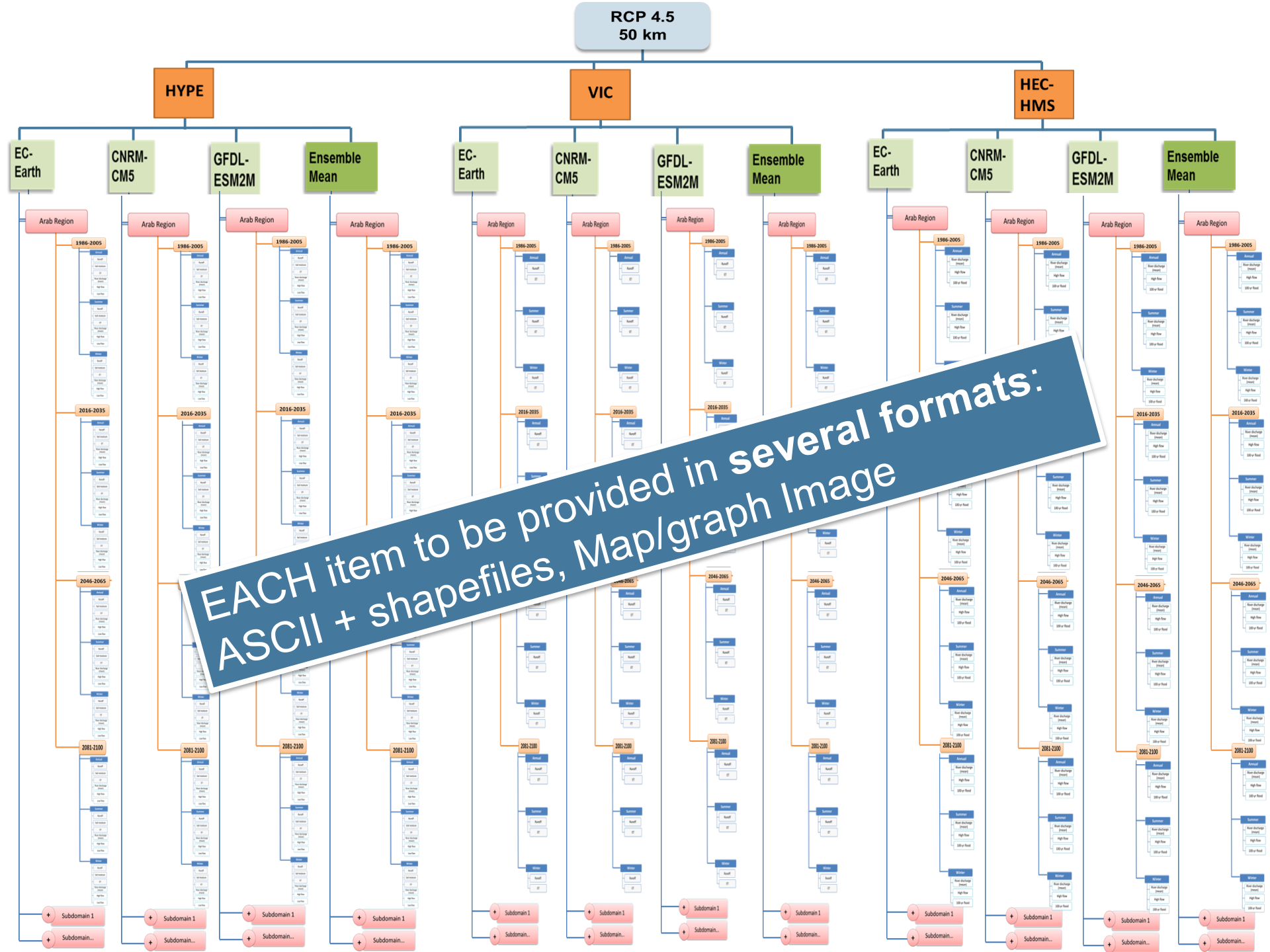
Daily datasets for download

VIC

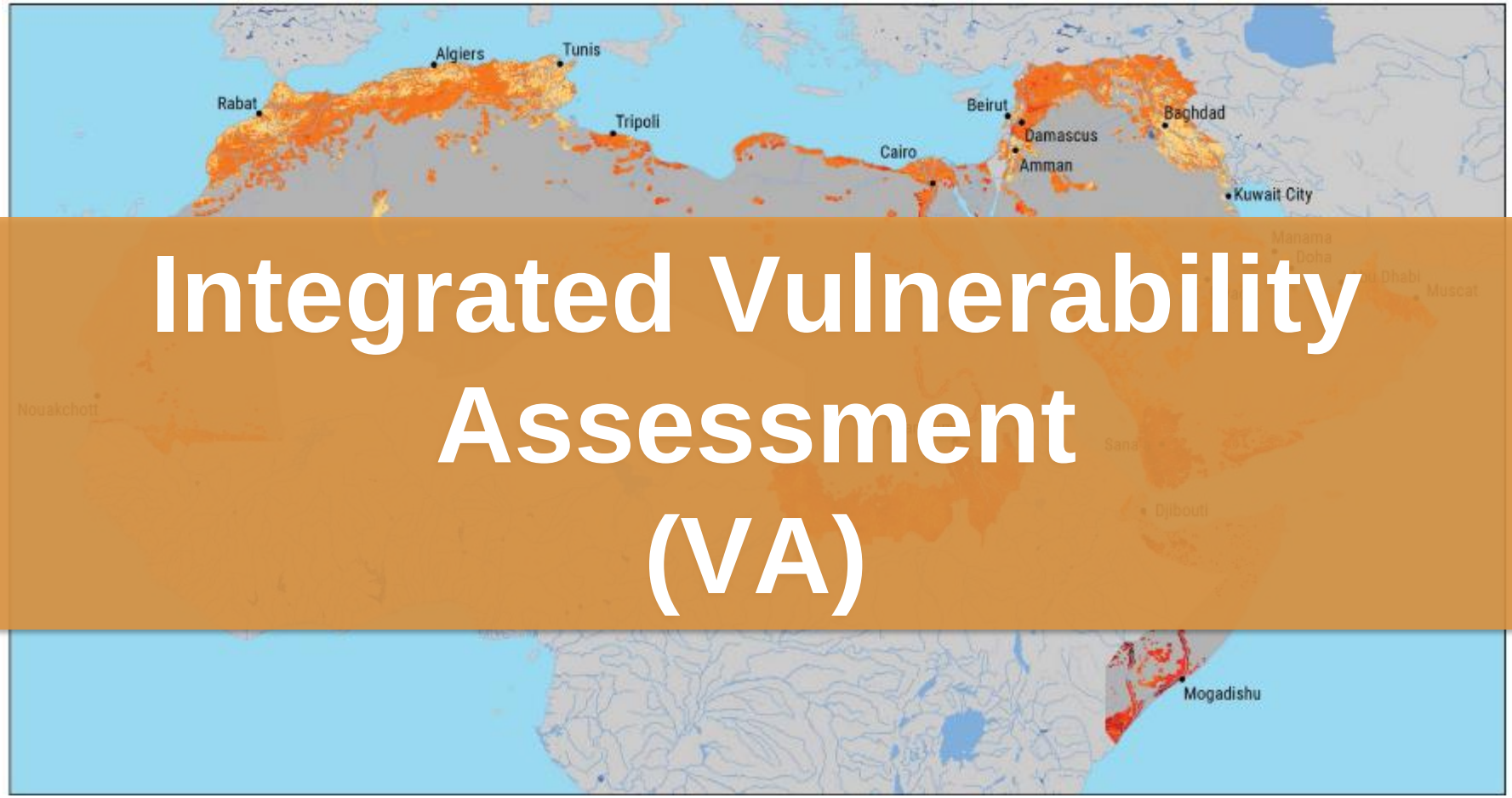

Arab Region
1986-2005
Annual
Runoff
ET
Summer
Runoff
ET
Winter
Runoff
ET
2016-2035
2046-2065
2081-2100

HEC-HMS


Arab Region
1986-2005
Annual
River discharge (mean)
High flow
100-yr flood
Summer
River discharge (mean)
High flow
100-yr flood
