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Water Accounting Plus (WA+)

Approach, implementation in MENA and added value

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International Water Management Institute (IWMI)

Innovative water solutions for sustainable development

Food · Climate · Growth

May 6, 2025

1. Dryland Challenges

- Limited water resources
- High vulnerability to climate change
- Complex and cascading impact
- Weak adaptive capacity
- Millions of people are exposed to these impacts
- Poor people and disadvantaged communities are disproportionately affected

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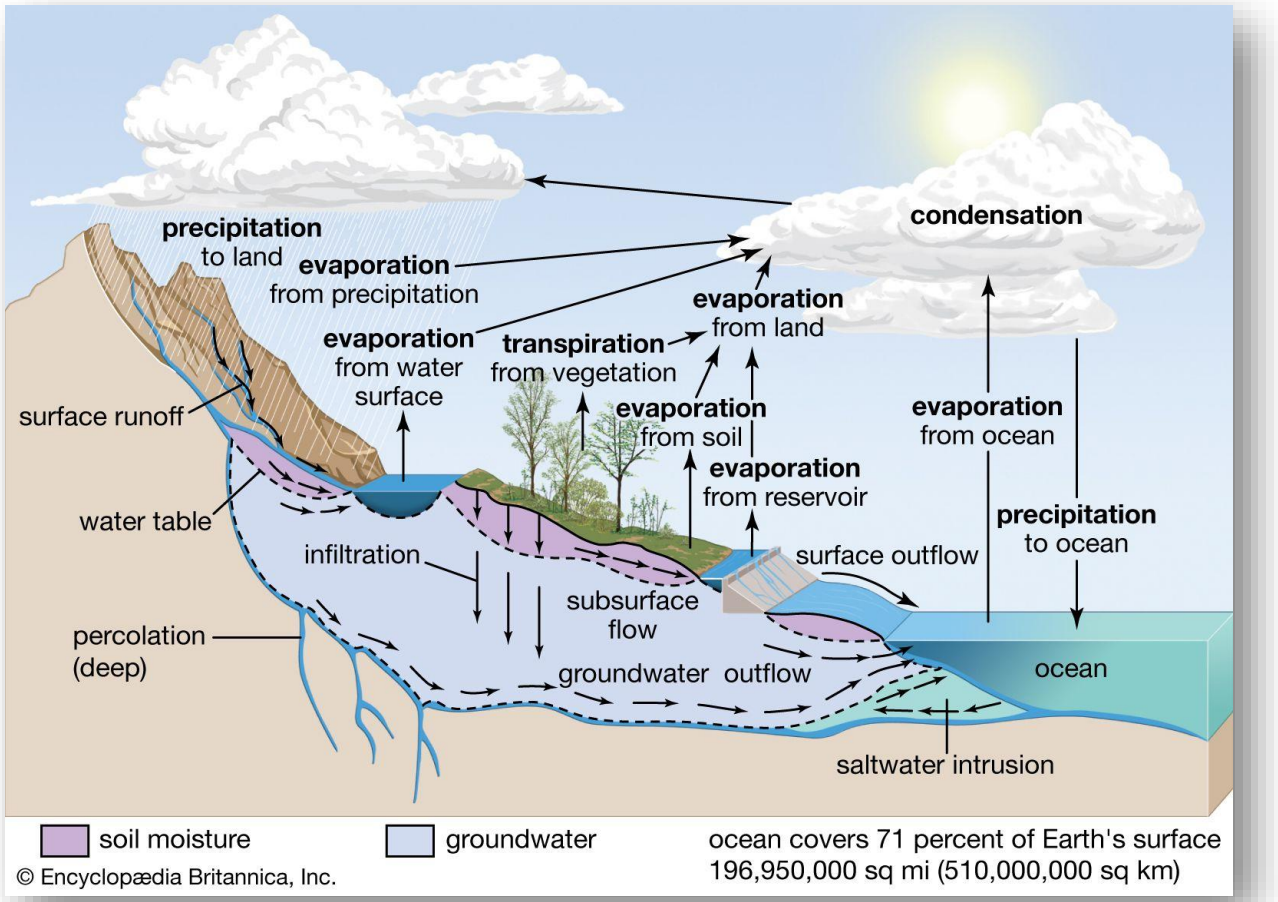
Typically, effective water resource management necessitates comprehensive data encompassing all facets of the water cycle.



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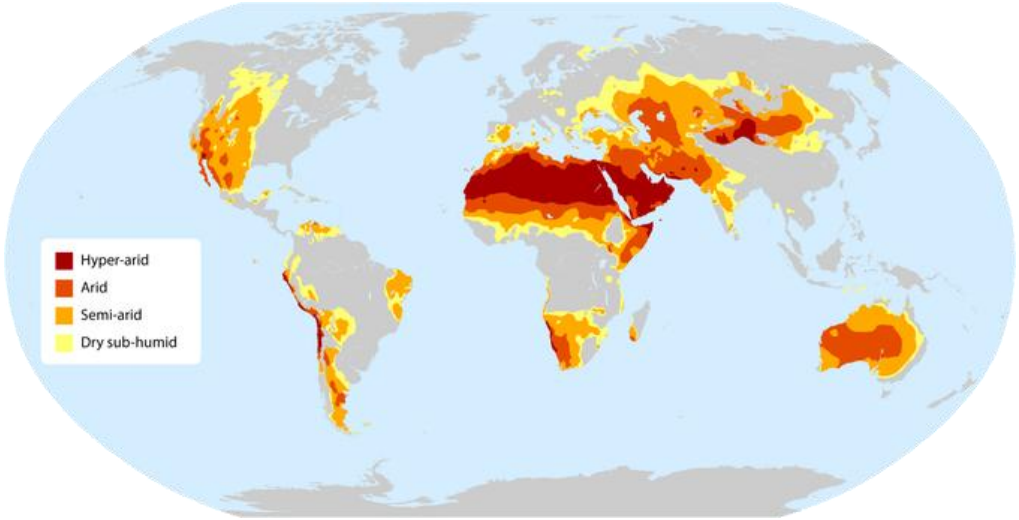
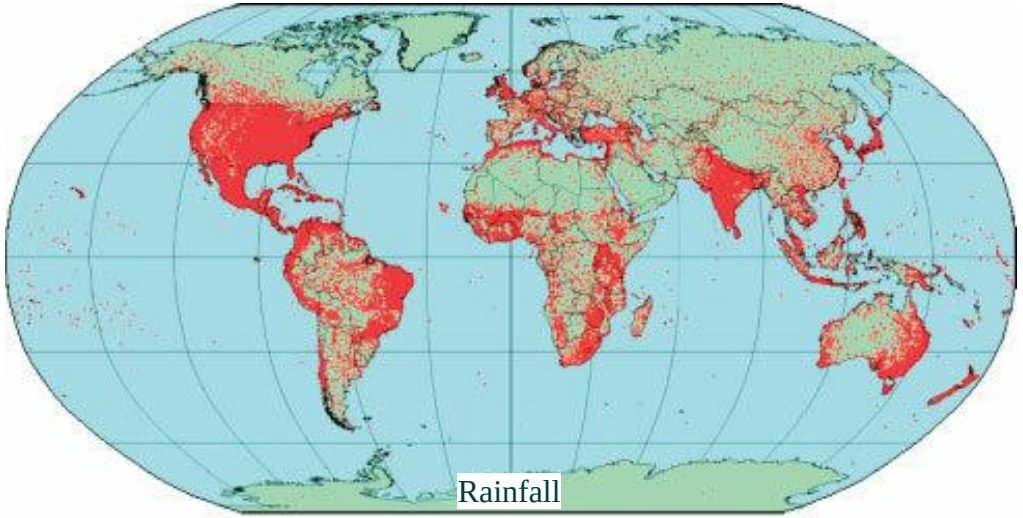
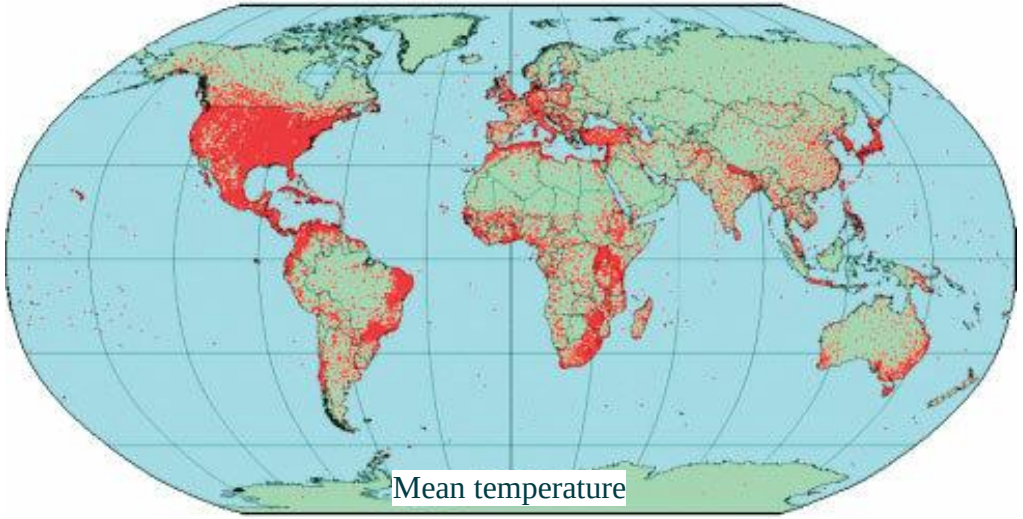
The world's drylands and subtypes



