

Kailash Nath Khattri (1934–2007)

Kailash Nath Khattri died in Dehra Dun, India on 24 April 2007 at the age of 73. His professional vocation spanned nearly five decades. During this period, the plate tectonics theory revolutionized earth sciences and geophysical methods of exploration thrived with digital techniques. Khattri endeavoured to see that India was not left behind in picking the benefits of these remarkable developments.

Khattri was born on 9 June 1934 in Banaras and received his primary education in Lucknow. He received his B Sc (Hons) in geophysics from the Indian Institute of Technology, Kharagpur in 1956. He joined the then newly set up Oil and Natural Gas Commission. In the late 1960s, Khattri enrolled for a Ph D degree in seismology at St. Louis University. Among other things, he analysed data of South American earthquakes in this phase. He was awarded the M S and Ph D degrees in 1968 and 1969 respectively. In the early 1970s, Khattri took up teaching of geophysics at Roorkee University. This proved extremely beneficial for geophysics in India. Over a period of about 20 years, a generation of students was exposed to his overwhelming store of knowledge on geophysics. Later, he was appointed as a Professor in Geophysics at the same University, where he guided the research of several Ph D students in seismology. Along with P. S. Moharir, Khattri developed new courses on seismic signal processing and objective interpretation of geophysical data using techniques such as the generalized linear inverse. Along with his teaching, Khattri engaged himself in basic research in several areas of geophysics, mainly in seismology. Based on his own initiative, coupled with motivation and support from V. K. Gaur, Khattri initiated work in quantification of seismic hazard in the Indian subcontinent. This was partly because work on the Tehri dam site in the Garhwal Himalaya was picking up in the late 1970s. His numerous studies on this

theme included first use of probabilistic methods of hazard estimation in India, attenuation of seismic waves in the Himalaya and estimation of strong ground motion at Tehri dam site in as many different ways as possible. After his retirement from Roorkee University in 1991, Khattri was appointed as Emeritus Scientist of CSIR at the Wadia Institute of Himalayan Geology, Dehra Dun, where he linked until the time of his death.



One of his most enduring contributions was in the seismic gap theory for the Himalaya in north-east and north-central India, where he identified two regions that remain unruptured and are likely locations of future great earthquakes. In the minds of Indian earth scientists, the phrase 'seismic gap' became firmly associated with his name. Simultaneously, Khattri initiated studies in which he used plate tectonics ideas in understanding source processes of Himalayan earthquakes. He sought patterns in the available data on these earthquakes. In addition, recognizing the paucity of quantitative information about Indian earthquakes, Khattri guided Roorkee University to acquire instruments for recording micro-earthquakes. The first set of instruments was deployed in the Garhwal Himalaya. It could be demonstrated that Tehri dam site is only a few tens of kilometres away

from the main seismic belt. The 1991 Uttarkashi earthquake further confirmed this idea. As one of the leading geophysicists in India, he was elected as a Fellow of the National Academy of Sciences in 1987 and of the Indian National Science Academy in 1995. He received several awards for his research, including the Khosla Award and the Decennial Award of the Indian Geophysical Union. He served as Vice-Chairman of the IASPEI working group on seismicity patterns from 1987 to 1991, and was a visiting fellow in universities in the United States and Germany. Khattri worked on numerous government committees, most notably the Prime Minister's committee on the Tehri dam.

Khattri wished to inspire a scientific ire in his friends and acquaintances, with whom he discussed scientific and other intellectual matters. His untimely departure created a vacancy in the Indian Earth Sciences community. His wife, Savita Devi had died in 1989. He is survived by a daughter and son.

I was his student starting in 1982, when I had joined M.Tech. in Applied Geophysics at Roorkee University. He was an excellent teacher. Later, I worked for my Ph D under his supervision and also that of Ramesh Chander. During my research, Khattri splurge several hours with me in the laboratory, helping me to read seismograms and guiding me to check every interpretation carefully. Ramesh Chander who was close to Khattri helped in summarizing his eternal contributions. Khattri will be especially remembered for his work in the seismology of the highest mountains on Earth, the Himalaya.

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