



Urban groundwater quality. Update of the Barcelona city

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Barcelona is one of the densest cities in Europe (UE, 2016) and together with the climate change the water stress in the city is rising. Regarding groundwater resources, last studies found that groundwater bodies in the city suffer pollution from many recharge sources such as leakage of sewage systems, seepage from rivers, seawater intrusion, losses from water supply network, among others (Vázquez-Suñé, E., 2003; Jurado, A., 2013).

Some drought episodes affected the city since 2008. For that reason the Barcelona city Council prepare the water management alternative plan (WMAP) each 5 years to guarantee optimizing water uses management in the city (its quantity, quality and spatial distribution).

A new study updated the condition of the groundwater in the city. To improve this analysis, we connected the Barcelona city Council databases with HYDORGIS platform (Velasco et al., 2014). HYDORGIS is a software platform developed in a Geographic Information System (GIS) environment. These GIS-based tools give support to the users for storing, managing, and analysing geological, hydrogeological and hydrochemical data in 2D and in a 3D context.

The analysis with HYDORGIS tools shows that the most stressed zone in the city is close to the Besòs river and the sea. This zone has been affected by an important dewatering because of the construction of new underground infrastructures. This impact increased the seawater intrusion in the city, measuring values of electric conductivity close to 55000 uS/cm. Some measures will be taken to control the seawater intrusion in the zone.

Acknowledgments

This work was supported by Barcelona Cicle de l'Aigua (Barcelona City Council) and by the Catalan Industrial Doctorates Plan of the Secretariat for Universities and Research, Ministry of Economy and Knowledge of the Generalitat de Catalunya.

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