

SYMCRAU

Syndicat mixte
de gestion de la
nappe de la Crau



INRA
SCIENCE & IMPACT

Montpellier
SupAgro

HYDROFIS®

Groundwater resource management facing global changes: from the European Directive to the local action plan for the Crau aquifer (SE France)

**Baillieux A., Alcazar C., Villesseche D., Monière C., Trolard F., Bourrié G., Brochier C.,
Olios A., Chanzy A., Ruy S., Charron F., Belaud G., Fénart P.**



DÉPARTEMENT
**BOUCHES
DU RHÔNE**



Région
Provence
Alpes
Côte d'Azur

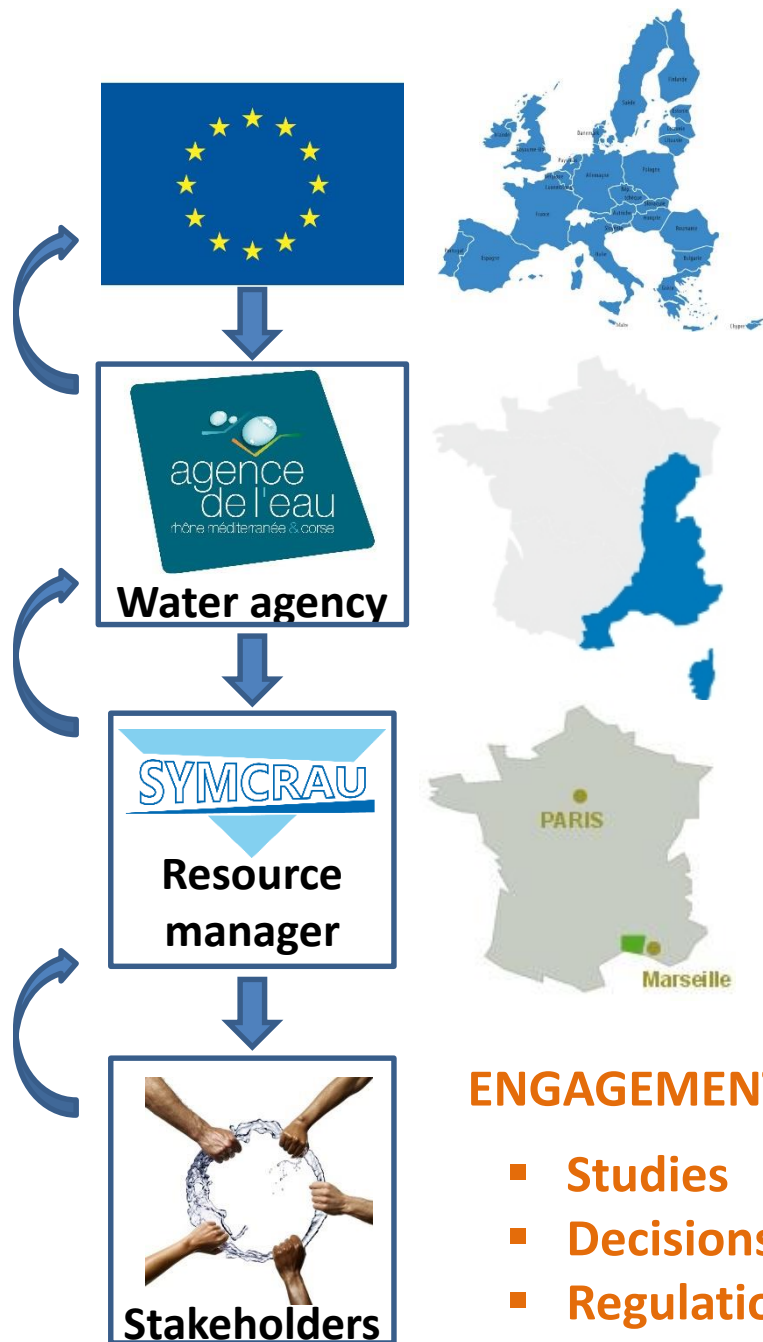


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WATER FRAMEWORK DIRECTIVE (2000) GROUNDWATER DIRECTIVE (2006)

WATER DEVELOPMENT AND MANAGEMENT MASTER PLANS (SDAGE)

