Graphing Tides

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Goals

Student analysis using real data (well, real from a tidal calculator) to see the three tidal types and the effect of tidal resonance.

Practice in graphmaking and interpretation

Description

Students plot high and low tide for Wilmington Beach (semi-diurnal), Pensacola (diurnal), Seatttle (mixed), and Joggins Wharf (semi-diurnal, but extreme tidal range), so they can see the important effect of location on tides.

Context

Used in an introductory oceanography course, where I have explained basic tidal theory, which indicates you should get two high tides per day (really, day plus a few minutes). Students get all four locations to graph and interpret. I follow this lab with an activity on calculating tidal resonance period for the Bay of Fundy.

In my general education Earth Science class, I give pairs of students one of these locations and then have the whole class report on results for all four locations.

See Tides Exercises.xls for data. The tab “Four locations for 226” is the sheet I print for Oceanography. For discussion of other sheets, see the spreadsheet or Instructor Notes.

Tides

Plot the tidal record from each of the locations on the graph paper. You can plot multiple locations on one graph by marking data points with W,P,S,J.

What tide type occurs at What is the elevation of mean high water?

Wilmington Beach

Pensacola

Seattle

Joggins Wharf

Which location has the smallest tidal range and which the largest? What is the tidal range at these locations?

What is the significance of the negative tidal heights at some times?