

National Report to SCAR for year:

2012-2013

Activity	Contact Name	Address	Telephone	Fax	Email	web site
National SCAR Committee						
	Prof. Petro Gozhik Chair Valeria Savchenko Secretary	Institute of Geological Science Gonchara Str, 55-B Kiev 01601 National Antarctic Scientific Center Taras Shevchenko Blvd, 16 01601 Kiev	38044 246 3880	38044 2463880 38044 4869334	mmcgeo@nbi.com.ua valery_sav@ukr.net	
SCAR Delegates						
1) Delegate	Dr. Valery Lytvynov	blvd. Tarasa Shevchenka, 16, Kyiv 01601, Ukraine	38044 246 3810	38044 2463880	uac@uac.gov.ua	www.uac.gov.ua
2) Alternate Delegate	Oleksandr Kuzko	blvd. Tarasa Shevchenka, 16, Kyiv 01601, Ukraine	380,442,463,880	380,442,463,880	uackuzko@mon.gov.ua	
Standing Scientific Groups						
Life Sciences	Dr. Yevgen Moisejenko	Bogomoletz Institute of Physiology Bogomoletz St., 4 Kyiv 01024, Ukraine	380,442,463,883	380,442,463,883	moiseenko@biph.kiev.ua	
Geosciences	Dr. Volodymyr Bakmutov	Subbotin Institute of Geophysics Palladina Ave 32, 03680 Kyiv	38 044 4241186	38 044 4502520	Bakmutovvg@gmail.com bakhm@igph.kiev.ua	
Physical Sciences	Dr. Vazira Martazinova	Institute of Hidrometeorology Nauki Ave 37, 03650 Kyiv	38 044 5258790	30 044 5255363	nigmi2@yandex.ru vazira@gmail.com	

Activity	Contact Name	Address	Telephone	Fax	Email	web site
Scientific Research Program						
AGCS	Dr. Vazira Martazinova	Institute of Hidrometeorology Nauki Ave 37, 03650 Kyiv	38 044 5258790	30 044 5255363	nigmi2@yandex.ru vazira@gmail.com	
EXPERT GROUPS						
1) GIANT	Dr Eugene Seredinin	ECOMM Ltd Pertitskogo St 4, 03115 Kyiv	38 044 5024121	38 044 5024121	es@ecomm.kiev.ua	
2) ANTEC	Dr. Rudolf Greku	Institute of Geological Sciences Gonchara St., 55-B, Kyiv 01601	38 044 2169334	38 044 4869334	satmar@voliacable.com	
3) IBCSO	Dr. Rudolf Greku	Institute of Geological Sciences Gonchara St., 55-B, Kyiv 01601	38 044 2166934	38 044 4866934	satmar@voliacable.com	
4) ADMAP	Dr. Volodymyr Bakhmutov Dr. Tamara Yegorova	Dr. Subbotin Institute of Geophysics Palladina Ave.,32, Kyiv 03680	38 044 4241186	38 044 4502520	bakhmutovvg@gmail.ru bakhm@igph.kiev.ua egorova@igph.kiev.ua	
5) Human Biology and Medicine	Dr. Eugene Moiseenko	Bogomoletz Institute of Physiology Bogomoletz St., 4, Kyiv 01024	38 050 3344558	38 044 2463880	moiseenko@bipg.kiev.ua	
6) PoMet	Dr. Vazira Martazinova	Institute of Hidrometeorology Nauki Ave 37, 03650 Kyiv	38 044 5258790	38 044 5255363	nigmi2@yandex.ru vazira@gmail.com	
SCADM						
1)	Dr. Eugene Seredinin	ECOMM Ltd Pertitskogo St., 4, 03115 Kyiv	380,445,024,121	38 044 5014121	es@ecomm.kiev.ua	
2)	Dr. Larysa Globa	National Technical University "Kyiv Polytechnic Institute", Peremogy Ave., 37, Kyiv 03056	380,444,549,891	380,444,068,299	lgloba@its.kpi.ua lgloba@hotmail.com	www.kpi.ua
SCAGI						
1)	Dr. Andriy Fedchuk	National Antarctic Scientific Center Taras Shevchenko Blvd, 16 01601 Kyiv	38 044 2463883	38 044 2463883	andriyf@gmail.com	
NATIONAL ANTARCTIC DATA CENTRE						
National Antarctic Scientific Centre	Mykola Leonov	National Antarctic Scientific Center Taras Shevchenko Blvd, 16, 01601 Kyiv	38 044 2463880	38 044 2463880	uac@uac.gov.ua	
SCAR DATABASE						
insert name of database for which your country has responsibility						

A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS*:

Geological-Geophysical sciences

Processing of the bottom topography marine research near Antarctica was carried out as well as interferometer processing of Antarctic Peninsula satellite photographs. The modeling of the deep structure using the gravimetric tomography was conducted. The signs of hydrocarbon accumulations at depths of 1.5 km were revealed, which requires further detailed study.