Winter
River discharge (mean)
High flow
100-yr flood
2016-2035
2046-2065
2081-2100

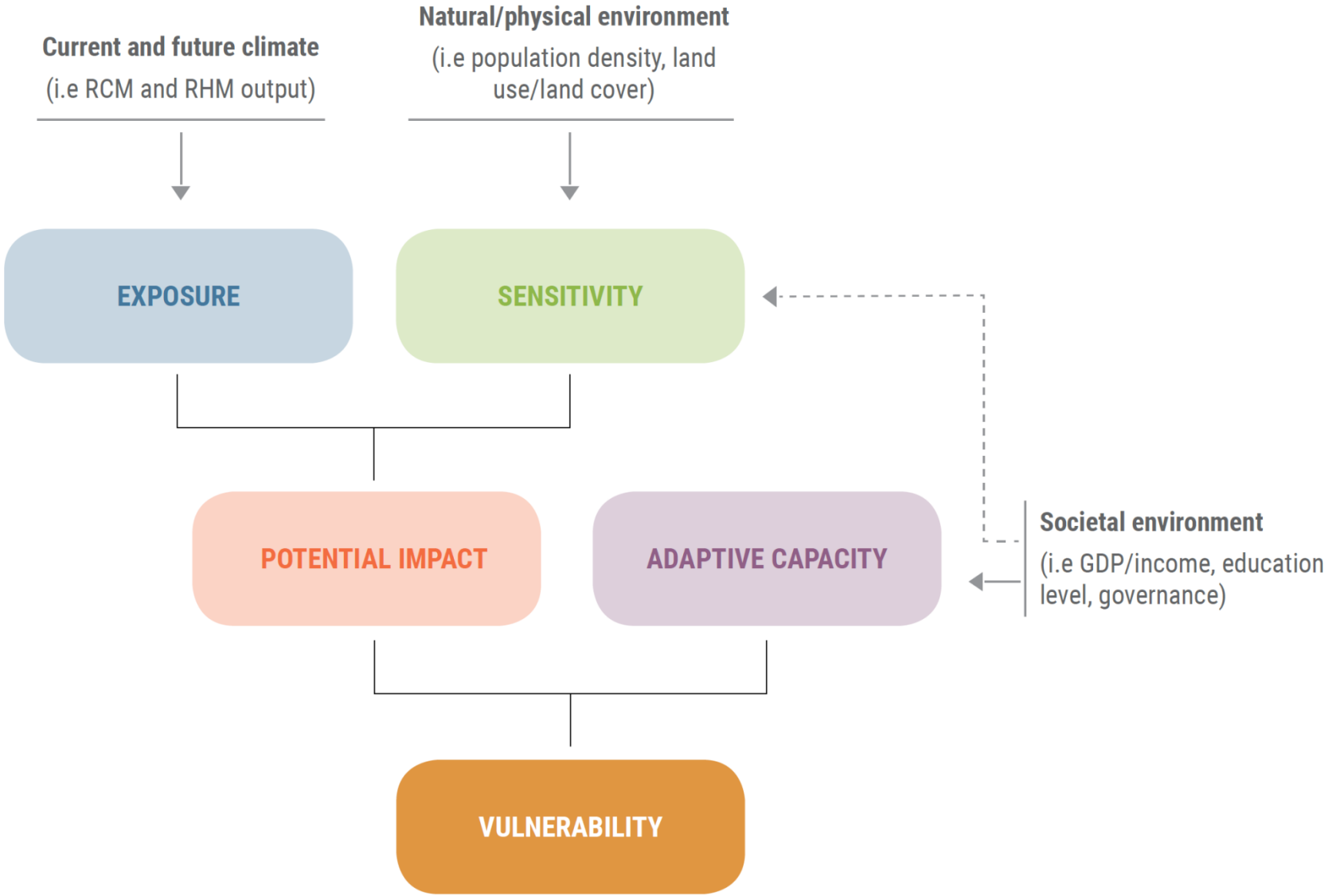

RCP 4.5
50 km
HYPE
VIC
HEC-HMS
EC-Earth
CNRM-CM5
GFDL-ESM2M
Ensemble Mean
Arab Region
1986-2005
2016-2035
2046-2065
2081-2100
Subdomain 1
Subdomain...
EACH item to be provided in several formats:
ASCII + shapefiles, Map/graph Image

