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## European Research Headlines

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### SUSTAINABLE DEVELOPMENT

#### □ Europeans forge ahead with sustainable water resources in Mediterranean

**Withdrawing fresh water faster than it can be recharged near a coastline results in seawater intrusion. The Mediterranean basin and other similar areas encounter this common, yet serious problem more often than not. Experts in Spain have identified the Mediterranean and south Atlantic coastlines as being the biggest victims of seawater intrusion, the culprit in groundwater pollution in a country that is located on a peninsula. In the EU-funded project SWIMED, researchers aimed to develop an integrated approach combining advanced computational tools and GIS for sustainable water resources management in coastal aquifers of the Mediterranean.**



Tarifa (Province Cadiz, Andalucia, Spain). View from the vista point Plazuela del Viento: the Strait of Gibraltar and the Moroccan coast of Africa

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Professor Jose Benavente Herrera from the Water Institute of the University of Granada, Spain, and senior lecturer at the Geodynamics Department, said that seawater intrusion has contaminated around 60% of Spanish coastal aquifers. 'This contamination is a generalised phenomenon for 20% of these cases,' he added.

'Freshwater contaminated by a 5% of seawater can no longer be used for common purposes, such as human use, agriculture or farming,' Prof. Benavente said. 'That is the reason why salinisation of coastal aquifers — mainly a consequence of an uncontrolled or deficient management — is such a serious phenomenon.'

From an economic perspective, seawater intrusion is seriously affecting crucial aquifer systems in Spain's Mediterranean and Atlantic coastlines. They are not alone, however; areas in Mexico, Chile, Peru, Australia, the north of the Pacific and Atlantic coastlines are also feeling the crunch.

The prevention of salinisation can begin by examining aquifers on an individual basis, according to Prof. Benavente. 'Minimising freshwater pumping should be followed by other measures, like analysing the aquifer's situation before building reservoirs upstream, as this will account for a serious minimisation of its natural recharge and maybe, for salinisation if the return flow is not guaranteed,' he added.

The Spanish researcher explained, 'Ironic as it may be, building up an artificial reservoir could render useless the natural groundwater reservoir downstream.'

Prof. Benavente also noted how the reduction of pumping or extraction of water from either smaller or greater depths in extremely localised seawater intrusion areas, are key measures. He explained that another effective measure for the prevention of salinisation is the artificial recharge of aquifers, because it blocks seawater intrusion and increases freshwater levels.

#### More information:

- [SWIMED](#)
- [University of Granada](#)

A number of regions across the globe have already been putting these measures into practice. According to the professor, two sites where sewage water injection has generated some positive results for putting a stop to salinisation, are the river Llobregat delta in Spain and Los Angeles, California.

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