

Working with NASA/ International partner/stakeholder perspective



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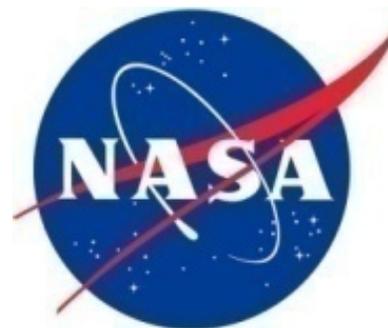
MAWRED-

(the source in Arabic)

Modeling and monitoring
Agricultural and **W**ater
Resources **D**evelopment



USAID
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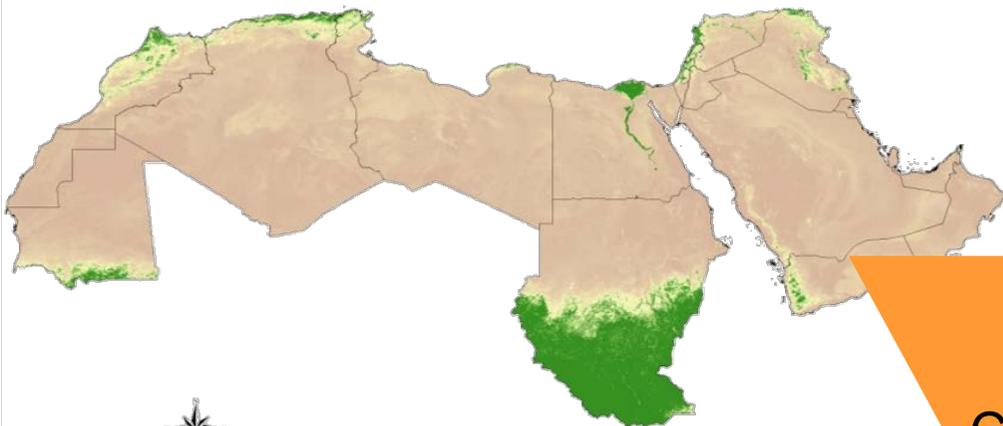


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MAWRED – empowering decision-makers

Land surface Information



Climate Data

Present:

- Global re-analysis
- Satellite data

Future:

- Regional re-analysis
- Regional climate scenarios

Water Model
+
Crop Yield Model
+
Regional Climate Model

Regional and National Outputs (maps and data)