Data Portal — VA Mapping

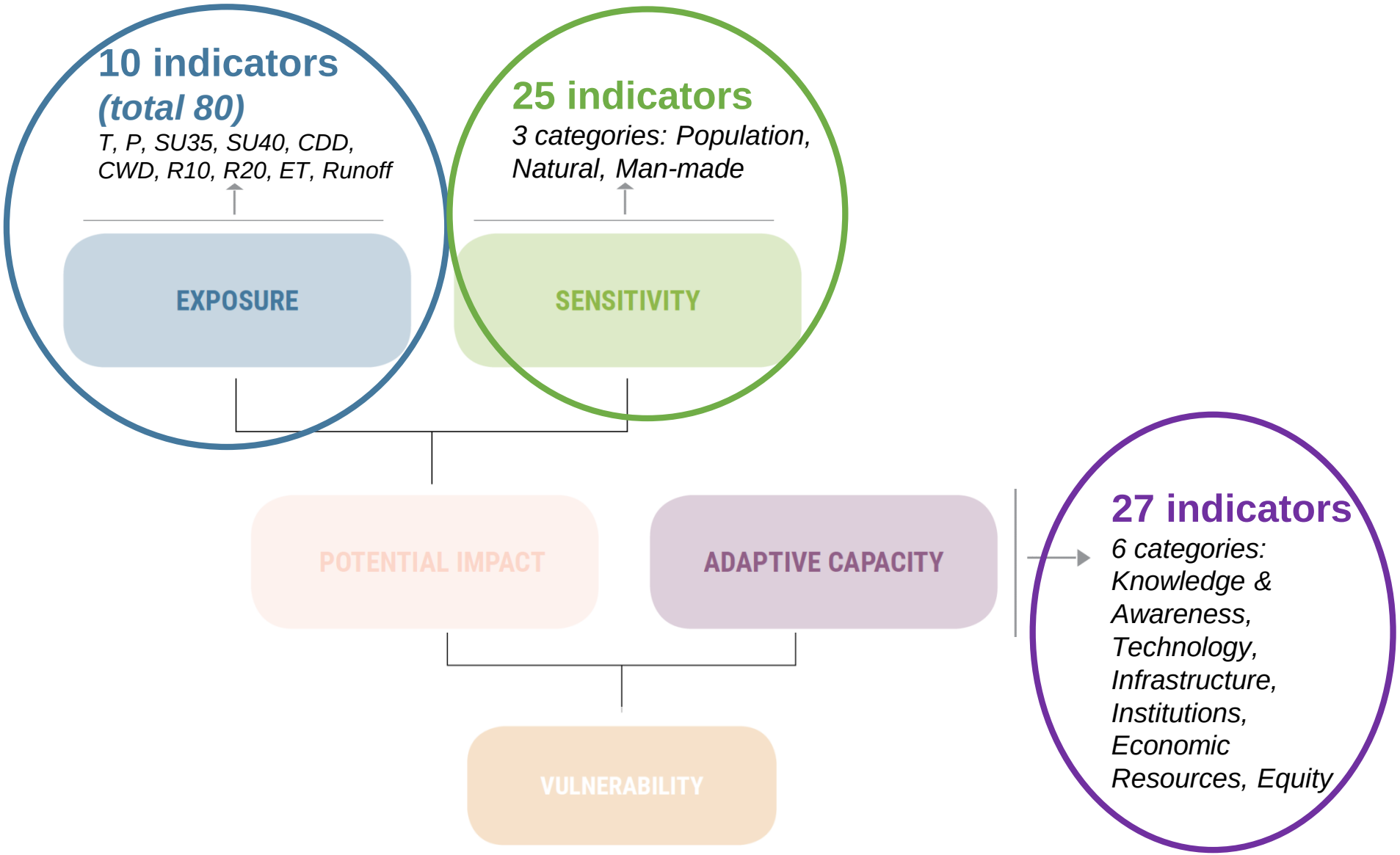


Integrated Vulnerability Assessment (VA)

