



Namibia Meteorological Service

WHOT? Bulletin



HIGHLIGHTS

- ?? Normal to above normal rainfall were received at some regions
- ?? High daily rainfall figures exceeding 70 (mm)
- ?? Warmer than normal temperatures in Namibia

RAINFALL SUMMARY FOR NOVEMBER 2003

Rainfall over the Otjozondjupa region during the month of November 2003 was relatively high compare to the rest of the other regions (fig. 1). Down pours were received from the 01-10 November 2003. The rainfall increased during the period 11-20 and high daily figures were received during this period. The highest daily figures were recorded at Choantsas with 72.0 (mm) on the 13th. Vergenoeg received 40.0 (mm) on the 18th and 18.5 (mm) on the 20th but for the whole month Vergenoeg accumulated 104.4 (mm). Awagobibital received 97.5 (mm) for the entire month, Gaub 93.5 (mm), Uitkomst 92.5 (mm) and Otavi 89.4 (mm).

The southeast and the central parts of Namibia received normal to above normal rainfall for November 2003. Many places in the Otjozondjupa region received way above normal rainfall for entire period. The western part of the country was still under the dry side (see fig. 2).

Fig 1: Rainfall (mm): 01-30 November 2003

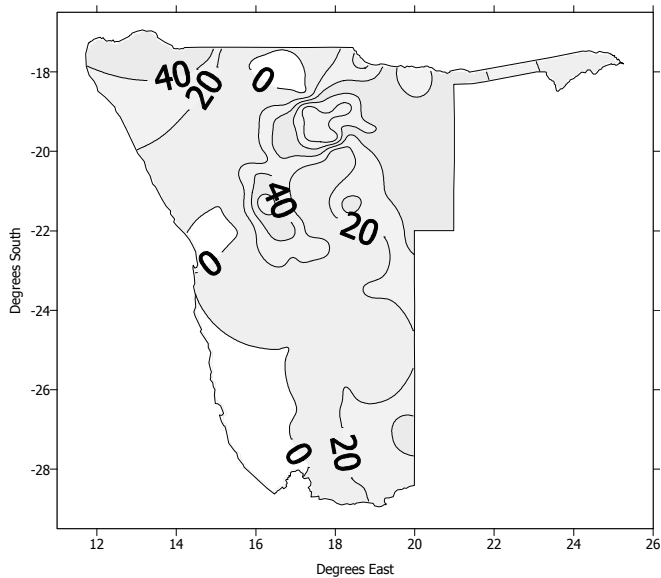
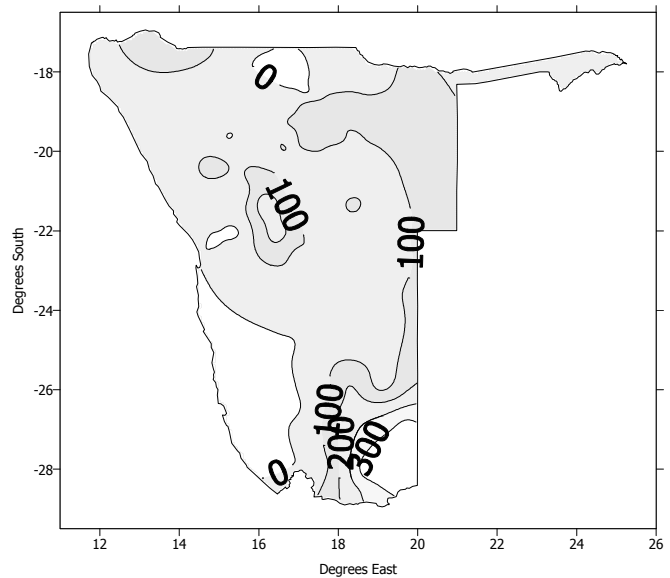