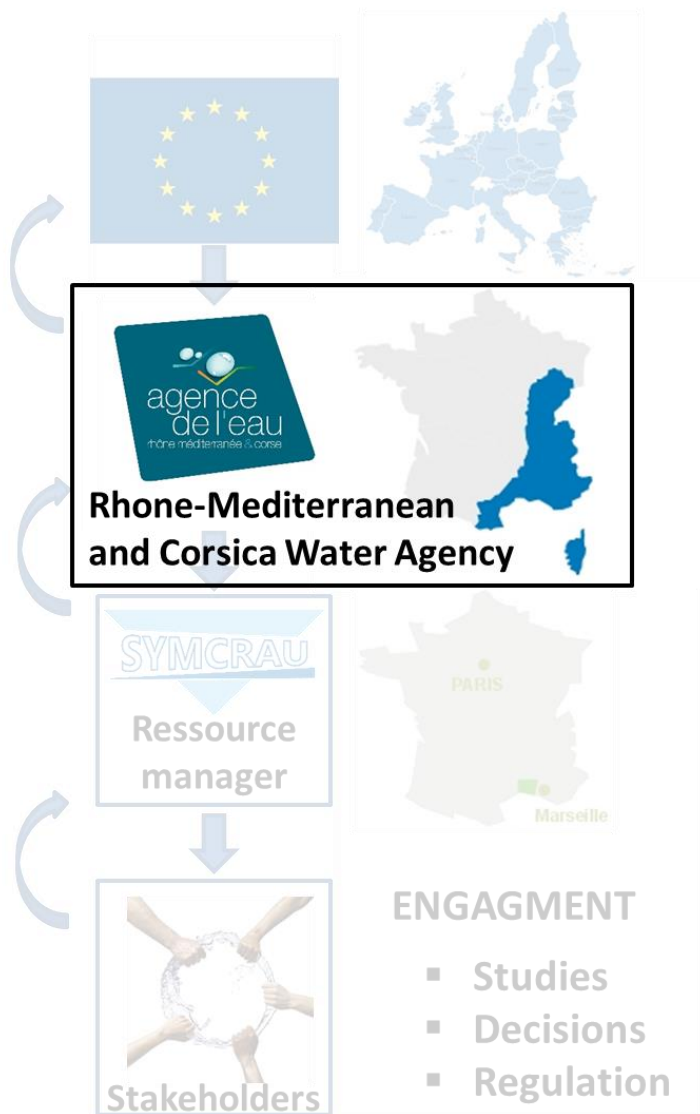
- Sets out the environmental objectives
- Determines the orientations
- Updated every six years

LOCAL ACTION PLAN

- Assess the local actions
- Identifies the project leaders (contract)
- Defines financial means