VA Indicators



Selected Indicators for the VA



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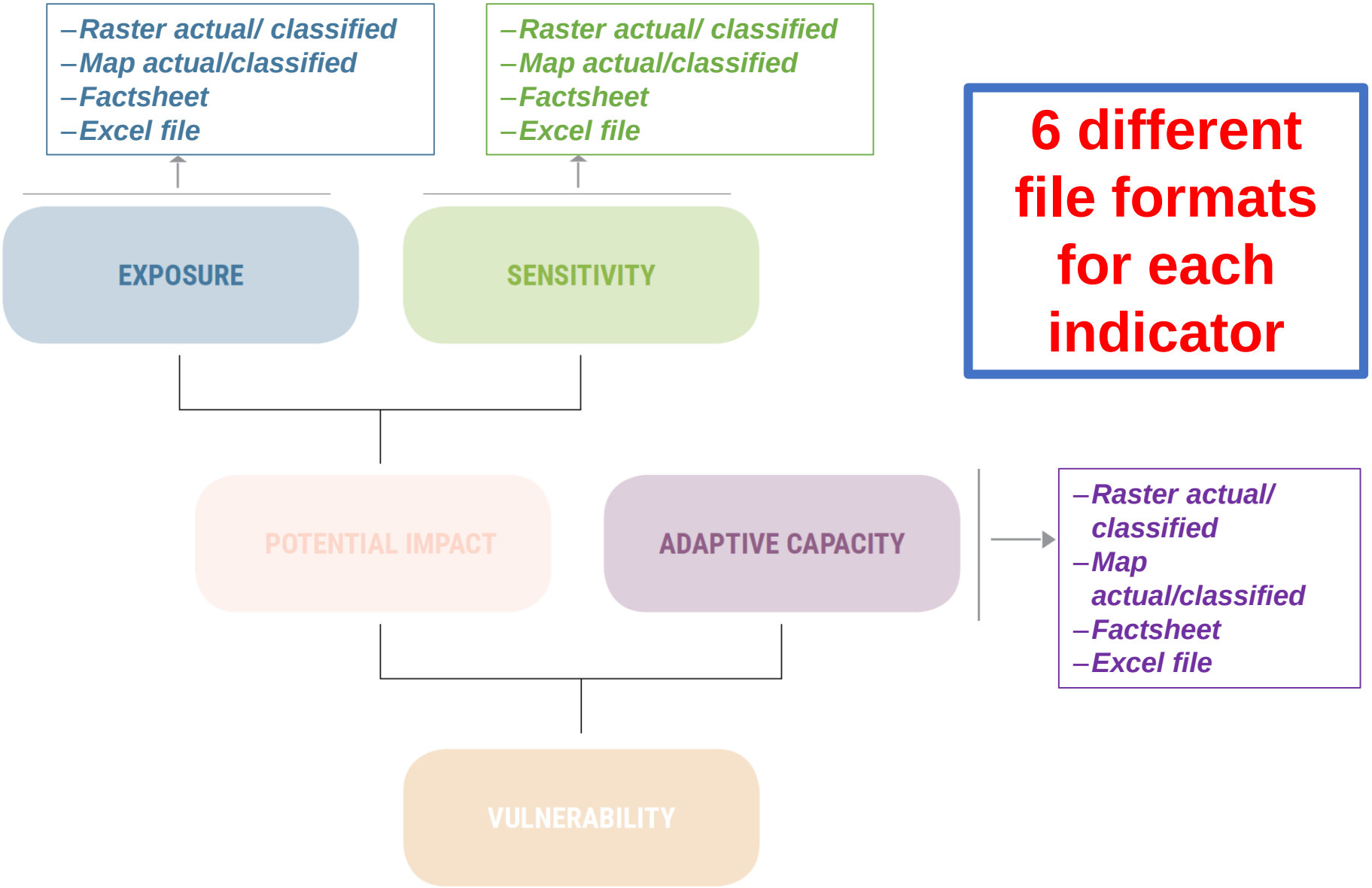
File formats for each indicator



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VA outputs

SECTORS	SUBSECTORS
Water	Water availability
Biodiversity and Ecosystems	Area covered by forests Area covered by wetlands
Agriculture	Water available for crops Water available for livestock
Infrastructure and Human Settlements	Inland flooding area
People	Water available for drinking Health conditions due to heat stress Employment rate for the agricultural sector

VA outputs

- There is a total of **9 different vulnerability sectors/subsectors**
- Each has a specific combination of Exposure, Sensitivity, and Adaptive Capacity **indicators**.
- Thus, in addition to the individual indicator datasets, outputs include, **for each sector/subsector**:
  - **Vulnerability map** for selected timeframes and scenarios
  - **Potential Impact map** for specific timeframes and scenarios
  - **Exposure map** for specific timeframes and scenarios
  - **Sensitivity map** obtained by combining the selected sensitivity indicators under that sector
  - **Adaptive Capacity** map

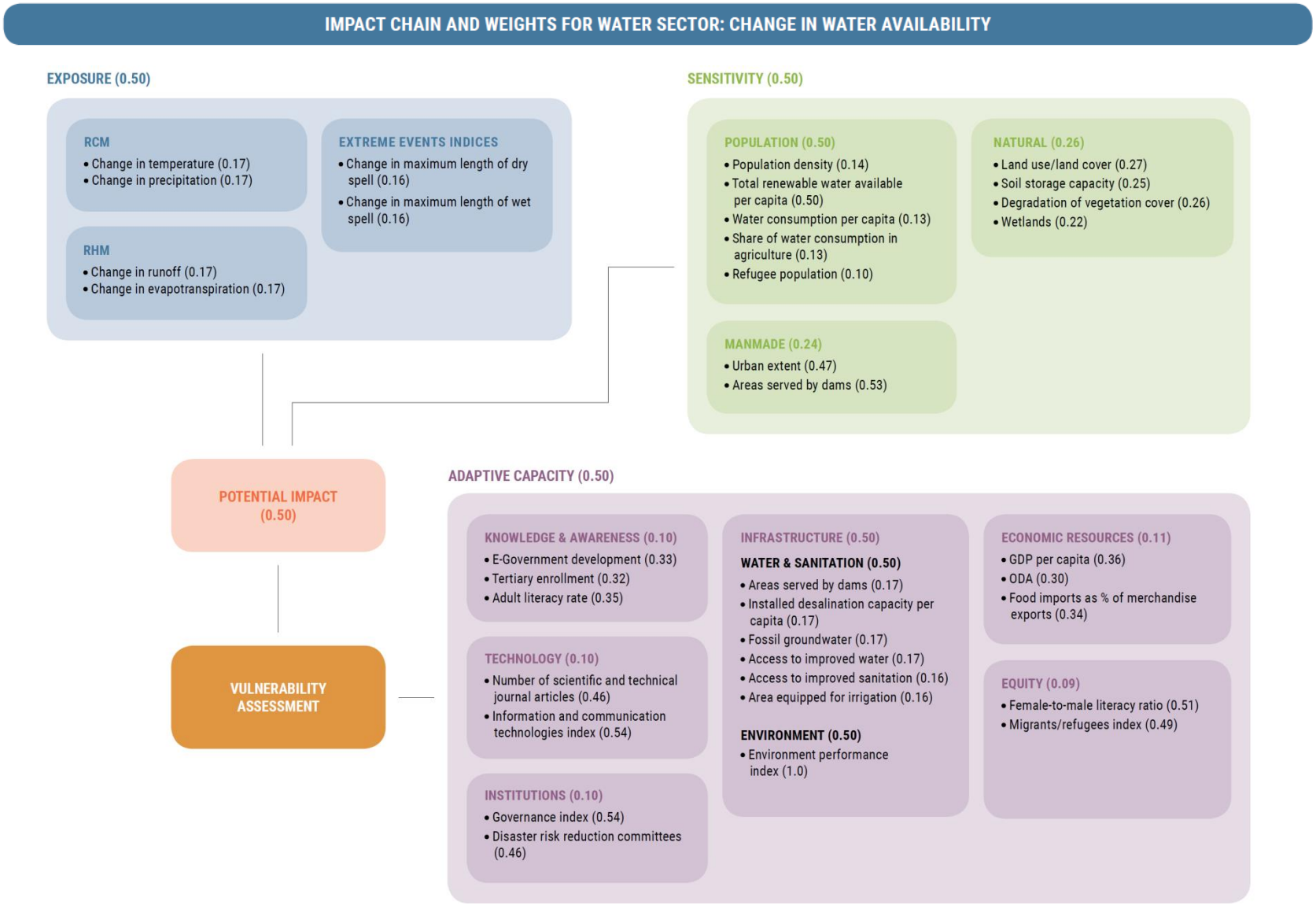
EACH output would consist of a dataset of multiple raster files in addition to the maps illustrating each.

