



## **Drought drives DOM biodegradability in intermittent streams**

Astrid Harjung, Andrea Butturini, and Francesc Sabater-Comas

Departament d'Ecologia, Universitat de Barcelona, Barcelona, Spain (astridharjung@ub.edu)

In lotic ecosystems drought periods strongly influence the availability of dissolved organic matter (DOM) in terms of quantity and quality. It is essential to investigate the link between DOM properties and ecosystem functioning under this hydrologic condition. Within this context, the study explores the relationship between DOM availability and Net Ecosystem Production (NEP) in a pool which is disconnected from the river continuum during drought episode. It is expected that the increase of water residence time, as a consequence of drought, will enhance the transformation of DOM and the contribution of autochthonous relative to allochthonous DOM.

An intensive sampling program of surface and hyporheic waters coupled to continuous measurements of dissolved oxygen (DO) and DOM was performed in a pristine Mediterranean intermittent stream in order to prove this hypothesis.

The field site is characterized by a permeable streambed and impermeable bedrock, which interrupts the surface-hyporheic connectivity during drought periods. Due to the impermeability of the bedrock there is still surface water captured in small pools, even when the rest of the stream is dry. The samples were analysed for nutrients and DOM. With respect to DOM quality this study focuses on its fluorescent properties.

The data of continuous measurements taken over two months inside the pool indicates that DOM is becoming more recalcitrant as the pool gets disconnected and residence times increase. During drought the NEP seems to uncouple from DOM concentrations and in some moments of severe drought they even show an inverse relationship. A decrease of terrestrial input, shifting the DOM source to autochthonous production and chemical transformation of DOM could cause this change in DOM availability. Drought in geomorphological diverse streams is not just causing a loss of water and hence source of DOM, but also enhancing other factors of production and transformation. Consequently, it is important to take different structures of the river bed into account when studying DOM.