

Tide Prediction Error for the United States Stations

The accuracy of NOAA, National Ocean Service tide predictions is determined through a comparison of the predicted tides and observed water levels for all stations. Comparisons are made of the times and heights of high and low tides as well as hourly heights. Each water level station is unique; there is no single standard of accuracy when comparing the astronomical tide predictions and observed water levels.

Differences between predicted and observed tides will be greater than average during extreme weather events and during above normal river runoff to stations on tidal rivers. Errors in time and height of tide are generally larger for those areas with weaker tides.

The table below contains the tide stations that are used as reference stations in the NOAA tide table publication. Additional stations will be added in following years. The comparisons were made by subtracting the observations from the predictions, and computing a Root Mean Square (RMS) of the differences to estimate the average errors. These calculations were made using one year of data from each station.

As an example of how to interpret the RMS statistics, reference is made to Eastport, ME in the table below. At Eastport, ME the observed and predicted times of high water are within 0.11 hours of each other on average. Observed and predicted times of low water are within 0.12 hours on average. On average, the heights of observed and predicted high waters are within 0.147m (0.48 ft.); low waters are within 0.135m (0.44ft.); and hourly heights are within 0.143m (0.47ft.).

Station ID	Station Name	Analysis Year	High Water Time	Low Water Time	High Water Height	Low Water Height	Hourly Heights
			Hours	Hours	Meters(feet)	Meters(feet)	Meters(feet)
EAST COAST							
8410140	Eastport, ME	2013	0.11	0.12	0.147 (0.48)	0.135 (0.44)	0.143 (0.47)
8413320	Bar Harbor, ME	2013	0.12	0.13	0.139 (0.46)	0.129 (0.42)	0.137 (0.45)
8418150	Portland, ME	2013	0.15	0.15	0.150 (0.49)	0.131 (0.43)	0.142 (0.47)
8443970	Boston, MA	2013	0.15	0.14	0.206 (0.68)	0.205 (0.67)	0.213 (0.70)
8447930	Woods Hole, MA	2013	0.46	1.38	0.137 (0.45)	0.154 (0.51)	0.145 (0.48)
8449130	Nantucket, MA	2013	0.18	0.16	0.162 (0.53)	0.150 (0.49)	0.158 (0.52)
8452660	Newport, RI	2013	0.18	0.40	0.162 (0.53)	0.163 (0.53)	0.164 (0.54)
8461490	New London, CT	2013	0.27	0.22	0.152 (0.50)	0.155 (0.51)	0.155 (0.51)
8467150	Bridgeport, CT	2013	0.13	0.14	0.185 (0.61)	0.170 (0.56)	0.179 (0.59)
8510560	Montauk, NY	2013	0.25	0.24	0.157 (0.51)	0.171 (0.56)	0.167 (0.55)
8516945	Kings Point, NY	2013	0.84	0.65	0.187 (0.61)	0.200 (0.66)	0.203 (0.67)
8518750	Battery, NY	2013	0.30	0.25	0.182 (0.60)	0.178 (0.58)	0.180 (0.59)
8531680	Sandy Hook, NJ	2013	0.23	0.23	0.188 (0.62)	0.198 (0.65)	0.197 (0.65)