Key Crop Maps

Evapotranspiration

Water used for Irrigation

Groundwater Dynamics

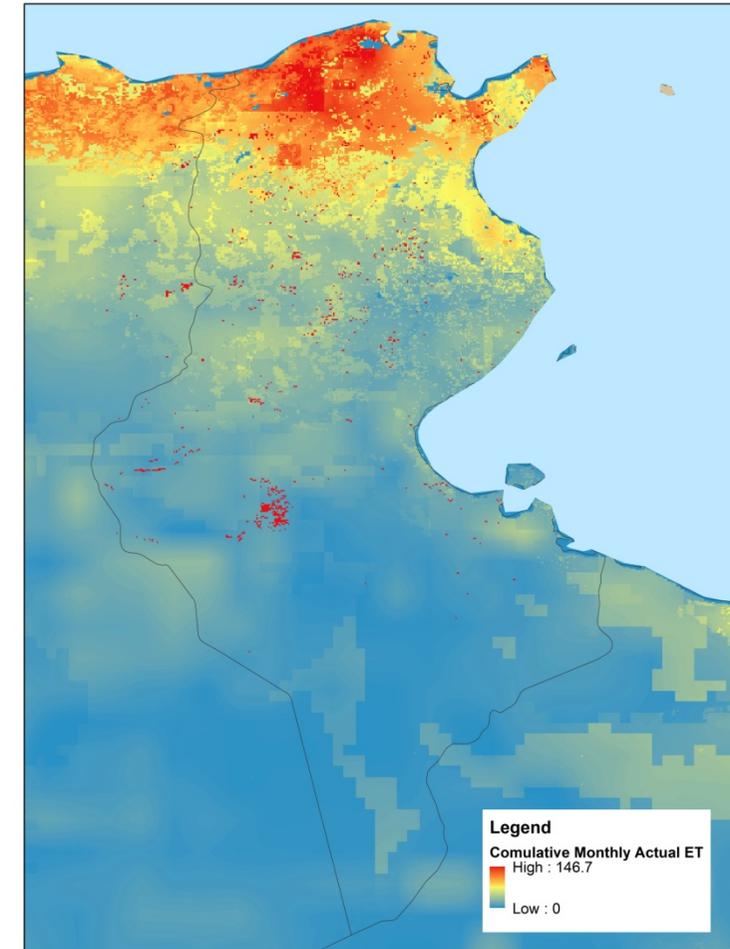
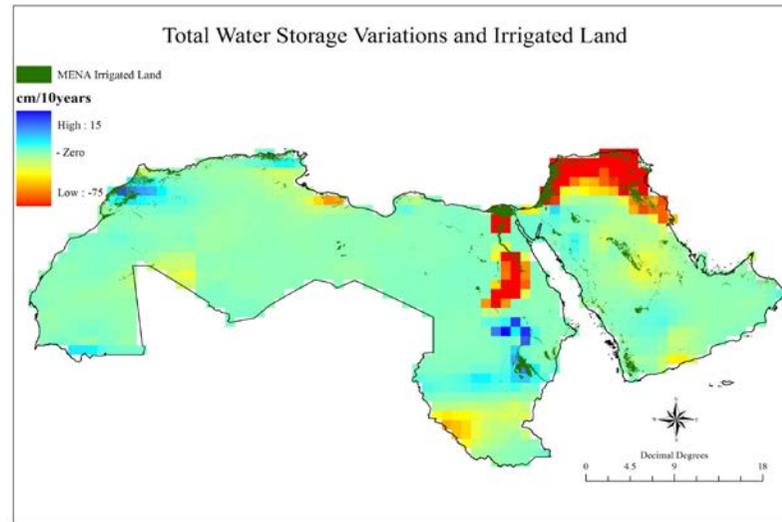
Crop Yield Data

Drought monitoring

Climate Change Scenarios

MAWRED - Models and data

- MENA LDAS
LIS 7
- GRACE
- ALEXI/disALEXI
- decision tree/SVM
- DSSat
- SEBAL
- WRF



