READ_ME

Model and datasets for submitted publication "Clark et al. (2024), Clumped isotope temperatures of coccolithophores from global sediment traps, Paleoceanography and Paleoclimatology, submitted".

Model files:

- d18O_surface.m
  o d18O of the surface ocean txt file from NASA into matrix around set location

- findcarb.m
  o Function to derive carbonate parameters around given location

- Run_model_file.m
  o Converts nc datasets from Multi Observation Global Ocean to cell array

- curpred.m
  o Function of a sinking particle until depth for given time period and year

- temppred.m
  o Function deriving the sinking path of a particle and temperature from origin

- temppred2.m
  o Function deriving the sinking path of a particle and temperature at place of sediment trap

- temppred_avg.m
  o Function deriving the sinking path of a particle and temperature from origin with averaged paths

- temppred_month.m
  o Function to find what months fit D47 temperatures

Data files:

- d18O_dataset.nc
  o Dataset of d18O of the surface ocean

- Model_output_timing.xlsx
  o Dataset containing the longitude and latitude of the approximate provenance location, timing of when the sediment trap was open and would capture coccoliths for both without and with the current model

- Model_output_curpred_publ.xlsx

- Dataset documenting the movement in the x and y direction, sinking depths, and total distance travelled for each sediment trap location for 75, 100, and 125 $mday^{-1}$ sinking velocity

- Model_output_tempred_75_publ.xlsx
  - Dataset showing heterogeneity of temperatures for the sinking velocity of 75 $mday^{-1}$ for the start, average, and end of the opening of the sediment trap for each depth level for the capture cone around the location of the sediment trap and the provenance location

- Model_output_tempred_100_publ.xlsx
  - Dataset showing heterogeneity of temperatures for the sinking velocity of 100 $mday^{-1}$ for the start, average, and end of the opening of the sediment trap for each depth level for the capture cone around the location of the sediment trap and the provenance location

- Model_output_tempred_125_publ.xlsx
  - Dataset showing heterogeneity of temperatures for the sinking velocity of 125 $mday^{-1}$ for the start, average, and end of the opening of the sediment trap for each depth level for the capture cone around the location of the sediment trap and the provenance location