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Training hydrologists to be ecohydrologists: A 'how-you-can-do-it' example leveraging an active learning environment

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Structuring an education strategy capable of addressing the various spheres of ecohydrology is difficult due to the inter-disciplinary and cross-disciplinary nature of this emergent field. Clearly, there is a need for such strategies to accommodate more progressive educational concepts while highlighting a skills-based education. To demonstrate a possible way to develop courses that include such concepts, we offer a case-study or a 'how-you-can-do-it' example from an ecohydrology course recently co-taught by teachers from Stockholm University and Cornell University at Stockholm University's Navarino Environmental Observatory (NEO) in Costa Navarino, Greece. This course focused on introducing hydrology Master's students to some of the central concepts of ecohydrology while at the same time supplying process-based understanding relevant for characterizing evapotranspiration. As such, the main goal of the course was to explore central theories in ecohydrology and their connection to plant-water interactions and the water cycle in a semiarid environment. In addition to presenting this roadmap for ecohydrology course development, we explore the utility and effectiveness of adopting active teaching and learning strategies drawing from the suite of learn-by-doing, hands-on, and inquiry-based techniques in such a course. We test a gradient of 'activeness' across a sequence of three teaching and learning activities. Our results indicate that there was a clear advantage for utilizing active learning techniques in place of traditional lecture-based styles. In addition, there was a preference among the student towards the more 'active' techniques. This demonstrates the added value of incorporating even the simplest active learning approaches in our ecohydrology (or general) teaching.