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Differences in Tide Tables

A common question that we get asked is why the times of high or low water shown on our tidal predictions differ from those computed by another organisation. There are numerous reasons for this and I shall briefly cover these in this short document.

Different methods of calculation

There are many different ways of computing the tides into the future and they will almost certainly lead to different answers. For example, harmonic analysis of a tide gauge record is generally considered the most accurate method. If, however, there isn't a tide gauge dataset to analyse, sometimes approximations of the time and height of high and low water are based on differences to a nearby reference port.

Different observation periods

Even using the same techniques can lead to different results if a different period of observation data is used. For example a harmonic analysis of one year of data from 1980 will not be as accurate as an analysis of 10 years of more recent data.

Rounding

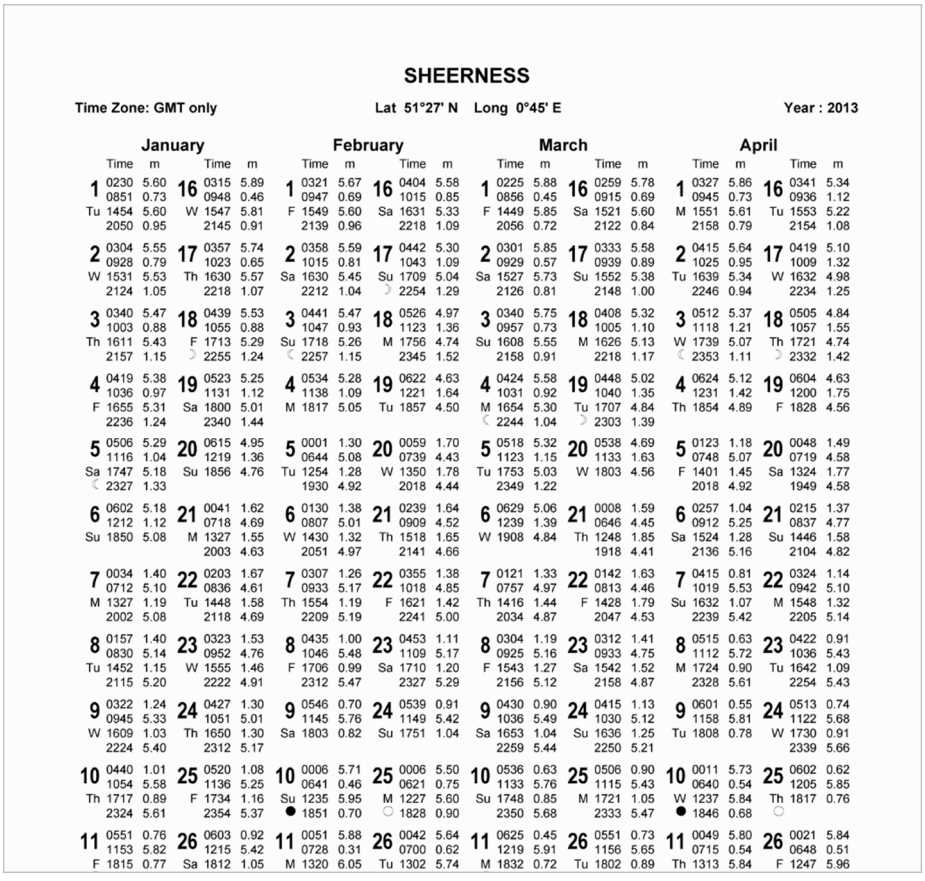
Some tide tables are only published to one decimal place, others to two decimal places. This can make a difference between two tide tables larger than it really is. If tide table A shows a height of 4.6m and tide table B shows a height of 4.7m, it looks like a 10cm difference. However the actual computed values may well have been 4.649m and 4.651m respectively. So the 2mm difference has been rounded in opposite directions.

Differences may not be as big as they seem

At the exact instance of high or low water the height of the tide is not changing. For short periods of time either side of high/low water the tidal level is changing very slowly. The values here show how much the level will change as a percentage of the tidal range for periods up to 15 minutes either side of the quoted high water (HW) for a typical tide.

