

Climate change : water cycle dries out

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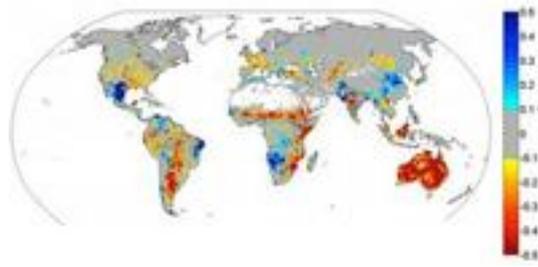
An international study published by Nature (October 21, 2010) reveals evapotranspiration has been slowing down for the last twelve years, worldwide. This trend could have an impact on vulnerable ecosystems, water resources and climate feedbacks. Researchers of Laboratoire des Sciences du Climat et de l'Environnement (LSCE) (1) took part in this study.

A limitation in moisture supply in the Southern Hemisphere has contributed to falling rates of evapotranspiration in the past ten years, suggests a *Nature* paper. This slowing trend could have an impact on vulnerable ecosystems, water resources and climate feedbacks.

Evapotranspiration, the combination of evaporation from land surfaces and transpiration from plants ? is a fundamental flux of water and energy in the climate system. It is also a strong determinant of water availability for plant growth and human consumption. Climate change is expected to intensify the hydrological cycle and to alter evapotranspiration, but direct observational constraints have been lacking at the global scale.

Martin Jung and colleagues model global evapotranspiration over a large variety of ecosystems using data from a global monitoring network combined with meteorological and remote-sensing observations. They find that from 1982 to 1997, evapotranspiration increased persistently by about 7.1 millimetres per year per decade. But since 1998 and the last major El Niño event, this increasing trend has flattened, probably due to limits on moisture supply, particularly in Africa and Australia.

The authors stress that it is too soon to tell whether the changing behaviour of evapotranspiration is representative of natural climate variability or reflects a more permanent reorganization of the land water cycle.



Trends of evapotranspiration between 1982-1997 and 1989-2008. Red indicates a decrease and blue indicates an increase in evapotranspiration from one period to another.

Note

1. LSCE is part of Institut Pierre-Simon Laplace

Source

Recent decline in the global land evapotranspiration trend due to limited moisture supply, Martin Jung, Markus Reichstein, Philippe Ciais, Sonia I. Seneviratne, Justin Sheffield, Michael L. Goulden, Gordon Bonan, Alessandro Cescatti, Jiquan Chen, Richard de Jeu, A. Johannes Dolman, Werner Eugster, Dieter Gerten, Damiano Gianelle, Nadine Gobron, Jens Heinke, John Kimball, Beverly E. Law, Leonardo Montagnani, Qiaozhen Mu, Brigitte Mueller, Keith Oleson, Dario Papale, Andrew D. Richardson, Olivier Roupsard, Steve Running, Enrico Tomelleri, Nicolas Viovy, Ulrich Weber, Christopher Williams, Eric Wood, Sönke Zaehle et Ke Zhang, Nature, 21 octobre 2010.

Contact researcher

Nicolas Viovy, Phone : 33 (0)1 69 08 77 17, email : nicolas.viovy @ lsce.ipsl.fr
