

Russian science expedition to the Indian Ocean

The Russian expedition to the Indian Ocean took place and has come to an end. Scientists from all over Russia - Moscow, Kaliningrad, Vladivostok, Sevastopol, Tomsk, were conducting research activities on the board of the Research Vessel “Akademik Boris Petrov” (Fig. 1). This is the first multidisciplinary scientific expedition of our R/V for our own research program of the Indian Ocean in over last 25 years. This expedition is the first contribution of Russia to IIOE-2. Areas of research are shown in Fig. 2.



Fig.1. R/V “Akademik Boris Petrov”

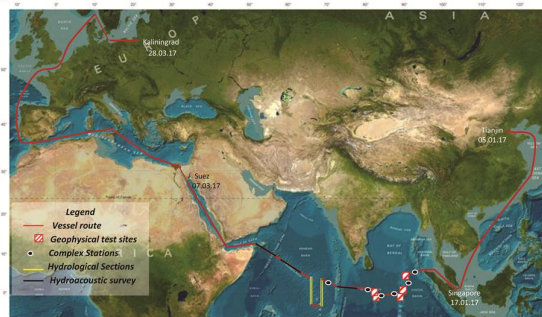


Fig.2. Route and work areas on the cruise

The primary objectives of the expedition were geophysical and geological research of the northern part of the Ninety East Ridge and hydrologic research of equatorial currents on the western part of the Indian Ocean. Hydrobiological, gas-geochemical and mercurimetric research were carried out as well.

The goal of the geophysical survey was to study of the structure of the northern, the eldest part of the aseismic Ninety East Ridge – the longest and the most enigmatic intraplate volcanic rise of the World Ocean. Another important study object is the area of intraplate deformation of the lithosphere of the Indian Ocean in the Central Basin characterized by the highest oceanic intraplate seismicity and abnormal high heat flow.

Hydrological work was aimed at the study of the Equatorial Counter Current. Two sections with CTD and ADCP measurements were made along the 65°E and 68°E from 3°S to 3°N (Figure 2).

To measure the concentration of polychlorinated biphenyl (PCB), organochlorine pesticides (DDT and metabolites), mercury, synthetic radionuclides ^{90}Sr , ^{137}Cs , $^{239,240}\text{Pu}$ and secondary radionuclides ^{210}Po in water, hydrobionts and sediments of marine ecosystems samples were collected along the route of the expedition. Cytometric and bioluminescent studies of micro-, nano-, pico- and femtoplankton at upper layer of water column were conducted as well.

Samples were taken along the route of the expedition to determine the concentration of polychlorinated biphenyls (PCBs), organochlorine chemical pesticides (DDT and metabolites), mercury, synthetic radionuclides ^{90}Sr , ^{137}Cs , $^{239,240}\text{Pu}$, natural radionuclide ^{210}Po in water, hydrobionts, bottom sediments of marine ecosystems. Cytometric and bioluminescent studies of micro-, nano-, pico-, and femtoplankton in the surface water column were done as well.

Samples for measurements of the concentration of greenhouse gases (methane, carbon dioxide, hydrocarbon gases), and hydrogen in water column, marine sediments and atmospheric surface layer were collected as well.

The obligatory component was a wide range of meteorological observations throughout the entire length of the cruise. The expedition was successfully concluded on 28th March in the Port of Kaliningrad, Russia.