Vit Klemeš   1932 - 2010

Bio

- **Civil Eng; Brno University of Technology**
- **CSc (=PhD); Slovak Technical University**
- **DSc; Czech Technical University Prague**
- **1968 to Canada; Associate Prof. University of Toronto**
- **1972 – 89; Research Hydrologist, Environment Canada, Ottawa (became Chief Scientist)**
- **President IAHS, 1987 - 91**
- **1990 – 99; Consultant, Victoria, British Columbia**

COMMON SENSE AND OTHER HERESIES

Selected Papers on Hydrology and Water Resources Engineering

by Vit Klemeš

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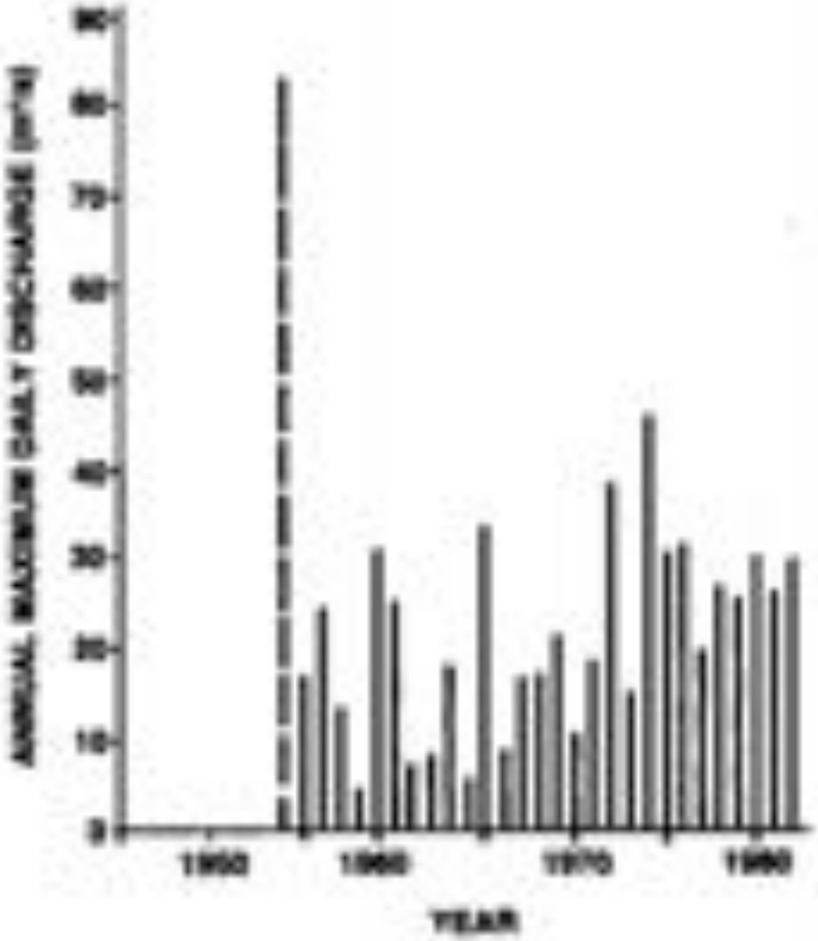

Fig. 4b. Annual maxima of daily discharge for East Humber River near Pine Grove, Ontario (at the northwest edge of Metropolitan Toronto). Hurricane Hazel hit the area in October 1954, shortly after the station was put in operation; the Hazel flood peak was estimated at 83.3 m^3/s.

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- How can predictions based on a short sample be justified? (Especially when there may be trends in climatic inputs and regime changes resulting from human activities);

- Flood events in this river have several different origins

1 - Early inspiration

I owe my first inspirations for looking deeper into the stochastics of tree rings to beavers with whom our family shared enjoyment of the 'Klemeš Lake' some 30 years ago[1]. However, in those days I was preoccupied with stochastic hydrology, so the pursuit of this interest had to wait.

2 - Final inspiration

Its time came two years ago when a lot of tree rings became exposed in our neighborhood by a rather severe storm – that was the final incentive for embarking on the long delayed experiment in stochastic treatment of tree-rings. The additional factor was that by then it was clear to me that stochastic hydrology was of little help in solving our practical water-related problems[2]. So I had a load of tree trunks transported on my driveway and got to work, applying my stochastic expertise as systematically as I could.

3 -Checking for nonlinearities

The first thing to do was to check the data for nonlinearities and get rid of them by a proper transformation. Contemplating which might be the most appropriate one in this case, the scene of my last inspiration came to mind. I saw myself sitting in what could be justly regarded as 'log space' - and that led me to use the log-transformation, so popular in hydrology and beyond.

4 -Log transformation, general

The first version I tried linearized my samples quite satisfactorily, but it did not preserve their stationarity – they kept rolling and made the work rather difficult.

7 - Self-similarity

... simply by comparing the two conjugate planes of the cut.

8 - Scale invariance of self-similarity

Moreover, as I have carefully verified, this self-similarity is scale-invariant: it applies from the largest log to the smallest twig. To my knowledge, none of these insights have yet been published, not even posted on the internet!

11- Samples too big

Starting to process the samples I found that, although linear enough, they were too big to be tackled with my hardware.

12 -Split-sample technique

This gave me an opportunity to apply in practice the split-sample technique which I had advocated already more than 20 years ago[7].

21- Configuring hardware

After all these preliminary analyses, the time came to embark on mass processing of the data, a task estimated to take the entire winter. It was therefore imperative that the central processing unit be carefully configured to ensure its smooth operation throughout the duration of the project.

22 -Data processing

This care paid off – the processing worked without a hitch and gave one the warm feeling which always accompanies a successful completion of a hard job.