

ELABORATION OF A GROUNDWATER FLOW AND TRANSPORT MODEL TO QUANTIFY BALANCES AND ESTIMATE THE AGRICULTURAL EXTRACTIONS IN THE CAMP OF TARRAGONA (NE SPAIN).

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Summary. The process of modeling allows to integrate the available information and to confirm the validity of the conceptual model. It is therefore an indispensable tool if one tries to do a realistic and integrated management of the water resources.

Habitually, one of the magnitudes more difficult to annotate is the agricultural extraction due to the uncertainties that it presents. An agronomic calculation based on local information is not a sufficient guarantee of success as for fixing of a realistic value, since there are multiple variables that influence. The depth of the well, with the consistent associate cost, the customs established in the farmer, the pluviometric variations or the arbustive distribution are factors that can concern the calculation of the agricultural extraction.

In cases as the Camp of Tarragona, where the agricultural pumping wells represent around 80 % and the total extractions, it is vital to establish a reasonable and realistic value, but the problem takes root in the lack of precise information of surfaces, crops and real endowments. It is here where rests the functionality of a numerical model, who allows to contrast different hypotheses.

In the annotation of the water destined for the agriculture in the Camp of Tarragona, the initial estimations, based on calculations of endowments by means of specific programs and official maps of distribution of crops, were placing around 100 hm³/a, but the numerical model of management who was elaborated on the part of the Agency was demonstrating the need to reduce them up to the half to obtain a reasonable functioning.

From this situation, a series of contacts was realized by administrations, centers of research and entities of the zone that gave place to a major socioeconomic knowledge and the agronomic practices in the Camp, as for example the application of technologies of hydric stress, very extended in the zone of study. Considering these facts and doing the pertinent approximations, there obtained a final value of the order of 70 hm³/a of total extractions (agriculturalists, industrialists and supply) that the conceptual model allows to define and to be coherent with the functioning of the numerical model.

Key words: quantification of the agricultural extraction, numerical model, conceptual model, hydric stress