Leonid I. Ivanov, Ph.D., M.S.
Oceanographer

Expertise

Process-oriented analysis and interpretation of oceanographic data from coastal and open ocean regions; extreme event analysis; signal processing, design and implementation of observation systems for multidisciplinary research projects; studies of physical controls on marine ecosystems; ecosystem modeling.

Education

Ph.D., Oceanography – 1990
Marine Hydrophysical Institute, Ukranian Academy of Sciences

M.S., Oceanography – 1978
Moscow State University

Professional Affiliations

The Oceanography Society

Publications and Presentations

35

Qualification Summary

- More than 30 years of experience worldwide in Open Ocean and coastal processes
- Conducted studies of metocean conditions affecting deep water operations, including extreme event analysis; seasonal, meso-scale, tidal, and internal wave variability of ocean conditions in various regions of the Ocean; sea-level change and coastal fronts off West Africa; physical controls on marine ecosystems
- Coordinated and developed coupled physical-biogeochemical one-dimensional ecosystem model for the Black Sea; applied the model to study response of oxic/anoxic ecosystems to alterations in external conditions
- Specialize in collection, analysis, interpretation and integration of field data into project design. This includes the design of multidisciplinary field studies to measure currents, waves, water level, and seawater properties in various environments
- Fluent in Russian and English

Work Experience

2001-Present	Oceanographer, Woods Hole Group, Inc.
1993-2001	Senior Scientist, Marine Hydrophysical Institute, Ukraine
1990-1993	Scientist, Marine Hydrophysical Institute, Ukraine
1990	Chief of Field Expedition, feasibility studies for port construction Guinea, (contract with LENMORNIIPROEKT, Russia)
1987-1989	Researcher, Coastal Oceanographic Research Center, Guinea
1985-1987	Assistant Scientist, Marine Hydrophysical Institute, Ukraine

Key Projects

Real Time Metocean Mooring (RTMM) Ecopetrol, Colombia (Data Report, 04 September 2015 – 04 December 2015), 2015 – Consultant.
Inspect, QC, analyze and interpret ADCP, wave, and wind measurements collected from a Real-Time Metocean Measurement (RTMM) system deployed offshore Colombia. A data report, including various data statistics based on three months of observations and detailed description of energetic events, has been provided to Ecopetrol.

Real Time Metocean Mooring BP Mad Dog Spar Production Facility Green Canyon (Year 2 Data Report, 04 June 2014 – 21 April 2015), for BP, 2015 – Consultant.
Inspect, QC, analyze and interpret ADCP, wave, and wind measurements collected from the Mad Dog Real-Time Metocean Measurement (RTMM) system in the deep Gulf of Mexico. A data report, including various data statistics based on two years of observations and detailed description of energetic events, has been provided to BP.

Wind and Wave Statistics For the Location of Fishermen's Energy Atlantic City Wind Farm, 2015 – Consultant.
Derive wind and wave statistics for a location offshore Atlantic City, NJ, based on observational data collected in 201-2012 and on Ocean Weather Inc. (OWI) hind cast data. The required statists were needed to help evaluate future maintenance alternatives, including selection of appropriate service vessels and service schedules.

Real Time Metocean Mooring BP Mad Dog Spar Production Facility Green Canyon (Year 1 Data Report, 17 February 2013 – 22 April 2014), for BP, 2014 – Consultant.
Inspect, QC, analyze and interpret ADCP, wave, and wind measurements collected from the Mad Dog Real-Time Metocean Measurement (RTMM) system in the deep Gulf of Mexico. A data report, including various data statistics and description of energetic events, has been provided to BP.

Offshore Metocean Survey Absheron Field Caspian Sea Offshore Azerbaijan, for TOTAL, 2013-2014 – Consultant.
Quality control, analysis and interpretation of current profile, wave, CTD, and meteorological measurements offshore Absheron Peninsula, Azerbaijan. The current, CTD, and wave data are from three deepwater moorings, two bottom platforms, and a TRIAXYS wave buoy. The data were collected for a period of six months. Two data reports (interim and final), including various wind, wave, and current statistics, have been provided to the client.

