GroundWatCh III – Groundwater and global change. Impacts and adaptation

Summary

As the largest liquid freshwater reservoir on Earth, **groundwater** has both a huge environmental and economic value and will be an essential resource for adaptation to climate change and reduction of socio-economic vulnerability, particularly in regions where freshwater availability is highly variable and frequently limited.

Several factors foster the need for a more comprehensive and multidisciplinary educational groundwater programme.

First, groundwater is a component of the water cycle, interacting with all other components at various temporal and spatial scales.

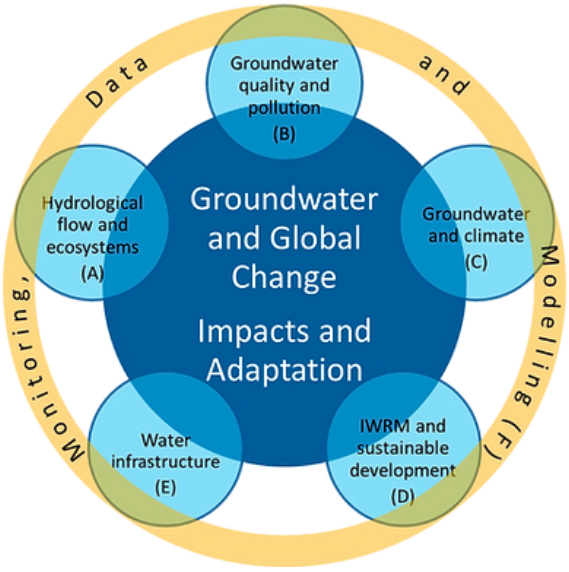
Second, groundwater systems are largely interdependent on socio-economic development. The presence of important and productive aquifers can boost socio-economic development and alleviate poverty in low-income countries by providing water for public supply and sustainable irrigation, increasing (environmentally-friendly) land use efficiency.

On the other hand, the continuous growth of the world population and the socio-economic development of many countries have already caused, and will continue to cause, large impacts on freshwater (including groundwater) systems through uncontrolled exploitation, causing depletion, seawater intrusion, reduction in baseflows in rivers and ecological flows sustaining freshwater ecosystems, or land subsidence.

Third, climate change is foreseen to affect freshwater availability globally, with several hotspots, among which many areas that currently already suffer periods of severe droughts and freshwater scarcity, such as the Mediterranean area of southern Europe and Northern Africa, northeast China, northern and south-western Latin America, large parts of Australia and the western United States, among others. **Fourth**, important feedback mechanisms exist between groundwater (and its use), climate and global change, which vary in time and space.

GroundwatCh addresses the current gaps with regard to the understanding of the complex interactions between groundwater, surface water, climate and global change, and how we should consider these, and can benefit from them, for the implementation of adaptation solutions. Embracing the central theme of **Groundwater and Global Change – Impacts and Adaptation**, we have linked it to six major thematic fields: (A) Hydrological flow and ecosystems; (B) Groundwater quality and pollution; (C) Groundwater and climate; (D) IWRM and sustainable Development; (E) Water infrastructure; and (F) Monitoring, data and modelling.

Figure 1. Word cloud on Research produced in 140 Erasmus Mundus GroundwatCH MSc theses.



GroundwatCH
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https://www.groundwatermaster.eu/