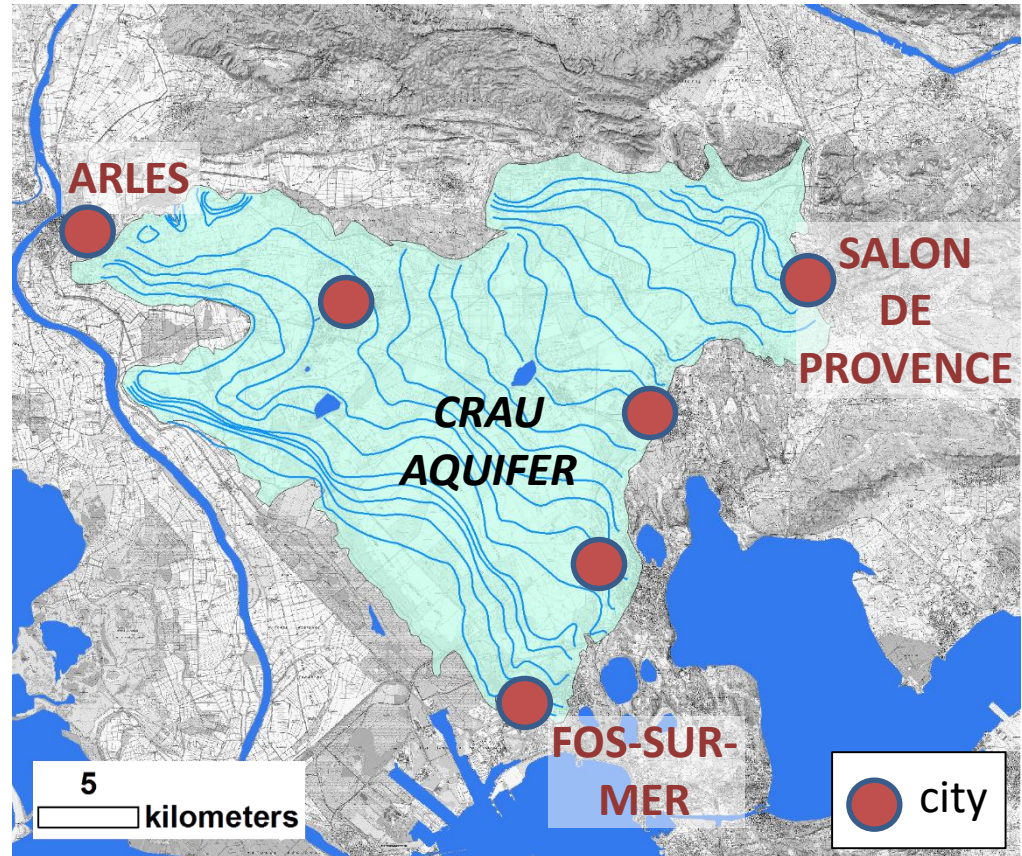
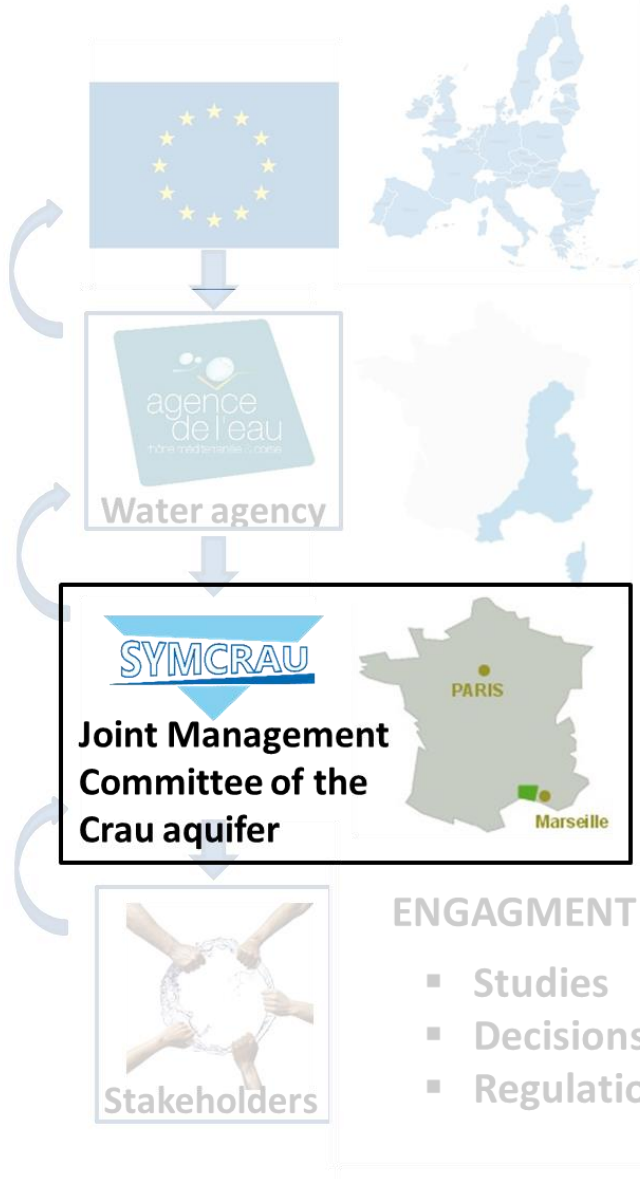
ENGAGEMENT

- Studies
- Decisions
- Regulation



WATER MANAGEMENT MASTER PLAN FOR THE RHONE-MEDITERRANEAN DISTRICT (2016-2021)

GROUNDWATER RESOURCE OF THE CRAU PLAIN



SYMCRU = committee of stakeholders in charge of the groundwater resource management

How are **global change issues**
taken into account
in the **action plan** for the **Crau aquifer**?



