

## CHRONICLE

TO THE ANNIVERSARY OF THE EARTH CRYOSPHERE INSTITUTE,  
TYUMEN SCIENTIFIC CENTRE SB RAS

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The main milestones of the history of the Earth Cryosphere Institute, Tyumen Scientific Centre SB RAS are reflected in the light of its thirtieth anniversary, celebrated in 2021.

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In May 2021, the Earth Cryosphere Institute, Siberian Branch of the Russian Academy of Sciences (ECI SB RAS) commemorates 30<sup>th</sup> anniversary. Creation of this institute in Tyumen back in 1991 was an event marking an important stage in the development of cryology as a science studying the world of cold. Building of the research team has effectively enabled interdisciplinarity covering most aspects of the object of study. Apart from scientists studying permafrost, the developing institute called for other experts in physics, chemistry, mechanics, system theory, etc. In this collaborative effort, the created pool of researchers aimed high to work out a holistic scientific view of the world of cold. This allowed an enlargement perspective for the object of cryological research (cryolithosphere and glaciosphere), with the increment of almost a 100 km-high column of the Earth's atmosphere, and areas of low positive temperatures combined with high pressures where gas hydrate may form (lithosphere and hydrosphere). The uniqueness of the research team created at ECI SB RAS is further accentuated by the implementation of the developed by them comprehensive approach to the study of the Earth's cryosphere in its integrity, encompassing cryogenic objects and processes in the lithosphere, hydrosphere, atmosphere and biosphere.

The Earth Cryosphere Institute SB RAS was breaking new ground in the years when the crisis of the 1990s led to the drastic reduction of state support for science, which entailed curtailment of most field works and experimental studies, while many long-established scientific teams working in research institution depleted of funding were literally trying to make ends meet. However, owing to its founder, academician Vladimir P. Melnikov, the Institute managed not only to deservingly pull through all the adversities of that time, but in a short time gained wide

international recognition of the results of its scientific and research activities (Fig. 1).

The year of the birth of the Earth Cryosphere Institute was marked by an unprecedented historical decision made by Yuri K. Shafranik, the head of administration (Governor) of the Tyumen region after the events of August 19, 1991, to transfer the property in the headquarters of the Tyumen Regional Committee of the Communist Party to the academic community.

In the mid 1990s, a group of the country's leading geocryologists from All-Russian Scientific Research Institute for Hydrogeology and Engineering Geology (VSEGINGEO), Moscow, joined the Institute, thereby forming the Moscow branch of the Earth Cryosphere Institute.

The traditional Pushchino annual international permafrost conferences, whose successful organization was both the responsibility and merit of David A. Gilichinsky, Elizaveta M. Rivkina and their team, provided an impetus towards stronger networking and creative benefits thereof.

A series of the Yamal international conferences, with the first one held in Yamburg (1989), left an indelible impression on Russian and foreign scientists. Given that these events were sponsored by the government of the Yamal-Nenets Autonomous District, as well as Gazprom and Neftegazstroy companies, the level of their organization was unanimously estimated as superb by the conference participants. Thus, after the 1989 Yamburg Conference American Professor T. Peve, the president of the International Permafrost Association (IPA), said in the telegram sent to V.P. Melnikov: "Vladimir, we have never had such conferences and never will". Also worth noting is that six helicopters were in service to daily take all 140 attendees to study the frozen rock sections prepared in



**Fig. 1. Academician Vladimir P. Melnikov, the founder of the Earth Cryosphere Institute, SB RAS and its director from 1991 to 2014, the organizer and permanent editor-in-chief of the “Earth’s Cryosphere” journal.**

advance for observations on Yamal and Gydan, and to get a bird’s eye view of all the elements of tundra landscapes typical of permafrost regions (cryolithozone).

The Earth Cryosphere Institute has hosted a number of international conferences in Tyumen. Among them, the 2004 international conference “Cryosphere of Oil and Gas Provinces” to commemorate 60<sup>th</sup> anniversary of the Tyumen region. Its opening ceremony was marked by two welcoming speeches: by Sergey Sobyenin, Governor of the Tyumen Region, and by Dr. Jerry Brown, IPA President.

In 2012, the Institute was actively involved in organizing and conducting the 10<sup>th</sup> Jubilee International Conference on Permafrost (The Tenth International Conference on Permafrost, TICOP). With

over 500 scientists from more than 25 countries gathered in the city of Salekhard, the meeting ranked as largest scientific conference on permafrost in Russia in the past three decades.

For more than thirty years, scientists from the Earth Cryosphere Institute have been conducting field research at geocryological research stations in Russia: Vaskiny Dachi and Marre-Sale (Yamal Peninsula), Nadym and Urengoy (Western Siberia), Shapkino, Bolvansky and Kashin (North of European Russia).

In 2017, the Earth Cryosphere Institute entered into the Federal Scientific Centre SB RAS (Tyumen).

Of the 54 researchers currently employed with Institute, more than 60 % are under the age of 39, thus enabling amalgamation of mature scientific ex-



**Fig. 2.** The ECI research staff, Tyumen.

expertise and youth vigor (Fig. 2). The breadth of the institute's research lines is remarkably expressed in its structure, which includes four laboratories titled "Cryogenic processes", "Cartographic modeling and forecast of the state of natural cryogenic geosystems", "Natural gas hydrates", "Heat and mass transfer phenomena", and a scientific project "The methodological framework of cryospheric sciences" (Fig. 3).