https://www.fao.org/dryland-forestry/background/what-are-drylands/en/

Locations of weather stations





Hijmans et al. (2005)

* There is a correlation between areas experiencing severe water scarcity and areas where essential water monitoring data are lacking.

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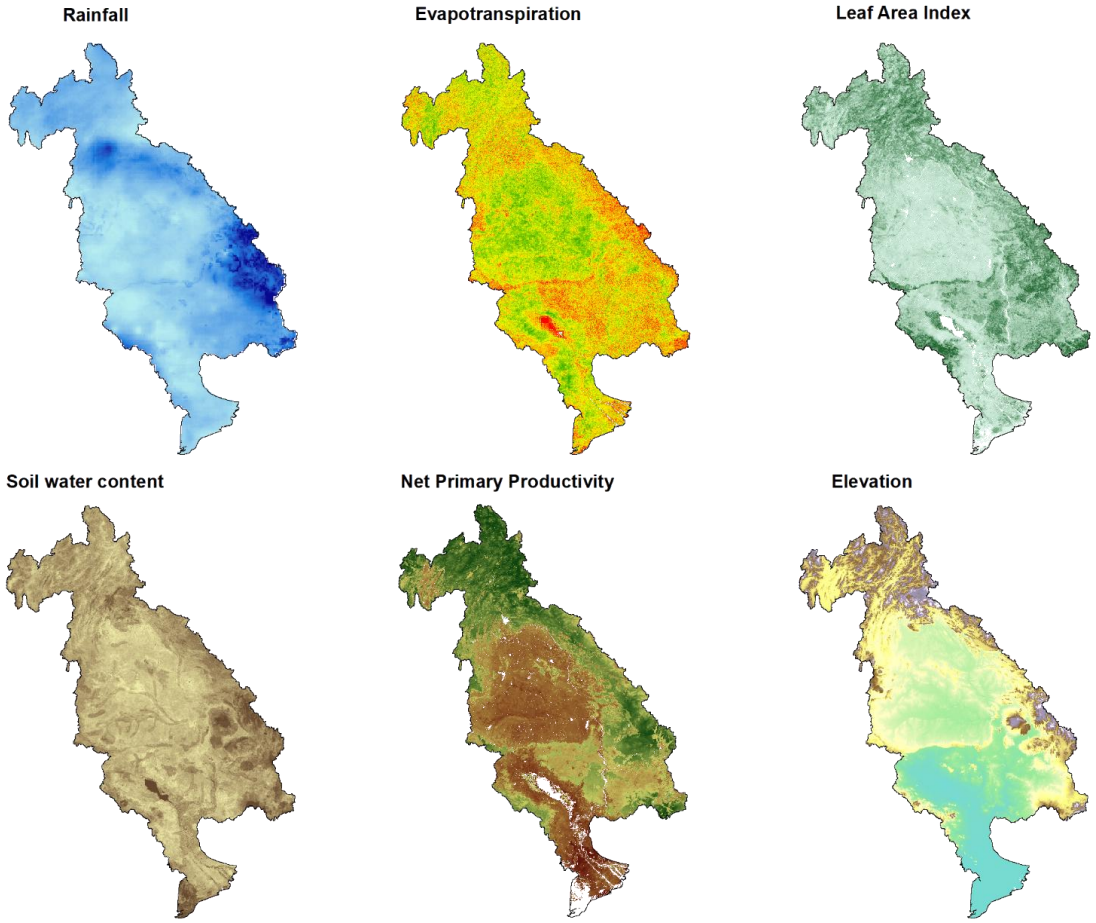
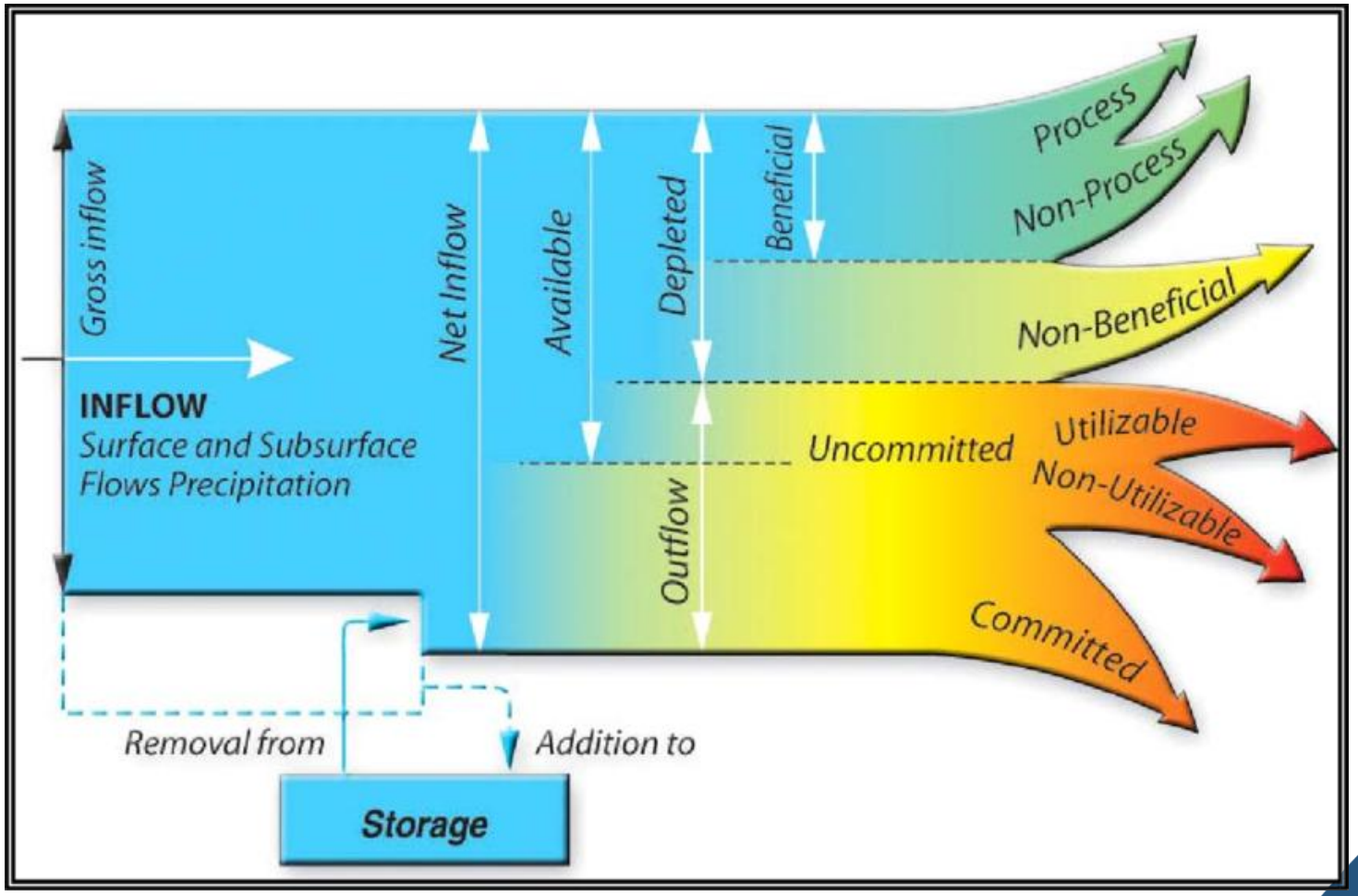
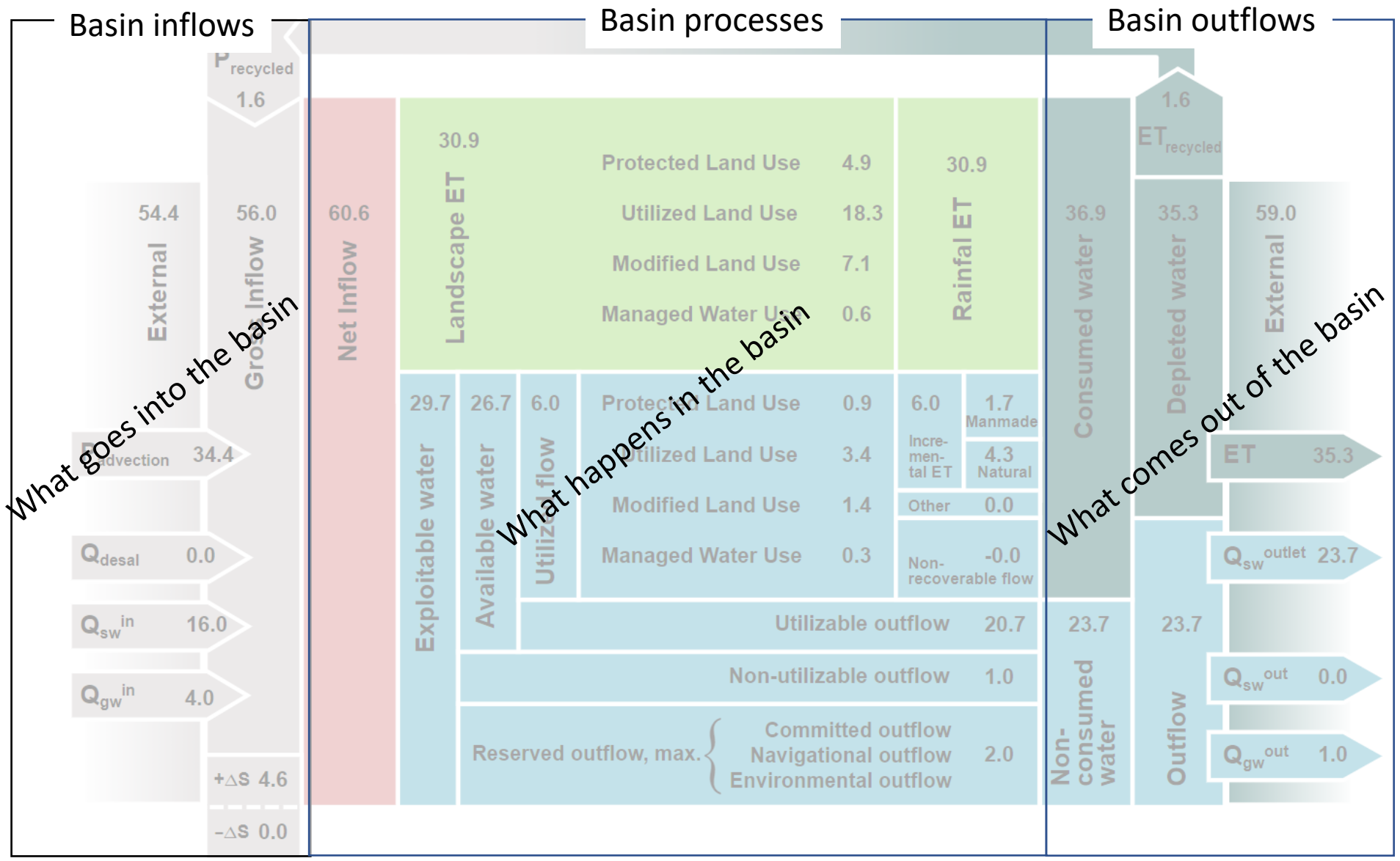
2. Our approach



