



МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

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Від _____ № _____

На № _____ від _____

Scientific Committee on Antarctic Research
Executive Committee of SCAR
Scott Polar Research Institute
Lensfield Road
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Full Membership of SCAR Ukraine

Dear President, dear members of the Executive Committee

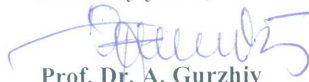
Ukraine herewith submits the application for a change the membership status from Associate to Full Membership of the Scientific Committee of Antarctic Research (SCAR). According to the Article X of the Antarctic Treaty the Ukraine as independent state has been provided the complex and systematic research in Antarctica since 1996. This application is a result of discussion of Ukrainian scientists and institutes who take part in Antarctic research since last decade.

Conclusively, the Ministry of Education and Science of Ukraine is very happy to support this application and to function as coordinator in the matter according the Ukrainian legislation.

We herewith also confirm to adhere to the SCAR Constitution and to the Principles of environmental protection of the Antarctica. Please find also enclosed a submission of documents describing the activities of the Ukraine in Antarctica.

We hope that the application and the supporting documents correspond to the requirements and expectation for a positive decision by the Executive Committee of SCAR at the next meeting in 2006. We would be happy to supply any additional information assisted necessary for processing the application.

Sincerely yours,


Prof. Dr. A. Gurzhiy
(First Deputy Minister of Education and Science of Ukraine)

Enclosure: Application documents for full membership of Ukraine to SCAR

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Application documents for full membership of Ukraine to SCAR

Introduction

Ukraine expresses its interest to achieve the Full Membership of SCAR, at category “D”. Ukraine plans to increase its development of joint collaboration with scientists from other countries, and actively to increase participation in the SCAR Scientific Groups.

Ukraine acceded to the Antarctic Treaty on 17 September, 1992. In accordance with Article XIII of the Antarctic Treaty, Ukraine achieved the status of a Consultative Party to the Antarctic Treaty on 27 May 2004 (Cape Town) at XXVII ATCM.

Ukraine has been an Associate Member of SCAR since September 5, 1994.

According to the Memorandum of Understanding between the British Antarctic Survey and the Ukrainian Antarctic Centre (UAC, since 2005 – NASC, the National Antarctic Scientific Center of Ukraine), signed in June 1995, the Faraday station was transferred to the Ukraine and is now named – Akademik Vernadsky Antarctic station. In accordance with Article X of the Antarctic Treaty, Ukraine has carried out complex and systematic research in Antarctica since 6 February 1996.

At the XXIV ATCM (2001) the Depository of the Antarctic Treaty confirmed the receipt of official documents by Ukraine about acceding to the Protocol on Environmental Protection to the Antarctic Treaty and Recommendations XVI-10 (Annex V to the Protocol).

The National Antarctic Scientific Center (NASC) of the Ministry Education and Science of Ukraine is the organization appointed to undertake, co-ordinate, and provide the logistical support for Antarctic research, as the national operator of Ukraine in Antarctica.

The State programme of Ukrainian research in Antarctica for 2002–2010 (the Programme 2002-2010) defines the strategy of Ukraine’s activity in the Antarctic region. The main goal of the Programme 2002-2010 is the provision of interdisciplinary research and the creation of conditions for an amplification of interactions with SCAR. Most researches are continuous and made on an all-year-round basis.

The Programme 2002-2010 is based on international cooperation with the National Antarctic programmes of other countries, and on interaction and communication with the Scientific Committee of Antarctic Research (SCAR). Active participation of Ukrainian scientists in the SCAR Scientific Groups is one of the main tasks of Ukrainian Antarctic activity.

Ukraine’s Antarctic station Akademik Vernadsky (65°15'S, 64°16'W) is a full year operating station. Ten Ukrainian Antarctic expeditions have been organized by the NASC, and in the last five expeditions Ukraine has facilitated the active participation of scientists from different countries in the joint research.

Ukrainian activities in the framework of SCAR

In accordance with the priority areas of bilateral agreements between NASC and other countries, several research projects have been performed in cooperation with different countries: Poland, Slovenia, United Kingdom, Germany, Bulgaria (INTAS project), United States of America, Czech Republic (long-term project), Russia, Argentina, and Peru.

The fifth SCAR Antarctic Geodesy Symposium 2003 (AGS'03) was successfully organized by Ukraine, with the co-ordination and partial financial support of SCAR, at the University "Lviv Polytechnica", in Lviv. It was attended by 38 participants, which included representatives of nine SCAR countries. The program included 36 presentations and the GIANT Business meeting. The common international projects with active participation of Ukraine were discussed. This symposium developed in close cooperation between SCAR Geosciences SSG members and Ukraine scientists. Results were published as SCAR Report 23.