Current, Wave, and Sediment Observations and Sediment Transport Analysis at the Location of the Proposed MMA Waterfront Protection Project, 2013-2014 – Consultant.
Collect current profile and wave data offshore the facilities of the Massachusetts Maritime Academy (MMA) at the western entrance to Cape Cod Canal. Two current and wave profilers deployed for a month. In addition, an ADCP survey performed to depict spatial variability of the flow field. Perform current and sea level data analysis and interpretation in support of sediment transport analysis and modeling.

Improving Loop Curerent Eddy (LCE) Current Profile Representation in the GEM Kinematic Model, 2013-2014 – Consultant.
Define the range of variability of EOF shapes, amplitudes, and mode composition for various Loop Current eddies, geographic areas, and conditions. Test certain hypotheses incorporated in GEM, like appropriateness of addition of eddy translation velocity to the velocity profile. Improve the quantitative description of LCE current profiles based on BOEM NTL real-time current profiles, BOEM ESP moored instrument data, and BP vessel-mounted ADCP survey data.

Key Projects (continued)

Review and QC of Near-Bottom ADCP Observations at the BF, DID, and KC736 Locations in the Gulf of Mexico, 2013 – Consultant.
Inspect and QC ADCP near-bottom current data collected by the Chevron Energy Technology Company at three sites in the deep Gulf of Mexico. Provide recommendation to the Chevron Energy Technology Company on how to improve the quality of the near-bottom current measurements in the future.

Environmental Observations at the Location of GSOE NJORD Spar Buoy Offshore New Jersey, 20013 – 2014 – Consultant.
QC, analyze and interpret data on ocean currents, waves, water temperature, and salinity from a bottom platform deployed offshore Atlantic City, NJ. Based on these observations, provide various statistics, summaries of process-oriented analyses, and recommendations.

Current, Conductivity, Temeperature, and Meteorological Observations at the Locations of Burlington, NJ; Philadelphia, PA; and Marcus Hook, DE, 2012-2014 – Consultant.
QC, analyze and interpret data on ocean currents, water temperature, salinity, and wind from three buoys deployed in the Delaware River Philadelphia Water Department (PWD) of the City of Philadelphia.

Improving the near bottom currents calculated by the GEM kinematic model. Phase I: Comparison between GEM currents and observations, 2012-2013 – Consultant.
Identify deep current measurements in the Gulf of Mexico that were collected at sites with water depths greater than 500m and within 100m off the bottom during the time the measurement site was under the influence of an LCE, match the measurements with the GEM model output, and compare GEM output with measured near bottom currents testing the hypothesis that eddy currents below 1000m are due to eddy motion and equal to the eddy translation velocity.

Development of a Database of Deepwater Current Measurements, Gulf of Mexico, for DeepStar Technology Development for Deepwater Research, 2011-2013 – Consultant.
Obtain, inspect, and edit ocean current data that were collected by oil industry operators pursuant to several MMS (now (BOEM)) Notices to Lessees (NTLs) during the period 2005-2010. Analyze various issues with the quality of these data and provide recommendations on how to improve the quality of the NTL measurements. Review and classify strong current events contained in the database.

Wave and Current Observations at the Location of Fishermen's Energy Atlantic City Wind Farm, 2010 – 2012 – Consultant.
QC, analyze and interpret ocean current, wave, and meteorological data from a location offshore Atlantic City, New Jersey. A total of three data reports, one after each deployment period, delivered.

Evaluation of Soliton Models, 2011 – Consultant, 2011 – Consultant.
Investigate the feasibility of soliton hindcasting and forecasting based on state-of-the-art numerical models. Define a list of hydrodynamic models capable of modeling the generation, propagation and evolution of internal solitary waves (ISWs) in the deep ocean, review capabilities of various models, and provide recommendations to the client.

Ocean Currents off Brasil, for Petrobras Brasil, 2008 - 2012 – Consultant.
QC, analyze and interpret data on ocean currents, water temperature and salinity from a number of deepwater moorings deployed in the Atlantic Ocean off Brasil, a total of 82 mooring deployments). Based on these observations, provide various statistics, summaries of process-oriented analyses, and recommendations.