1. Navigate data scarcity challenge
2. Translate data into easily accessible and actionable knowledge
3. Capacity building

3. WA+ Methodology





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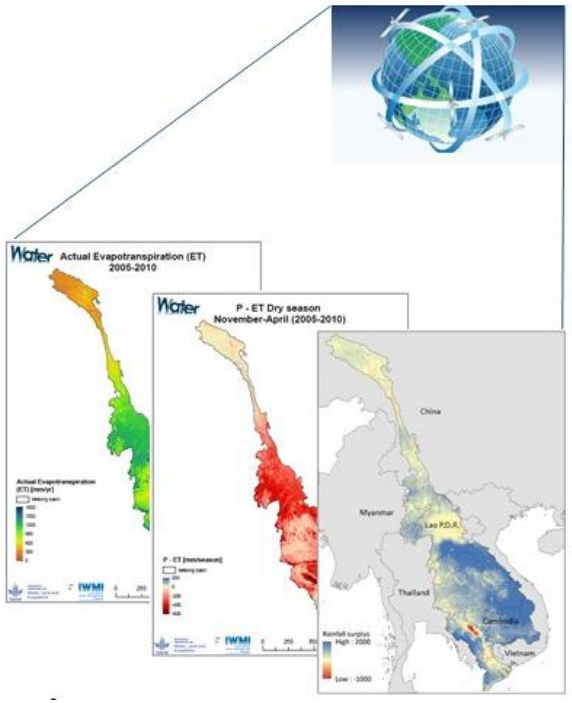
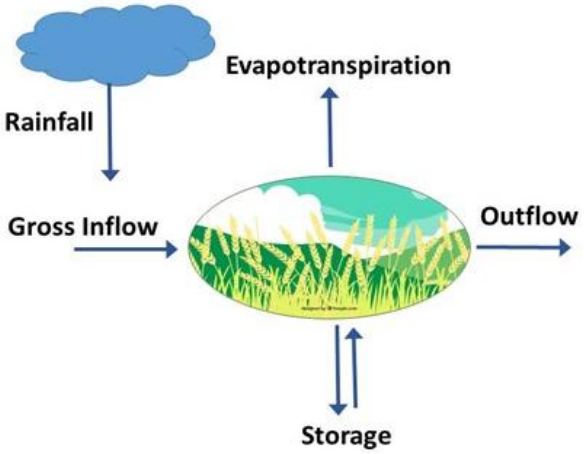


