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

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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 Rhone-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.