

## Eric Marwick Laurenson (9-3-1932 – 22-4-2003)



After graduating from the University of New South Wales as a Civil Engineer in 1952, with First Class Honours and University Medal, Eric Laurenson began an outstanding career in water engineering and hydrology. In his first job, with the NSW Public Works Department, he undertook detailed design flood estimation work for Eucumbene Dam. In 1956 he joined the staff of the School of Civil Engineering of the University of NSW, and in 1963 completed a PhD with a thesis on the topic “Hydrograph synthesis by runoff routing”. In his fourteen years at UNSW Eric Laurenson built up a solid reputation as an academic and rose to the rank of Associate Professor. In 1970 he moved to Papua New Guinea where he served as Head of the School of Engineering and Professor of Civil Engineering at the PNG University of Technology at Lae until 1972.

In 1973 Eric Laurenson took up the Chair of Civil Engineering (Water Resources) at Monash University, and for the next 25 years led a group that had a major impact on hydrology and water engineering in Australia. He maintained research contacts with the Massachusetts Institute of Technology, Imperial College London, Colorado State University and the University of Karlsruhe in Germany. After his retirement at the end of 1997, Eric Laurenson remained active in research and consulting, serving as a reviewer of many important water resource studies.

### **Eric Laurenson’s major professional achievements**

#### ***Education and university***

Eric made key contributions to the education and training of Australian and overseas engineering hydrologists and water resource engineers. At UNSW he helped initiate the highly successful three months Hydrology Course and was involved in developing a course work Masters program. At Monash he played a similar role in the coursework Masters program and the Monash Water Engineering Workshop series. All of these made major contributions to increase the skill base in Australian water resources engineering.

#### ***“Australian Rainfall and Runoff”***

From the initial work of the Institution of Engineers, Australia’s Technical Committee on Stormwater Standards in the mid 1950s, which led to the first (1958) edition of “Australian Rainfall and Runoff” (ARR), Eric contributed significantly towards the development of sound guidelines for design flood estimation in Australia. Through his work on storm loss rates, flood routing and runoff routing he also made major contributions to the 1977 and 1987 editions of ARR.

### ***RORB***

Perhaps Eric's best known contribution to engineering hydrology is the RORB program for flood estimation using runoff routing which he developed in conjunction with Russell Mein. An initial version of the program was released at the first Monash Water Engineering Workshop in 1975. Over the next 20 years Eric remained in close contact with the practical users of the program, adding many enhancements and adaptations to allow its use in a wide range of practical applications.

### ***Flood estimation research***

Apart from his pioneering research on runoff routing methods, Eric made major contributions to many areas of flood estimation research, including frequency analysis, dam safety, design losses, flood routing, and joint probability of factors affecting runoff generation and flow. For the latter, his 1974 paper in Water Resources Research "Modelling of stochastic-deterministic hydrologic systems" established a probabilistic framework that was able to deal with a broad range of joint probability problems in hydrology, and is a seminal paper in this area.

### ***Key Papers***

- • Laurensen, E.M. and Pilgrim, D.H. (1963). Loss rates for Australian catchments and their significance. IEAust, The Journal, Jan.-Feb. 1964, 9-24.
- • Laurensen, E.M. (1964). A catchment storage model for runoff routing. Journal of Hydrology, Vol 2, 141-163.
- • Mein, R.G., Laurensen, E.M. and McMahon, T.A. (1974). Simple nonlinear model for flood estimation. ASCE, Journal of the Hydraulics Division, Vol. 100, HY11, 1507-1518.
- • Laurensen, E.M. (1974). Modeling of stochastic-deterministic hydrologic systems. Water Resources Research, 10/5, 955-961.
- • Laurensen, E.M. (1987). Back to basics on flood frequency analysis. IEAust, Civil Eng. Trans. Vol. CE29, 47-53.
- Laurensen E.M and Kuczera, G.A. (1999). Annual exceedance probability of probable maximum precipitation. Australian Journal of Water Resources, 3(2), 167-176. •