Key Projects (continued)

Neptune Near Bottom ADCP QC and Data Analysis, Gulf of Mexico, for BHP Billiton Petroleum Americas, 2009, 2011 – Consultant.
QC, analyze and interpret two year-long records from a bottom mounted ADCP deployed near the Neptune TLP. Based on these observations, provide various statistics and estimate long-return-period currents.

New Bedford Harbor PCB Flux Study, for US Army Corps for Engineers, 2010 – Consultant.
Design data collection scheme to quantify the transport of PCBs through the hurricane barrier at New Bedford Harbor, collect data on PCBs and currents (six full tidal cycle surveys), process, quality control, analyze and interpret data on flows in and out of the harbor (boat-mounted ADCP and pile-mounted horizontal ADCP).

Topographic Rossby Wave Measurement Program, Gulf of Mexico, for DeepStar, 2008-10 – Consultant.
Process, quality control, analyze and interpret data on ocean currents from two full water column moorings and two near-bottom moorings deployed along the Sigsbee Escarpment in the Gulf of Mexico. Based on the year-long datasets, characterize water velocities associated with Topographic Rossby Waves, as well as to determine if deepwater currents can be linked to upper layer variability, mostly associated with Loop Current Eddies.

Ocean Currents, Waves, and Ice Offshore Northstar Island, Beaufort Sea, Alaska, for BP Alaska, 2008-10 – Consultant.
Process, provide quality control, analyze and interpret data on ocean currents, waves, and ice thickness as well as on the size and mass of floating ice blocks offshore Northstar Island. The analysis was based on measurement data from two bottom platforms deployed at about 10m depth, each equipped with ASL Environmental Science Model IP-5 Ice Profilers and Nortek AWAC AST Wave and Current Profilers. The BP Alaska 2008-2009 measurement program was the first use of Nortek's AWAC AST with NIP processor and extended memory for a long-term measurement program under Arctic ice.

Deepwater Current Mooring at BP's Kaskida Development, for BP, 2008-09 – Consultant.
Acquire information on full water column ocean currents in the area of BP Kaskida development in the Gulf of Mexico, provide quality control of the collected data, and perform data analysis and interpretation.

Bottom Current Measurement Study in the Walker Ridge Area of the Gulf of Mexico, for Petrobras America Inc, 2008-09 – Consultant.
Acquire information on near-bottom ocean currents in the mega-furrows area at the foot of the Sigsbee Escarpment, provide quality control of the collected data, and perform data analysis and interpretation. The unprecedented measurement program involves deployment of current profiling systems inside several mega-furrows to better understand current variability near the ocean floor and delineate the kinematic structure of near-bottom flows in four different areas of the furrow field.

NE Gulf of Mexico Water Temperature and Currents Study, for Williams – Consultant.
Perform a desk study of water temperature and current variability in the specified areas of the northeastern Gulf of Mexico using publicly available data from a Navy digital ocean database as well as from the NOAA's National Ocean Data Center, National Data Buoy Center, and results of numerical models.

Met Ocean Measurement Program for BP Trinidad and Tobago LLC, 2008 and ongoing – Consultant.
Provide quality control of incoming wind, wave, and current data, document data reduction procedures, complete monthly analyses of the data, produce monthly data reports.

Key Projects (continued)

Wind, wave and current conditions for the deepwater port Neptune LNG terminal in Massachusetts Bay, 2007, for Suez LNG N.A. – Consultant.
Compile wind, wave and current data from various sources, produce operational and extreme wind, wave and current statistics and define met-ocean design criteria for the site of deepwater port Neptune LNG.

Water depth assessment at the Neptune site in the Gulf of Mexico, 2006, for BHP Billiton - Consultant
Develop a methodology for accurate assessment of mean water depth in connection with the design of seafloor structures for a Tension Leg Platform in the Gulf of Mexico.

Extremal Currents and Fatigue Current Profiles for the New Gendalo Location in Makassar Strait, Indonesia, 2006, for Chevron Corporation – Consultant.
Complete extreme current event forecasting for a specific location in the western Makassar Strait through process oriented analysis of ADCP and current meter observations. Provide operational statistics for regional currents.

