

ABSTRACTS – BALTICA 27 SPECIAL ISSUE 2014 pp. 1-72

Klemas, V., Blažauskas, N., 2014. Reducing the oil spill threat to the marine environment (Foreword). *Baltica*, 27, *Special Issue*, 1–2. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.08

Presented in this special issue studies aims to contribute in order to limit the damage from oil spills and to facilitate containment and cleanup efforts; to optimize the response to oil spills as well as facilitate the preparation of comprehensive maps of most valuable assets as well as prepare joint response plans between neighbouring Kaliningrad Oblast of Russian Federation and Lithuania. The results of common Lithuanian-Russian project “Development of solutions for effective oil spill management in the South-Eastern Baltic” takes an attempt to operationally harmonize and scientifically ground a response capacity for this commonly used area.

Suzdalev, S., Gulbinskas S., Sivkov V., Bukanova, T., 2014. Solutions for effective oil spill management in the south–eastern part of the Baltic Sea. *Baltica*, 27, *Special Issue*, 3–8. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.09

Abstract The Baltic Sea is facing exceptionally intensive marine traffic. Oil products in addition to other cargo types are being transported in this marine area. Therefore, the risk of potential oil pollution is very high. Although, the Baltic Sea has not experienced catastrophic oil spills, there have been spills causing serious environmental damage in the region. Construction of oil terminals and planned growth of Russian oil export through Baltic Sea ports along with the operation of large oil enterprises and oil drilling platforms make maritime safety a priority task for the Baltic Sea region. The publications collected in present *Baltica* Journal Special Issue set sights on the improvement of oil spill management in the South–Eastern Baltic Sea as well as stimulate the appearance of new transnational response agreements in the region.

Bulycheva, E., Kuzmenko, I., Sivkov, V., 2014. Annual sea surface oil pollution of the south–eastern part of the Baltic Sea by satellite data for 2006–2013. *Baltica*, 27, *Special Issue*, 9–14. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.10

Abstract The annual average features of the spatial distribution of oil pollution at the sea surface in the south–eastern part of the Baltic Sea were determined for the first time. It was shown that the most polluted areas are the seawaters west of the Sambian Peninsula and Vistula Spit, including the coastal zone that is connected to the Baltiysk, Gdansk, and Gdynia ports. The sea surface near the oilfield Kravtsovskoye D-6 (Russia) and oil terminal Būtingė (Lithuania), as well as the coastal zone near the Curonian Spit, do not suffer from oil pollution. A lower estimation of the annual average amount of oil products at the sea surface was performed. The lack of correlation between the location of the oil slicks and main navigation routes by Automatic Identification System (AIS) was explained by the infrequent but large spillages from ships that occur outside of the main traffic lanes. A significant contribution to the oil pollution of the sea surface from nonconventional ships not equipped with AIS was discovered.

Kileso, A., Chubarenko, B., Zemlys, P., Kuzmenko, I., 2014. Oil spill modelling methods: application to the south-eastern part of the Baltic Sea. *Baltica*, 27, *Special Issue*, 15–22. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.11

Abstract The state-of-art in oil spill modelling methods is summarized, focusing on development since 2000. Some recommendations for possible application of these methods to the south-eastern part of the Baltic Sea are prepared. Particular attention is paid on the methods of parameterization of volume of oil spill and calculation of advection of the oil spills. Consideration is also given to methods used in oil weathering models.

Suzdalev, S., Gulbinskas, S., 2014. Total petroleum hydrocarbons in surface sediments of the Lithuanian coastal area of the Baltic Sea. *Baltica*, 27, *Special Issue*, 23–30. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.12

Abstract Operation of large oil import/export terminals and intensive shipping activities together with input of hazardous substances from terrestrial runoff and constantly developing cities makes the Lithuanian part of the Baltic Sea especially sensitive to contamination with oil products. The paper presents an overview of total petroleum hydrocarbons (TPH) distribution in surface sediments at the Lithuanian near shore and within the Klaipėda State Seaport area – transitional marine-lagoon system. The study is based on the results of examination of surface sediment samples carried out in 2010–2012. The variations of TPH content in bottom sediments are explained by differences in grain size and the genesis of the investigated sediments as well as the degree of organic material decomposition. Extreme values obtained in the Klaipėda Strait area indicate presence of additional TPH contamination sources possibly of anthropogenic origin.