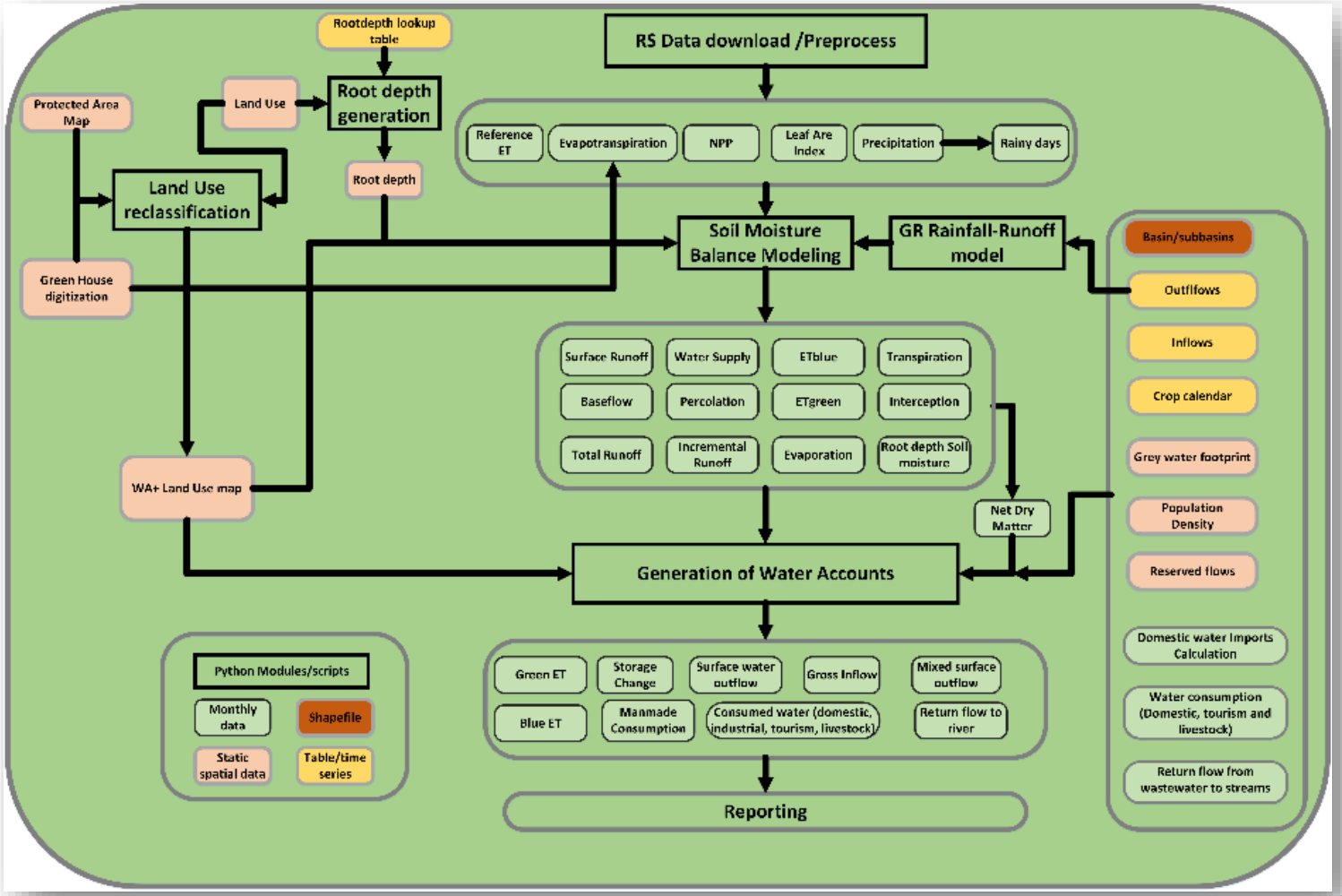


Remote sensing inputs

Water Balance Parameters

Indicators

3. WA+ Methodology



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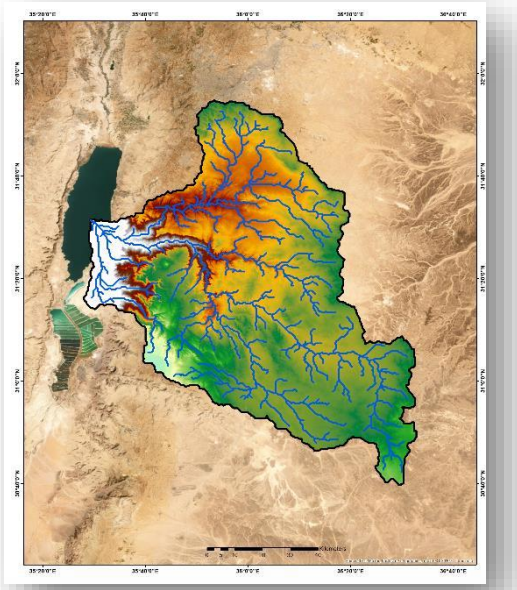
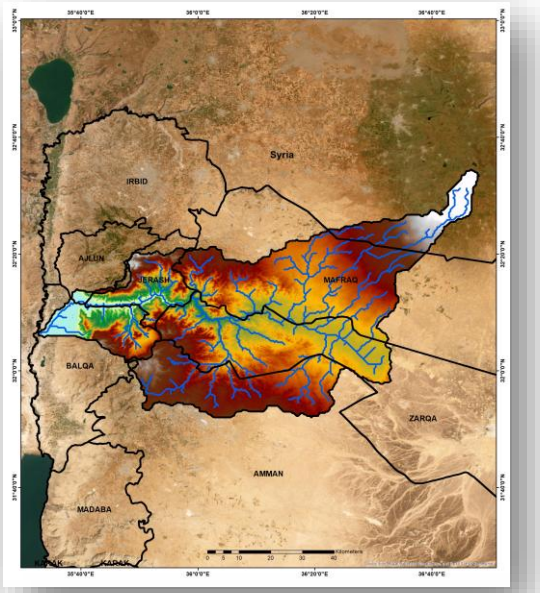
4. WA+ Applications in MENA