±1 minute = 0.0036% of tidal range.
±3 minutes = 0.0320%
±5 minutes = 0.0889%
±10 minutes = 0.3554%
±15 minutes = 0.7990%

Therefore for a location with a 5 metre tidal range with HW at midday, the tide will move only 4cm between 11:45am and 12:15pm. So tide tables that show 10 or 15 minute differences in the time of high water could in fact be quite similar.



SHEERNESS

Time Zone: GMT only — Lat 51°27' N Long 0°45' E — Year : 2013

January

	Time	m		Time	m
1	0230	5.60	16	0315	5.89
Tu	0851	0.73	W	0948	0.46
	1454	5.60		1547	5.81
	2050	0.95		2145	0.91
2	0304	5.55	17	0357	5.74
W	0928	0.79	Th	1023	0.65
	1531	5.53		1630	5.57
	2124	1.05		2218	1.07
3	0340	5.47	18	0439	5.53
Th	1003	0.88	F	1055	0.88
	1611	5.43		1713	5.29
	2157	1.15	☽	2255	1.24
4	0419	5.38	19	0523	5.25
	1036	0.97		1131	1.12
F	1655	5.31	Sa	1800	5.01
	2236	1.24		2340	1.44
5	0506	5.29	20	0615	4.95
	1116	1.04		1219	1.36
Sa	1747	5.18	Su	1856	4.76
☾	2327	1.33			
6	0602	5.18	21	0041	1.62
	1212	1.12		0718	4.69
Su	1850	5.08	M	1327	1.55
				2003	4.63
7	0034	1.40	22	0203	1.67
	0712	5.10		0836	4.61
M	1327	1.19	Tu	1448	1.58
	2002	5.08		2118	4.69
8	0157	1.40	23	0323	1.53
	0830	5.14		0952	4.76
Tu	1452	1.15	W	1555	1.46
	2115	5.20		2222	4.91
9	0322	1.24	24	0427	1.30
	0945	5.33		1051	5.01
W	1609	1.03	Th	1650	1.30
	2224	5.40		2312	5.17
10	0440	1.01	25	0520	1.08
	1054	5.58		1136	5.25
Th	1717	0.89	F	1734	1.16
	2324	5.61		2354	5.37
11	0551	0.76	26	0603	0.92
	1153	5.82		1215	5.42
F	1815	0.77	Sa	1812	1.05

February

	Time	m		Time	m
1	0321	5.67	16	0404	5.58
	0947	0.69		1015	0.85
F	1549	5.60	Sa	1631	5.33
	2139	0.96		2218	1.09
2	0358	5.59	17	0442	5.30
	1015	0.81		1043	1.09
Sa	1630	5.45	Su	1709	5.04
	2212	1.04	☽	2254	1.29
3	0441	5.47	18	0526	4.97
	1047	0.93		1123	1.36
Su	1718	5.26	M	1756	4.74
☾	2257	1.15		2345	1.52
4	0534	5.28	19	0622	4.63
	1138	1.09		1221	1.64
M	1817	5.05	Tu	1857	4.50
5	0001	1.30	20	0059	1.70
	0644	5.08		0739	4.43
Tu	1254	1.28	W	1350	1.78
	1930	4.92		2018	4.44
6	0130	1.38	21	0239	1.64
	0807	5.01		0909	4.52
W	1430	1.32	Th	1518	1.65
	2051	4.97		2141	4.66
7	0307	1.26	22	0355	1.38
	0933	5.17		1018	4.85
Th	1554	1.19	F	1621	1.42
	2209	5.19		2241	5.00
8	0435	1.00	23	0453	1.11
	1046	5.48		1109	5.17
F	1706	0.99	Sa	1710	1.20
	2312	5.47		2327	5.29
9	0546	0.70	24	0539	0.91
	1145	5.76		1149	5.42
Sa	1803	0.82	Su	1751	1.04
10	0006	5.71	25	0006	5.50
	0641	0.46		0621	0.75
Su	1235	5.95	M	1227	5.60
●	1851	0.70	○	1828	0.90
11	0051	5.88	26	0042	5.64
	0728	0.31		0700	0.62
M	1320	6.05	Tu	1302	5.74