Update of Wind and Wave Conditions for Makassar Strait Including Regional Wind and Wave Analysis and Operational and Extremal Statistics for the Gendalo, Gehem/Ranggas, and West Seno Sites, 2005, For Unocal Corporation – Consultant.
Complete extreme wind and wave event forecasting for a specific location in the western Makassar Strait using *in-situ* wind and wave measurements and satellite information. Provide operational statistics for regional wind and waves.

Current profile analysis for riser fatigue estimates for Western Makassar Strait, Indonesia 2004-05, for Unocal Corporation – Consultant.
Develop a methodology for classification of observed current profiles in accordance with their ability to excite vortex induced vibrations of a riser, use a specific current data set for selection of representative current profiles and corresponding probability of their occurrence.

Extremal currents and fatigue current profiles for the Gendalo location Makassar Strait, Indonesia 2004, for Unocal Corporation – Consultant.
Completed extreme current event forecasting for a specific location in the western Makassar Strait through process oriented analysis of ADCP and current meter observations.

Wind Farm Sites Instrumentation and Data Acquisition Systems 2003-2004, for Cape Wind Associates – Consultant.
Processing and analysis of the meteorological and oceanographic data from the Cape Wind Scientific Tower installed in the Nantucket Sound; data reporting.

Analysis of Extremal Currents and Fatigue Current Profiles at the Merah Besar and Ranggas Locations in the Makassar Strait, 2003-04, for Unocal Corporation – Consultant.
Completed extreme current event forecasting for two locations in the western Makassar Strait through process oriented analysis of ADCP and current meter observations.

Makassar Strait Regional Current Study, 2002-03, for Unocal Corporation – Consultant,
Provided a synthesis of the available Unocal oceanographic observations in the western Makassar Strait region and of the published results on the oceanography of the Indonesian Seas derived from models and observations.

Gulf of Honduras Programme, 2003, for Inter-American Development Bank – Consultant,
Provided a synthesis of the available information on the oceanography of the Gulf of Honduras as part of the Preliminary Transboundary Diagnostic Analysis

Key Projects (continued)

Caspian Environmental Program: National Consultant to Assist the Program as a Trainer/Leading physical Oceanographer for a Pollution Assessment Sea Cruise.
Preparation of the cruise plan, hands-on training of cruise participants, collection of CTD and ADCP data in support of the pollution assessment studies.

Operational Data Base Management System for the Black Sea, 2000 – 01, for NATO Science for Peace Program (NATO SfP-971818), - NATO Partner Country Project Director.
Preparation of the project work plan; coordination of research.

Ventilation of the Black Sea Anoxic Waters, 1997-2000, for EC INCO COPERNICUS Programmme - Team Leader.
Project design and management, coordination of research, preparation of project reports and relevant scientific publications.

Black Sea Observation and Forecasting System, 1997-98, for NATO CCMS - Chairman of the working group on observation systems – Consultant.
Preparation of a section on the design of an observation system for the Black Sea Observation and Forecasting System Science Plan.

Publications and Presentations

Ivanov, L.I., P. Duzinski and D. Walsh. 2015.Long-term current meter observations in the urban tidal freshwater Delaware Estuary. CERF-2015, 08-12 November, Portland, OR.

Magnell, B.A., L.I. Ivanov, A.T. Morrison, III and E.G. Hasbrouck. 2015. Current measurements from a deep real-time metocean mooring: lessons learned on real-time data QA/QC. 2015 IEEE/OES Eleventh Current, Waves and Turbulence Measurement. 2-6 March 2015. St. Petersburg, Florida, USA.

Magnell, B.A., L.I. Ivanov, A.T. Morrison, III and E.G. Hasbrouck. 2015. Current and wave measurements off the coast of New Jersey during the second most severe storm of the past 28 years. 2015 IEEE/OES Eleventh Current, Waves and Turbulence Measurement. 2-6 March 2015. St. Petersburg, Florida, USA.

Magnell, B.A. and L.I. Ivanov. 2014. Signatures of Mid-Water 'Jets' in the Gulf Of Mexico BOEM NTL Dataset. OTC 25421, 5-8 May 2014, Texas, USA.

A Database of Oil Industry Deepwater Current Measurements. 2014. OTC 25369, 5-8 May 2014, Texas, USA.

