# Maps of zero-crossing wave period (wave_t02_maps.nc)

The average period of zero-crossing waves is estimated according to the following equation:

$$T_z \cong T_{02} = \sqrt{\frac{m_0}{m_2}}$$

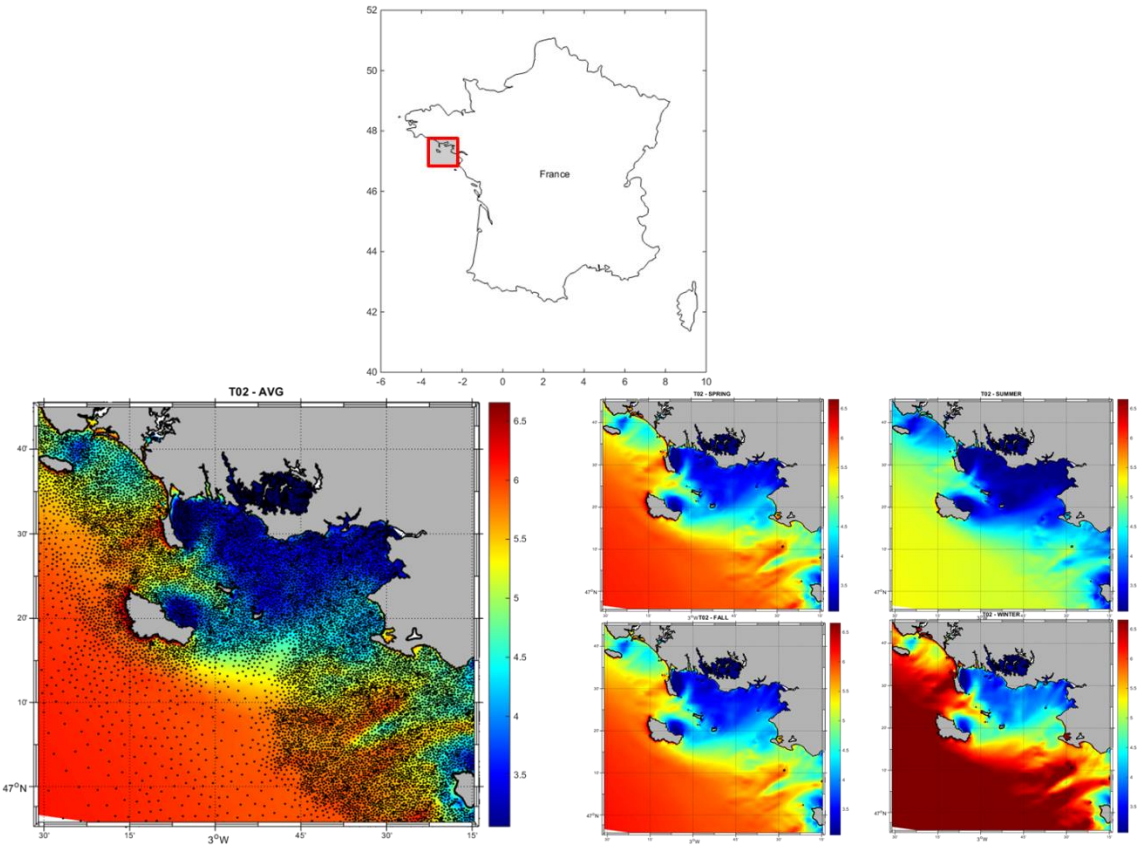
where $m_n$ is the n$^{th}$ spectral moment that is defined as:

$$m_n = \sum_i f_i^n S_i \Delta f_i$$

and

$$S_i = \sum_j S_{ij} \Delta\theta_j$$

$T_z$: Period of zero-crossing waves (s)
$f_i$: i$^{th}$ discrete frequency (Hz)
$S_{ij}$: Variance density over the i$^{th}$ discrete frequency and j$^{th}$ discrete direction (m$^2$/Hz.rad)
$\Delta f_i$: Frequency width of the variance density of the i$^{th}$ discrete frequency (Hz)
$\Delta\theta_j$: Angular width of the variance density j$^{th}$ discrete direction (rad)




*Example of period of zero-crossing waves maps produced using the data available from (website). Average values are in the left panel, with black dots representing the hindcast grid. Seasonal values are in the right panel.*

The average period of zero-crossing waves maps are displaying the spatial distribution of annual/seasonal averages of period of zero-crossing waves. Seasons are December-February (winter), March-May (spring), June-August (summer), September-November (fall). All averages are computed based on the hourly outputs of the 19-year sea state hindcast Homere (Boudière et al. 2013). This hindcast 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).

**Data download**: Annual/seasonal averages of wave energy period can be downloaded here using standard protocols (OPENDAP, HTTP, etc.).

**Targeted end-users**: Decision makers from national to local scale, investors, utilities and scientists.

**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.

Dubranna, J., T. Ranchin, L. Ménard, and B. Gschwind. 2015. Production and Dissemination of Marine Renewable Energy Resource Information. *11th European Wave and Tidal Energy Conference*.

**Contact**

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