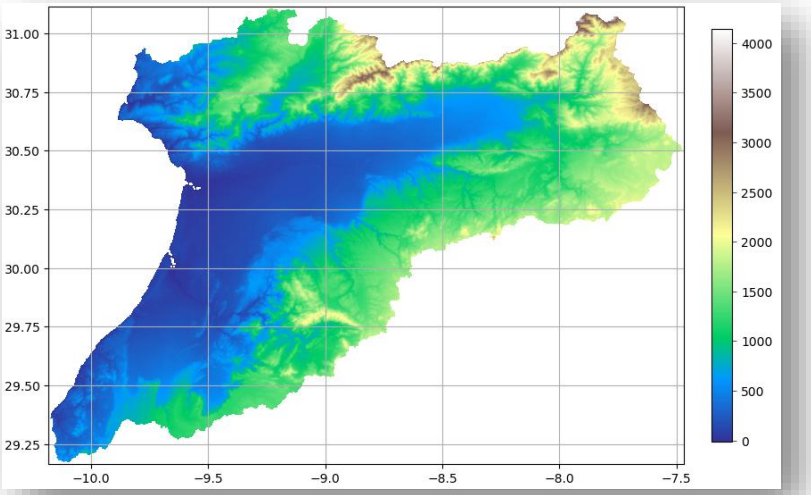
Mujib

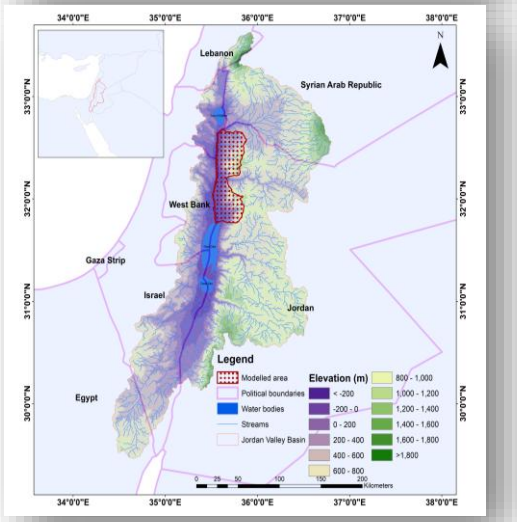


Amman-Zarqa

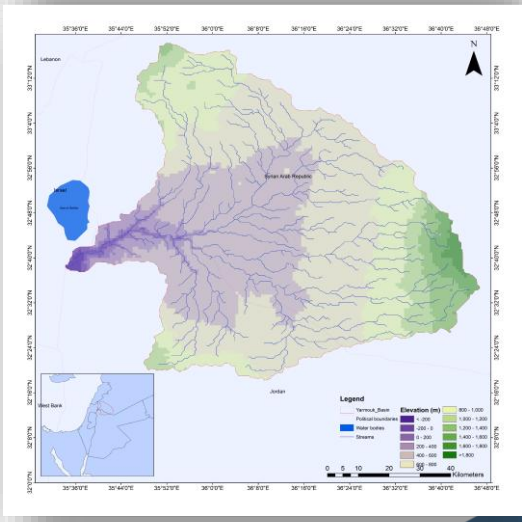


Souss Massa





Jordan Valley



Yarmouk

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5. Examples of Added value of WA+

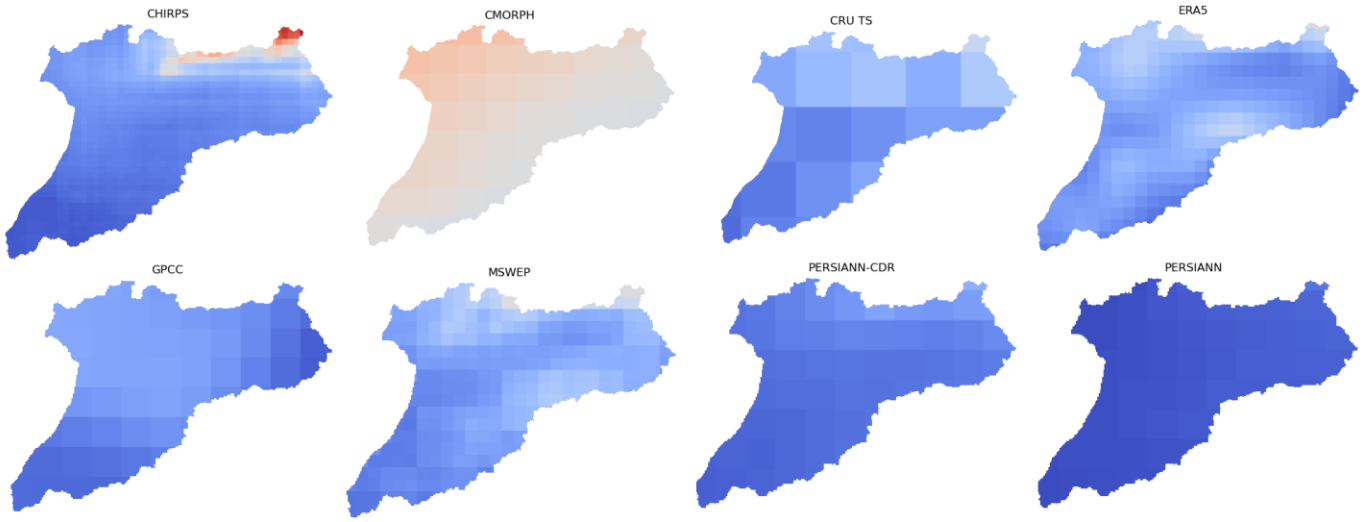
5.1 Overcomes data scarcity

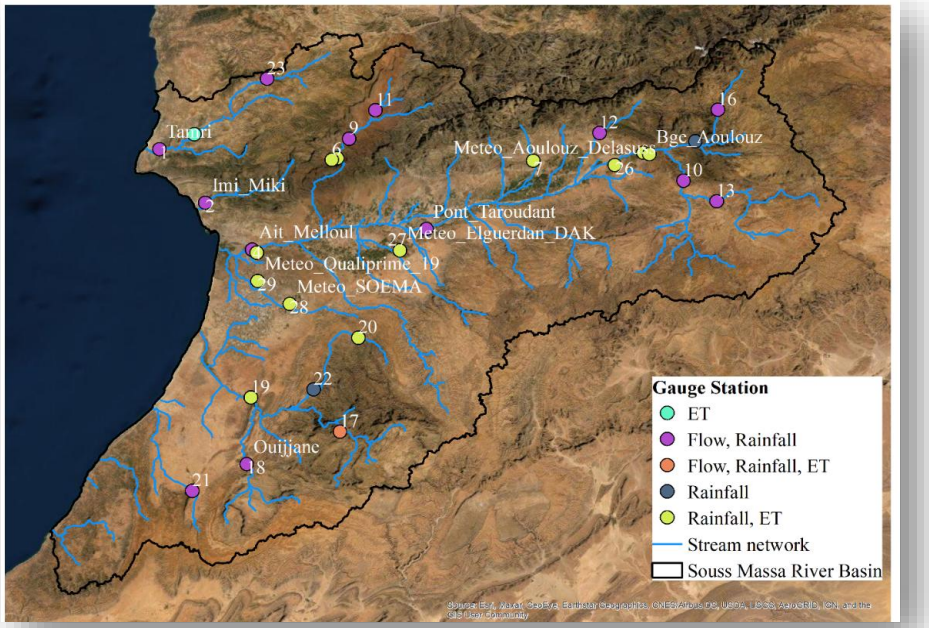
5.2 Offers unparalleled spatial coverage of water information

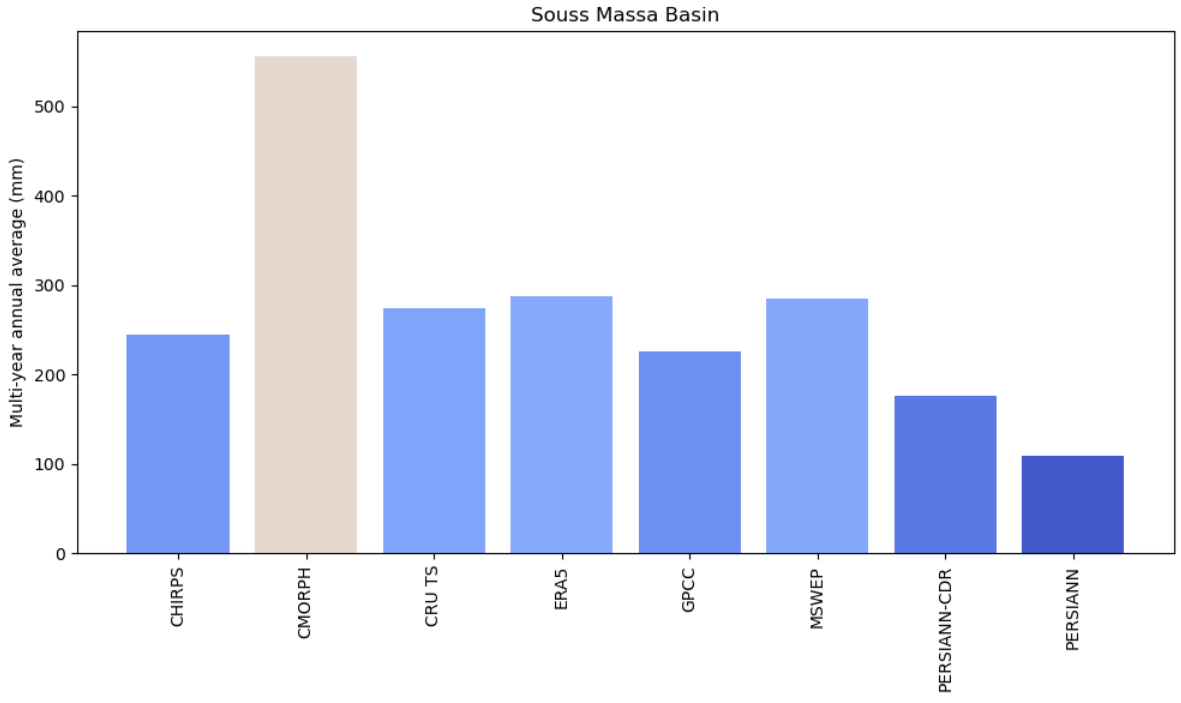
5.3 Support data-driven decision making:

- Water budgeting" in Jordan
- Strategic water investment/planning in Morocco

5.1 Overcome data scarcity







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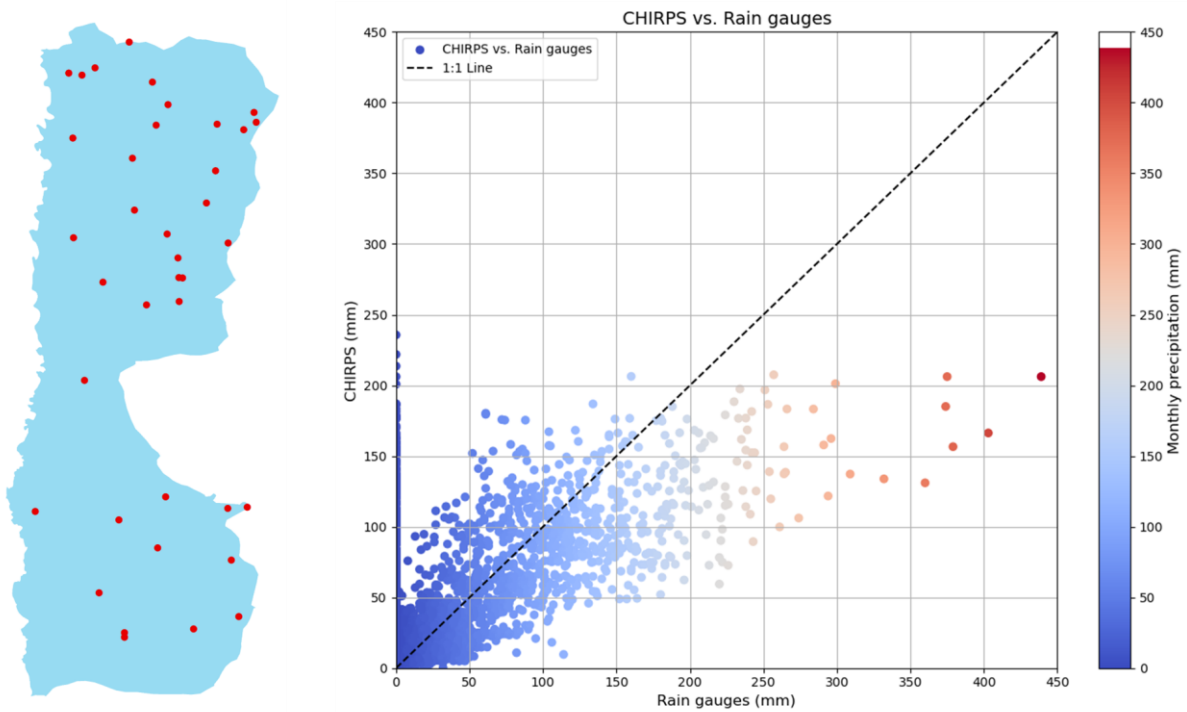
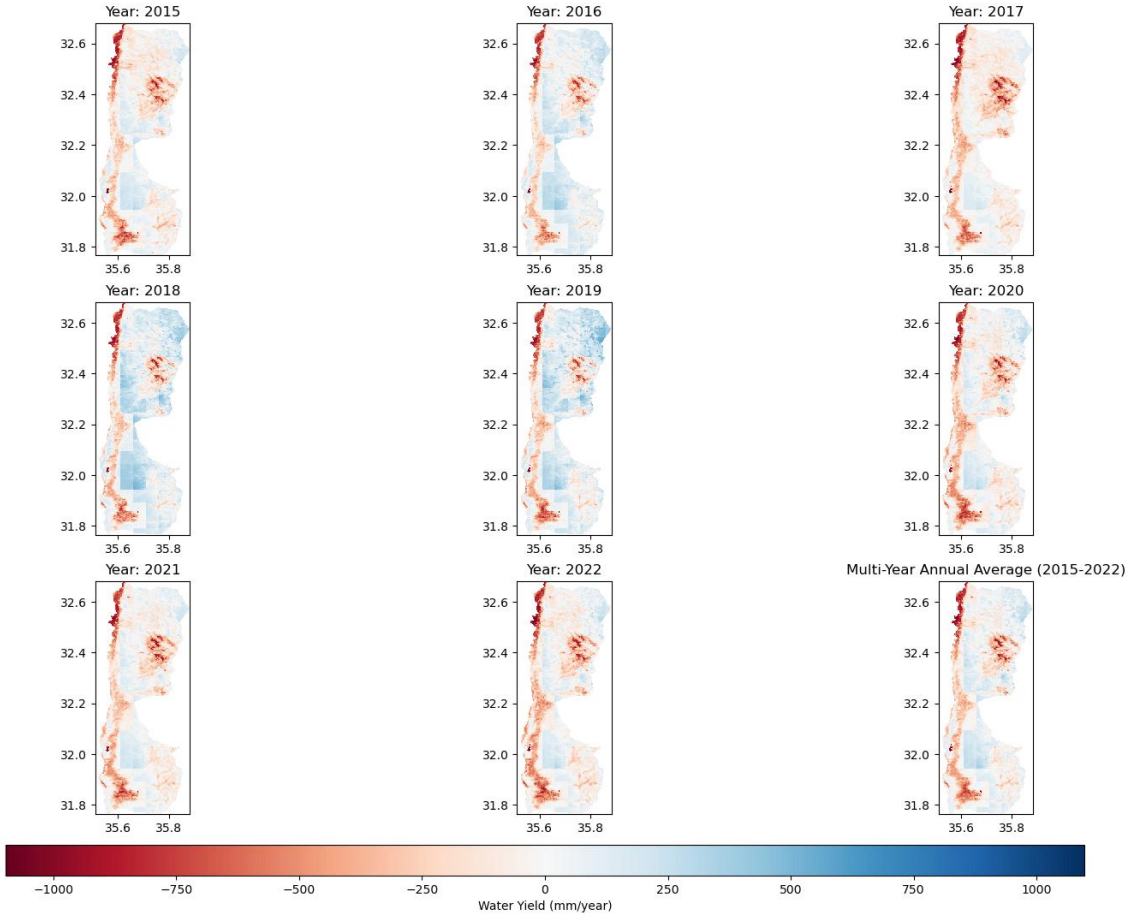


Location map of 38 rain gauges used to validate CHIRPS 2.0 precipitation production and a 2-Dimenstional scatter plots of the CHIRPS precipitation estimates against 38 rain gauges data in the Jordan River Basin.