Supporting CC work

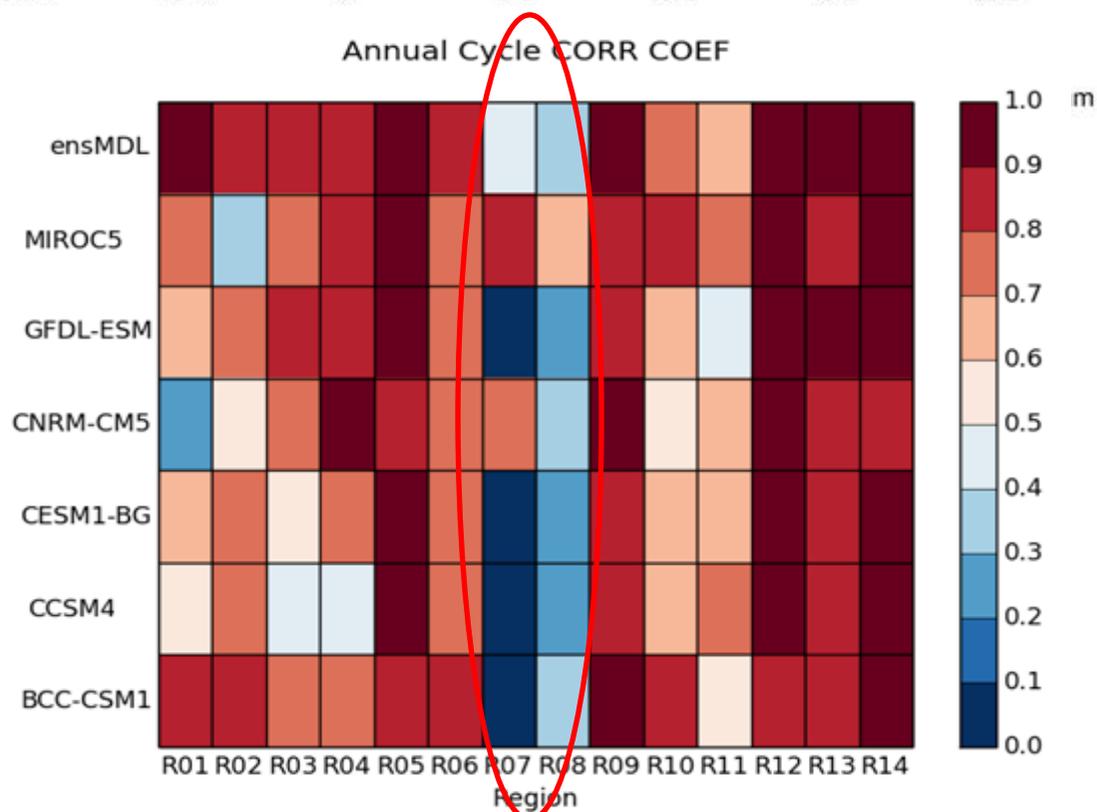
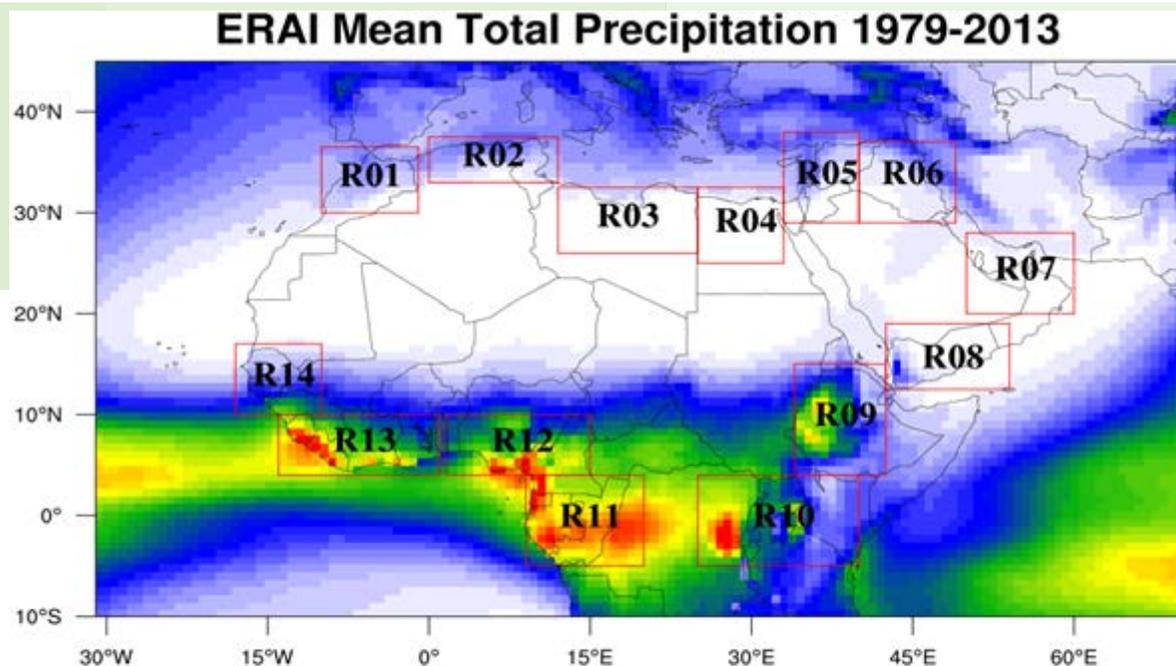
Tool : NASA-JPL RCMES

GCMs :

