Hydrology and Earth System Sciences
An Interactive Open Access Journal of the European Geosciences Union

Hydrol. Earth Syst. Sci., 8, 1051-1064, 2004
www.hydrol-earth-syst-sci.net/8/1051/2004/

Application of time-series analyses to the hydrological functioning of an Alpine karstic system: the case of Bange-L'Eau-Morte

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Abstract. This paper analyses the hydrological functioning of the *Bange-L'Eau-Morte* karstic system using classical and original techniques, recession curves, correlation and spectral analyses, noise analysis and wavelet analyses. The main characteristics that can be deduced are the recession coefficients, the dynamic volume of storage, the response time of the system, the quickflow and baseflow components and the snowmelt characteristics. The non-stationary and timescale-dependent behaviour of the system is studied and particular features of the runoff are shown. The step-by-step use of these different techniques provides a general methodology applicable to different karstic systems to provide quantifiable and objective criteria for differentiation and comparison of karstic systems.

Keywords: karstic hydrology, *Bauges* mountains, recession curves, correlation and spectral analysis, wavelet analysis, snowmelt

Final Revised Paper (PDF, 3944 KB)

Citation: Mathevet, T., Lepiller, M. l., and Mangin, A.: Application of time-series analyses to the hydrological functioning of an Alpine karstic system: the case of Bange-L'Eau-Morte, Hydrol. Earth Syst. Sci., 8, 1051-1064, 2004. Bibtex | EndNote | Reference Manager