

Interactive comment on “A framework for upscaling short-term process-level understanding to longer time scales” by W. H. Lim and M. L. Roderick

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I applaud the authors for raising this topic – the exploitation of covariances is a powerful and generic tool in environmental science, where variability is ubiquitous, and must not be ignored.

The authors call for covariances to be reported in future papers. I wonder if a future step in that process might be to develop generalised knowledge (for a particular process) about the circumstances when particular covariance terms are significant, insignificant or atypical.

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At the risk of appearing self-serving in my comment, the authors may wish to consider the following attempts to introduce some related ideas into the space- and time-variability of flood event hydrology. For example the papers below provide a reinterpretation of the rational method, and decompose the event runoff coefficient into terms arising from temporal and spatial variability of flood event processes.

Viglione, A., G.B. Chirico, J. Komma, R. Woods, M. Borga and G. Blöschl (2010) Quantifying space-time dynamics of flood event types, *Journal of Hydrology*, 394, 213-229, doi:10.1016/j.jhydrol.2010.05.041

Viglione, A., G.B. Chirico, R. Woods and G. Blöschl (2010) Generalised synthesis of space-time variability in flood response: An analytical framework, *Journal of Hydrology*, 394, 198-212, doi:10.1016/j.jhydrol.2010.05.047.

Woods, R., Sivapalan, M., 1999. A synthesis of space–time variability in storm response: rainfall, runoff generation, and routing. *Water Resources Research* 35(8), 2469–2485.

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