Filing structure

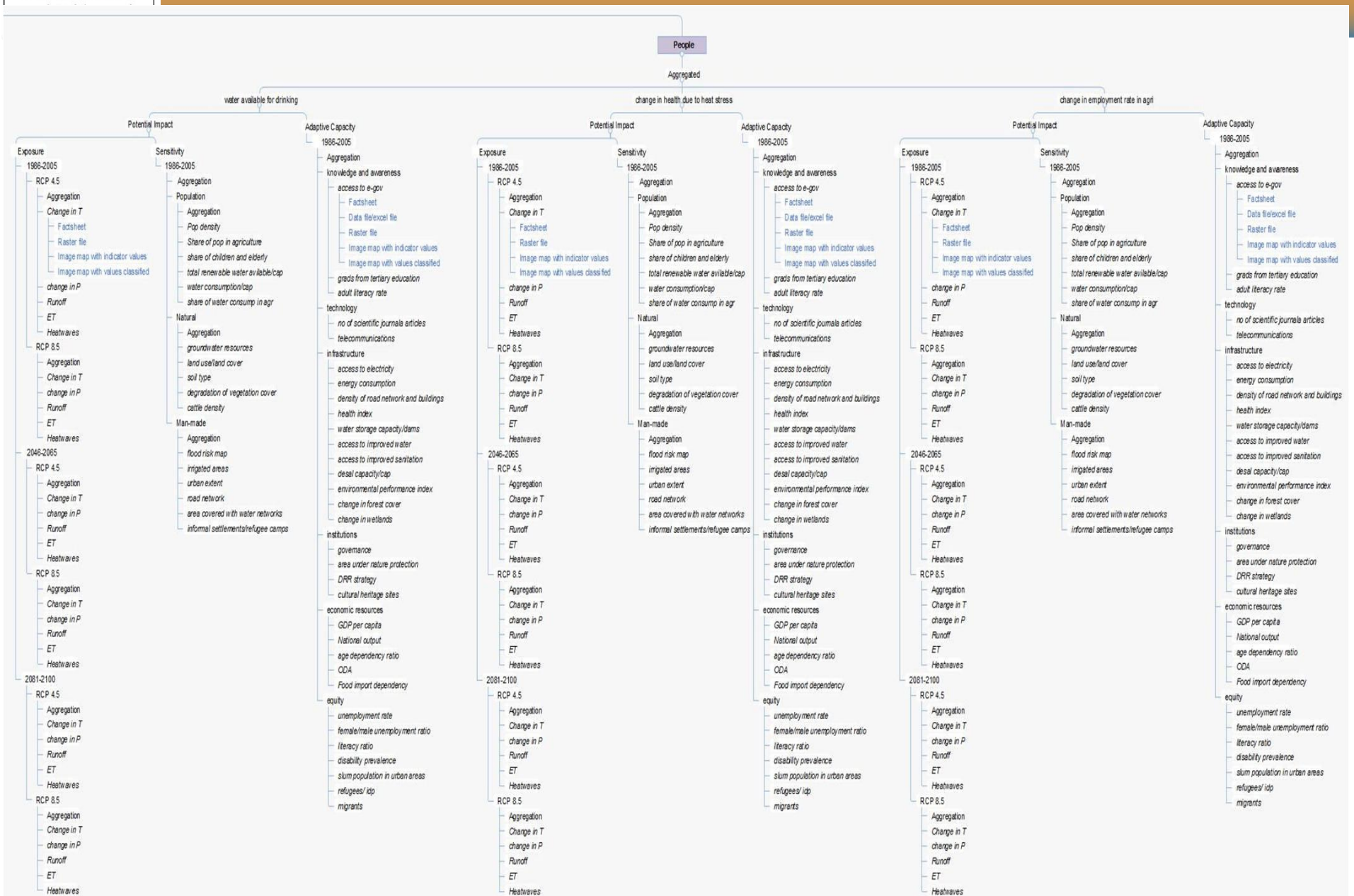
- 01_Exposure Indicators
  - 01_Reference Period
    - 01_RCM Output
      - 01_Precipitation
        - 01_Raster Files_Actual Values
        - 02_Raster Files_Classified Values
        - 03_Map_Actual Values
        - 04_Map_Classified Values
        - 05_Factsheet
        - 06_Spreadsheet
      - 02_Temperature
    - 02_RHM Output
    - 03_Extreme Climate Indices
  - 02_Mid-century
    - 01_RCP 4.5
    - 02_RCP 8.5
  - 03_End-century
    - 01_RCP 4.5
    - 02_RCP 8.5
- 02_Sensitivity Indicators
  - 01_Population
  - 02_Natural
  - 03_Manmade
- 03_Adaptive Capacity Indicators
- 04_Vulnerability Assessment Outputs
  - 01_Water Sector
    - 01_Water Availability
      - 01_Exposure CI
      - 02_Sensitivity CI
      - 03_Potential Impact
      - 04_Adaptive Capacity CI
      - 05_Vulnerability

