Abstract

Nowadays, many studies about the behaviour of harbours are being developed all around the world. When we talk about the behaviour of a harbour we are referring to the hydro dynamical conditions that take place into the harbour precinct or how the geometrical characteristics influence in these behaviour and in the quality of the closed waters inside the harbour.

According to this interest about harbour behaviour, this study focuses its efforts on the Port de Tarragona (Spain). The final aim is to establish a meteorological, hydro dynamical and quality of waters characterization during a usual year. This characterization is the first step in which a new monitorisation of the harbour will be based on. This new monitorisation will allow an exhaustive study of the harbour and will set the bases for future models and simulators.

In order to realise this characterization, hydro dynamical, meteorological and quality parameters will be studied during two campaigns, developed in winter and summer, respectively. Both campaigns last a month and they consist in the compilation of the necessary data to define the behaviour of the harbour.

The weather station of the Port de Tarragona registers data in a constant way, every ten minutes, of different parameters: wind, temperature, rain, pressure, wetness, etc. The analysis of these data concludes that temperatures are soft; both in winter and summer, winds are lower than 15m/s and slight rain.

The analysis of data about river Francolí flows shows that, in normal conditions, it doesn’t exist the possibility of running water developments. When the river waters enter into the harbour precinct, because of they are less saline (so, less dense), they move over the sea waters and vertically they describe a water wedge.

The study of running waters and sea levels of the harbour precinct establishes a first model of harbour behaviour. This model reflexes that waters from open sea enter into the harbour through deep waters and go out through the surface of the harbour, forming a cycle of water regeneration. It would be convenient to develop a more exhaustive study of harbour dynamics in order to determine if this model is right or wrong, because we have only work with two months data.

Finally, the study of water quality inside the Port de Tarragona shows that waters are not constantly polluted, but it should be convenient to study more specifically this behaviour, because it appears focus of punctual pollution, caused possibly by the pouring of residual waters, and presence of oil/fuel in the water inside the harbour.

The water renovation cycle is quite quickly, so it favours that concentration of pollutants don’t be maintained during the year. However, the interior dock presents worse quality because it is the closest zone and, in consequence, the renovation of waters is worse.

All these data makes possible to notice the necessity of improving the control system of Port de Tarragona in order to be able to develop bigger studies and to define its real behaviour by considering all the seasons of year and special events, such as storms or rivers flood.