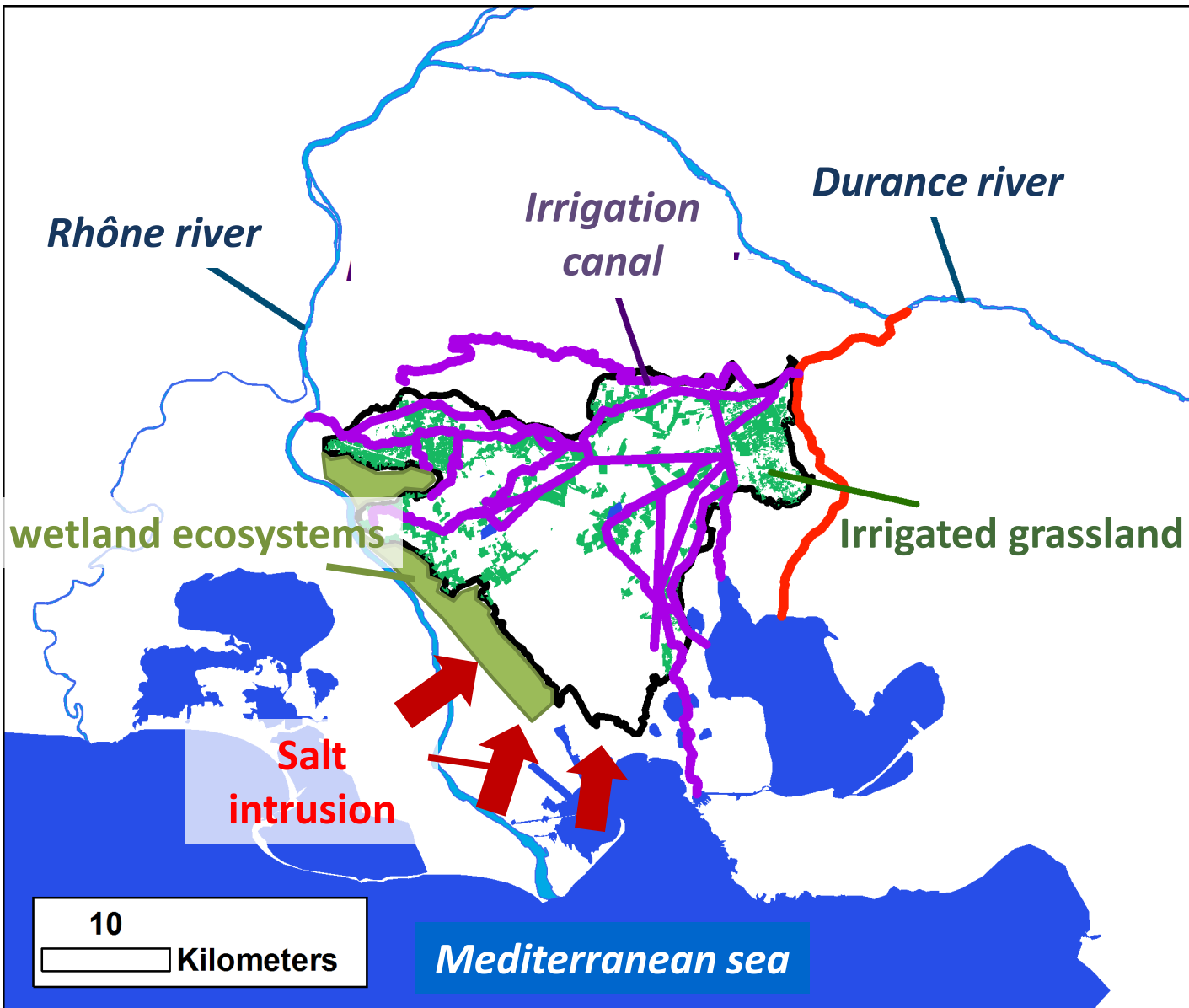
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SITUATION OF THE CRAU AQUIFER