During the 2005/6 season, Ukraine is carrying out joint Antarctic research activity with Peru. The Peruvian Government's Antarctic R/V Humboldt will support the season's researches.

Historically the Akademik Vernadsky station has been a well-equipped observatory for upper atmosphere, climate and other geophysical research. The geomagnetic data from Vernadsky have been sent to the INTERMAGNET network. Ionosphere disturbances and their relations with the transversal lower ionosphere conductivity in conjugate regions (Vernadsky station – Boston region) are studied with USA scientists of AFRL, Haystack Observatory, Lowell University. A series of publications in referee'd journals was issued on this topic. The 3-hours indices every month are sent to the International Service of geomagnetic indices (France). Simultaneous observations of geomagnetic micropulsations and analysis in cooperation with BAS (UK) have been undertaken. The long-term variations of atmosphere ozone-depleting organic halides, hydrocarbons in the Antarctic ice and snow samples from degraded glaciers are studied with scientists of Germany, and the USA.

Comprehensive meteorological observations are made based on the standard program of the World Meteorological Organization, using the modular automatic weather station (MAWS).

The local wind circulation peculiarities are studied, and regular hydrological observations at the Argentine Island region have been provided since 2000. The efficiency of the erythemalous UVB radiation investigation, and UV radiation flow are explored at Vernadsky. The surface energy balance and the solar radiation (UV, and IR radiation) reaching the vegetation cover are studied in a joint project with the Czech Republic.

The ice caps and glaciers dynamics and mass-balance of the Argentine Island Archipelago and Antarctic Peninsula (in the Vernadsky Station region) are studied. Digital photogrammetry and geodesy survey technology have been introduced. During IPY 2007/8 Ukraine is planning to carry out joint researches in the Argentine Islands region in the framework of the CLICOPEN project (with Germany, Spain, Argentina and other participants), the MESAO project (with Czech Republic), the ICESTAR/IHY project

(with UK, USA, Finland and other participants), and the POLENET project (with USA, Germany and others).

The project on “*Region-scale geological investigation of the subglacial terrains of Antarctica: main rock types identification and terrain-scale geological/metallogenic events determination on a basis of single-grain trace element geochemistry of wide-spread accessory minerals from marine glacial deposits*” is being developed in the framework of the IPY 2007/8 CAZIC project (with Germany).

In the framework of the GIANT project, the season permanent GPS-survey at the “SCAR GPS 2002” site on Galindez Island was started at Vernadsky in 2002 in cooperation with German scientists. This work is a continuation of the Antarctic plate movement research called for under SCAR’s Geodetic Infrastructure of Antarctica Programme (GAP96, GAP98, SCAR2002).

Echo sounding data from the Argentine archipelago’s seabed in the shallow unsurveyed areas (within the framework of SCAR’s IBCSO project) has been provided by the Vernadsky Ukrainian Antarctic station region since 1997. Determination of detailed local geoids with altimeter data from the Bellingshausen Sea was carried out within the framework of SCAR’s ANTEC project.

Studies have been made of plant physiological function (photosynthesis), of dependence on nutritious substances, and on physical and chemical conditions of the environment (with the Czech Republic). Parasitological researches have been carried out of Antarctic fish at the Vernadsky station and in the Antarctic Peninsula shelf region (with Poland). Biological researches on sea and land invertebrates within the King George Island ecosystem have also been carried out with Poland. Research on genetic, physiological and biochemical features of *Deschampsia antarctica* populations were started in 2005 (also with Poland).

Measurements of atmospheric Radon concentration and gamma-background, using solid-state detectors, were started in 2002 (with Slovenia). Ecological-genetic monitoring of birds is also carried out. Since 2002 the investigation of *Pygoscelis papua* penguin populations and the problem of changing of genetic structure of populations under environmental impact have been carried out with Bulgaria and Switzerland.

Ukraine is leading the SCAR project “*Atmospheric Impact on GNSS Observations in Antarctica in relation to Geophysical Research*” in the Geodetic Infrastructure of Antarctica (GIANT) Programme, and actively participates in the ICESTAR Programme.

In cooperation between the Institute of Geodesy and Cartography (Poland) and NASC on Antarctic GPS observations, a dual frequency GPS receiver has been installed as a permanent GPS observatory at Vernadsky station during March 2005 for research on geodynamics and the ionosphere.