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8534720	Atlantic City, NJ	2013	0.22	0.22	0.173 (0.57)	0.179 (0.59)	0.176 (0.58)
8545240	Philadelphia, PA	2013	0.24	0.35	0.200 (0.66)	0.203 (0.66)	0.212 (0.70)
8551910	Reedy Point, DE	2013	0.24	0.34	0.184 (0.60)	0.192 (0.65)	0.199 (0.65)
8557380	Lewes, DE	2013	0.19	0.20	0.175 (0.57)	0.208 (0.68)	0.212 (0.70)
8570283	Ocean City, MD	2013	0.27	0.21	0.164 (0.54)	0.194 (0.64)	0.180 (0.59)
8574680	Baltimore, MD	2013	0.41	0.52	0.191 (0.63)	0.184 (0.60)	0.198 (0.65)
8594900	Washington, DC	2013	0.34	0.42	0.199 (0.65)	0.189 (0.62)	0.197 (0.65)
8638610	Hampton Roads, VA	2013	0.24	0.24	0.186 (0.61)	0.204 (0.67)	0.196 (0.64)
8638863	CBBT, VA	2013	0.25	0.26	0.186 (0.61)	0.190 (0.62)	0.187 (0.61)
8651370	Duck Pier, NC	2013	0.25	0.24	0.162 (0.53)	0.180 (0.59)	0.172 (0.56)
8652587	Oregon Inlet, NC	2013	0.55	1.43	0.132 (0.43)	0.150 (0.49)	0.172 (0.56)
8658120	Wilmington, NC	2013	0.33	0.25	0.123 (0.40)	0.132 (0.43)	0.139 (0.46)
8661070	Myrtle Beach, SC	2013	0.23	0.26	0.128 (0.42)	0.144 (0.47)	0.138 (0.45)
8665530	Charleston, SC	2013	0.21	0.21	0.134 (0.44)	0.158 (0.52)	0.155 (0.51)
8720030	Fernandina Beach, FL	2013	0.45	0.24	0.132 (0.43)	0.180 (0.59)	0.172 (0.56)
8720218	Mayport, FL	2013	0.17	0.25	0.121 (0.40)	0.166 (0.54)	0.151 (0.50)
8721604	Trident Pier, FL	2013	0.29	0.29	0.121 (0.40)	0.131 (0.43)	0.130 (0.43)
8723970	Vaca Key, FL	2013	1.47	1.11	0.114 (0.37)	0.103 (0.34)	0.116 (0.38)
8724580	Key West, FL	2013	0.26	0.19	0.097 (0.32)	0.109 (0.36)	0.104 (0.34)
GULF COAST							
8725110	Naples, FL	2013	0.52	0.32	0.117 (0.38)	0.125 (0.41)	0.125 (0.41)
8726520	St. Petersburg, FL	2013	0.40	0.44	0.145 (0.48)	0.133 (0.44)	0.140 (0.46)
8727520	Cedar Key, FL	2013	0.38	0.38	0.185 (0.61)	0.165 (0.54)	0.171 (0.56)
8729840	Pensacola, FL	2012/2013	0.81	1.04	0.149 (0.49)	0.168 (0.55)	0.160 (0.52)
8735180	Dauphin Island, AL	2013	1.09	1.33	0.155 (0.51)	0.148 (0.48)	0.156 (0.51)
8737048	Mobile, AL	2013	1.50	1.49	0.202 (0.66)	0.166 (0.54)	0.188 (0.62)
8761724	Grand Isle, LA	2013	1.04	1.11	0.130 (0.43)	0.116 (0.38)	0.122 (0.40)
8771450	Galveston Pier 21, TX	2013	1.04	0.86	0.169 (0.54)	0.178 (0.58)	0.171 (0.56)
CARIBBEAN							
9759110	Magueyes Island, PR	2013	1.41	1.29	0.067 (0.22)	0.059 (0.19)	0.064 (0.21)
9755371	San Juan, PR	2013	0.25	0.24	0.058 (0.19)	0.060 (0.20)	0.061 (0.20)
9751639	Charlotte Amalie, VI	2013	0.48	0.70	0.056 (0.02)	0.054 (0.02)	0.057 (0.19)
9751401	Limetree Bay, VI	2013	1.47	1.29	0.074 (0.24)	0.062 (0.20)	0.067 (0.22)
2695540	Bermuda Esso Pier	2013	0.12	0.12	0.097 (0.32)	0.094 (0.31)	0.095 (0.31)