5.2 Unparalleled spatial coverage of water information



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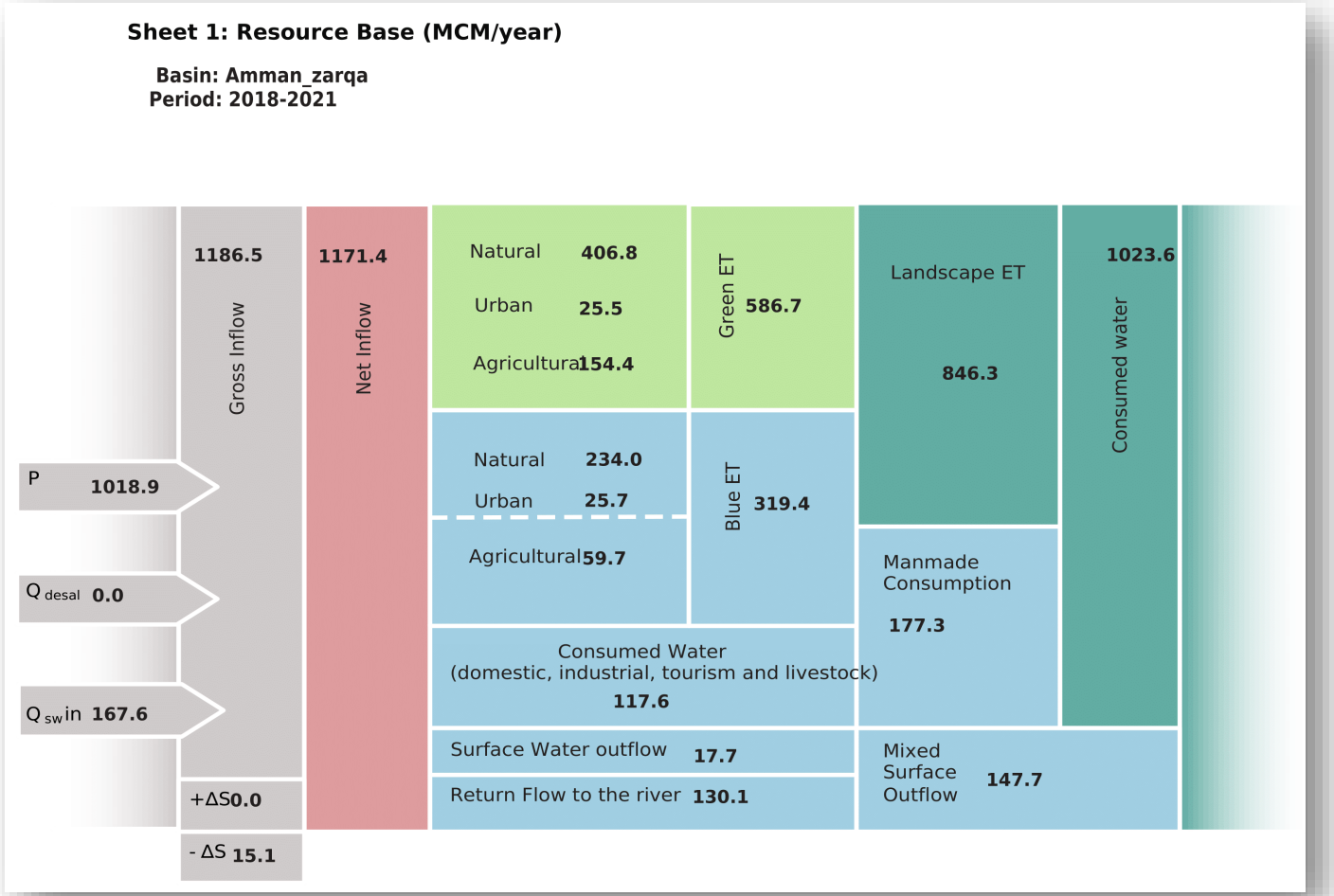
5.3 Data-driven decision making

> Water budgeting in Jordan



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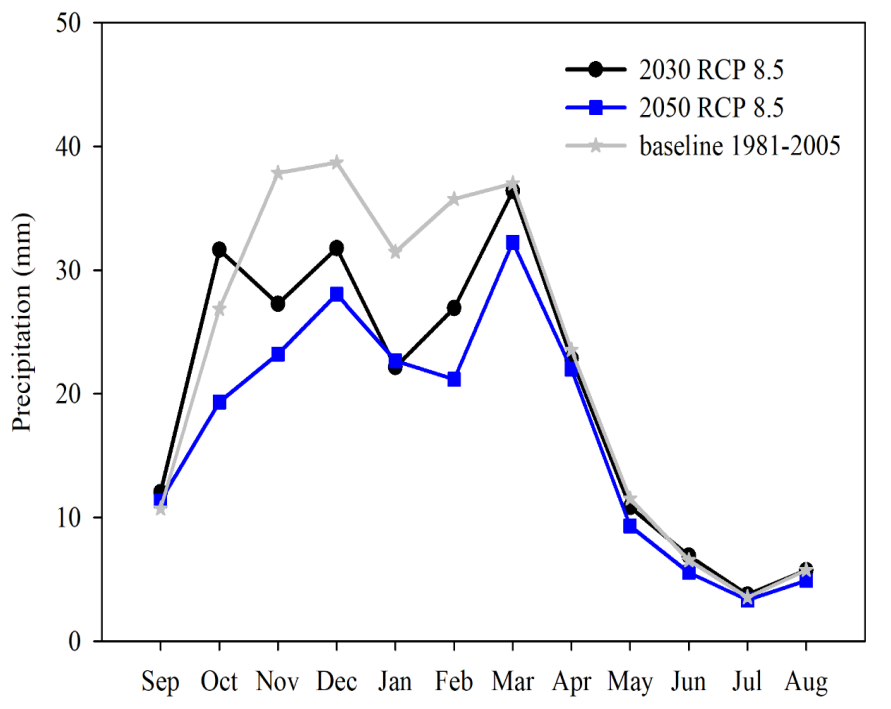
5.3 Support data-driven decision making

> Strategic water investment/planning in Morocco



Very little water is available for further use annually in the basin under projected climate scenarios.

Efforts include:

Two new large **dams** (capacity of 300 MCM) and several small and medium dams;

Inter-basin transfer to Agadir (31 MCM/year);

Completion of a major **seawater desalination** plant in Agadir (275,000 m^3/day).

Wastewater reuse and aquifer recharge

Will these efforts meet the needed demand?

Only a fraction of the projected 2030 demand is met (**22% or 2.45 km^3**)

Challenge: How to meet rest 78%?

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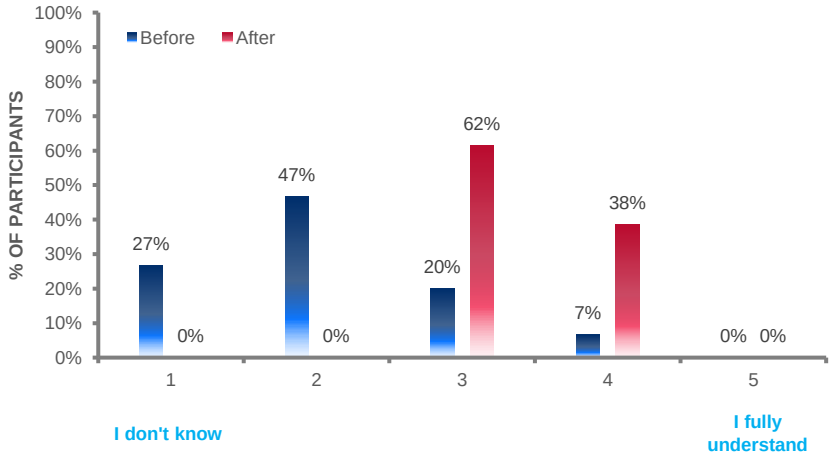
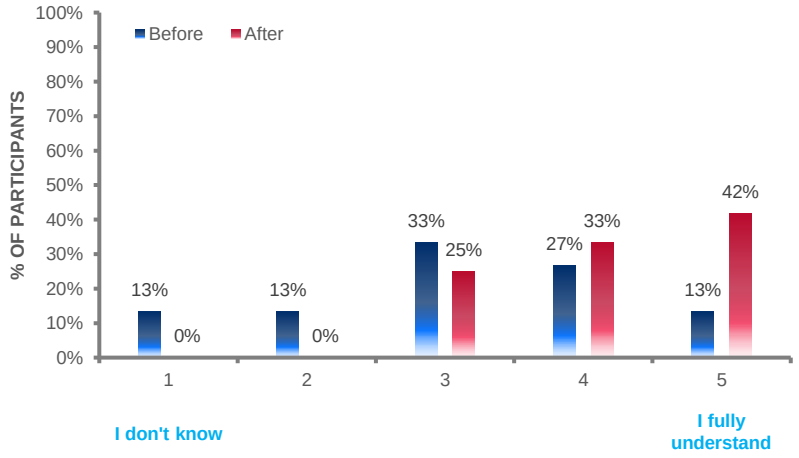
6. Capacity building – WA+ skills