For the purpose of estimating Antarctic station activity impact on the environment, the monitoring of Galindez Island ecosystem has been undertaken. Selection and conservation of samples of penguin feathers and guano, moss and lichen have been undertaken for the purpose of searching them for contaminants. Collection of samples for defining the quantity of oil-products and toxic substances in seawater near the station has also been carried out.

Studies are actively developing on the growing impact of tourists' activities on the environment of the Vernadsky station region and adjacent islands.

Ukraine has recently been involved (included) in ten projects in the framework of the International Polar Year 2007/8: CliCOPEN, ICESTAR/IHY, POLENET, MESAO, AMES, EBA, IPY-AP, ESSAR, CAML, CAZIC).

Long-term Research Projects in Antarctica during 2006–2010 period according to the Program 2002-2010

No	Project title	Project objectives
1	Long-term climate changes investigation	Pattern of the atmosphere circulation in the Antarctic Peninsula region. Determination of cyclone tracks and velocity. Composing the data bank of the hydro-meteorological anomalies.
2	Investigation of the near-Earth space and electromagnetic field in Antarctica	Measurements of the polarization characteristic ELF field near maximum Schumann resonance. Investigations of the thunderstorm activity using VLF monitoring.
		Retrieval of the long-period atmosphere, ozone layer, and ionosphere variations.
3	Investigation of the ozone layer	Investigation of ozone layer dynamics and the flow of ultra-violet radiation over the Antarctic Peninsula.
		Photometer investigation of the UVB radiation.
4	Western part of the Antarctic Peninsula	Research on the dynamics of Antarctic Peninsula blocks as a response to the disintegration of Gondwana.
5	Investigation of the seismic activity in the Antarctic Peninsula region	Seismic and acoustic (infrasound) monitoring, and iceberg calving monitoring.
6	Assessment of the Antarctic ecosystems state in the recent climate change conditions	Analysis of climate and ecosystem changes in the Antarctic Peninsula region.
7	Environment monitoring	Bioecosystem monitoring of the Argentina Island region
		Research on the connection between contamination level in penguin feather and purities of micro nuclide frequency in blood red corpuscles as an index of genome stability.

8	Krill population genetic structure	The analysis of krill population genetic structure and their dynamics based on the methods of biochemical genetics. Genetic basis of krill population stability, development and adaptation.
9	Fauna Antarctic fish parasites	Antarctic fish parasites (taxonomy, phylogeny, and seasonal dynamics).
10	Human adaptation mechanisms in Antarctica	The biorhythm correction methodic introduction for human adaptation. Study of fatigability mechanisms and sub-cell disruption of human immunity.
11	Influence of Antarctic conditions on human genome stability	Study of human genome stability dependencies from individual peculiarities.
12	Pulse-Doppler ionosphere sounding of drifts in Antarctica	Troposphere, mesosphere, ionosphere coupling research. Study of disturbances energy transfer from the Earth surface to geospace height.
13	Region-scale geological investigation of the subglacial terrains of Antarctica	Rock type identification and terrain-scale geological metallogenic event determination on the basis of single-grain trace element geochemistry of widespread accessory minerals from marine glacial deposits.
14	Electromagnetic monitoring	Study of the deep crustal structure in the region, using magnetotelluric, tectonomagnetic and magnetovariational measurements.
15	The Antarctic Peninsula block horizontal movement	Geodynamical reconstruction of Argentine Island territory, and paleotectonic reconstruction of the West Antarctic Peninsula in Neozoic age.
16	Neotectonic dynamics of landscape and ice cover of West Antarctica	Geodetic and Geomorphological research for detailed mapping of land and seabed topography; observations for the crust and ice cover mobility study using ground-based and satellite remote sensing methods.
17	Dynamical and thermal regime study of glaciers	Glaciology and meteorology observation; snow, firn and ice sampling; photogrammetry and investigation of glacier dynamics in the Argentine Island archipelago.
18	Creation of geodetic and geodynamical network	Creation of a geodetic and geodynamical network in the Argentine Islands territory.
19	GIS project "Vernadsky-Argentina Islands"	GIS and database development for spatial data, visualization of data.
20	An investigation of gentoo penguins' population structure	An investigation of gentoo penguins populations structure (<i>Pygoscelis papua</i>) on Peterman Is. and Livingston Is.
21	Low temperature biochemical adaptation mechanisms	Biochemical pelagic research to study low temperature biochemical adaptation mechanisms.
22	The eco- geochemical monitoring Vernadsky station region	Research (exploration) on technogenic geochemical anomalies in background lithologic properties of sediments.