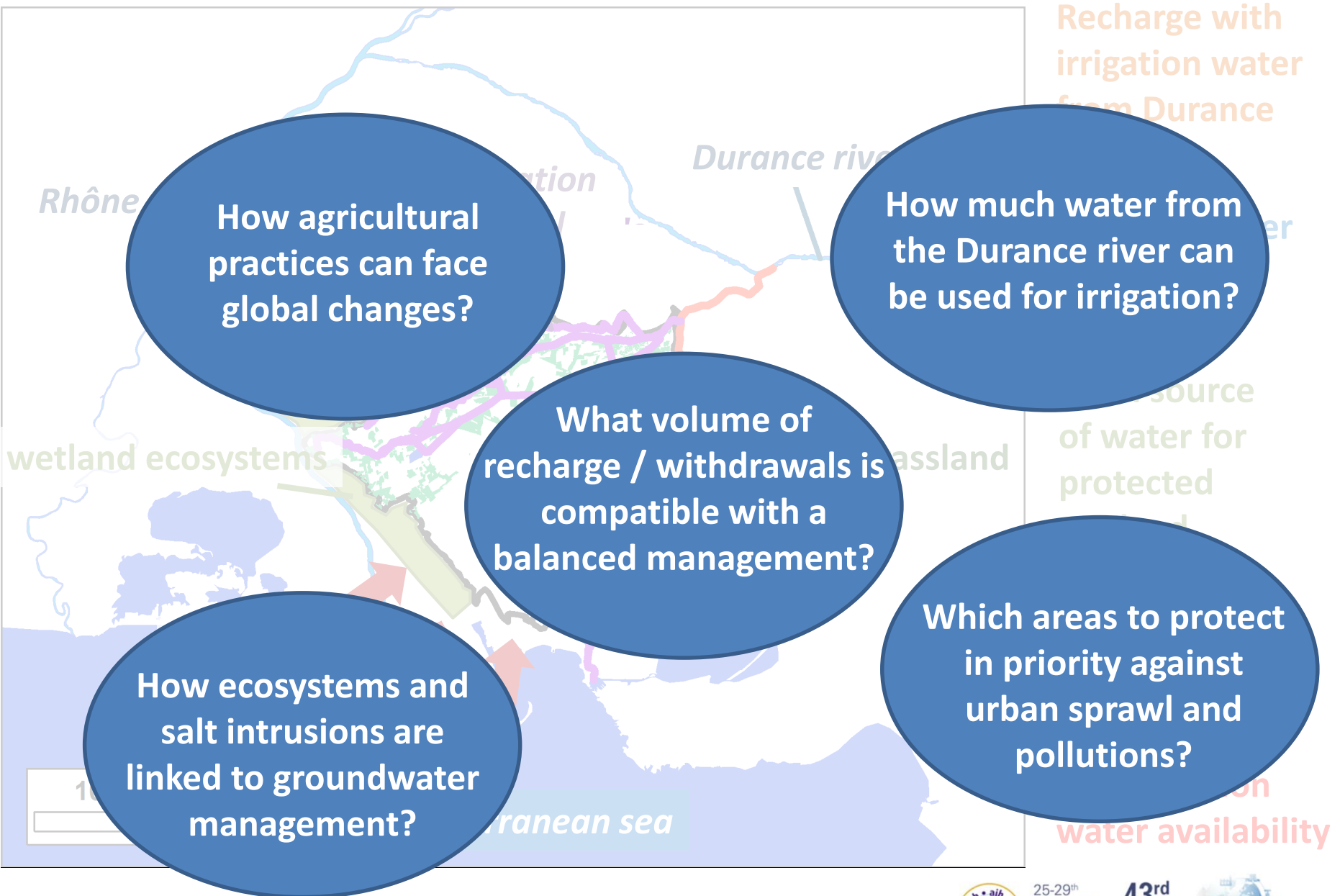
Recharge with
irrigation water
from Durance
river

Supplies water
for 300 000
inhabitants

Main source
of water for
protected
wetland
ecosystems

Threatened by
urban sprawl,
salt intrusion
and irrigation
water availability

SITUATION OF THE CRAU AQUIFER



Global changes issues are complex to deal with for local water resource managers and their traditional partners (publics services and consulting offices)



Need to collaborate with research institutes to improve knowledge and to develop operational tools

