INTRODUCTION
The North Sea is currently the most attractive region for offshore wind industry. Both resource available, and the bathymetry of this area are some of the reasons that explain the international interest in this sector. Current and future North Sea offshore wind developments need complex supply chains, which involve countries out from the North Sea like Spain, Portugal or the Atlantic coast of France. However, the distance in conjunction with the rough metocean conditions of the North Atlantic areas introduce some uncertainties over the suppliers from those countries.

The purpose of the present work is to develop a methodology for the strategic analysis of different shipping routes and alternatives for special marine transports like jacket structures or other large structures typical of the offshore wind sector. To achieve the already mentioned objective, a transportation simulator has been developed. Based on long term hindcast metocean databases, statistical analysis of transport success rates, as well as other transport parameters like the number of pieces potentially shipped per month or season can be obtained.

The methodology is able to reproduce different shipping methods (Heavy lift vessel, towed barges or towed structures) considering different speeds and operative thresholds in terms of wave height, period and wind speed, applied to the route. The decision-making algorithm proposed classifies every travel in direct transport or indirect transport because delayed departures or because of the port of refuge.

METHODOLOGY
A comprehensive strategy covers different parameters that may influence the success of the transport. Mean variables are concerned with metocean conditions, and its relation with ships seakeeping. The marine climate in a given area of the ocean (statistical distribution of sea state parameters) varies on a seasonal scale (month) and annual scale (years). Consequently, shipping is modulated throughout the year and has an associated uncertainty, as the marine climate has some annual fluctuations. The metocean variables of interest involved in this process are the significant wave height and peak wave period and wind speed. The databases used related to the dynamics of waves and wind have been GOW (Reguero et al., 2012) reanalysis of waves in deep water zone 61 with a resolution of 0.1°, and Seawind (Menendez et al., 2013) reanalysis of wind hours with a resolution of 30 km.

Once it has been selected the route climate data between two selected ports, an analysis of transport is carry out, including the definitions of structures to transport, and the type of boats to employ (Heavy Lift Vessels, towed barges, or towed structures). The model developed employs an algorithm for decision making verifying hourly that support the navigation function of a window weather forecast, previously established threshold conditions are not exceeded. If at any time the threshold parameters are exceeded, the method selects the optimal port of refuge in which to perform scale based on the same criteria of accessibility and proximity to the port of destination.

Results presented are based in a transport between Santander and Aberdeen ports, based in a large number of simulations between 1980 and 2005 to undertake a detailed statistical analysis of the results.

CONCLUSIONS
In this work it is evident that the cost of a transport operation is explicitly linked to the availability of adequate navigation conditions or more specifically, to the persistence over time of these conditions. Therefore, when planning a transport operation it is essential to understand the environment in which it operates. The results which is capable of providing this method are essential for any marine operation. Thus, among other results, can assess the probability of failure associated with a particular transport route navigation, specify transport times and costs, what are the main havens ports used and times of stay in them, and determine optimal transport months.

Keywords: Transport, climate, marine operations, hindcast