- CCSM4
- CESM1-BGC
- GFDL-ESM
- bcc-csm-1-m
- CNRM-CM5
- MIROC5

14 sub-regions for atmospheric variables

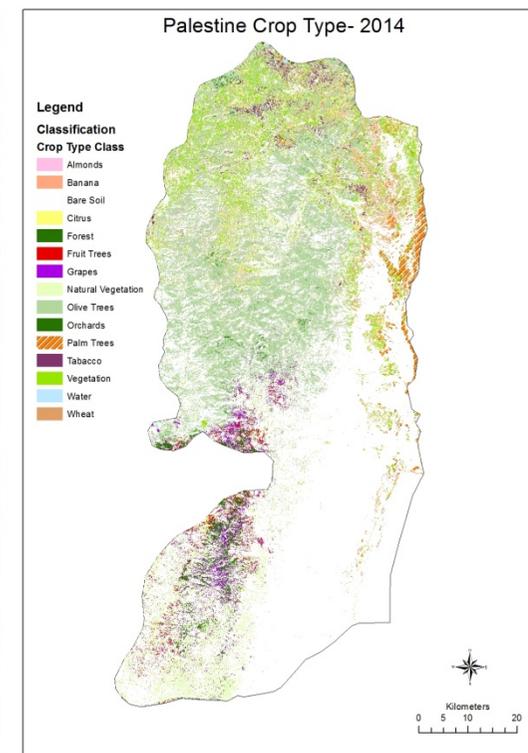
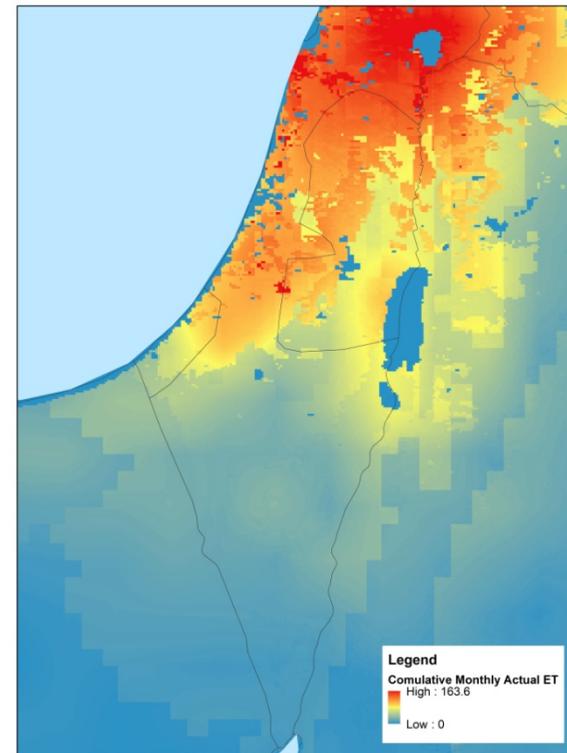
Received great support



Successes and failures

Successes

- USAID support has been vital for success and gratefully acknowledged
- LIS 7 is producing good results which will be even better with refinement of irrigation module
- New irrigation and crop maps and national and regional scale – invaluable for modeling and decision-makers
- CC dynamic downscaling bringing important new insight