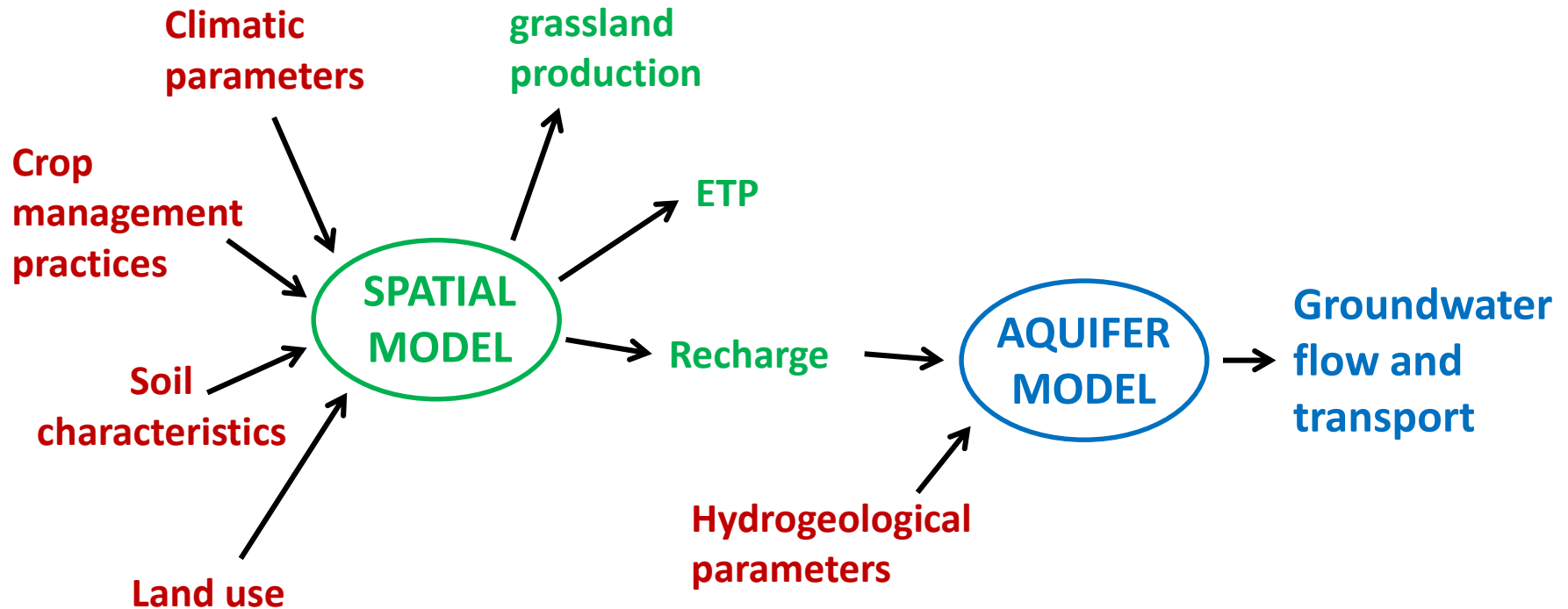
CURRENT COLLABORATION

Development of a numerical model to simulate global change impact on the groundwater resource (ASTUCE&TIC / SIRRIMED)



(INRA/Avignon University)

MODEL DESIGN



CURRENT COLLABORATION

Development of a numerical model to simulate global change impact on the groundwater resource (ASTUCE&TIC / SIRRIMED)



