International Scientific Conference
dedicated to 50th anniversary of IO RAS SPb Branch
and 80th birthday of its founder S.S. Zilitinkevich

NATURE, THEORY AND MODELLING
OF THE
ATMOSPHERE – HYDROSPHERE – LAND-SURFACE SYSTEM

PROGRAMME

12–14 April 2016

Saint-Petersburg
Conference organisers

- Saint-Petersburg Scientific Centre of the Russian Academy of Sciences
- P.P. Shirshov Institute of Oceanology of the Russian Academy of Sciences
- Russian Foundation for Basic Research
- Saint-Petersburg Branch of the P.P. Shirshov Institute of Oceanology of the Russian Academy of Sciences
- Joint Research Council for Geosciences (Russia)
- Research Council on Fundamental and Applied Hydrophysics (Russia)
- Finnish Meteorological Institute
- University of Helsinki
- International (EU-Russia-China) Programme “Pan-Eurasian Experiment” (PEEX)
- Nordforsk Nordic Center of Excellence CRAICC (26060) “Cryosphere-atmosphere interactions in a changing Arctic climate”
- EU Commission Erasmus+ project 561975 ECOIMPACT «Adaptive learning environment for competence in economic and societal impacts of local weather, air quality and climate»

Conference main topics

- Atmosphere – hydrosphere – land-surface interaction
- Processes in planetary boundary layers of the Earth’s atmosphere and hydrosphere
- Reconstructions and projections of climate and environment change
- Observations of atmosphere – hydrosphere – land-surface interaction
- Applied aspects of studying the atmosphere – hydrosphere – land-surface system
- Modernisation of environmental education in response to modern demands from climate and environment change

Venue: Saint Petersburg Scientific Center (Russian Academy of Sciences)
5 Universitetskaya Nab., St. Petersburg, Russia

Official conference languages: Russian, English
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<td>11:00–11:05</td>
<td>Welcome address from Saint-Petersburg Administration and Saint-Petersburg Scientific Centre of the RAS</td>
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<td>11:05–11:35</td>
<td>A.A. Rodionov, O.V. Kopelevich (Russia) Saint-Petersburg Branch of the P.P. Shirshov Institute of Oceanology of the RAS: 50 years of history and development</td>
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<td>11:35–12:00</td>
<td>S. Zilitinkevich (Finland / Russia) Cognitive chaos: turbulence and boundary layers in the atmosphere and hydrosphere</td>
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<td>12:00–12:25</td>
<td>M. Kulmala (Finland) Climate relevant feedback loops and interactions</td>
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<td>12:25–12:50</td>
<td>G.G. Matishov (Russia) Large Northern and Southern marine ecosystems in conditions of ongoing climate change</td>
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<td>12:50–13:15</td>
<td>A.V. Belotserkovsky (Russia), S.N. Stepanenko (Ukraine) Modernisation of environmental education in response to grand challenges</td>
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<td>13:15–13:40</td>
<td>COFFEE BREAK; CONFERENCE PHOTO</td>
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<td>13:40–14:00</td>
<td>R. Bornstein (USA) Urban impacts on summer convective thunderstorms: results from field studies and modeling several mega cities</td>
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<td>14:00–14:20</td>
<td>G.S. Golitsyn, O.G. Chkhetiani (Russia) Horizontal diffusion of admixture at the sea surface in the presence of wind waves</td>
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<td>14:20–14:40</td>
<td>A.Z. Shvidenko (Austria) System approach to assessing the influence of Russian terrestrial ecosystems on global bio-geo-chemical cycles</td>
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<td>14:40–15:00</td>
<td>A.A. Baklanov (WMO) Seamless coupled meteorology-chemistry modeling in the Earth System</td>
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<td>15:00 – 16:30</td>
<td>CONGRATULATION SPEECHES</td>
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<td>16:30 – 17:00</td>
<td>CONCERT OF MARIINSKY THEATRE ARTISTS</td>
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<td>17:00–19:00</td>
<td>RECEPTION</td>
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GREAT HALL

10:00-10:30 G. Djolov (South Africa / Bulgaria) Works of the founder of IO RAS SPb Branch S.S. Zilitinkevich

PROCESSES IN PLANETARY BOUNDARY LAYERS OF THE EARTH’S ATMOSPHERE AND HYDROSphere / Finnish-Russian project clusters ABBA and CARLAC (Chairperson A. Karppinen)

10:30-10:45 Yu.I. Troitskaya (Russia) Bag-breakup control of sea spray in hurricanes
10:45-11:00 V. Kudryavtsev, P. Golubkin (Russia), B. Chapron (France / Russia) Wind-wave generation and coupling for moving extreme events: a simplified analytical model
11:00-11:15 E.A. Mareev (Russia) Electromagnetic weather and the global electrical circuit
11:15-11:30 S.V. Anisimov, S.V. Galichenko, K.V. Afinogenov (Russia) The electric condition of atmospheric boundary layer: results of ground-based observations and numerical modeling
11:30-11:45 I. Esau (Norway) Stably stratified planetary boundary layers in the Earth’s climate system
11:45-12:00 I.A. Repina (Russia) Interaction of atmosphere with inhomogeneous surface covered by sea ice

12:00–13:00 – LUNCH

13:00-13:30 R.I. Nigmatulin (Russia) Wave dynamics in bubbly liquids

SESSION CONTINUES

13:30-13:45 T. Vesala (Finland) Lesson from long-term flux observations over lakes
13:45-14:00 T. Elperin, N. Kleeorin, I. Rogachevskii (Israel) Self-organization mechanisms in transport of aerosols by stratified atmospheric turbulence
14:00-14:15 A.A. Grachev, T. Uttal, P.O.G. Persson, E.A. Konopleva-Akish, S.M. Crepinsek, C.J. Cox, C.W. Fairall, G. Lesins (USA), A.P. Makshtas, I.A. Repina (Russia) Annual cycle and latitudinal variation of the surface fluxes at Arctic terrestrial sites
RECONSTRUCTIONS AND PROJECTIONS OF CLIMATE AND ENVIRONMENT CHANGE (Chairperson V.V. Zhmur)

