Geophysical Research Abstracts
Vol. 21, EGU2019-18709, 2019
EGU General Assembly 2019

The dispersion of radioactive effluent in the Eastern Mediterranean from a hypothetical accidental spill from the nuclear power plant at Akkyyu

George Zodiatis (1,2), Robin Lardner (3,2), Katerina Spanoudaki (1), George Kozyrakis (1), and Nikos Kampanis (1)

(1) Coastal & Marine Research Laboratory, Institute of Applied And Computational Mathematics, Foundation for Research and Technology, Crete, Greece, (2) ORION Joint Research and Development Center, Nicosia, Cyprus, (3) Simon Fraser University, Burnaby, British Columbia, Canada

The Fukushima radioactive leakage in the sea was caused primary as a result of the catastrophic tsunami affected the Japanese coast, following the offshore Tōhoku earthquake on 11 March 2011. The Eastern Mediterranean Levantine Basin is considered an area with high seismicity, while in the past centuries the historical sources reported coastal mass disasters, from the nowadays known phenomenon of tsunami.
The consequences of a possible radioactive accident from the planned nuclear power plant at Akkyyu, located at the southern coast of Turkey in the Levantine Basin, has been first investigated in a multi-disciplinary approach back in 2000 in the frame of the “Radiological Impact Assessment in the Southeastern Mediterranean Area”.
Nowadays, the constructions of the Akkyyu nuclear power plant are taking place and is important to re-examine the dispersion simulations using new and high resolution met-ocean data, in-contrary to those simulations carried out almost two decades ago with limited available, those days, climatological data and low resolution met-ocean data. The present work is investigating the radioactive leakage in the sea, following a hypothetical accident from the cooling system of the Akkyyu nuclear power plant, similar to the Fukushima accident, using high resolution sea currents, waves and winds data from the CMEMS-Copernicus Marine Environment Monitoring Service and the general dispersion module of the well established MEDSLIK model.
The current simulations follow the same scenarios as those that were used in the frame of the “Radiological Impact Assessment in the Southeastern Mediterranean Area”, i.e. the spill is assumed to be instantaneous and to consist of 100 tons of water containing an initial concentration of radioactivity of 800 MBq/Kg. Two seasons of the year have been considered, summer and winter. Moreover, additional scenarios were examined considering the leakage to be continuous for the two examined periods.