



Juhani Virta

* 3/8/1935 † 8/11/2016

THE HYDROLOGIST PROFESSOR Juhani Virta, born on 3rd August 1935, died in Helsinki on 8th November 2016 at the age of 81 years. His father, Erkki Virta, had been head of the Eastern Häme Folk High School in 1931–37, at which point the family moved to Helsinki and he worked as editor of publications for the SOK cooperative movement until 1953. Juhani Virta matriculated from Munkkiniemi Coeducational School in Helsinki in 1954 and decided to study natural sciences at university. He gained a master's degree from the University of Helsinki in 1959 with physics as his main subject.

It was the position that he then took up in the hydrographic office of the National Board of Public Roads and Waterways that introduced him to the field of hydrology, culminating in submission of his doctoral thesis, *Measurement of evapotranspiration and computation of the water budget in treeless peatlands in the natural state* to the University of Helsinki in 1966. After continuing with his work at the Hydrological Office for a further four years, he then moved in 1970 to the Department of Geophysics at the University of Helsinki as associate professor of geophysics of the hydrosphere. He was appointed professor in the same de-

partment ten years later and continued in this position, combined with that of head of department, until his retirement in 1998. He was elected to membership of the Finnish Academy of Science and Letters in 1981.

Juhani Virta was also active in the Geophysical Society of Finland, serving as its treasurer and later as its chairman, and was a member of the editorial board of the journal *Geophysica*. He was also a member of the Finnish Limnological Society, the Water Association of Finland, the national committee of the Geodetic and Geophysical Union within the International Council of Scientific Unions (ICSU), the Nordic Association for Hydrology and the Scientific Advisory Committee for the National Water Administration, and was chairman of the Finnish committee for the International Hydrological Programme (IHP).

Water budgets, evaporation and peatlands had been the main topics of Juhani Virta's research from the outset, and his doctoral thesis had been concerned with evaporation from the huge *aapa* mires of Lapland. In that case it turned out that the height of the water table was the deciding factor alongside precipitation, since the variations in the local vegetation had only

minor importance. Thus the theoretical calculations gave reliable figures with regard to evaporation, whereas in later water budget investigations various modelling approaches played a major role. Practical applications of these methods were to be found in the prediction of spring flooding, prediction of the required inflow into Lake Päijänne to achieve regulation of its water level and the provision of long-term forecasts for lake systems, for instance.

Lakes became the principal objects of study for Virta in the course of his university career, during which he focused his work on their flow dynamics, optics, and interconnections with climatic conditions. In addition to field measurements he was also involved in developing mathematical models for lakes. The flow dynamics of lakes was the theme of his study of Lake Jääsjärvi in Hartola and Lake Pääjärvi in Lammi, concerning fluctuations in the thermocline and vertical flow profiles. In the early 1990s he was involved in three significant research programmes that greatly increased his collaboration with water ecologists. The Suvi programme was concerned with illumination conditions and the optical quality of the water in certain lakes in

Finland and Estonia, while his contribution to the Academy of Finland SILMU programme was focused on the influence of climatic fluctuations on annual cycles in lakes, including estimates of the changes in their condition that might result from warming of the climate. Finally, he served as the Finnish coordinator for the joint Nordic hydrological programme NOPEX concerning the water and energy budgets in lakes. He also extended the scope of the research to cover brackish water bodies, in particular the flow dynamics of the Pohjanpitäjänlahti basin.

In the late 1990s Juhani Virta became a sub-coordinator of the EU-financed programme on the Response of European Freshwater Lakes to Environmental and Climate Change (REFLECT), and he continued to pursue his interest in lakes even after reaching retirement age. Thus Juhani Virta was working at the forefront of Finnish hydrology for 50 years and produced about 50 publications in this field. As a person, he was warm-hearted and polite, with a characteristic sense of humour of his own and a powerful sense of duty. As a deeply thoughtful natural scientist, he was an inspiring debater and conversationalist.

*Obituary by
Matti Leppäranta and Pentti Mälkki*