

ERB Medal Lecture

Four decades of enjoyment with mountain hydrology

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Austrian writer Stefan Zweig, notes in his book *Decisive Moments in History*, that while history usually flows like a slow stream, changing little for decades or even centuries, there are rare moments when a single event changes the world forever. In our lives, similar moments can determine our future path. One such moment brought me, a student of hydrogeology expecting to spend his professional life doing hydrogeological surveys and pumping tests (likely doing something else or operating its own consultancy business at present) – into the research of hydrological balance and processes in mountains, learning from many distinguished colleagues, and exploring new ideas.

I was fortunate to join a newly established hydrological research catchment from its very beginning – helping to build the measurement network in the beautiful Tatra mountains, conducting and evaluating observations, designing and performing my own experiments, thinking about the uncertainties influencing our conclusions and doubts that sometimes accompany academic work.

Although I did not need to think about the organization and direction of our research in the very beginning, over time I concluded for myself that two intertwined aspects of the long-term research in mountains are important. The first is long-term, consistent monitoring of basic hydrological characteristics - catchment discharge, precipitation, air temperature, snow water equivalent and soil moisture. This is not a trivial task, but its successful completion (although it is never truly finished) provides the basis for detecting variations that can test our perceptions, theories or products. The second aspect involves short-term measurements focused on specific questions that can provide resources for the long-term monitoring and address emerging research themes. I would like to share a few reflections on both aspects and mention some findings that have surprised me (perhaps only me). They are related to stream-groundwater interactions, spatial distribution of precipitation, stream sampling frequency and more.

I would like to conclude by citing V. Klemeš, whose articles have been a constant source of inspiration for me. Koutsoyiannis (2011) puts it more nicely “Reading his papers continues to be a refreshing, enlightening and inspiring experience”. In the last slide of his fabulous presentation, Klemeš (2007) wrote: “The most fun and perhaps the greatest value of doing something is in doing it. The results may well go up in smoke, be wrong, become obsolete and forgotten, but some new ideas may have emerged in pursuing them, and some of them may somewhere, sometime, bear fruit.”

Klemeš, V., 2007: An unorthodox physically-based stochastic treatment of tree rings, XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia, International Union of Geodesy and Geophysics, International Association of Hydrological Sciences, 2007;
<https://www.itia.ntua.gr/en/getfile/723/5/documents/2007IAHSKlemesTreeRings.pdf>
Accessed on June 22, 2026

Koutsoyiannis, D. (2011): Common Sense and Other Heresies (Second Edition, 2011). Prolegomena.