

## Coastal Water Characteristics along the Saudi Arabian Coastline

**Authors :** Yasser O. Abualnaja<sup>1</sup>, Alexandra Pavlidou<sup>2</sup>, Taha Boksmati<sup>3</sup>, Ahmad Alharbi<sup>3</sup>, Hammad Alsulmi<sup>3</sup>, Saleh Omar Maghrabi<sup>3</sup>, Hassan Mowalad<sup>3</sup>, Rayan Mutwalli<sup>3</sup>, James H. Churchill<sup>4</sup>, Afrodit Androni<sup>2</sup>, Dionysios Ballas<sup>2</sup>, Ioannis Hatzianestis<sup>2</sup>, Harilaos Kontoyiannis<sup>2</sup>, Angeliki Konstantinopoulou<sup>2</sup>, Georgios Krokos<sup>1,5</sup>, Georgios Pappas<sup>2</sup>, Vassilis P. Papadopoulos<sup>2</sup>, Konstantinos Parinos<sup>2</sup>, Elvira Plakidi<sup>2</sup>, Eleni Rousselaki<sup>2</sup>, Dimitris Velaoras<sup>2</sup>, Panagiota Zachioti<sup>2</sup>, Theodore Zoulias<sup>2</sup> and Ibrahim Hoteit<sup>5</sup>.

**Abstract :** The coastal areas along the Kingdom of Saudi Arabia on both the Red Sea and Arabian Gulf have been witnessing in the past decades an unprecedented economic growth and a rapid increase in anthropogenic activities. Therefore, the Saudi Arabian government has decided to frame a strategy for sustainable development of the coastal and marine environments, which comes in the context of the Vision 2030, aimed at providing the first comprehensive 'Status Quo Assessment' of the Kingdom's coastal and marine environments. This strategy will serve as a baseline assessment for future monitoring activities; this baseline is relied on scientific evidence of the drivers, pressures, and their impact on the environments of the Red Sea and Arabian Gulf. A key element of the assessment was the cumulative pressures of the hotspots analysis, which was developed following the principles of the Driver-Pressure-State-Impact-Response (DPSIR) framework and using the cumulative pressure and impact assessment methodology. Ten hotspot sites were identified, eight in the Red Sea and two in the Arabian Gulf. Thus, multidisciplinary research cruises were conducted throughout the Red Sea and the Arabian Gulf coastal and marine environments in June/July 2021 and September 2021, respectively, in order to understand the relative impact of hydrography and the various pressures on the quality of seawater and sediments. The main objective was to record the physical and biogeochemical parameters along the coastal waters of the Kingdom, tracing the dispersion of contaminants related to specific pressures. The assessment revealed the effect of hydrography on the trophic status of the southern marine coastal areas of the Red Sea. Jeddah Lagoon system seems to face significant eutrophication and pollution challenges, whereas sediments are enriched in some heavy metals in many areas of the Red Sea and the Arabian Gulf. This multidisciplinary research in the Red Sea and the Arabian Gulf coastal waters will pave the way for future detailed environmental monitoring strategies for the Saudi Arabian marine environment.

**Keywords :** arabian gulf, contaminants, hotspot, red sea

**Conference Title :** ICWWM 2022 : International Conference on Wastewater and Water Management

**Conference Location :** London, United Kingdom

**Conference Dates :** October 13-14, 2022