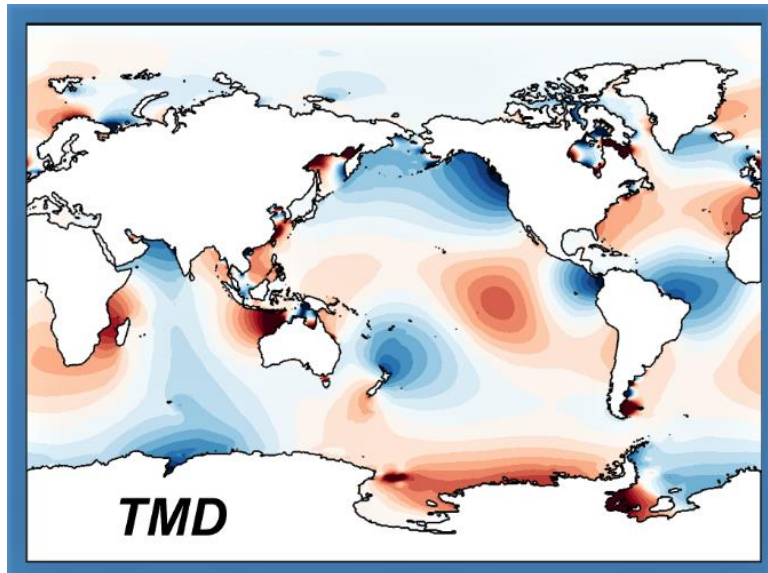


TMD Toolbox v2.5



Laurie Padman, ESR

Susan Howard, ESR

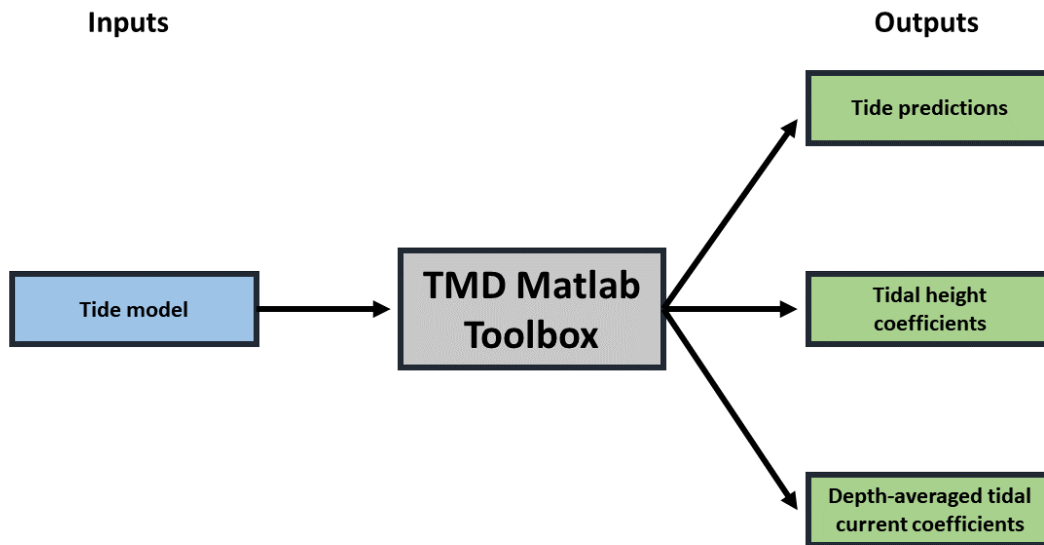
Lana Erofeeva, OSU

Overview

TMD 2.5 (“Tide Model Driver”, version 2.5) is a MATLAB toolbox for accessing the coefficients for tidal harmonic constituents in barotropic tide models created by Oregon State University (OSU) and Earth and Space Research (ESR), and for making predictions of tide height and currents. TMD 2.5 includes two components: (1) a set of scripts for accessing tidal fields and making predictions; and (2) a graphical user interface (GUI) for quickly browsing tide fields, zooming in on regions of interest, and selecting points and time ranges for predictions of specific variables. The toolbox is provided with a detailed User Manual with several examples of how to use its different functions.

TMD has been developed, beginning in 2005, from the [OSU “OTPS” FORTRAN code](#). TMD was updated to its current version (version 2.5) in 2020.

The TMD toolbox runs in a user’s current MATLAB installation. TMD allows a user to access specific tide models, output harmonic constants (amplitudes and phase for sea surface height, and components for currents and volume transports; and tidal current ellipse properties), and to make tidal predictions.



Coordinate systems: Tide models that work with TMD are provided in two coordinate systems: (1) uniform in latitude and longitude; and (2) uniform in polar stereographic (“PS”) x and y distances (in km). The Arctic and Greenland tide models served at the Arctic Data Center (<https://arcticdata.io/catalog/portals/ArcticTides>) are all coded in PS coordinates. TMD provides the scripts needed to convert between lat/lon and PS values for a specific model.

Contact Susan Howard (showard@esr.org) or Laurie Padman (padman@esr.org) for advice about the use of this toolbox, bug reports, and suggestions for improvements.

Tide model compatibility

TMD works with:

- **Arctic models developed by ESR**, available from ESR’s web page (<https://www.esr.org/research/polar-tide-models/>) and the Arctic Tides Portal at ADC (<https://arcticdata.io/catalog/portals/ArcticTides>).
- **Antarctic models developed by ESR**, available from ESR’s web page (<https://www.esr.org/research/polar-tide-models/>).
- **Global and regional models provided by OSU** (<https://www.tpxo.net>) in binary format with all constituents in a single file.

Repository

The TMD toolbox is maintained at https://github.com/EarthAndSpaceResearch/TMD_Matlab_Toolbox_v2.5. Please check this repository for bug fixes and updates.

TMD releases are also available at the Mathworks file exchange:

<https://www.mathworks.com/matlabcentral/fileexchange/75599-tide-model-driver-tmd-version-2-5-toolbox-for-matlab>

Alternatives to the MATLAB TMD toolbox

FORTRAN: A FORTRAN version of this package is available through OSU: [OSU Tidal Prediction software \(OTPS\)](#)

PYTHON: [pyTMD](#), created by T. C. Sutterley, is a Python-based tidal prediction software package based on our MATLAB TMD package that reads OTIS and GOT formatted tidal solutions for calculating ocean and load tides.

Acknowledgements

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