The Earth Cryosphere Institute actively cooperates with scientific and educational organizations: Lomonosov Moscow State University, Tomsk State University (TSU), Tyumen State University (TyumSU), Melnikov Permafrost Institute (MPI SB RAS), Sergeev Institute of Environmental Geoscience, Russian Academy of Sciences (IGE RAS), etc. In recent years, the Institute has been involved in a number of international programs (e.g., Circumpolar Active Layer Monitoring (CALM), Thermal State of Perma-

frost (TSP)) and its researchers have participated in leading international and Russian conferences.

For almost 25 years now, the Earth Cryosphere Institute has been the main co-founder of the "Earth's Cryosphere" journal, the only national edition covering all aspects of cryology published since 1997.

We should not forget about another important fact as we reflect on this jubilee year: in two years' time, we will mark the centenary of the term "cryosphere" coined in 1923 by A.B. Dobrovolsky. Not only does this upcoming anniversary make us look back and analyze the path the science of cold has accomplished over the past century, it also enjoins on us a forward-looking commitment to deepen and widen our knowledge of the Earth's cold envelope. The novel approaches and cutting edge remote sensing technologies which became available in the 20<sup>th</sup> century and applicable to the cryosphere dynamics

**Fig. 3.** Present-day activities of the Earth Cryosphere Institute.

*a* – the Pechora field team of the ECI Tyumen Scientific Center SB RAS with the Nenets State Nature Reserve staff; *b* – the 2019 field works at the Vaskiny Dachi research station, Yamal Peninsula (the Cryogenic Processes Laboratory employees with colleagues); *c* – young scientists, the future of the Natural Gas Hydrate Laboratory (*from left to right*): V.A. Vlasov, PhD (Phys.-Math.); A.M. Reshetnikov, PhD (Tech.), laureate of the Academician P.I. Melnikov Prize, Siberian Branch of the Russian Academy of Sciences; N.S. Molokitina, PhD (Phys.-Math.), winner of the competition for the scholarship of the President of the Russian Federation for young scientists and postgraduates; A.O. Drachuk, PhD (Phys.-Math.); M.Sh. Madygulov, junior research scientist; *d* – V.V. Nakladnov, postgraduate student from the Heat and Mass Transfer Phenomena Laboratory – fitting a laboratory model of frozen soil cooling system; *e* – V.S. Sheinkman, leading researcher, and the students on geological hiking trail along the Kodar Ridge; *f* – editorial group of the "Earth's Cryosphere" journal.

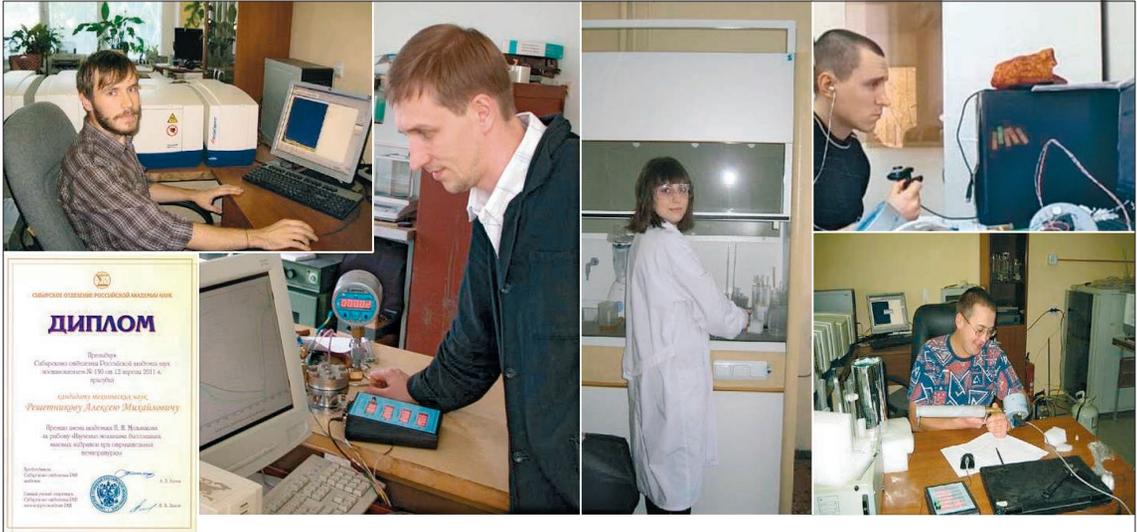
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monitoring, as well as increasing opportunities to improve our understanding of the complex physical, chemical and biological processes occurring in it, have enabled an unparalleled extension of the scope of knowledge about the object of research. Against this backdrop, global society is increasingly becoming aware of the key role of the cryosphere as one of the most important resource ensuring stability of mankind's existence and its sustainable development. These tendencies impose even greater responsibility

on the Earth Cryosphere Institute, to further promote the knowledge integrating concept within a holistic scientific view of the cryosphere and look for answers to both current and future climate changes and environmental challenges.

In the year of this remarkable anniversary, we sincerely wish the ECI staff to preserve their creative longevity in the future, and increase their research potential, in a continuous effort to expand the horizons of knowledge of the world of cold.

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