

2019

**SOUTH AFRICAN
TIDE TABLES**

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CONTENTS

Preface	(iii)
Tidal Levels	(iv)
HATOY & LATOY	(v)
Heights of Chart Datums	(v)
Seasons	(vi)
Eclipses	(vi)
Moon Phases	(vi)
Perigee	(vi)

	Tide Tables	Hourly Tidal Predictions
Walvis Bay	1	53
Lüderitz	5	65
Port Nolloth	9	77
Saldanha	13	89
Cape Town	17	101
Simon's Town	21	113
Hermanus	25	125
Mossel Bay	29	137
Knysna	33	149
Port Elizabeth	37	161
East London	41	173
Durban	45	185
Richards Bay	49	197

	Sunrise Sunset	Moonrise Moonset
Walvis Bay	209	235
Lüderitz	211	237
Port Nolloth	213	239
Saldanha	215	241
Cape Town	217	243
Simon's Town	219	245
Hermanus	221	247
Mossel Bay	223	249
Knysna	225	251
Port Elizabeth	227	253
East London	229	255
Durban	231	257
Richards Bay	233	259

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PREFACE

1. The tables contained in this publication give daily predictions of the times of heights and high and low water and hourly predictions of heights of the tide for certain ports as well as sunrise, sunset, moonrise and moonset tables.
2. In using these tables it should be remembered that meteorological conditions can cause considerable differences between predicted and actual tides.
 - a. **Atmospheric pressure.** Variations of atmospheric pressure cause the level of the sea to change by approximately 1cm per millibar. Mean atmospheric pressure at sea level on the South African coast is 1017.0mb. Highs of 1040.0mb and lows of 990.0mb are attained very occasionally.
 - b. **Wind.** The effect of wind depends on the topography in question. In general strong onshore winds pile up the water and offshore winds will lower it. Winds blowing along the coast tend to set up long waves which travel along the coast, known as “storm surges”. Variations of water level caused by storm surges of more than 0.3m about the mean tidal curve have been recorded at ports on the SE coast of the Republic.
3. All predicted heights are given in metres above Chart Datum, which is the datum to which all soundings on the largest scale navigational chart of the area have been reduced. Chart datum is now Lowest Astronomical Tide (LAT) in all ports of the Republic of South Africa and Namibia. The relationship between Chart datum and Land Levelling Datum prior to 1 January 1998 is given on page (v). The term Land Levelling Datum used in these tables refers to the datum adopted by the Chief Director, Surveys and Mapping for the Precise Levelling of the Republic of South Africa. It is commonly called Mean Sea Level by land surveyors.
4. The data for Moon Phases, Seasons and Eclipses was supplied by the South African Astronomical Observatory.
5. Rising and setting times for Sun and Moon are those when the upper limbs of these bodies appear to coincide with the horizon. They are those times when the centres of these bodies are 90° from the zenith with allowances made for mean refraction (+ 34') and semi-diameter (+ 16') for the Sun and semi-diameter minus horizontal parallax for the Moon. They are independent of altitude but should be corrected if necessary for dip, the height of eye of the observer above the plane of the horizon.
6. Users are requested to inform this office of any errors or omissions noted.
7. All times given are South African Standard Time (Time Zone -2). Users should remember that Namibia uses Time Zone-1 between April and September.

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TIDAL LEVELS

The values of Lowest Astronomical Tide (LAT) and Highest Astronomical Tide (HAT) are computed from 19 years' predictions. The Mean Levels are computed from the predictions of a recent year when the moon's average maximum declination was $23\frac{1}{2}^{\circ}$. The definitions of the several levels are given below.

- a. **HAT** and **LAT** are the highest and lowest levels respectively which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. These levels will not be reached every year. HAT and LAT are not the extreme levels which can be reached, as storm surges and other meteorological conditions may cause considerably higher and lower levels to occur. **HATOY** and **LATOY** are the HAT and LAT for the year in question.
- b. **MHWS** (Mean High Water Springs). **MLWS** (Mean Low Water Springs). The height of mean high water springs is the average, throughout a year when the average maximum declination of the moon is $23\frac{1}{2}^{\circ}$, of the heights of two successive high waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is greatest. The height of mean low water springs is the average height obtained by the two successive low waters during the same periods.
- c. **MHWN** (Mean High Water Neaps). **MLWN** (Mean Low Water Neaps). The height of mean high water neaps is the average, throughout a year as defined in b. above, of the heights of two successive high waters during those periods (approximately once a fortnight) when the range of the tide is least. The height of mean low water neaps is the average height obtained from the two successive low waters during the same periods.

Note: The values of MHWS etc vary from year to year in a cycle of approximately 18.61 years. The mean tidal levels given in this table are computed average values for the whole cycle.