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

Example one sector- Impact Chain



Example of Datasets Mapping for one VA sector



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

Sample factsheet

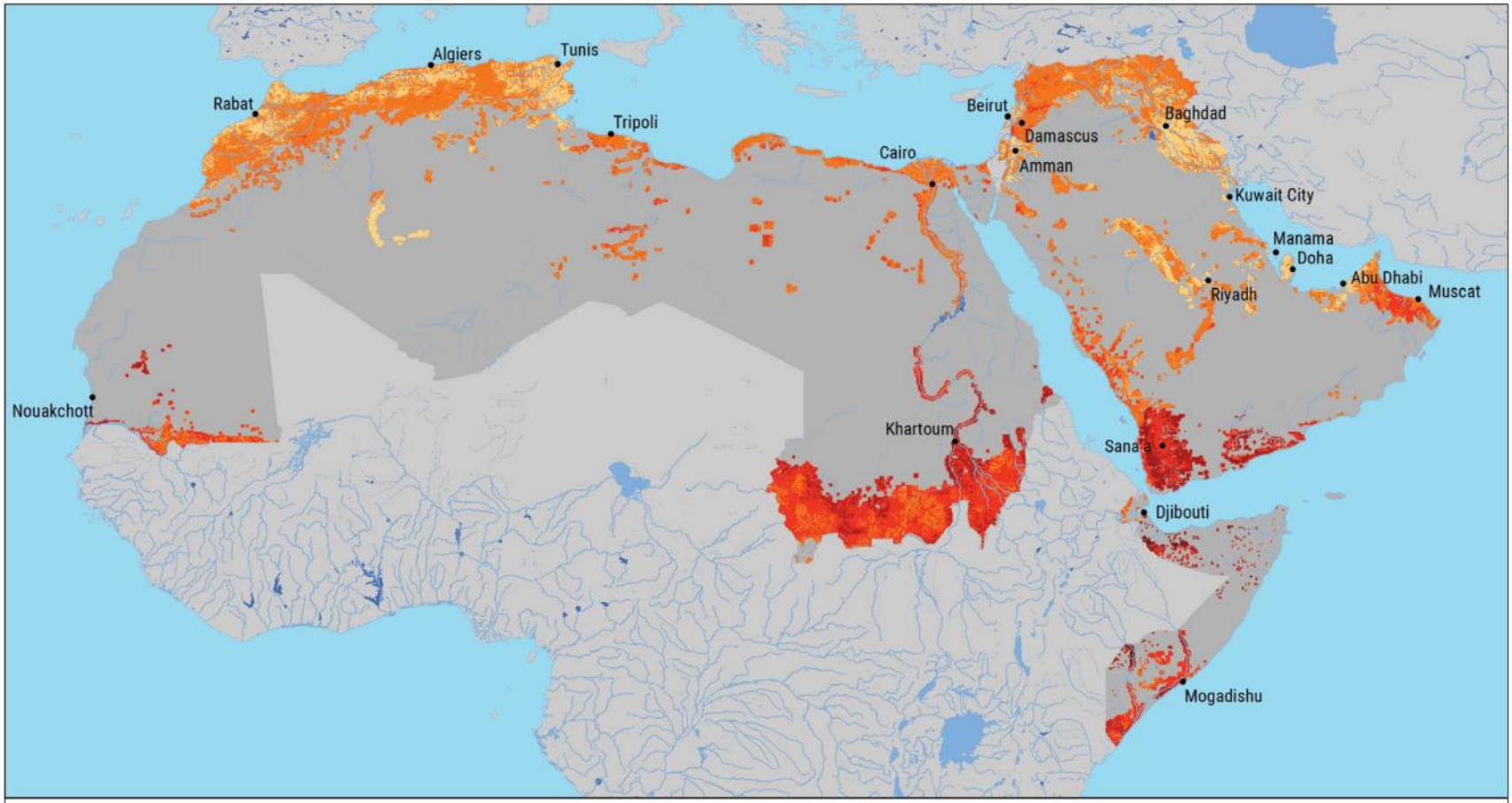
Information and Communication Technologies Index