INRA/Avignon University

GLOBAL CHANGE SCENARIOS FOR 2030

CLIMATE CHANGE
A1B 2025-2035



LAND USE CHANGE
-12%* of irrigated
grassland



**WATER AVAILABILITY
CHANGE**
-30%* of irrigation water

*compared to reference year 2009



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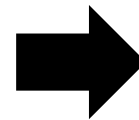
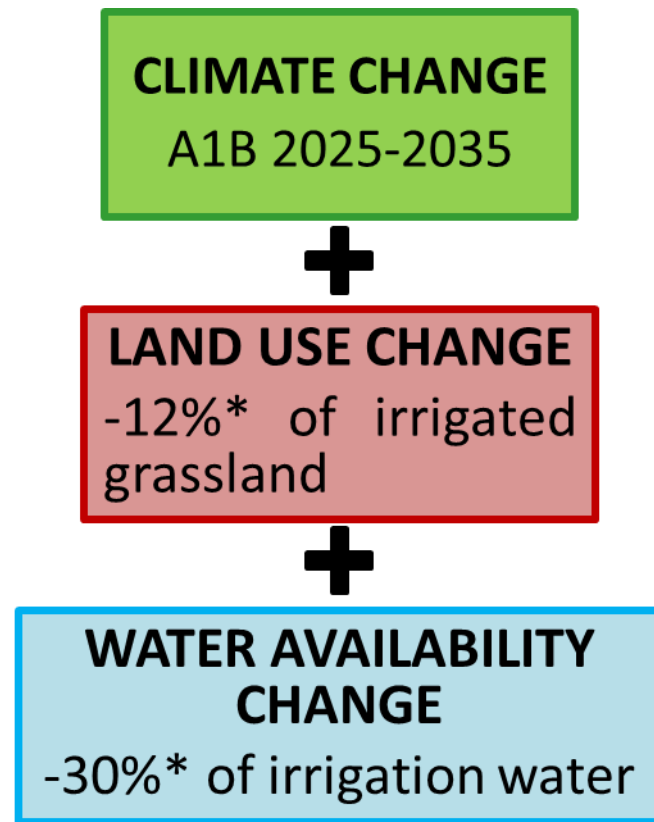
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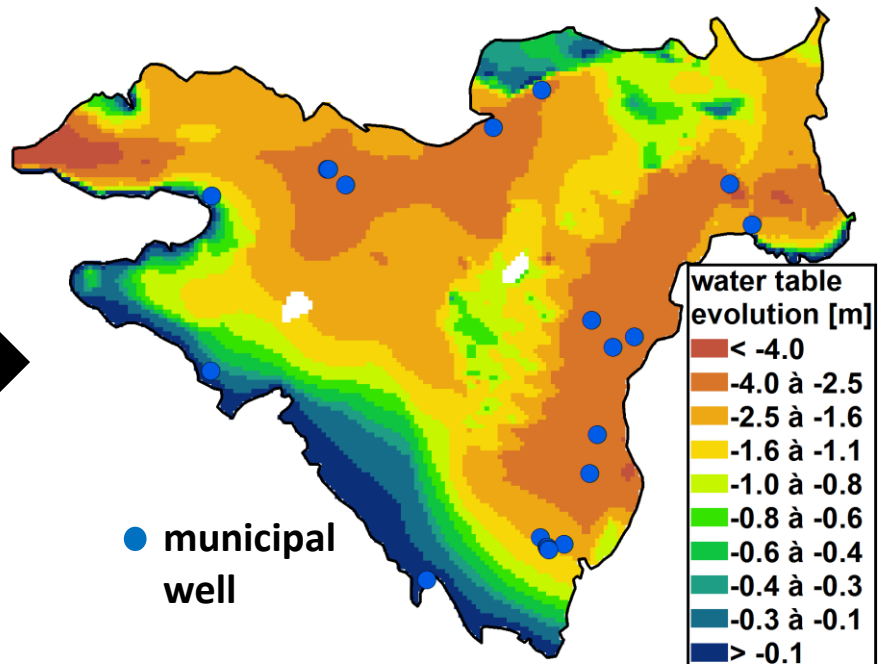


INRA/Avignon University

MAIN RESULTS



Groundwater table evolution in 2030 compared to reference year 2009



CURRENT COLLABORATION

Development of a numerical model to simulate global change impact on the groundwater resource (ASTUCE&TIC / SIRRIMED)



INRA/Avignon University

MAIN RESULTS

This study confirms the links between several compartments (water, agriculture, urbanism) that were a priori disconnected

Irrigated grasslands play a major role in the aquifer recharge (68% - 80%)

Decrease in drainage, due to global changes, may lead to a significant decrease of the aquifer storage

This project highlights the benefit of a cooperation between the resource managers and the researchers

CURRENT COLLABORATIONS

Development of a numerical model to simulate global change impact on the groundwater resource (ASTUCE&TIC / SIRRIMED)



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Identification of special protection areas to protect future of drinking water supply (project ERS)



FUTURE COLLABORATIONS

Sensitivity of groundwater to recharge and withdrawals variations & water crisis management (project SINERGI)



Sustainable adaption of irrigation practices to global changes



Monitoring and control of salt water intrusions (SIMBA)

