



## **Droughts and water scarcity: facing challenges**

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Water scarcity characterizes large portions of the world, particularly the Mediterranean area. It is due to natural causes - climate aridity, which is permanent, and droughts, that are temporary – and to human causes – long term desertification and short term water shortages. Droughts aggravate water scarcity. Knowledge has well developed relative to all processes but management tools still are insufficient as well as the tools required to support appropriate planning and management. Particularly, new approaches on tools for assessing related impacts in agriculture and other economic and social activities are required.

Droughts occur in all climates but their characteristics largely differ among regions both in terms frequency, duration and intensity. Research has already produced a large number of tools that allow appropriate monitoring of droughts occurrence and intensity, including dynamics of drought occurrence and time evolution. Advances in drought prediction already are available but we still are far from knowing when a drought will start, how it will evolve and when it dissipates. New developments using teleconnections and GCM are being considered.

Climate change is a fact. Are droughts occurrence and severity changing with global change? Opinions are divided about this subject since driving factors and processes are varied and tools for the corresponding analysis are also various. Particularly, weather data series are often too short for obtaining appropriate answers.

In a domain where research is producing improved knowledge and innovative approaches, research faces however a variety of challenges. The main ones, dealt in this keynote, refer to concepts and definitions, use of monitoring indices, prediction of drought initiation and evolution, improved assessment of drought impacts, and possible influence of climate change on drought occurrence and severity.