

MEMBER COUNTRY:

Ukraine

National Report to SCAR for year:

2011

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<b>Standing Scientific Groups</b>						
<b>Life Sciences</b>						
<b>1)</b> <b>2)</b> <b>3)</b> <b>4)</b>	Dr. Oleksandr Tashyrev	Institute of Biology and Virology Zabolotnogo Str. 154 D, Kyiv 03680	38 044 5263297	38 044 5263279	<a href="mailto:tach@i.com.ua">tach@i.com.ua</a>	
<b>Geosciences</b>						
<b>1)</b> <b>2)</b> <b>3)</b> <b>4)</b>	Dr. Volodymyr Bakhmutov	Subbotin Institute of Geophysics Palladina Ave 32, 03680 Kyiv	38 044 4241186	38 044 4502520	<a href="mailto:Bakhmutovvg@gmail.com">Bakhmutovvg@gmail.com</a> <a href="mailto:bakhm@igph.kiev.ua">bakhm@igph.kiev.ua</a>	
<b>Physical Sciences</b>						
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Activity	Contact Name	Address	Telephone	Fax	Email	web site
<b>Scientific Research Program</b>						
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<b>EBA</b> 1) 2) 3) 4)	Dr. Oleksandr Tashyrev	Institute of Biology and Virology Zabolotnogo Str. 154 D, Kyiv 03680	38 044 5263297	38 044 5263279	<a href="mailto:tach@i.com.ua">tach@i.com.ua</a> <a href="http://tach2007.ukr.net">tach2007.ukr.net</a>	
<b>ICESTAR</b> 1) 2) 3) 4)						
<b>SALE</b> 1) 2) 3) 4) <b>AAA (2010-)</b> 1) 2) 3) 4)						

Activity	Contact Name	Address	Telephone	Fax	Email	web site
<b>ACTION GROUPS</b>						
1) Prediction of Changes in the Physical and Biological Environment of the Antarctic	Dr. Oleksandr Tashyrev	Institute of Biology and Virology Zabolotnogo Str. 154 D, Kyiv 03680	38 044 5263297	38 044 5263279	tach@i.com.ua tach2007@ukr.net	
<b>EXPERT GROUPS</b>						
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2) ANTEC	Dr. Rudolf Greku	Institute of Geological Sciences Gonchara St., 55-B, Kyiv 01601	38 044 2169334	38 044 4869334	<a href="mailto:satmar@voliacable.com">satmar@voliacable.com</a>	
3) IBCSO	Dr. Rudolf Greku	Institute of Geological Sciences Gonchara St., 55-B, Kyiv 01601	38 044 2166934	38 044 4866934	<a href="mailto:satmar@voliacable.com">satmar@voliacable.com</a>	
4) ADMAP	Dr. Volodymyr Bakhmutov Dr. Tamara Yegorova	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	<a href="mailto:moiseenko@bipg.kiev.ua">moiseenko@bipg.kiev.ua</a>	
6) PoMet	Dr. Vazira Martazinova	Institute of Hydrometeorology Nauki Ave 37, 03650 Kyiv	38 044 5258790	38 044 5255363	nigmi2@yandex.ru vazira@gmail.com	
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<b>SCAGI</b>						
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<b>NATIONAL ANTARCTIC DATA CENTRE</b>						
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<b>SCAR DATABASE</b>						
insert name of database for which your country has responsibility						

## **A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS\*:**

### **Geological-Geophysical Research**

Main results on basic scientific directions are as follows:

1. Complex research of the West Antarctica Earth's crust structure oriented to: obtaining a new data on geophysical fields distribution; refinement of structural-tectonic zoning schemes; allocation of inhomogeneities of the Earth's crust and the upper mantle; determination of age, elemental composition and petrologic-geochemical peculiarities of the main geological complexes; construction of the Earth's crust and the upper mantle geophysical models.
2. Investigation of tectonic-structural and density inhomogeneities of deep structure of the West Antarctica, its resource potential, distribution of organic pollutants and heavy metals in its geoecosystem components pointed at: determination of deep structures which are promising for hydrocarbon resources; investigation of the deep structure, geodynamics and evolution of the region by the gravimetric tomography method for the purpose of allocation prospective georesource areas; investigation of conditions of the regional geoecosystem as well as gaining the results with respect to the influence of anthropogenic and androgenic factors to its change.
3. Geoelectric and tectonomagnetic investigations of Antarctic Peninsula are directed to: obtaining new data on intensity of modern seismotectonic processes; construction of interaction schemes of main structural elements of the Earth's crust; erection of the Antarctic Peninsula geoelectric model on the basis of geomagnetic field variations analysis.
4. Monitoring of geomagnetic field variations and geophysical hazard in Antarctica by complex instrumental data, first of all from Vernadsky Magnetic Observatory included into the INTERMAGNET.

Prospects of further investigations directed basically to the mineral resource potential of the region are considered.

### **Meteorological Research**

In the framework of a program on improving the measuring equipment at Vernadsky station a new TROPOSPHERE meteorological complex has been installed in February, 2011. The TROPOSPHERE complex is made in Ukraine, and it measures main meteorological parameters.

High quality of the meteorological complex has been confirmed by certificates of the State Committee of Ukraine on Technical Regulation and Consumer Policy and the State Aviation Administration of the Ministry of Transport and Communication of Ukraine.

Measurement is performed by separate transducers. This approach ensures the implementation of the World Meteorological Organization (WMO) recommendations on the accuracy of various meteorological parameters measurement and periodic verification thereof, eliminates the transducers' mutual influence on each other operation.

Some meteorological sensors have original performance. Relative humidity in the TROPOSPHERE complex is measured by the two-temperatures method, free of the sensor's hysteresis, increases the accuracy of measurements and ensures that the transducer continuously and stably functions in conditions of saturation and at temperatures below 0°C.

The distinctive features of the wind speed and direction transducer are: manometric principle of operation; no moving parts; measurement of two meteorological parameters with a single device; heating system which prevents the transducer from freezing in winter.

Currently two measuring systems operate simultaneously at Vernadsky station, including old UK Modular Automatic Weather station (MAWS). This will allow us to exclude errors in measurements and improve quality in operative and climate data from Vernadsky, which is a part of WMO network in Antarctica.

### **Biological Research**

Particular importance is attached to such new areas as biological intelligence, and molecular genetic studies of Antarctic organisms. Biological intelligence - is the search and selection among Antarctic microorganisms, plants, animals and industrial-looking producers of biologically active substances (cryoprotectants, melanin, carotene, etc.). Effective bio-based on the knowledge of regularities of the structure and functions of the Antarctic ecosystem.

The aim of molecular genetic research is the creation of the database causing the resistance and adaptation of Antarctic organisms (viruses, bacteria, plants, etc.) to the extreme factors of Antarctica (low temperatures, UV radiation, toxic metals, etc.).

A fundamentally new direction is the creation of a single biological geographic information system (ArcGIS), combining the results of a comprehensive study of the structure and functions of the Antarctic biota, its resistance to extreme factors, its involvement in the biogeochemical cycles of elements, etc.

New biological research program meets the modern requirements of international standards, requirements for the comprehensive study of Antarctic ecosystems

**Physics of Atmosphere and Near Space**

For the first time an interaction of atmospheric and space weather systems were discovered. VLF and ELF observations data base is created. Supersensitive receiving systems for geomagnetic field monitoring and wave disturbance diagnostics are elaborated and installed. Perennial average structure and dynamics of total ozone content distribution is estimated.

**Medico-Physiological Research**

A progress is made in the study of modern climatic changes of state of the South hemisphere troposphere atmospheric processes, their impact on Antarctic Peninsula region climate formation.

Analysis of the Weddell Sea seasonal circulation characteristics has been carried out.

For the first time in Ukraine a long-term weather forecast method was elaborated and successfully tested at Vernadsky Station.