

The results of the Laboratory of Nonlinear Dynamical Systems (2014)

Проф. С.В. Пранц удостоен Международной премии им. Г. Заславского по нелинейной науке. Prof. S.V. Prants is the winner of an International Zaslavsky Award in nonlinear science and complexity.

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According to voting at the Institute Scientific Council, the following result was recognized as the most important one in the Institute and included among **the most important results** in the Russian Academy of Sciences in **2014**

Lagrangian simulation of near-surface transport in the Kuroshio-Oyashio frontal zone after the Fukushima accident

Lagrangian approach is applied to study near-surface transport in the Kuroshio-Oyashio frontal zone using a simulation with synthetic particles advected by the AVISO altimetric velocity field. Fukushima derived cesium isotopes are used as tracers to study transport and mixing in the area after the 11 March 2011 tsunami that caused a heavy damage of the Fukushima nuclear power plant. A special technique is proposed and applied to find out the origin of water masses in cold-core cyclonic rings pinched off from the jet in summer 2011. Lagrangian maps provide the evidence of transport across the Kuroshio Extension jet. Tracking maps are computed to trace the origin of water parcels with measured levels of ^{134}Cs and ^{137}Cs concentrations collected in two research vessel cruises in June and July 2011. It is shown that Lagrangian simulations are useful to finding the surface areas that are potentially dangerous due to the risk of radioactive contamination. The results of simulation are supported by tracks of surface drifters which were deployed in the area.