Expected results

To investigate the influence of industrial factors on regional climate changes within the XXI century;

To study the energy exchange processes in the surface-atmosphere-ionosphere-magnetosphere system for modeling and forecasting natural and artificial processes and disturbances;

To develop new methods for monitoring atmospheric and ionospheric parameters in Geospace;

On the base of geophysical monitoring of the spatial-temporal structure of the geomagnetic field, to receive information on deep processes in tectonosphere;

To construct a regional geodynamic evolution model;

To study the correlation between global long term changes in the environment, and climate and geophysical parameters;

To work out the effective technology of medical – biology, psychophysiology and sanitary-hygiene safety of expedition crews;

To work out a permanent monitoring system for the human organism, operative diagnosis and pathological correction;

To provide permanent ecological monitoring as called for by the Protocol on Environmental Protection to the Antarctic Treaty.

Bibliography of Ukrainian Contributions to Antarctic Science (selected publications in referee journals)

Yampolski Yu.M., Belenov A.F., Ponomarenko P.V.. Interaction between artificial ionospheric turbulence and geomagnetic pulsations, - Journal of Atmospheric and Solar - Terrestrial Physics, 59, N18, 1997, p. 2367-2372.

Clilverd M.A., Menk F.W., Milinevsky G.P. et al. In-Situ and Ground-Based Intercalibration Measurement of Plasma Density at L=2.5. // Journ. Geoph. Res., A10, 2003. P. 1-25. doi: 10.1029/2003JA009866.

Galushko V.G., Beley V.S., Koloskov A.V. et al. Frequency-and- Angular HF Sounding and VHF ISR Diagnostics of TIDs // Radio Science. – 2003. –Vol. 38, RS2861. – P.1029-1039.

Sinitsin V.G., Yampolski Yu.M., Zalizovski A.V. et al. Spatial field structure and polarization of geomagnetic pulsations in conjugate areas // Journ. Atm. and Solar Terrestr. Phys. – 2003. – Vol. 65. – P.1161-1167.

Bogillo V.I., Pokrovskiy V.A., Kuraev O.V., Gozhyk P.F. The Ozone-Depleting Organic Compounds in Antarctic Ice Environ // Sci.& Pollut. Res., 1998. – V. 5, No 3. – P. 136.

Gritsai Z.I., Evtushevsky A.M., Leonov N.A., Milinevsky G.P. Comparison of ground-based and TOMS-EP total ozone data for Antarctica and northern midlatitude stations (1996-1999) // Phys. Chem. Earth (B). - 2000. - Vol.25, _ 5-6. - P. 459-461.

Lambert J.-C., Roozendael M.Van, Simon P.C., Milinevsky G.P., et al. Combined Characterisation of GOME and TOMS Total Ozone Measurements From Space Using Ground-Based Observations From the NDSC // Adv. Space Res.- 2000.- V. 26, No 12, pp. 1931-1940,

Pokrovskiy V.A., Bogillo V.I., Dabrowski A.. Adsorption and Chemisorption of Organic Pollutants on the Solid Aerosols Surface // Adsorption and its Application in Industry and Environmental Protection / A. Dabrowski, Ed. – Elsevier; Amsterdam, 1999. – Pp. 571-634.

Terenetskaya I.P. A possibility of ozone depletion monitoring in conditions of opaque atmosphere using 'D-dosimeter', In: Ultraviolet Ground and Space -based measurements, Models and Effects. Eds Slusser JR, Herman JR and Gao W., SPIE vol. 4482. 2002. P. 305-312.

Krakovskaia, S.V. and A.M. Pirnach, 1998: Theoretical study of the microphysical structure of mixed stratiform frontal clouds and their precipitation // Atmospheric Research, 47-48, pp.491-503.

Pirnach, A.M. and S.V. Krakovskaya, 1994: Numerical studies of dynamics and cloud microphysics of the frontal rainbands // Atmospheric Research, 33, 333-365.

Didenko A.N., Tikhonov L.V., Peyve A.A. Magnetic petrology and variations of basalt's along the Mid-Oceanic Ridge near Bouvet Triple Junction // InterRige News. – 2001. – V.10, N1. – P.41-44.

Prosek __, Laska __, Budikova __, Milinevsky G. The regime of total and biologically effective ultraviolet radiation at Vtrnasky Station (Argentine Islands, Antarctica) and the impact of ozone and cloudiness in 2002 and 2003 // Czech Geography at the Dawn of the Millenium. - Olomous: Czech Geographic Society, Palacky University in Olomous, 2004. - P. 211-223.

