

Biography

Leonid M. Parfenov (1937–2002)

by K. Fujita, A. V. Prokopiev, and D. B. Stone

This volume is dedicated to the memory and accomplishments of Leonid Mikhailovich Parfenov, one of the early advocates of plate tectonics in the Former Soviet Union and a key driver in the study of the geology, tectonics, geodynamics and economic resources of northeast Asia. Leonid was highly regarded by those who worked in eastern Russia, both Russian and western, and has been a friend and colleague of most of the authors of this volume.

Leonid was born on 19 February 1937, in Vladimir, in European Russia. He finished high school with a silver medal, and graduated with honors in geology from M. V. Lomonosov Moscow State University in 1959. He was posted to the Institute of Geology and Geophysics of the Academy of Sciences of the USSR in Novosibirsk, where he earned his Kandidat degree in 1965 with a dissertation entitled “The Precambrian Structure of the Eastern Sayan”. His first paper was published in 1961 and was devoted to clarifying terms used in tectonics, a topic which he continued throughout his career. He stayed at the institute until 1970 working on the Precambrian of Siberia and other continents and simultaneously teaching at Novosibirsk State University.

In 1970–1971, Leonid was awarded a prestigious position as visiting researcher at Liverpool University in England. Undoubtedly, it was at this time that he was exposed to plate tectonics, a theory which had not yet gained much credence in the Soviet Union. He also began to make acquaintance with various researchers in the western petroleum industry.

Upon his return, Leonid joined the Institute of Tectonics and Geophysics of the Far East Science Center in Khabarovsk. Here he organized and headed the Laboratory of Deep Tectonics and the Division of Regional and Applied Tectonics. He began to study how plate tectonics and tectonic regionalization could be applied to the Precambrian; soon after (1973), he was a co-author on the first Russian plate tec-

tonic reconstruction of the continents in the late Precambrian. During his time in Khabarovsk, he also chaired the compilation of the Tectonic Map of the Far East USSR. In formulating this compilation, he developed the large database that he would use to interpret the geology and tectonics of the eastern Soviet Union in a more mobilistic context. He continued to use this process and plate tectonic concepts in the compilation of numerous geologic and geodynamic maps throughout his career. It was during his time in Khabarovsk that he began to reinterpret the tectonic evolution of eastern Russia in terms of plate tectonics. His pioneering work, “Geodynamics of the North-Eastern Asia in Mesozoic and Cenozoic Time and the Nature of Volcanic Belts” was published in 1978 in the *Journal of Physics of the Earth*.

In 1981, he moved to the Yakutian Institute of Geological Sciences in Yakutsk where he expanded his geodynamic model for eastern Russia into a doctoral dissertation entitled “Comparative Tectonics and the History of Formation of the Mesozoids of Northeast Asia” in 1983, and published in 1984 as “Continental Margins and Island Arcs of the Mesozoids of Northeast Asia.” These works first developed a subduction associated history and accretionary model for northeast Russia. Associated journal publications started considerable debate over mobilistic models in the 1980s. In 1984, he founded the Laboratory of Tectonics at Yakutsk, which he directed until his death. Over the course of the next nearly two decades, Leonid conducted detailed field investigations, often under difficult and extreme temperature and logistical conditions. He then used modern, western techniques to analyze structural, petrologic, geochemical and geophysical data that he and his colleagues acquired. He, and his group, were instrumental in developing and refining a plate tectonics based model for the region involving the movement of blocks of various ages and provenances to assemble the edge of the Asian continent.



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Subsequent to the development of the mobile tectono-stratigraphic terrane concept in the early 1980s, Leonid quickly recast his blocks and structural-formational complexes to conform to it and began developing terrane-based paleogeodynamic models.

As the eastern Soviet Union opened to international workers in the early 1990s, Leonid was instrumental in bringing American and other western researchers into the northeast USSR. He invited researchers from the University of Alaska and Michigan State University to the INQUA symposium in Yakutsk in 1990, resulting in the development of a cooperative program starting in the summer of 1991 to study the seismicity, paleomagnetism, geochronology, and tectonics of northeast Russia to determine the present-day plate boundaries in northeast Russia as well as its geodynamic evolution over the Phanerozoic.

Also in 1991, Leonid joined with the US Geological Survey in the compilation of the “Terrane Map of the Circum-North Pacific”, a cooperative project between the geological surveys of the USA, Canada, and Japan, and various institutes of the Russian Academy of Sciences (RAS). The map was issued in 1994, and a series of derivative works on the tectonics and mineral resources of the region were published through the late 1990s. Leonid also joined the successor project on northern Asia that extended this work further west.

At a meeting in Menlo Park, California, on this map project in 1993, Leonid began collaborations between his group and other Russian colleagues and the structural geology group at Stanford University to study the tectonics of Chukotka and the Verkhoyansk Range.

Leonid published over 200 works, some of them posthumously. These include not only scientific articles but also a number of books and several tectonic maps. His work was published not only within Russia, but also in British, American, Japanese, and other international journals. His life’s work, a collaborative synthesis and reinterpretation of the geology and tectonics of Yakutia, “Tectonics, Geodynamics, and Metallogeny of the Territory of the Sakha Republic (Yakutia),” was published in Moscow in 2001.

In addition to his extensive scientific work, Leonid served the Russian and foreign geological communities in numerous service capacities. Leonid was a corresponding member of the Russian Academy of Natural Sciences, and served as Vice President (1993–2000) and founding member of the Academy of Sciences of the Sakha Republic (Yakutia), Director of the Institute of Diamond and Precious Metal Geology (2000–2002; formerly the Yakutian Institute of Geological Sciences), and Professor at Yakut State University. He was also a member of the Interdepartmental Tectonic Committee of the RAS, the Scientific Council on the Tectonics of Siberia and the Far East of the Siberian Division (SD) of the RAS, the United Academic Councils on Earth Science of both the SD RAS and Academy of Sciences of the Sakha Republic (Yakutia), and the General Assembly of the SD RAS, and served on numerous dissertation committees.

Until his deteriorating health precluded his travels, Leonid was a frequent visitor to the United Kingdom, the United States and other countries, where he participated in scientific conferences and workshops, held extensive discussions with many of us, and consulted with the petroleum industry.

Regretfully, Leonid passed away on 6 August 2002, in Irkutsk, after a long struggle with cancer; he is survived by his wife, Irina, a son, and two brothers.

Leonid was a versatile and extremely skilled geologist with an encyclopedic knowledge of northeast Russia and an uncanny ability to use disparate evidence from many disciplines to develop tectonic models. His life and work in the Soviet North gave him a strong character, and a love for nature in eastern Russia; he was willing to share that love and knowledge with all who were interested. During the period following the collapse of the former Soviet Union, he wrote of the conditions facing scientists in eastern Russia and encouraging all who were interested to enter into joint projects with his and other research groups. He, in particular, encouraged young scientists and interdisciplinary studies – some of the fruits of which are presented in this volume. All of us who have worked in eastern Russia, will miss his guidance, knowledge, and friendship.

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