Indicator fact sheet	
Indicator	**Information and Communication Technologies Index**
Vulnerability component	Adaptive Capacity
Description (position in the impact chain)	A composite indicator that represents the extent of a society's connectivity (mobile, fixed lines, computers, internet) This indicator includes four components: – Fixed-telephone subscriptions per 100 inhabitants (a value) – Households with a Computer (%) – Individuals using the internet (%) – Mobile-cellular subscriptions per 100 inhabitants (a value)
Sector(s) / Impacts(s)	All sector and all potential impacts
Classes and thresholds	**Example: Equal Interval classification Mobile-cellular subscriptions per 100 inhabitants (for RKH)** 27.97 - 44.20 44.21 - 60.43 60.44 - 76.67 76.68 - 92.90 92.91 - 109.13 109.14 - 125.36 125.37 - 141.59 141.60 - 157.83 157.84 - 174.06 174.07 - 190.29 **Equal Interval classification (for VA – 8 classes only)** 1- Djibouti, Mauritania, Somalia, Yemen 2- Iraq, Sudan 3- Algeria, Syrian Arab Republic 4- Egypt, Libya, Tunisia 5- Jordan, Morocco 6- Lebanon 7- Oman, Saudi Arabia 8- Bahrain, Kuwait, Qatar, United Arab Emirates
Influence on vulnerability	The countries with higher ICT index the more adaptive capacity they would have
Citation (source of data)	International Communication Union, Country Data.
Data information	
Type of data	Tables/Excel
Spatial coverage	Only Arab States
Resolution	One value per country

Time reference	2013
Unit of measurement	A value between 0 to 1
Methodology for general data calculation	
Methodology for classification and transformation of values	The intervals were classified using Equal Interval classification for the percentage values. For the Vulnerability assessment classification, Equal interval classification was used. The higher the value on the composite indicator, the higher the value from 1 – 8 on the adaptive capacity classification scale The value 8 was assigned as the maximum in comparison to international standards
Input-indicators needed	– Fixed-telephone subscriptions – Households with a Computer – Individuals using the internet – Mobile-cellular subscriptions
Data supply and acquisition	
Date of processing and publication	2013
Availability and costs	Immediately
Right to use / disseminate the data	-
Contact	ITU
Download-link	http://www.itu.int/
Date of acquirement	29/10/14
Additional comments:	

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

Sample Map



AGRICULTURE: WATER AVAILABLE FOR CROPS

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

Legend

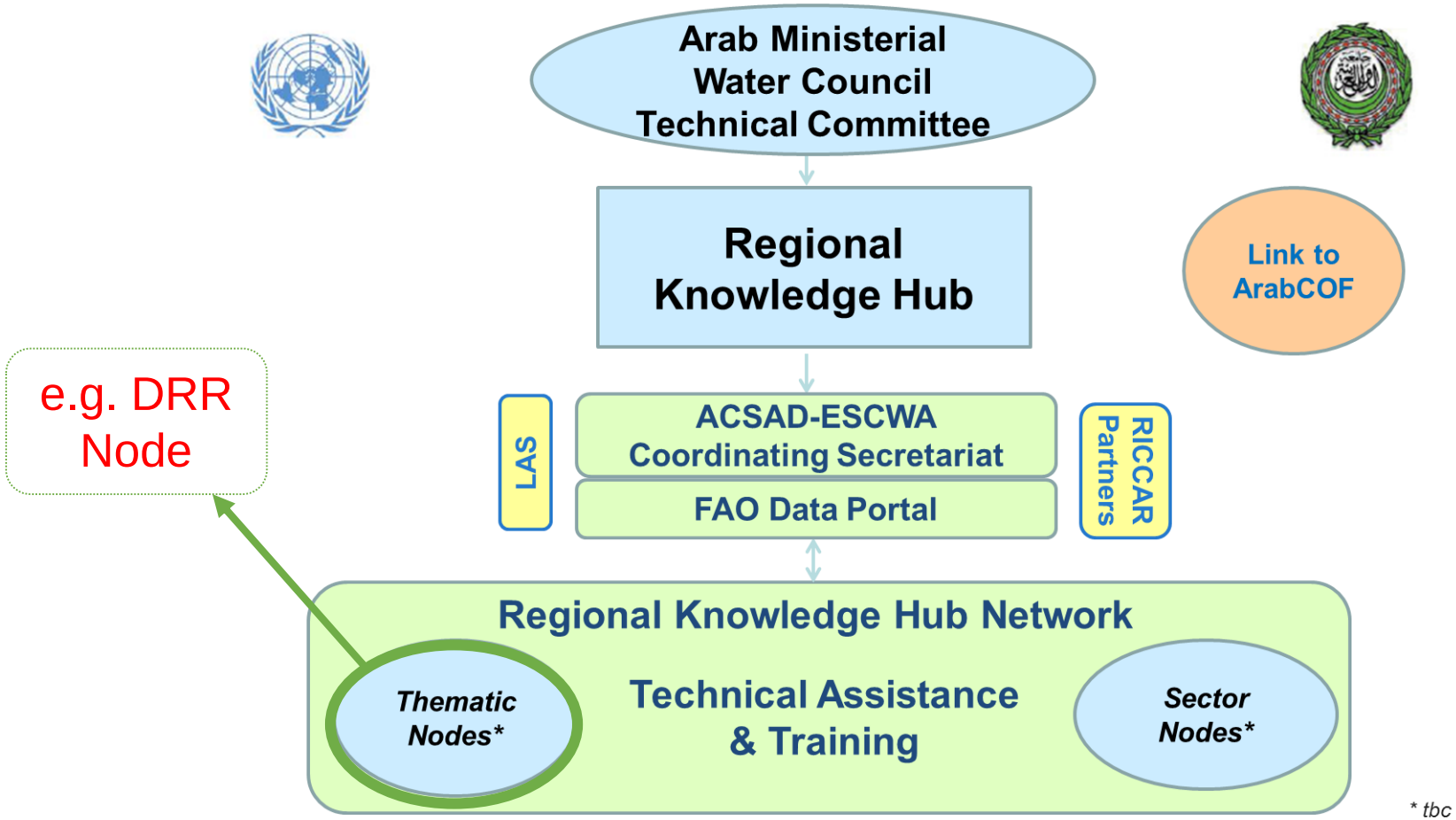
- Lakes
- Reservoirs
- Rivers
- Intermittent rivers
- Major cities
- Area not relevant to subsector

