

Using GIS for Assessment and Modelling of Oil Spill Risk at Vulnerable Coastal Resources: Of Misratah Coast, Libya

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Abstract : The oil manufacture is one of the main productive activities in Libya and has a massive infrastructure, including offshore drilling and exploration and wide oil export platform sites that located in coastal area. There is a threat to marine and coastal area of oil spills is greatest in those sites with a high spills comes from urban and industry, parallel to that, monitoring oil spills and risk emergency strategy is weakness, An approach for estimating a coastal resources vulnerability to oil spills is presented based on abundance, environmental and Scio-economic importance, distance to oil spill resources and oil risk likelihood. As many as 10 coastal resources were selected for oil spill assessment at the coast. This study aims to evaluate, determine and establish vulnerable coastal resource maps and estimating the rate of oil spill comes for different oil spill resources in Misratah marine environment. In the study area there are two type of oil spill resources, major oil resources come from offshore oil industries which are 96 km from the Coast and Loading/Uploading oil platform. However, the miner oil resources come from urban sewage pipes and fish ports. In order to analyse the collected database, the Geographic information system software has been used to identify oil spill location, to map oil tracks in front of study area, and developing seasonal vulnerable costal resources maps. This work shows that there is a differential distribution of the degree of vulnerability to oil spills along the coastline, with values ranging from high vulnerability and low vulnerability, and highlights the link between oil spill movement and coastal resources vulnerability. The results of assessment found most of costal freshwater spring sites are highly vulnerable to oil spill due to their location on the intertidal zone and their close to proximity to oil spills recourses such as Zreag coast. Furthermore, the Saltmarsh coastline is highly vulnerable to oil spill risk due to characterisation as it contains a nesting area of sea turtles and feeding places for migratory birds and the . Oil will reach the coast in winter season according to oil spill movement. Coastal tourist beaches in the north coast are considered as highly vulnerable to oil spill due to location and closeness to oil spill resources.

Keywords : coastal recourses vulnerability, oil spill trajectory, gnome software, Misratah coast- Libya, GIS

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