- d. **ML** (Mean Level) as given in this table, is the mean of the heights of MHWS, MHWN, MLWS and MLWN.
- e. **Years of observations.** Tidal predictions of South African ports are generally based on more than twenty years' observations.
- f. **General.** Tides on the Southern African coasts are regular, semi-diurnal and their range seldom exceeds 2.2m

PLACE	LAT	MLWS	MLWN	ML	MHWN	MHWS	HAT
Walvis Bay	0	0.27	0.67	0.98	1.29	1.69	1.97
Lüderitz	0	0.23	0.65	0.94	1.22	1.65	1.99
Port Nolloth	0	0.28	0.78	1.09	1.40	1.91	2.25
Saldanha	0	0.24	0.70	0.99	1.27	1.75	2.03
Cape Town	0	0.25	0.70	0.98	1.26	1.74	2.02
Simon's Town	0	0.24	0.73	1.00	1.29	1.79	2.09
Hermanus	0	0.27	0.75	1.02	1.29	1.78	2.07
Mossel Bay	0	0.26	0.88	1.17	1.46	2.10	2.44
Knysna	0	0.22	0.82	1.06	1.32	1.91	2.21
Port Elizabeth	0	0.21	0.79	1.04	1.29	1.86	2.12
East London	0	0.23	0.78	1.02	1.25	1.82	2.08
Durban	0	0.21	0.87	1.11	1.36	2.01	2.30
Richards Bay	0	0.27	0.97	1.20	1.48	2.11	2.47

The above levels are referred to CHART DATUM

2019

Port	LATOY			HATOY		
	Height	Time	Date	Height	Time	Date
Walvis Bay	0.041	2155	29 Sep	1.944	0438	21 Feb
Lüderitz	0.026	2151	29 Sep	1.916	0405	22 Mar
Port Nolloth	0.045	2150	29 Sep	2.204	0401	22 Mar
Saldanha	0.050	2155	29 Sep	2.030	1538	29 Sep
Cape Town	0.038	2201	29 Sep	1.987	1543	29 Sep
Simon's Town	0.024	2158	29 Sep	2.043	0406	22 Mar
Hermanus	0.056	0946	31 Aug	2.043	1540	29 Sep
Mossel Bay	0.018	0949	29 Sep	2.414	1605	29 Sep
Knysna	0.021	2257	20 Feb	2.215	1633	29 Sep
Port Elizabeth	0.027	0952	29 Sep	2.131	1608	29 Sep
East London	0.034	2248	20 Feb	2.094	1615	29 Feb
Durban	0.015	1035	30 Sep	2.292	1615	29 Sep
Richards Bay	0.037	1039	30 Sep	2.442	1619	29 Sep

The above levels are all referred to Chart Datums.

HEIGHTS OF CHART DATUM RELATIVE TO LAND LEVELLING DATUM IN SOUTH AFRICA AND NAMIBIA

Port	Up to 31 Dec 1978	1 Jan 1979 to 31 Dec 1997	1 Jan 1998 to 31 Dec 2002	1 Jan 2003 onwards
Walvis Bay	-0.913	-0.900	-0.966	-0.966
Lüderitz	-0.865*	-0.900	-0.935	-1.055
Port Nolloth	-0.718*	-0.900	-1.075	-0.925
Saldanha	-0.582	-0.900	-0.975	-0.865
Cape Town	-0.829	-0.900	-0.975	-0.825
Simon's Town	-0.651	-0.900	-1.003	-0.843
Hermanus	-0.619	-0.900	-0.978	-0.788
Mossel Bay	-0.761	-0.900	-1.163	-0.933
Knysna	-0.625	-0.900	-1.048	-0.788
Port Elizabeth	-0.838	-0.900	-1.026	-0.836
East London	-0.762	-0.900	-1.006	-0.716
Durban	-0.838	-0.900	-1.113	-0.913
Richards Bay	-0.900	-0.900	-1.205	-1.015

*In use until 1 January 1994.

2019 SEASONS

		d	h	m		d	h	m
Equinoxes :	MAR	20	23	58	SEP	23	09	50
Solstices:	JUN	21	17	54	DEC	22	06	19

Good Friday – 19 April

ECLIPSES

Partial Solar Eclipse*	06 Jan
Lunar Eclipse**	21 Jan
Total Solar Eclipse*	02 Jul
Partial Lunar Eclipse	16 Jul
Annular Solar Eclipse*	26 Dec

** Partially visible in SA

* Not visible in SA

MOON PHASES

New Moon				First Quarter				Full Moon				Last Quarter			
	d	h	m		d	h	m		d	h	m		d	h	m
Jan	6	03	28	Jan	14	08	45	Jan	21	07	16	Jan	27	23	10
Feb	4	23	03	Feb	13	00	26	Feb	19	17	53	Feb	26	13	28
Mar	6	18	04	Mar	14	12	27	Mar	21	03	43	Mar	28	06	10
Apr	5	10	50	Apr	12	21	06	Apr	19	13	12	Apr	27	00	18
May	5	00	45	May	12	03	12	May	18	23	11	May	26	18	33
Jun	3	12	02	Jun	10	07	59	Jun	17	10	31	Jun	25	11	46
Jul	2	21	16	Jul	9	12	55	Jul	16	23	38	Jul	25	03	18
Aug	1	05	12	Aug	7	19	31	Aug	15	14	29	Aug	23	16	56
Aug	30	12	37	Sep	6	05	10	Sep	14	06	33	Sep	22	04	41
Sep	28	20	26	Oct	5	18	47	Oct	13	23	08	Oct	21	14	39
Oct	28	05	38	Nov	4	12	23	Nov	12	15	34	Nov	19	23	11
Nov	26	17	05	Dec	4	08	58	Dec	12	07	12	Dec	19	06	57
Dec	26	07	13												

Note : These times are Terrestrial Dynamical Time (TDT) plus 2 hrs. This corresponds to SA standard time within 3 minutes.

MOON AT PERIGEE

Date	Hour	Date	Hour
Jan 21	21	Aug 02	09
Feb 19	11	Aug 30	17
Mar 19	21	Sep 28	04
Apr 17	00	Oct 26	12
May 13	23	Nov 23	09
Jun 08	01	Dec 18	22
Jul 05	06		