Samodurov A.S., M.I. Scranton, Y. Astor, L.I. Ivanov and A.M. Chukharev. 2013. Modeling vertical exchange of heat, salt, and other dissolved substances in the Cariaco Basin. *Deep-Sea Research* 71 (1): 61-72.

Ivanov L.I. and B.A. Magnell. 2012. Classification of strong current events based on Gulf of Mexico BOEM NTL Dataset. OCEANS 2012, 14-19 Oct. 2012, Hampton Roads, VA, USA, p.p. 1-9.

Siegel, E., L.I. Ivanov and B. A. Magnell. 2011. Measurements of Ice Parameters in the Beaufort Sea. Sea Technology, February 2011, pp 10-13.

Publications and Presentations (continued)

Magnell, B.A., L.I. Ivanov and D.B. Driver. 2011. Waves, Ice Draft and Floe Size Measurements in the Beaufort Sea Using Bottom-Mounted Ice, Wave, and Current Acoustic Profilers. OTC Arctic Technology Conference, 7-9 February 2011, Texas, USA, 22108-MS.

Magnell, B.A., L.I. Ivanov and E. Siegel. 2010. Measurements of Ice Parameters in the Beaufort Sea Using the Nortek AWAC Acoustic Doppler Current Profiler. OCEANS 2010, 20-23 September 2010, Seattle, WA, 10.1109/OCEANS.2010.5664016, p.p. 1-8.

Lima, J., E. Ribeiro, J. Daniel and L.I. Ivanov. 2010. Bottom Current Measurements at GoM Furrows for the Cascade and Chinook Fields Development Offshore Technology Conference, 3-6 May 2010, Houston, Texas, USA, 20753-MS.

Magnell, B.A. and L.I. Ivanov. 2008. Performance of the 75kHz Long Ranger ADCP in a Low Scattering Environment. In Proceedings of the IEEE/EOS/CMTC Ninth Working Conference on Current Measurement technology, 17-19 March 2008, Charleston, SC.

Ivanov, L.I., B.A. Magnell, R.A. Catalano and L. Fagan. 2006. Characteristics of the Atmospheric Boundary Layer in Nantucket Sound. OCEANS 2006, Vol: Sept. 2006, p.p.1 – 6.

Magnell, B.A., L.I. Ivanov, M.C. Garcia Govea, R, Villalba Lopez and Molina Valle. 2005. Observations of downward and upward propagating near-inertial waves in the western Gulf of Mexico. OCEANS, 2005. Proceedings of MTS/IEEE Vol: 3, p.p. 2407 – 2414.

Konovalov, S.K., A.S., Samodurov, T.,Oguz and L.I. Ivanov. 2004. Parameterization of iron and manganese cycling in the Black Sea suboxic and anoxic environment *Deep Sea Research Part I,* Volume 51 (12), p.p. 2027-2045.

Samodurov, A.S. and L.I., Ivanov. 2002. A balance model for calculating mean vertical fluxes of mass, heat, salt and dissolved chemical substances in the Black Sea thermohaline. Marine Hydrophysical Journal. No 1, p.p. 7- 25.

Ivanov, L.I. and A.S. Samodurov. 2001. The Role of Lateral Fluxes in Ventilation of the Black Sea. Journal of Marine Systems 31 (1-3): 159-174.

Ivanov, L.I., J.O. Backhaus, E. Ozsoy, and H. Wehde. 2001. Winter Convection in the Black Sea. Journal of Marine Systems 31(1-3): 65-76.

Konovalov, S.K., L.I. Ivanov, and A.S. Samodurov. 2001. Fluxes and Budget of Sulfide and Ammonia in the Black Sea Anoxic Layer. Journal of Marine Systems 31(1-3): 203-216.

Ivanov, L.I., V. Belokopytov, A.S. Samodurov and E. Ozsoy. 2000. Ventilation of the Black Sea Pycnocline on Seasonal and Interannual Time Scales. Journal of Mediterranean Marine Science. ½: 61-74.

Konovalov, S.K., L.I. Ivanov and A.S. Samodurov. 2000. Oxygen, Nitrogen and Sulfide Fluxes in the Black Sea. Journal of Mediterranean Marine Science ½: 41-59.