Some new results of geoelectric crustal structures of the West Antarctic research and evaluation of the mineral resource potential of the region were obtained during seasonal works of the 17th Ukrainian Antarctic Expedition. For the first time the existence of intense electrical abnormality in the Earth's crust (top mantle) south of the Antarctic Peninsula was revealed, indicating that the region is promising for mineral exploration. The data relevant to the assessment of possible mechanisms of the formation and evolution of tectonic structures of the region were obtained.

Hydrometeorological sciences

Database of meteorological, ozone and synoptic observations at Vernadsky station was checked and replenished; these observations will be used to study regularities of large-scale atmospheric processes of the Southern Hemisphere troposphere. The world's first reconstruction of the atmospheric circulation of the first half of the twentieth century in the Southern Hemisphere took place in accordance with the state of the Southern Hemisphere circulation, when archive of its meteorological fields was absent. A model of long-term forecasting of the ozone hole was developed. A new model of the Antarctic sea ice cover was developed and simulation studies are carried out. The data will be the basis for establishing a system for climate prediction and migration of biological resources in the Southern Hemisphere.

Geospace sciences

Ionosphere radio sounding, VLF-SLF observations and Stanford University experiment data (SLF) are presented. Studies of electromagnetic displays of geospace and weather disturbances in Antarctica were carried out.

Biological sciences

Research of terrestrial and marine ecosystems biodiversity was conducted. A collection of algae and bryophyte cultures of the dominating complex of Galindez Island biogeographic ground terrestrial ecosystems was created. The morphological and molecular genetic identification of the received material was made. A new species of algae is identified and its taxonomic position is determined. The set of samples will be examined for the purpose of search and putting into practice technologically advanced items of Antarctic biota. Creation of a collection of Antarctic pathogenic bacteria phages, which expose their activity at low temperatures, is a collection of unique gene pool of viruses. The studies lay the foundation for the creation of biotechnical applied elaborations with their use which can be connected both with possible research in the sphere of limiting the number of bacterial pathogens in agricultural production and with identification of high-level enzymes which can be used in molecular-biological research.

For the first time generalized three-dimensional models and marine system atlases were created: biodiversity data base with introduced video files and photo materials and also voucher collection catalogue containing 155 specimens (specimen encrypting system corresponds to biodiversity data base) were created. Atlas layout of underwater landscapes and marine organisms was designed. 30 % of species from the biodiversity data base are included to the atlas.

A study on the patterns of formation of vector flow of biogenic elements, qualitative and quantitative changes in ecosystems under the influence of climatic factors was conducted: photogrammetric tables and photogrammetric nomograms for nondestructive analysis of benthos communities was for the first time created for Antarctica; sequence of genes for 15 species from voucher collection were received which were included to molecular-genetic data base. The analysis of benthic communities was held on the test ground: biodiversity indices were defined for further analysis of ecosystem changes under the influence of climatic factors.

The database of genes that determine resistance to extreme factors was supplemented. A database that includes the specific name of plants, cultivation conditions, the growth medium, the name of the gene sequences of the primers, the size of the amplified fragments was developed. The data will be used to investigate the resistance of the Antarctic flora to extreme factors at the molecular genetic level.

Research on search and characterization of Antarctic organisms - producers of biologically active substances was conducted. 10% of the work on creating a collection of Antarctic organisms representing biotechnological interest is fulfilled. Valuable source of biologically active substances are Antarctic microorganisms. We were able to distinguish from the Galindez island vertical rock cliffs black yeast-shaped mushrooms *Nadsoniella nigra*, which are producers of melanin and to develop technological conditions for its industrial production.

Medico-physiological studies

The research, analysis and generalization of results of Antarctic expedition participants' examination on the stages of medical selection and after a long stay in Antarctica were conducted. Methods of selection of candidates for participation in Antarctic expeditions are improved and additional criteria of evaluation of functional systems of polar explorers' organisms were investigated to improve disease prevention. Such additional criteria will increase the effectiveness of preventive and rehabilitative measures. Scientific research is carried out taking into account the current level of achievement in the study of the mechanisms of human adaptation to extreme Antarctic conditions.

Oceanographic studies

On the basis of modern climate arrays, archive contact hydrological databases, long-term re-analysis data and satellite measurements the seasonal and interannual variability of temperature fronts, area of water masses and large-scale flows in the region of Western Antarctica were investigated. Variability of the Earth's surface heat balance and main meteorological parameters in the Southern Hemisphere is studied due to changes in the Pacific decadal oscillation phases; low-frequency variability of the turbulent heat fluxes on the basis of monthly data NCEP / NCAR was also studied. Peculiarities of the seasonal variability geostrophic currents on the surface of the ocean for the Southern Ocean basin are identified. These studies are part of the ongoing monitoring of the actual state of hydro-physical fields of the Southern Ocean and are aimed at improving the methods of climate change long-term prediction.

National Antarctic Data Centre

Requirements list for creation of the automated system of the National Antarctic Data Center is elaborated which is based on ArcGis geoinformation platform of Esri Company – the world leader of geoinformation technologies