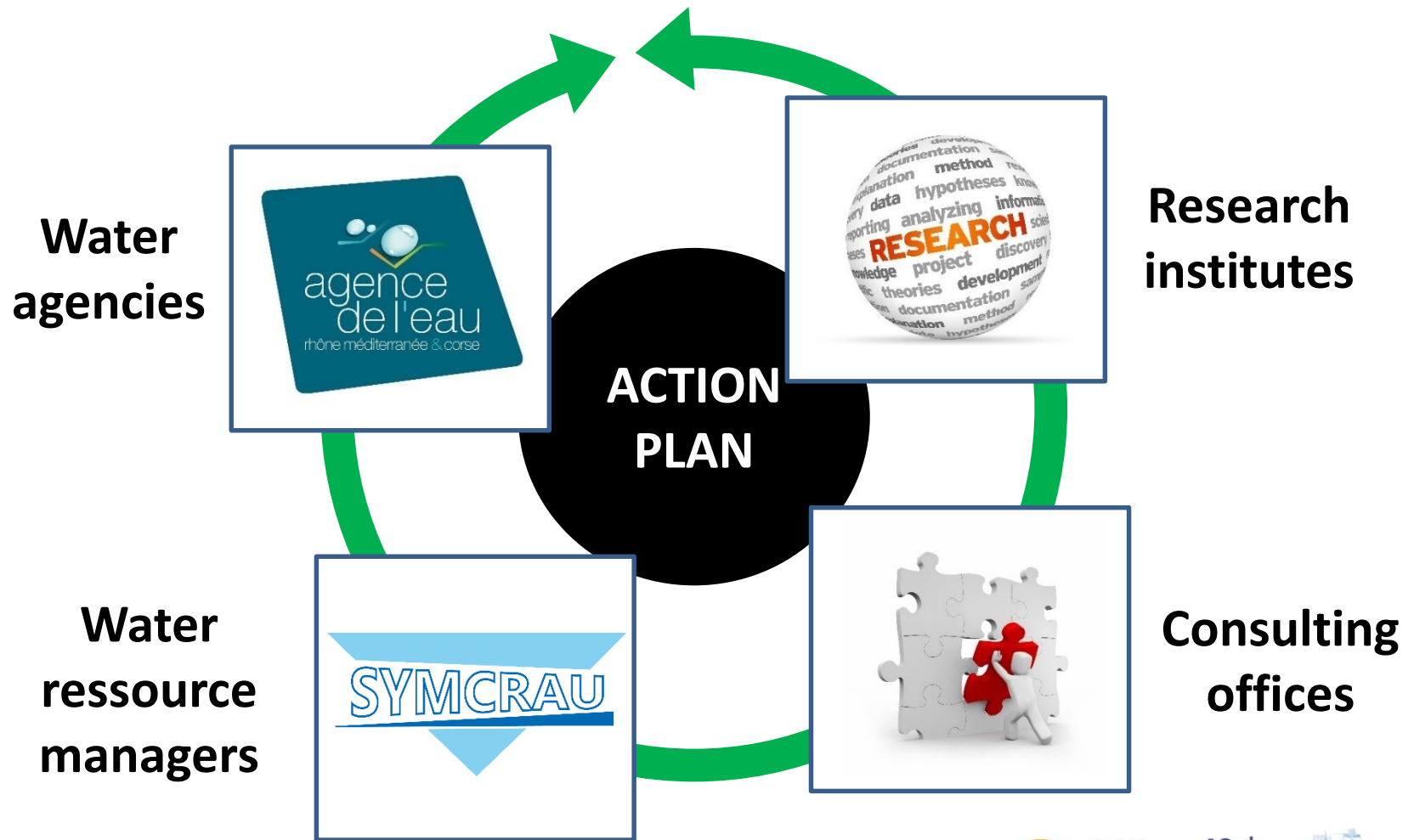


Groundwater management for wetland ecosystems protection



CONCLUSION

Global changes issues require reinforcing links between **research fields** and **operational programs**



CONCLUSION

**Local water
resource
managers**

**Research
institutes**

CONTRIBUTIONS

Field knowledge
Coordination with stakeholders
“legitimacy” for local actions
Funding for operational projects

CONTRIBUTIONS

Multiple skills
Time for method development
“Neutrality” of results
Funding for research projects

NEEDS

knowledge
suitable tools
Transdisciplinary skills
New fund sources

NEEDS

Case study
Field problematic
Coordination with actors
New fund sources

