### 1. Scientific Highlights and Achievements
- Global surface wind waves archive and supplementary climatology of wave characteristics is updated and extended to the period from 1880 to 2007. Data include now information about wave steepness, wave age, characteristics of wave phase velocities and extremes (IORAS, PI - S. Gulev).
- A new model of air sea exchange by CO2 and O2, based on the analysis of the transfer of gases by bubbles under different wind conditions is developed at MGO (St. Petersburg, PI - R. Bortkovsky). The model discriminates the diffusive and bubble gas fluxes. The model is applied for the computation of CO2 and O2 fluxes in the Atlantic and adopted for the use in climate model.
- 2-year field programme of the measurements of CO2 and CH4 exchange in the Kara and Laptev Seas was completed (IAPRAS, PI - I. Repina). Long time series of direct measurements and estimates of the state of the carbonate system using pH-TALK technique were provided and documented.
- A 4-year field campaign for the measurements of heavy metals in marine aerosols in the Black Sea is finished. Seasonal sections of heavy metals (Cr, Mn, Ni > Fe, Cu, Pb > Al, Zn, As, Cd) concentrations in the western part of the Black Sea were obtained (SOI, PI - A. Syroeshkin).

### 2. Main Activities (research projects, cruises, special events, workshops, outreach, capacity building etc)
- “Global air-sea gas exchanges and their climate relevance” subproject is approved by the National Ministry of Education and Science as a part of the Federal Research “World Ocean” programme (funding is expected to be started in June 2009).
- Russian Hydrometeorological service approved two more years of CO2 flux measurements in the Kara Sea. This will be a joint project with Russian Academy of Science (IAPRS).
- IORAS confirmed 2 more years of MERIDIAN cruises in the Atlantic – potentials for SOLAS-relevant measurements.
- Surface wave global analysis project is extended by 2 years and should have links now to the air-sea gas exchanges (Russian Academy of Sciences).
- New lab on marine biogeochemistry is established at SOI, Russian Hydrometeorological Office.
- New project “Carbon dioxide fluxes across the atmosphere-water-coastal eroded ice complex in the Arctic Ocean: Laptev and Kara seas” is submitted for funding consideration to the Russian Foundation for Basic Research.

### 3. Publications in 2008 (Reports, articles, models, datasets, products, website etc)

### 4. Interactions and Collaborations
- RV “Kapitan Dranitsyn” cruises in the Arctic basin (Kara sea) were organized in co-operation with University of Alaska.
- Analysis of surface wind waves at IORAS is performed in co-operation with KNMI (The Netherlands) and NOC (Southampton).
- Field laboratory at the Black Sea is maintained in co-operation with Ukraine Marine Ecology research center.

### 5. Goals and Plans for Future Activities
- To finalize up to the operational level MGO air-sea gas exchange model and to test it in the variety of conditions (under “Global air-sea gas exchanges and their climate relevance” subproject of the Federal Research “World Ocean” programme).
- Prepare for the publication Atlas of Heavy Metals in the western Black Sea.
- To start field measurements of surface air-sea gas fluxes at MERIDIAN cruises (partners are needed).

### 6. Other Comments

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**SOLAS Russia**

by Sergey Gulev