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

ABSTRACT n° 1979

Authors:

Name | Email | Country
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Baillieux Antoine | antoine.baillieux@symcrau.com | France
Alcazar Charlotte |  | France
Villesseche David |  | France
Moniere Cécile |  | France
Trolard Fabienne |  | France
Bourrie Guilhem |  | France
Brochier Cédric |  | France
Olioso Albert |  | France
Chanzy André |  | France
Ruy Stéphane |  | France
Charron François |  | France
Belaud Gilles |  | France
Fenart Pascal |  | France

Topic: Topic 5 - groundwater, and global & climate change
Sub Topic: 
Keywords: local water policy, action plan, global change, stakeholders, Crau aquifer
Comments: 0

Date of submission: 2016-03-30

Global changes have to be taken into account to reach the objective of good water status, laid down by the European Water Framework Directive (2000/60/CE). The 2016-2021 master plan for water development and management of the Rhône-Mediterranean basin (SDAGE Rhône-Méditerranée) set the climate change adaptation as a new basic orientation of the water policy. For the local managers of water resources, this policy is difficult to implement because of a deficit of knowledge and methods.

The Crau aquifer (550 km2) supplies water for 300,000 inhabitants, for major economic sectors and for agriculture. 70% of the aquifer recharge depend on irrigated grasslands (14,000 ha) with water derived from the Durance River. Located in coastal area, the south part of aquifer is sensitive to saltwater intrusions, which are mainly controlled by recharge conditions. But at medium term these recharge conditions could be affected by global changes, e.g. the decrease of water availability from the Durance River and the decrease of irrigated grassland surfaces due to urban sprawl.

The local public manager of the Crau aquifer (SYMCRAU) has defined with the stakeholders an action plan ("contrat de nappe de la Crau") to anticipate global changes and propose adaptation solutions. Collaborations with research institutes have been developed to study global changes processes and better forecast their local impacts. A numerical model of surface drainages and groundwater flows allows quantifying the sensitivity of the resource to global changes. Special protection areas were identified to protect future of drinking water supply. Additional studies are scheduled to assess the impact of recharge decrease on saltwater intrusions and on wetland ecosystems. A project is planned to define the conditions for a sustainable adaption of irrigation practices to global changes.

This program provides knowledge and methods to adjust policy to local challenges and to support stakeholders in its implementation.