March

	Time	m		Time	m
1	0225	5.88	16	0259	5.78
	0856	0.45		0915	0.69
F	1449	5.85	Sa	1521	5.60
	2056	0.72		2122	0.84
2	0301	5.85	17	0333	5.58
	0929	0.57		0939	0.89
Sa	1527	5.73	Su	1552	5.38
	2126	0.81		2148	1.00
3	0340	5.75	18	0408	5.32
	0957	0.73		1005	1.10
Su	1608	5.55	M	1626	5.13
	2158	0.91		2218	1.17
4	0424	5.58	19	0448	5.02
	1031	0.92		1040	1.35
M	1654	5.30	Tu	1707	4.84
☾	2244	1.04	☽	2303	1.39
5	0518	5.32	20	0538	4.69
	1123	1.15		1133	1.63
Tu	1753	5.03	W	1803	4.56
	2349	1.22			
6	0629	5.06	21	0008	1.59
	1239	1.39		0646	4.45
W	1908	4.84	Th	1248	1.85
				1918	4.41
7	0121	1.33	22	0142	1.63
	0757	4.97		0813	4.46
Th	1416	1.44	F	1428	1.79
	2034	4.87		2047	4.53
8	0304	1.19	23	0312	1.41
	0925	5.16		0933	4.75
F	1543	1.27	Sa	1542	1.52
	2156	5.12		2158	4.87
9	0430	0.90	24	0415	1.13
	1036	5.49		1030	5.12
Sa	1653	1.04	Su	1636	1.25
	2259	5.44		2250	5.21
10	0536	0.63	25	0506	0.90
	1133	5.76		1115	5.43
Su	1748	0.85	M	1721	1.05
	2350	5.68		2333	5.47
11	0625	0.45	26	0551	0.73
	1219	5.91		1156	5.65
M	1832	0.72	Tu	1802	0.89

April

	Time	m		Time	m
1	0327	5.86	16	0341	5.34
	0945	0.73		0936	1.12
M	1551	5.61	Tu	1553	5.22
	2158	0.79		2154	1.08
2	0415	5.64	17	0419	5.10
	1025	0.95		1009	1.32
Tu	1639	5.34	W	1632	4.98
	2246	0.94		2234	1.25
3	0512	5.37	18	0505	4.84
	1118	1.21		1057	1.55
W	1739	5.07	Th	1721	4.74
☾	2353	1.11	☽	2332	1.42
4	0624	5.12	19	0604	4.63
	1231	1.42		1200	1.75
Th	1854	4.89	F	1828	4.56
5	0123	1.18	20	0048	1.49
	0748	5.07		0719	4.58
F	1401	1.45	Sa	1324	1.77
	2018	4.92		1949	4.58
6	0257	1.04	21	0215	1.37
	0912	5.25		0837	4.77
Sa	1524	1.28	Su	1446	1.58
	2136	5.16		2104	4.82
7	0415	0.81	22	0324	1.14
	1019	5.53		0942	5.10
Su	1632	1.07	M	1548	1.32
	2239	5.42		2205	5.14
8	0515	0.63	23	0422	0.91
	1112	5.72		1036	5.43
M	1724	0.90	Tu	1642	1.09
	2328	5.61		2254	5.43
9	0601	0.55	24	0513	0.74
	1158	5.81		1122	5.68
Tu	1808	0.78	W	1730	0.91
				2339	5.66
10	0011	5.73	25	0602	0.62
	0640	0.54		1205	5.85
W	1237	5.84	Th	1817	0.76
●	1846	0.68	○		
11	0049	5.80	26	0021	5.84
	0715	0.54		0648	0.51
Th	1313	5.84	F	1247	5.96

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