Nemirovskaya, I., Ulyanova, M., Sivkov, V., 2014. Hydrocarbons in the sediments offshore of the Curonian Spit (the south-eastern part of the Baltic Sea). *Baltica*, 27, *Special Issue*, 31–38. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.13

Abstract Data regarding the content and composition of the hydrocarbons (HC) — aliphatic hydrocarbons (AHCs) and polycyclic aromatic hydrocarbons (PAHs) — are presented in comparison with the content of the total organic carbon (C_{org}) in the bottom sediments in the coastal area of the eastern part of the Gdansk Basin (Russian sector of the Baltic Sea). The HC and PAH distribution in the sediments confirm the dependence of hazardous substance accumulation on the organic carbon content and the sediment grain size of the affected sediment. Bigger concentrations of PAHs were also observed near the Pionersky port. Particular attention was paid to the PAHs content.

Balčiūnas, A., Blažauskas, N., 2014. Scale, origin and spatial distribution of marine litter pollution in the Lithuanian coastal zone of the Baltic Sea. *Baltica*, 27, *Special Issue*, 39–44. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.14

Abstract The first attempt to investigate the marine litter pollution level of the Lithuanian coastal zone was carried out based on different marine litter monitoring methods and according to the lists of identifiable items. The results have proven that plastic is the dominant type of marine litter. It seems that tourism and fishery related marine litter occurrence do not significantly depend on seasonal variations. The outcome of the study will serve as basic information for future inventory of the character of marine pollution, provide the scientifically grounded limit value for Good Environmental Status (GES) assessment in the Lithuanian coastal zone, and will contribute for the enhancement of the ecological status of the south-eastern coasts of the Baltic Sea.

Kocheshkova, O., Ezhova, E., Dorokhov, D., Dorokhova, E., 2014. Benthic communities and habitats in the near shore zone of the Curonian Spit (the south-eastern part of the Baltic Sea). *Baltica*, 27, *Special Issue*, 45–54. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.15

Abstract Benthic communities classified according to species diversity, abundance and composition of dominant complex were defined and mapped. Maps compiled represent the distribution of bottom sediment types, substrata, bathymetry and benthic communities in the pilot area. Combination of data on community distribution and several abiotic habitat features (grain size, substrate types, and photic conditions) allowed recognizing several benthic habitats, according to HELCOM habitat classification. New data on features of coastal benthic biotopes made evident the existence of unique seascape “ancient lagoon mud” in the study area and allowed recommending further establishment of new marine protected areas.

Blažauskas, N., Dorokhov, D., 2014. Assessment of the sensitivity of sandy coasts of the south-eastern part of the Baltic Sea to oil spills. *Baltica*, 27, *Special Issue*, 55–64. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.16

Abstract The sandy coasts of the south-eastern Baltic Sea are the unique landscape along the shores of Poland, Kaliningrad Oblast (Russia), Lithuania and Latvia. Flat sandy beaches, protective dune ridges and near shore sandy spits are very valuable and attractive resources for human recreation and valuable habitat for wildlife. Intensifying shipping, operation of oil terminals and offshore platforms poses a constant threat not only to coastal and socio-economic resources, but also to sensitive underwater landscapes of marine areas and vulnerable marine habitats. Analysis of environmental sensitivity proved to be an effective tool for national and regional oil spill response planning. However, in order to complete the precise evaluation of near shore and coastal zone sensitivity to possible oil spills there is a need to identify vulnerable coastal sectors and complete detailed mapping of underwater landscapes. This is achieved by developing an integrated methodology for analysis of valuable coastal zone sensitivity to potential oil spills.

Milerienė, R., Blažauskas, N., Gulbinskas, S. Integration of marine research results into a maritime spatial plan for Lithuania. *Baltica*, 27, *Special Issue*, 65–72. Vilnius. ISSN 0067-3064. doi: 10.5200/baltica.2014.27.17

Abstract This paper presents the results of integration of the environmental, economic and social data into comprehensive spatial plan of Lithuania. The main driving forces for the economic developments at sea are offshore wind energy growth and demand for exploration and exploitation of potential oil deposits. The developed spatial plan is a practical step towards implementation of the strategy for the Baltic Sea region and particularly focused on proper management of the marine resources. The concept of location of existing and future marine activities along with regulatory framework was created. The developed spatial solutions create the pre-conditions for future development at the sea and at the same time highlights the demand for new quality of the scientific research while investigating the marine resources and evaluating the economic effect as well as environmental consequences.