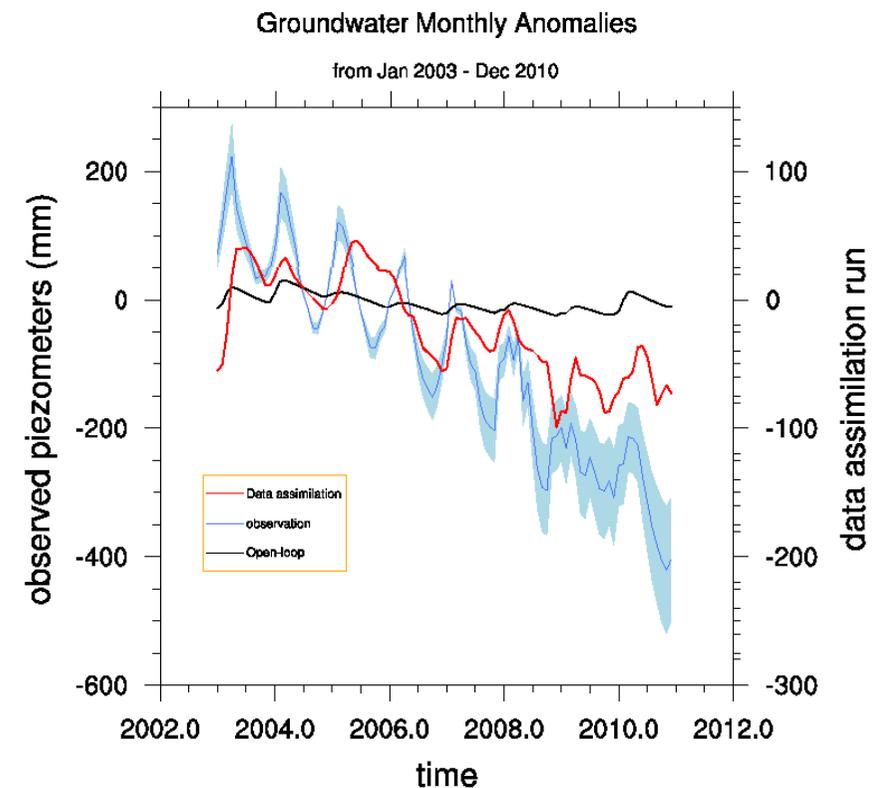


Successes and failures

Failures

- MENA-LDAS – expenditure of time re-defining basins, bedrock depth, limits of any irrigation module
- Using GRACE for large parts of the MENA region as predominantly confined or coastal aquifers
- Many countries are so small requiring different modeling and data needs

Monthly Groundwater Change in Northern Jordan



Working with NASA – what works and does not

What works

- Access to immense knowledge, cutting edge research
- Patient support and kindness well beyond any possible expectations
- Appreciation and respect for role of local experts in refining models and data to suit different environments

What does not work

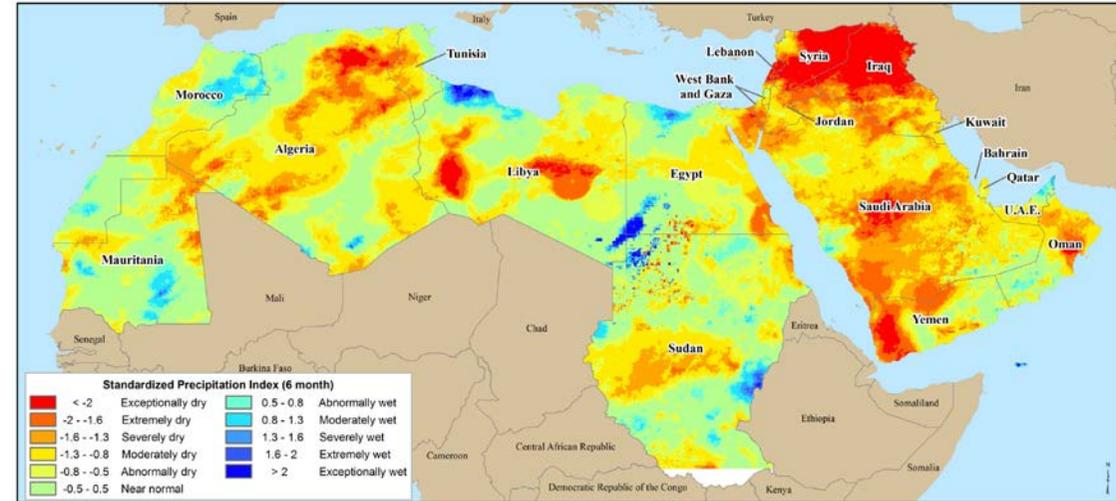
- NASA's view is global or US based so transferring some models and data sets requires extensive re-working
- Different depts and different budget centers make it tricky to navigate access when project is across disciplines
- Impact centered applications require established models

Lesson learned

- Access to observational data is vital for modeling and verifying data sets – need to establish local partners/trust to facilitate this
- Working closely with donors is vital as research and application are quite different
- Water is always managed at national/sub-national level so regional capabilities are of limited use
- Finding excellent researchers in a region is worth the challenges but also manage expectations of achievement

Future directions

- Funding in many ways dictates direction
- Drought monitoring and early warning systems are vital and requested by every country we work in
- Vital to work with NASA, NOAA, UNL, NOAA USDA etc if we are to achieve success



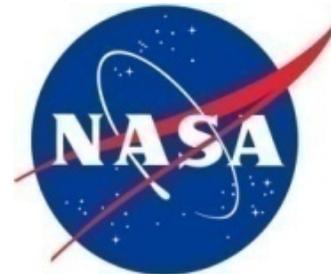
More generally - NASA's models and data are essential in so many areas of the world – awareness of most important water issues vital to determine focus

Researchers are so in awe of NASA that they feel 'not worthy' to partner

Thank you



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