

CHRONICLE

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VLADIMIR IVANOVICH SOLOMATIN

(29.10.1937–19.07.2019)

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On July 19, 2019, an outstanding permafrost scientist Vladimir Ivanovich Solomatina passed away. A genuine intellectual, he headed the Research Laboratory of Geocology of the North at the Faculty of Geography of the Moscow State University for 40 years. He carried out the pioneer research of underground glaciation and made an invaluable contribution to the formation and development of the Soviet, Russian and world science.

Permafrost scientist, underground glaciation, geocology of the North

On July 19, 2019, one of the most remarkable permafrost scientists of Russia, Doctor of Geography Professor Vladimir Ivanovich Solomatina passed away. His scientific work was carried out in two main places. The first place was the Moscow University, which he entered in 1955. After graduation in 1960 from the department of polar countries geography, Vladimir Solomatina was invited to work at the Faculty of Geography, where he worked till the end of his life, enthusiastically delivering lectures to students. His second area of activity was in the polar areas of the Earth, which Vladimir Ivanovich truly loved (Fig. 1). He would not miss a day to recall stories or episodes from his rich expedition experience. He had a special liking for ground ice, to the study of which he devoted the major part of his scientific works.

In the candidate's thesis Solomatina defended in 1969 "The Structure and the Origin of Wedge Ice", based on the results of the numerous field works conducted in the European and Siberian North, mainly in northern Yakutia (the Yana River, Kular settlement, Muostakh Island), where he headed a large expedition, Vladimir Ivanovich proved the repeated wedge growth (contraction) mechanism and the stepwise character of developmental syngensis of the ice veins in the vertical direction. It was clear to Solomatina already in those times that physico-chemical methods and laboratory methods were to be applied to the solution of the issues relating to the origin of massive ice. Continuing to develop the ideas of Petr Shumsky, whom Vladimir Solomatina considered to be his teacher, Vladimir Ivanovich developed the method of structural-genetic analysis. Shumsky's monograph "Fundamentals of the Petrology of Ice" [1955] was the desk book of Vladimir Solomatina for several decades.

Assisted by his students and colleagues, Vladimir Ivanovich conducted a series of experiments, by which he elucidated a number of regularities in ice formation

and the crystalline structure of ice. He found out that plastic deformity of ice creep was caused primarily by crack formation and breakage of ice crystals. The effect of regeneration of shear cracks and of formation of the bubble-like texture of ice due to regeneration of tension cracks was discovered.

Vladimir Solomatina was one of the first in the USSR to appreciate the possibilities of the isotope-oxygen method for ground ice studies. In cooperation and his students and colleagues from Estonia, the Moscow State University and the Institute of Geography of the Academy of Sciences of USSR, he developed and carried out a program for stable water isotope investigation of the incipient ice wedges in the coastal lowlands of Yakutia. In a number of publications, he stated the principle of isotopic thermometry of wedge and texture-forming ice [Konyakhin *et al.*, 1996].

Starting with wedge ice, Solomatina's interests spread on to the other types of massive ice. Several expeditions carried out in the Yenisei North and in the Yamal Peninsula brought about his conclusion relating to the glacier origin of the massive ice beds widespread there. He enthusiastically revealed and demonstrated to the Russian and foreign colleagues the definite signs of the glacial origin of ice, wherever it could be discovered. Each such evidence (for example, folding deformation of ice found on the Yugorski Peninsula or new evidence of underground glaciation of New Siberia Island) made him happy (Fig. 2). The huge material on ice collected by Vladimir Ivanovich was summarized in his two monographs "Physics and Geography of Underground Glaciation" [2013] and "Geocryology: Ground Ice" [2017]. Together with the book "Petrogenesis of the Ground Ice" based on Solomatina's doctoral thesis [1986], they represent a rare type of a summary which encompasses a large part of the author's life and spirit.

Vladimir Ivanovich conducted a large amount of scientific, organizational and educational work. He was a member of the Scientific Council for the Earth Cryology of the Russian Academy of Sciences, a member of the glaciology section of the International Union for Geodesy and Geophysics, a member of the International Permafrost Association, the deputy chairperson of the Science and Technology Council of the Arctic and Antarctic Commission, a member of Scientific Council of the Faculty of Geography and of the dissertation councils in the Moscow State University and in the Melnikov Permafrost Institute, SB RAS, and cooperated with the Earth's Cryosphere journal. Solomatin took part in a number of international projects: he was invited to do research, to participate in meetings and to deliver lectures in Canada, the USA, Sweden, and China, where he was a visiting professor of the Institute of Permafrost Studies and Glaciology of the Chinese Academy of Sciences.

In 1979, Vladimir Ivanovich was appointed head of the laboratory of the geocology of the North, Faculty of Geography [*Geocology of the North*, 1992]. Over 40 years of his work as the head of the laboratory, Solomatin safely steered his ship through all the challenges, hardships and temptations of the first two decades of the 21st century. Reduction of funding, the related decrease in the number of field works in the 1990s, sudden demise of several leading scientists at

the turn of the century, moving to the main building of the MSU, cardinal changes in the organization of the research work – the laboratory survived it all, mainly due to clever and calm leadership of Professor Solomatin. He was able to avoid many serious organizational disturbances and to preserve the laboratory's traditions laid down by its founders and the elders. Over the four decades of Solomatin's leadership in the laboratory (out of 50 years of its existence), the staff has been naturally changing; however, the progress continues. Off the record, the laboratory is referred to as Solomatin's laboratory, and we are sure that the name will persist for many years to come.

Presiding at regular scientific meetings of Laboratory of Geocology of the North, Professor Solomatin always supported discussions, reported his new ideas, and uncompromisingly argued with his scientific opponents. We will miss Vladimir Ivanovich's presence at meetings as the chairman, his opinions, evaluations, questions, stories, and enthusiasm over ground ice and the glacier origin of massive ice beds. The history of the laboratory is inseparably connected with Professor Solomatin's name, and his demise is a great loss for it. This is a loss not only for the laboratory but also for the entire Faculty of Geography of the Moscow State University and for the global community of the permafrost scientists. His name will remain in the history of the science of ice and of the polar countries.



Fig. 1. Vladimir Ivanovich Solomatin on the shore of the Kara Sea, 2017.

Photo by S.A. Ogorodov.



Fig. 2. V.I. Solomatin before takeoff to the continent, the Yugorski Peninsula, 2007.

Photo by N.G. Belova.

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