Publications and Presentations (continued)

Ivanov, L.I. and S. Besiktepe. 1999. Black Sea Cold Intermediate Water Mass Volumetric Structure and Its Variability. In: A. Zatsepin (ed.), Oceanic Fronts and Related Phenomena (Konstantin Fedorov International Memorial Symposium). IOC Workshop Report Series, N 159, UNESCO, 646.

Ivanov, L.I. and V.N. Eremeev. 1999. Ventilation of the Black Sea on Interannual Time Scales: Results of Long-Term Monitoring and Present Day Needs. In: L.Kruger (ed.), World Federation of Scientists. Environmental Conditions. Working Group on Water and Pollution. Proceeding Series, Vol.3, 163-183.

Konovalov, S.K., L.I. Ivanov, J.W. Murray and L.V. Eremeeva. 1999. Eutrophication: A Plausible Cause for Changes in the Hydrochemical Structure of the Black Sea Anoxic Layer, pp. 61-74. In: U. Unluata (ed.), Degradation of the Black Sea: Challenges and Remedies. Dordrecht, Netherlands: Kluwer Academic Publishers.

Samodurov, A.S. and L.I. Ivanov. 1998. Processes of Ventilation of the Black Sea Related to Water Exchange Through the Bosphorus. In: L. Ivanov and T. Oguz (eds.), Ecosystem Modeling as a Management Tool for the Black Sea. NATO ASI Series 2: 221-236. Dordrecht, Netherlands: Kluwer Academic Publishers.

Ivanov, L.I., S. Konovalov, V. Belokopytov and E.Ozsoy. 1998. Regional Peculiarities of Physical and Chemical Responses to Changes in External Conditions within the Black Sea Pycnocline: Cooling Phase. In: L.Ivanov and T.Oguz (eds.), Ecosystem Modeling as a Management Tool for the Black Sea. NATO ASI Series.2: 53-68. Dordrecht, Netherlands: Kluwer Academic Publishers.

Ivanov, L.I. and T. Oguz (eds.). 1998. Ecosystem Modeling as a Management Tool for the Black Sea. NATO ASI Series.1, 2. Dordrecht, Netherlands: Kluwer Academic Publishers.

Ivanov, L.I., S. Besiktepe and E.Ozsoy. 1997. Physical Oceanography Variability in the Black Sea Pycnocline, pp.. 265-274. In A. Mikaelyan and E. Ozsoy (eds.), Sensitivity to Change: Black Sea, Baltic Sea and North Sea. NATO ASI Series. Dordrecht, Netherlands: Kluwer Academic Publishers.

Ivanov, L.I., I. Yu. Shkvoretz. 1995. Thermohaline Structure of Deep and Near-Bottom Black Sea Waters. Morskoy Hydrophys. J. (Soviet Journal of Physical Oceanography) 6: 52-59.

Buesseler, K.O., H.D. Livingston, L.I. Ivanov, and A.S. Romanov. 1994. Stability of the Oxic/Anoxic Interface in the Black Sea. Deep-Sea Research 41 (2): 283-296.

Ivanov, L.I. and A.B. Polonsky. 1992. Seasonal Variability of Temperature and Salinity in the Northwestern Tropical Atlantic. Okeanologia (Oceanology) 32 (4): 654-660.

Baev, S.A., N.P. Bulgakov and L.I. Ivanov. 1990. The Intensity of the Ocean Meso-Scale Circulation Off Brazil. Okeanologia (Oceanology) 30 (1): 5-10.

Ivanov, L.I., V.A. Ivanov and A.D. Lisichonok. 1989. Redistribution of the Internal Tide Energy in the Zone of the North Atlantic Counter Current. Morskoy Hydrophys. J. (Soviet Journal of Physical Oceanography) 4: 52-58.

Publications and Presentations (continued)

Baev, S.A. and L.I. Ivanov. 1988. The Fine Structure of Temperature and Salinity Fields in the Northwestern Tropical Atlantic. Morskoy Hydrophys. J. (Soviet Journal of Physical Oceanography) 4: 51-55.

Ivanov, L.I and V.A. Ivanov. 1987. Spatial Characteristics of Internal Tides in the Guyana Basin. Morskoy Hydrophys. J. (Soviet Journal of Physical Oceanography) 4: 50-57.