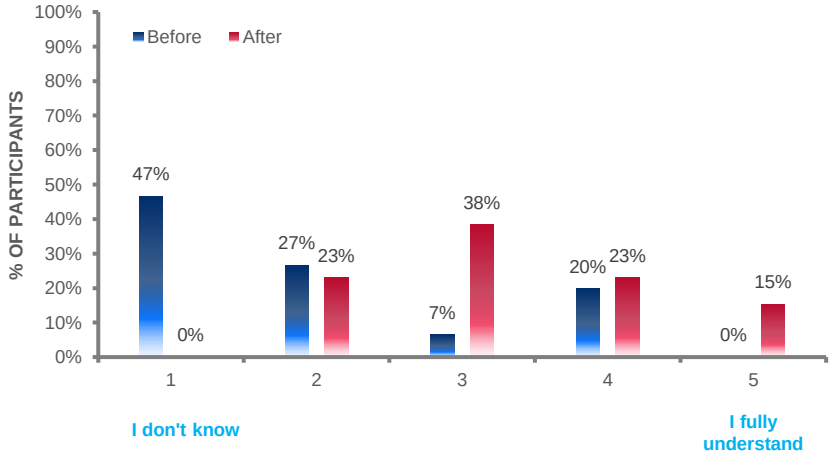
Water accounting plus general knowledge assessment

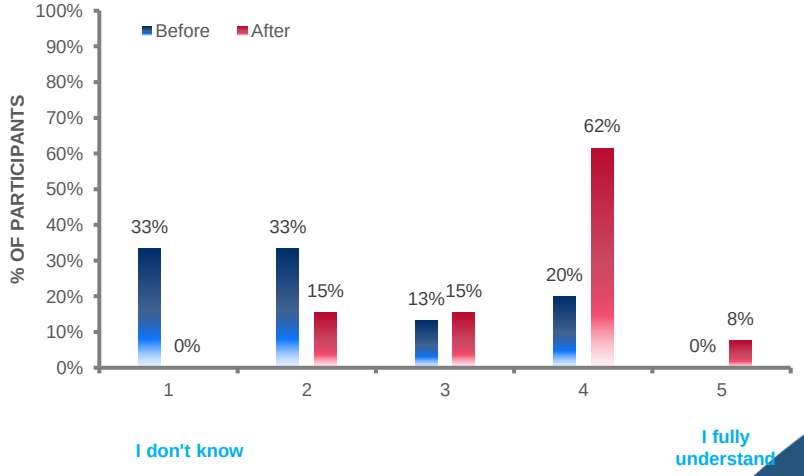




Knowledge in Geographic Information Systems Required for WA+

Handling WA+ Python scripts





Handling Remote Sensing Data Required for WA+

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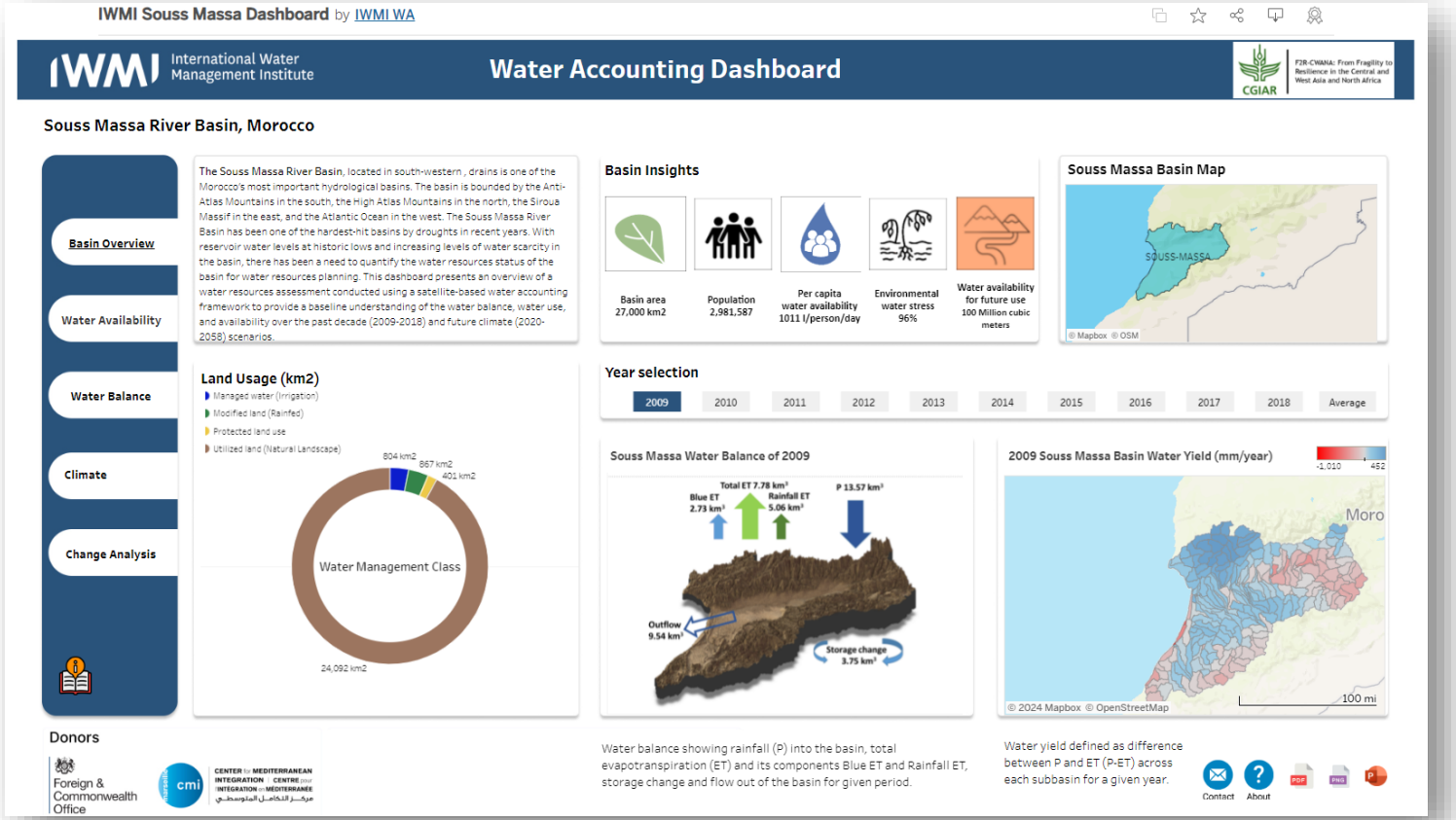
6. Capacity building - Digital solutions for data sharing



[Souss Massa Dashboard]

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