Grytsai A., Grytsai Z., Evtushevsky A., Milinevsky G. Interannual planetary waves variability in ozone layer at 65 S // International Journal of Remote Sensing. - 2005. - Vol. 26, No. 16. - P. 3377-3387.

Milinevsky G.P., Leonov M.A., Grytsai A.V. Zonal wave numbers 1-5 in planetary waves from the TOMS total ozone at 65 S // Annals Geophysicae. - 2005. - Vol. 23, No. 5. - P. 1565-1573.

Gvozдовskyy I. Orlova T., Salkova E., Terenetskaya I., Milinevsky G. Ozone and solar UV-B radiation: monitoring of the vitamin D synthetic capacity of sunlight in Kiev and Antarctica // International Journal of Remote Sensing. - 2005. - Vol. 26, No. 16. - P. 3555–3559.

Bezrukov V., Lazarenko L. Environmental impact on age-related dynamics of karyotypical instability in plants // Mutation Research, 2002, Volume 1-2 pp. 113-118.

Kovtunovych G., Lytvynenko T., Negrutka V., Lar O., Brisse S., Kozyrovska N. Identification of Klebsiella oxytoca using a specific PCR assay targeting the polygalacturonase *pehX* gene // Res. Microbiology.-2003, Oct, 154 (8), P. 587-592.

Terenetskaya I., T.Orlova, I.Gvozдовskyy, G.Milinevsky "Solar UV radiation and vitamin D synthesis: direct monitoring of the vitamin D synthetic capacity of sunlight in Kiev and in Antarctic", Proceedings of the 17th Int. Congress of Biometeorology ICB 2005, Annalen der Meteorologie, Deutscher Wetterdienst, N41, vol.2 (2005), pp.676-678.

Korepanov V., V. Maksymchuk, G. Milinevsky, B. Ladanivskyy. First results of Earth's crust electromagnetic sounding at Antarctic Peninsula. - ____: *XXVIII SCAR Open Sci. Conf. "Antarctica and the Southern Ocean in the Global System"*, Abstract Volume, Bremen, Germany, 2004. - P. 328-329.

Greku R.Kh., T.R. Greku. Mantle and crust structure of Antarctic along along 190°E and 44°E meridians with the gravimetric tomography technique", submitted to *Terra Antarctica/ Reports* (in print).

Greku R.Kh., Usenko V.P., Greku T.R. Geodynamic Features and Density Structure of the Earth's Interior of the Antarctic and Surrounded Regions with the Gravimetric Tomography Method, submitted to D.K. Futterer et al. (editors), Volume "Antarctic Contributions to Global Earth Sciences" (in print).

Moiseyenko Y.Madiar S. Polychromatic spectrum modification on the psychic-physical human status in Antarctica Abstracts volume XXVIII SCAR Open Science Conference Antarctica and the Southern Ocean in the Global System. Bremen, Germany, June 25-31, 2004, p.198

Bogillo V. I., R. Borchers, M. S. Bazylevska, Formation and Sinks of Volatile Trace Compounds in Coastal Antarctica, *Terra Nostra*, 2004, No. 4, P. 109-110.

Bogillo V. I., M. S. Bazylevska, Abstr. Fourth Intern. Symp. Contact Angles, Wettability and Adhesion, Sheraton Soc. Hill Hotel, Philadelphia, PA, USA, June 14-15, 2004, P. 66

Chernouss S., Roldugin V., Beloglazov M., Semenov A., Bannikov A., Vaschenko V., Milinevsky G. The total ozone content inter-seasonal fluctuation peculiarities in the Arctic and Antarctic // *Proceedings of the 30th Annual European Meeting on atmospheric studies by optical methods* (August 13-17, 2003, Longyearbyen, Norway). - Longyearbyen: The University Centre on Svalbard, 2003. - P. 77-80.

Periodic Ukraine Antarctic Journals:

Bulletin Ukrainian Antarctic Center //1997. Issue 1. Kyiv. 331 p.

Bulletin Ukrainian Antarctic Center //1998. Issue 2. Kyiv. 299 p.

Bulletin Ukrainian Antarctic Center, 2000. Report 1997/1998 // Issue 3. Kyiv. 369 p.

Bulletin Ukrainian Antarctic Center // 2002. Issue 4. Kyiv. 267 p.

Ukrainian Antarctic Journal // 2003. Issue 1. Kyiv. 157 p.

Ukrainian Antarctic Journal // 2004. Issue 2. Kyiv. 180 p.