

# Impact of Weather on Marine Vessel Accidents in the Iraqi Port of Umm Qasr, a Case Study of the Salihiah Tugboat Accident

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**Abstract.** The Arabian Gulf is known as a global center for trade, oil export, and shipping because the countries around the Gulf have many important commercial and oil ports. The southern port of Umm Qasr is one of these important transportation sites in the northern Arabian Gulf, as it includes berths for shipping goods as well as oil berths for importing and exporting oil derivatives and crude transport. Any disruption or disruption in port operations may lead to significant economic and material losses to Iraq. Marine accidents caused by bad weather are considered one of the most serious risks and obstacles facing marine work. In this study, we will investigate and evaluate the meteorological conditions that influence and cause marine accidents. The Salihiah tugboat accident, which collided with a foreign ship in 2020, and led to the sinking of the tow boat in the southern port of Umm Qasr. The disaster was caused by a violent dust storm and high wind speed. Two cases of dust storms were recorded on the day of the accident and several cases of dust raised, and there was also a significant drop in sea level pressure that led to the storm and the lack of visibility in the port of Umm Qasr. The aim of the study is to know the main causative weather factor for the accident and to advise the managers of Iraqi ports to take measures and reduce activity in bad weather conditions.

**Keywords.** The Arabian Gulf, Marine accidents Bad weather, Meteorological conditions, Iraqi ports.

## 1. Introduction

The Gulf has more than half of the world's oil and natural gas reserves, and the related industrial infrastructure and activities have had major effects on the region's marine systems. The Gulf of Mexico contains reserves of 76 billion metric tons of recoverable oil and 32.4 trillion cubic meters of natural gas [1]. Fisheries are presently the Gulf's second most significant natural resource after oil [2]. The Arabian Gulf is surrounded by deserts and is located between the north-eastern Arabian Peninsula and Iran. It is bordered by eight fast growing countries. The Arabian Gulf is located in the subtropics between latitudes of 24°N and 30°N and longitudes of 48°E and 57°E. During the summer, The Arabian Gulf is the world's warmest sea, especially in the shallow southern basin, where sea surface temperatures (SSTs) often approach 35 °C in August. Sea temperatures vary greatly across seasons,

