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Measure sea level variability using the *Tide Peaks Toolbox*

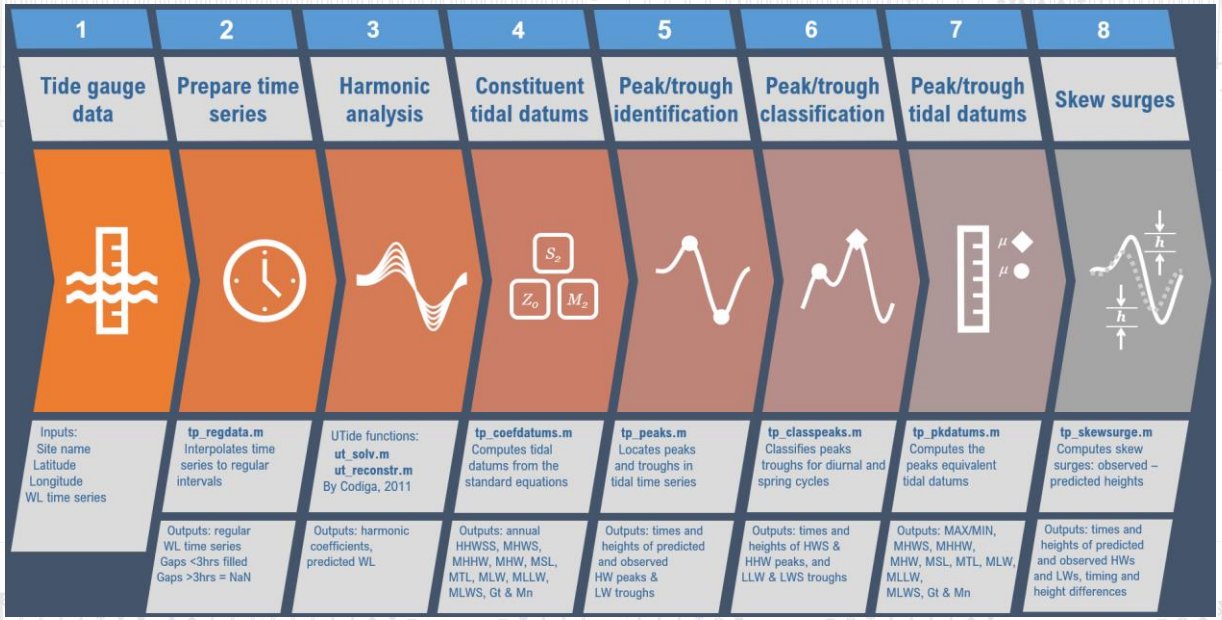
Quantifying the variability in mean sea level, tides, and surges is essential for managing sea level hazards.

The *Tide Peaks Toolbox*[1] is a set of functions for use in MATLAB for computing representative sea level statistics from any tide gauge record.

The peaks and troughs in the predicted and observed time series are automatically identified and classified for semidiurnal, diurnal, and spring tidal cycles.

Differences between tidal datums computed from peaks and troughs and those from primary harmonic constituents are consequential for elevation-based hazard thresholds[2].

Process flow diagram of the functions executed by the *Tide Peaks Toolbox:*



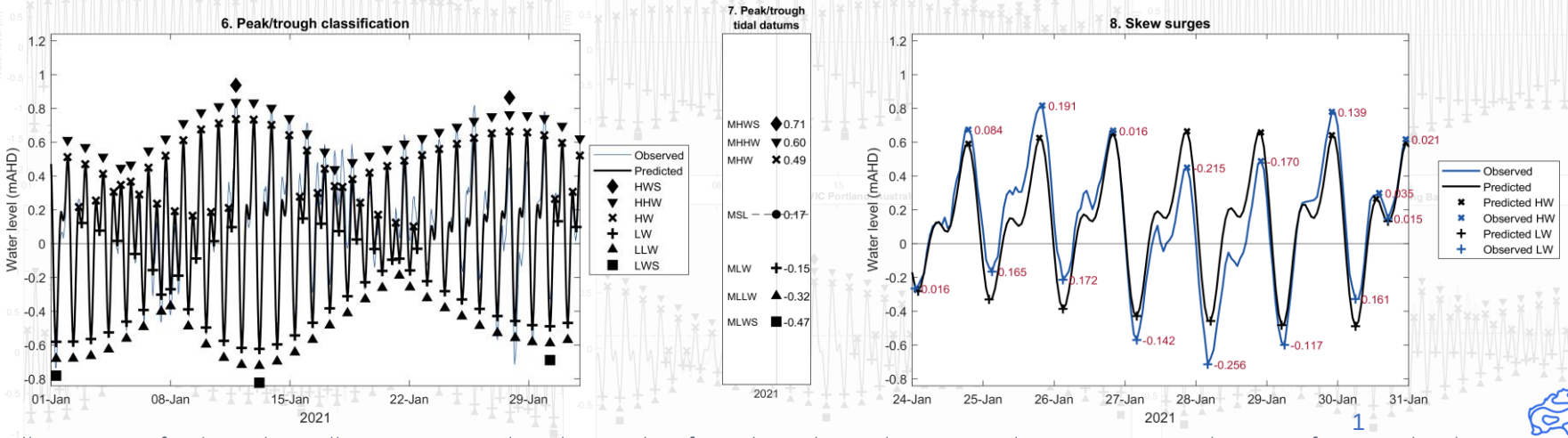
Additionally, the joint probability of mean sea level, tide peaks, and skew surges coinciding is informative for estimating the changing frequency of exceedances[3].

References

[1] K. Palmer (2023). *Tide Peaks Toolbox*. MATLAB File Exchange.

[2] K. Palmer, C. Watson, J. Hunter, B. Hague, & H. Power (2023). *An improved method for computing tidal datums*. Coastal Engineering.

[3] K. Palmer, J. Hunter, C. Watson, H. Power, & B. Hague (2022). *Joint probability of changes in mean sea level, tides, and skew surges around Australia*. WCRP Sea Level Conference, Singapore.



Illustrations of *Tide Peaks Toolbox* outputs produced using data from the Hobart tide gauge and ABSLMP stations (Bureau of Meteorology).