14:15-14:30  J. Haapala (Finland) Sea ice dynamics and recent changes of Arctic sea ice
14:30-14:45  G.M. Shved, S.I. Ermolenko, A.E. Kukushkina (Russia) Generation of Earth’s free oscillations by atmospheric motions
14:45-15:00  A. Izquierdo Gonzalez (Spain) The Strait of Gibraltar: a paradigm of Oceanography and a challenge for modelling

15:00–15:15 – COFEE BREAK

15:30-15:45  O.D. Shishkina (Russia) Mechanism of transformation of internal waves at the “shallow” and “deep” shelf
15:45-16:00  N.E. Voltsinger, A.A. Androsov (Russia) Non-hydrostatic dynamics of channels in the World Ocean
16:00-16:15  B.A. Kagan, E.V. Sofina (Russia) Tide-induced changes of a regional marine system climate: two methods of taking them into account as applied to the Barents Sea in summer
16:15-16:30  N.A. Dianskiy, V.V. Fomin, E.V. Borisov (Russia) Modeling of circulation in the Western Arctic Seas and estimating water exchange through the Kara Strait
16:30-16:45  V.A. Ryabchenko, V.A. Gorchakov, A.Yu. Dvornikov, S.S. Pugalova (Russia) Estimates of the ice cover influence on the primary production of phytoplankton in the Barents Sea (based on 3D modeling)
16:45-17:00  A.S. Safray, I.V. Tkachenko, S.M. Gordeeva (Russia) On evolution of a solitary internal wave in a channel: numerical experiments

SMALL HALL

14:15-17:00  ECOIMPACT Project Meeting (Chairperson S.S. Zilitinkevich)
19:00       DINNER at restaurant Le Boat (by invitation cards)
GREAT HALL

OBSERVATIONS OF ATMOSPHERE-HYDROSPHERE-LAND SURFACE INTERACTION / Finnish-Russian project clusters ABBA and CARLAC
(Chairperson V.N. Kudryavtsev)

10:00-10:20 H. Lappalainen (Finland) Pan-Eurasian Experiment (PEEX) – Towards system understanding of the Arctic-boreal regions

10:20-10:35 B. Chapron (France / Russia) Atmosphere – ocean system extremes using sensor synergy and modelling

10:35-10:50 S.A. Schuka, D. Rak, V.A. Soloviev, A.Yu. Dvornikov, A. Stashkevich (Russia) Dynamics of inter-basin water exchange in the Baltic Sea after the major inflow of December 2014

10:50-11:05 V.S. Platonov (Russia) Mesoscale modeling of extreme wind speeds over the Barents Sea

11:05-11:20 N.A. Zaytseva, Yu.A. Kurbatova, I.M. Kurganova (Russia) Towards studying meso- and micro-scale interactions between climate and terrestrial ecosystems in the framework of Pan-Eurasian Experiment (PEEX)

11:20-11:35 G.L. Stenchikov (USA / Saudi Arabia) Impact of strong volcanic eruptions on ocean and climate

11:35-11:50 V. Miles, I. Esau (Norway) Arctic urban heat islands under convective and stably stratified atmospheric conditions

11:50-12:05 A.L. Umnov (Russia) Distributed systems for environmental monitoring within the concept of the Internet of Things

12:05–13:00 – LUNCH

APPLIED ASPECTS OF STUDYING THE ATMOSPHERE – HYDROSPHERE – LAND-SURFACE SYSTEM / Pan-Eurasian Experiment (PEEX)
(Chairperson S.K. Gulev)

13:00-13:15 D.A. Romanenkov, A.V. Zimin, A.A. Rodionov, O.A. Atadzhanova, I.E. Kozlov (Russia) Variability of fronts and features of mesoscale dynamics in the White Sea

13:15-13:30 E.V. Borisov (Russia) Comparison and analysis of sea-level observations and model data in the Kara Sea

13:30-13:45 M.Yu. Belevich (Russia) Relationship between the continuity and density diffusion equations
13:45-14:00  V.I. Bogdanov, T.I. Malova (Russia) The problems of the modern concept of isostasy and large-scale effects of fractured Earth's crust of continents and oceans

14:00-14:15  A.Ya. Golmshtok (Russia) Multi-channel seismic profiling, gas hydrates and modeling of mud volcanoes formation in Lake Baikal

14:15-14:30  K. Yu. Bulgakov (Russia) The surface effects of the atmosphere - ocean - waves coupled model

14:30-14:45  A.S. Guzeev (Russia) Physical modeling of air flow patterns generated by engineering structures near the Earth’s surface

SMALL HALL

13:00-15:00  ECOIMPACT Project Meeting (Chairperson S.N. Stepanenko)

15:00–15:15  – COFEE BREAK

SMALL HALL

15:15–16:15  DISCUSSION OF THE CONFERENCE RESULTS
Conference e-mail: malova.ti@yandex.ru
Conference phone: +7 (812) 3234866
Contact person: Tatiana Malova
Phone in St. Petersburg Scientific Center: +7 (812) 328-26-12

Public transportation to the conference venue (5 Universitetskaya Nab., St. Petersburg)

- from metro "Sportivnaya-2" – bus 24, 47
- from metro "Admiralteiskaya", "Gostinyiy Dvor" and "Nevskiy Prospect" – bus 24, 7, trolley 1, 10, 11