(CurrentSpeed,Direction) cumulated occurrence tables (current_speed_direction_tables.nc)

The directional characteristics of current speed have been computed at the grid points of the sea state hindcast HOMERE (Boudière et al. 2013), located between the shore and 50 km off-shore, along the western coast of France. This hindcast is 19-year long (1994-2012), delivers hourly outputs of spectral-based sea state parameters and vertically-averaged current characteristics with a resolution down to 200 m at the coast. It was identified as the most appropriate single source of sea state variables for precise characterization of marine resources for marine energy purposes along the western coast of France (Dubranna et al. 2015).

The directional characteristics of the current are provided by a series of tables representing the cumulated occurrences of (current speed, direction) combinations.

In our specific case, the bin EDGES of current speed values are 0, Q10, Q25, Q50, Q75, Q90, Q99 and maximum speed, with QX representing the Xth percentile of the current time series at the location considered. The bin CENTERS of the current directions are defined in 3° intervals between 0° and 357°. Note that the flowing direction is considered, rotating anti-clockwise and East is the origin (0°). For instance, if D = 225°, then the current is flowing to the southwest.
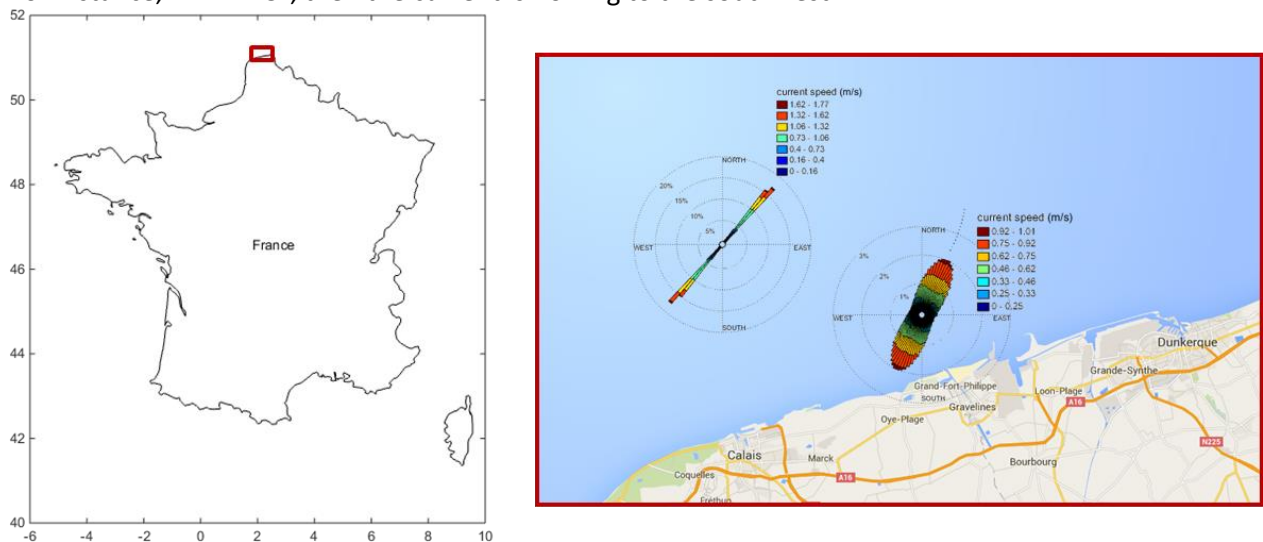

Figure: Example of (Current Speed, Direction) occurrence table represented as a directional roses at 2 different geographic positions using data available from (here).

Data download: (CurrentSpeed,Direction) occurrence tables can be downloaded here using standard protocols (OPENDAP, HTTP, etc.). Note that for OPENDAP access, the "curspd_dir_Ocurrence" variable has 3 dimensions, the first of which is related to the grid node number. It is therefore recommended that you collect the grid node number(s) of the area you are interested in before you make use of the OPENDAP protocol. Step by step tutorial about how to access the grid node numbers is presented here.

Targeted end-users: Device developers, scientists, farm designers, grid operators, consulting agencies.

References

Boudière, E., C. Maisondieu, F. Ardhuin, M. Accensi, L. Pineau-Guillou, and J. Lepesqueur. 2013. A suitable metocean hindcast database for the design of Marine energy converters. International Journal of Marine Energy **3-4**: e40–e52.

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