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WEST COAST							
9410170	San Diego, CA	2013	0.13	0.13	0.060 (0.20)	0.068 (0.22)	0.062 (0.20)
9410660	Los Angeles, CA	2103	0.12	0.12	0.049 (0.16)	0.049 (0.16)	0.050 (0.16)
9412110	Port San Luis, CA	2013	0.11	0.12	0.056 (0.18)	0.055 (0.18)	0.058 (0.19)
9413450	Monterey, CA	2013	0.10	0.10	0.059 (0.19)	0.059 (0.19)	0.060 (0.20)
9414290	San Francisco, CA	2013	0.12	0.15	0.076 (0.25)	0.074 (0.24)	0.077 (0.25)
9415144	Port Chicago, CA	2013	0.18	0.29	0.095 (0.31)	0.109 (0.36)	0.107 (0.35)
9416841	Arena Cove, CA	2013	0.11	0.10	0.101 (0.33)	0.100 (0.33)	0.10 (0.33)
9418767	Humboldt Bay, CA	2013	0.10	0.12	0.102 (0.33)	0.104 (0.34)	0.105 (0.34)
9419750	Crescent City, CA	2013	0.10	0.12	0.146 (0.48)	0.149 (0.49)	0.150 (0.49)
9439040	Astoria, OR	2013	0.12	0.16	0.167 (0.55)	0.177 (0.58)	0.169 (0.55)
9432780	Charleston, OR	2013	0.09	0.11	0.130 (0.43)	0.132 (0.43)	0.134 (0.44)
9440910	Toke Point, WA	2013	0.12	0.21	0.190 (0.62)	0.200 (0.66)	0.201 (0.66)
9443090	Neah Bay, WA	2013	0.13	0.15	0.192 (0.63)	0.185 (0.61)	0.188 (0.62)
9444900	Port Townsend, WA	2013	0.19	0.17	0.133 (0.43)	0.127 (0.42)	0.127 (0.42)
9447130	Seattle, WA	2013	0.15	0.13	0.139 (0.46)	0.135 (0.44)	0.134 (0.44)
9449424	Cherry Point, WA	2013	0.13	0.14	0.141 (0.46)	0.136 (0.45)	0.139 (0.46)
ALASKA							
9450460	Ketchikan, AK	2013	0.08	0.09	0.176 (0.58)	0.173 (0.57)	0.177 (0.58)
9452210	Juneau, AK	2013	0.12	0.09	0.189 (0.62)	0.188 (0.62)	0.192 (0.63)
9451600	Sitka, AK	2013	0.09	0.09	0.224 (0.74)	0.226 (0.74)	0.224 (0.74)
9454050	Cordova, AK	2013	0.15	0.15	0.166 (0.54)	0.171 (0.56)	0.170 (0.56)
9454240	Valdez, AK	2013	0.12	0.11	0.293 (0.96)	0.294 (0.96)	0.293 (0.96)
9455500	Seldovia, AK	2013	0.08	0.10	0.152 (0.50)	0.178 (0.58)	0.162 (0.53)
9455760	Nikiski, AK	2013	0.18	0.20	0.245 (0.80)	0.286 (0.94)	0.218 (0.71)
9455920	Anchorage, AK	2013	0.19	0.20	0.217 (0.71)	0.377 (1.24)	0.312 (1.03)
9457292	Kodiak, AK	2013	0.19	0.20	0.152 (0.50)	0.146 (0.48)	0.151 (0.49)
9459450	Sand Point, AK	2013	0.15	0.18	0.151 (0.50)	0.147 (0.48)	0.151 (0.49)
9461380	Adak, AK	2013	0.80	0.20	0.171 (0.56)	0.179 (0.59)	0.170 (0.56)
9462620	Unalaska, AK	2013	0.78	0.45	0.150 (0.49)	0.154 (0.50)	0.151 (0.50)
9463502	Port Moller, AK	2013	0.23	0.23	0.180 (0.59)	0.175 (0.57)	0.175 (0.57)
9468756	Nome, AK	2013	1.51	.074	0.362 (1.18)	0.333 (1.08)	0.362 (1.19)
9497645	Prudhoe Bay, AK	2012	1.22	1.28	0.171 (0.56)	0.166 (0.55)	0.177 (0.58)

