A COMPLEX MULTIPLE OIL SPILL RESPONSE

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In May 1987, the Red River was inundated with torrential rainfall on the Texas-Oklahoma border. Approximately 136 nautical miles of river as well as flooded farmland were affected by the oil spills when the Red River eventually exceeded its 30-year flood plain. As a result of the flooding conditions, three major oil and gas pipelines were broken and many tank batteries were decimated by high waters. Approximately 1,323,000 gallons of petroleum-related products were released into the Red River. The resulting spills caused a multitude of problems that had to be addressed before any cleanup efforts could be properly initiated. The greatest problem encountered was the rapidly flowing river, which prevented the deployment of containment booms. Other related problems included the identification of dischargers and their respective areas of responsibility. The primary regulatory concerns were monitoring the spill conditions and the ensuing clean-up efforts.

SPACE IMAGERY CONTRIBUTION TO COASTAL ATLAS MAPPING

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The setting-up of oil facilities either for offshore or onshore production increases the risk of accidental oil spills on coastal areas. The threat of pollution amplifies the need for a detailed description of the environment and the distribution of resources, as well as recommendations for control strategies. The preparation of environmental impact statements and oil spill contingency plans is based upon the ability to acquire, update and efficiently use important environmental databases. However, knowledge of coastal environments becomes insufficient in particular zones such as estuaries, deltas, swamps, laguna, and lagoons. In that case, the required data is lacking due to complex land-forms.

Therefore the earth observation satellite SPOT is a well-adapted tool to perform sharp-scale and multitemporal studies. From original images, specific digital processing methodologies based on SPOT data are developed in order to gather information on intertidal and infratidal zones. The data is then compiled on updated cartographies offering a very useful complement to existing land and marine maps.

A rapid and quantitative assessment is conducted and displayed through thematic cartography at scales from 1/50,000 to 1/25,000 integrating external data (meteorological, hydrological, socio-economic data). The shoreline units are ranked on the Environmental Sensitivity Index according to their morphological and biological features. Such documents frame a coastal atlas that contributes to decisions and strategies regarding shoreline protection and cleanup or logistics. The SPOT imagery contribution is now an operational alternative to traditional methods for environmental surveys devoted to contingency planning.

Bibliography