Low Vulnerability — High Vulnerability

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

RKH and Disaster Risk Reduction

RKH to Provide an Integrated Climate Change/ DRR Node



* tbc

DRR Node

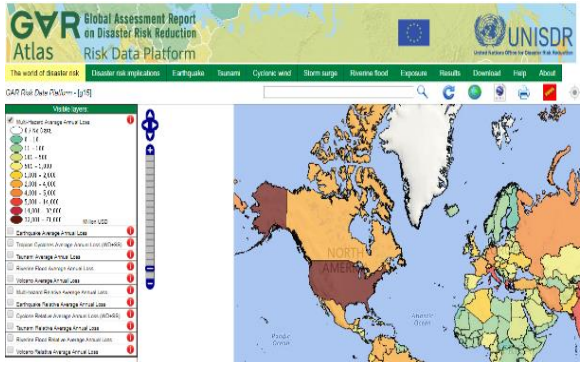
The Node could potentially include links to tools such as:

- *<u>UNISDR resources</u> & data platforms*

DRR Knowledge Platform

www.preventionweb.net

Risk Data Platform



www.risk.preventionweb.net

Disaster Data Platform

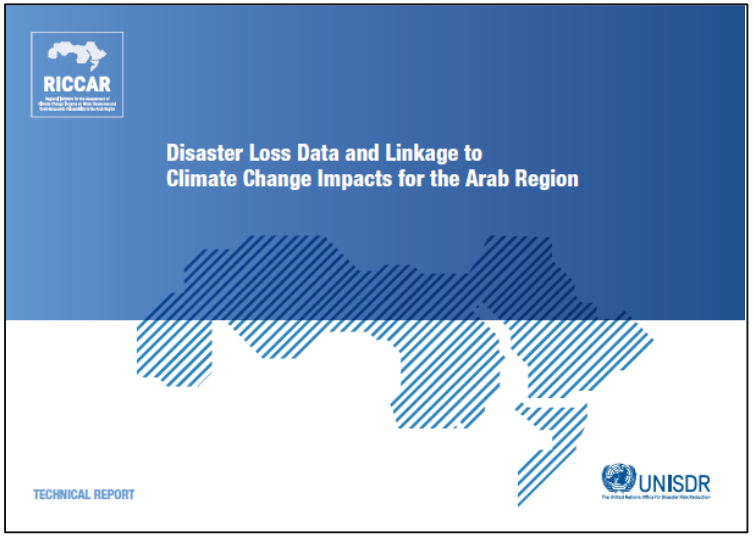
www.desinventar.net

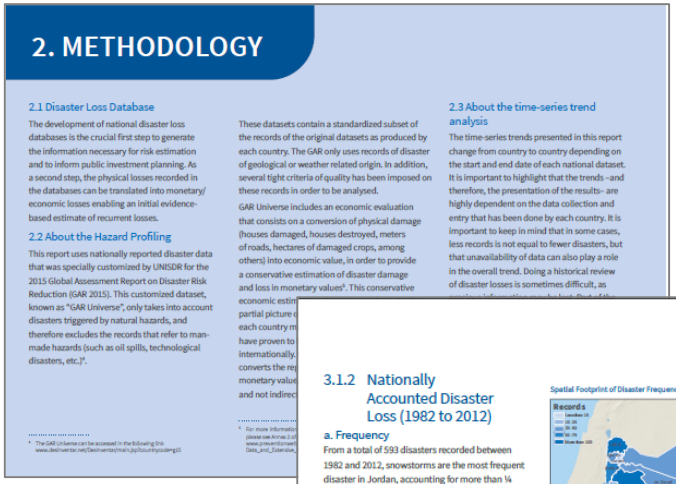
- *Provide access to knowledge resources such as <u>methodologies/training materials</u> on how to link both CC and DRR data to produce integrated assessments*
- *Provide links to national focal points and <u>concerned DRR and Climate Change institutions</u> in each Arab State*
- *Provide information and highlights on <u>ongoing regional efforts</u> to integrate DRR into national development planning processes in the context of climate change*

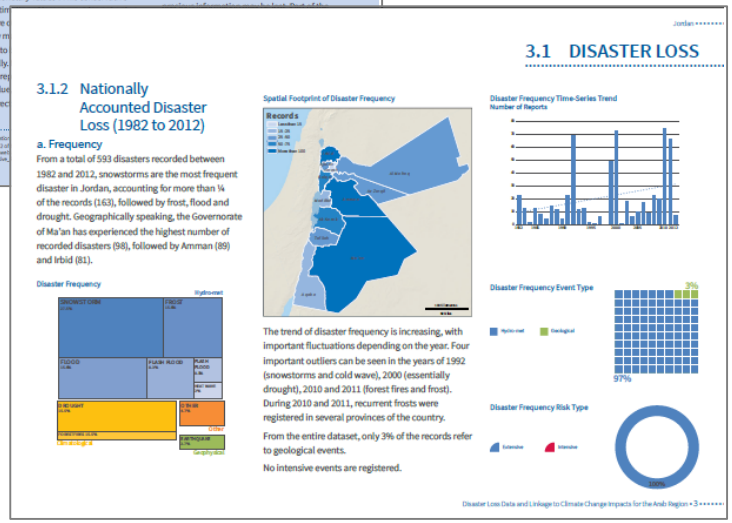
DRR Node

(continued)

e.g. UNISDR's RICCAR technical report *Disaster Loss Data and Linkage to Climate Change Impacts for the Arab Region (2017)* and methodologies used







Six countries:

- Jordan
- Lebanon
- Morocco
- Palestine
- Tunisia
- Yemen

Status of RKH Development

Implementation currently under development, in two phases:

- **Phase I:** completion of **website** and **preliminary version of the data portal**

  Basic functionalities for managing, visualizing and querying data; basic security features; ability to retrieve and download data; monitoring tools

- **Phase II:** implementation of **advanced visualization and analytical tools** to the data portal.

www.riccar.org

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