Fig 2: Rainfall as a percentage of normals for November 2003



Temperature Summary for November 2003

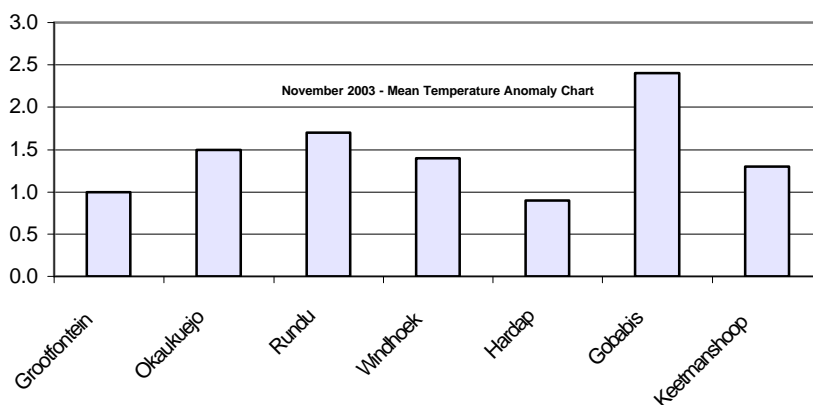
The month of November 2003 was characterized by noticeably warmer than normal conditions everywhere in Namibia, with daily temperature maxima reaching or exceeding 35°C on more than 10 days at 8 of the 13 monitoring stations that maintained an uninterrupted record throughout the month. Daily temperature maxima equaling or exceeding 40°C were recorded at 4 stations – Hardap (40.5°C on 13th), Okaukuejo (40.2°C on 11th), Rundu (40.2°C on 11th and 40°C on 12th), and Katima Mulilo (40.2°C on 11th and 40.1°C on 12th).

The month's temperature statistics as summarized from the daily records at the monitoring stations are given in the Table below. Departures from Normal are differences between the current month's mean values and the long-term averages or normals. Positive departures (or anomalies) indicate "warmer than normal", and Negative departures (or anomalies) indicate "cooler than normal".

Monthly Means and Departures from Normal – November 2003

Station Number Name	November 2003 Averages			Departures from Normal		
	MaxT °C	MinT °C	MeanT °C	MaxT °C	MinT °C	MeanT °C
68006 Ondagwa	33.6	20.0	26.8	****	*****	*****
68010 Okaukuejo	35.3	19.7	27.5	0.7	2.3	1.5
68014 Grootfontein	31.9	19.0	25.5	0.2	1.9	1.0
68016 Mowe Bay	*****	*****	*****	*****	*****	*****
68018 Rundu	33.8	20.2	27.0	1.8	1.7	1.7
68030 Katima Mulilo	35.0	21.2	28.1	*****	*****	*****
68098 Walvis Bay Airport	25.7	13.1	19.3	*****	*****	*****
68102 Sitrusdal	*****	*****	*****	*****	*****	*****
68104 Walvis Bay-Pelican Point.	*****	*****	*****	*****	*****	*****
68106 Gobabeb	*****	*****	*****	*****	*****	*****
68110 Windhoek	31.3	16.7	24.0	1.8	1.0	1.4
68112 Hosea Kutako Int. Airport	31.1	*****	*****	*****	*****	*****
68114 Omaruru	34.7	19.9	27.3	*****	*****	*****
68116 Gobabis	33.7	18.0	25.9	2.1	2.8	2.4
68212 Hardap	35.7	17.3	26.5	2.6	-0.8	0.9
68300 Luderitz Airport	23.1	*****	*****	*****	*****	*****
68312 Keetmanshoop	33.6	17.3	25.5	1.0	1.7	1.3

November 2003 Mean temperature Anomaly Chart for Selected Stations



ASTRONOMICAL INFORMATION- SUNRISE AND SUNSET

January 2004							February 2004					
Date	Ondangwa		Windhoek		Keetmans		Ondangwa		Windhoek		Keetmans	
	Sun Rise	Sun Set	Sun Rise	Sun Set	Sun Rise	Sun Set	Sun Rise	Sun Set	Sun Rise	Sun Set	Sun Rise	Sun Set
1	0623	1935	0610	1939	0557	1944	0642	1936	0631	1938	0621	1940
2	0624	1935	0610	1940	0558	1944	0643	1936	0632	1938	0622	1939
3	0625	1935	0611	1940	0558	1944	0644	1935	0632	1937	0622	1939
4	0625	1935	0612	1940	0559	1944	0644	1935	0633	1937	0623	1938
5	0626	1936	0612	1940	0600	1945	0645	1935	0634	1936	0624	1938
6	0627	1936	0613	1941	0601	1945	0645	1934	0634	1936	0625	1937
7	0627	1936	0614	1941	0601	1945	0646	1934	0635	1935	0625	1937
8	0628	1937	0614	1941	0602	1945	0646	1933	0636	1935	0626	1936
9	0628	1937	0615	1941	0603	1945	0647	1933	0636	1934	0627	1935
10	0629	1937	0616	1941	0604	1945	0647	1933	0637	1934	0628	1935
11	0630	1937	0616	1941	0604	1945	0648	1932	0637	1933	0628	1934
12	0630	1937	0617	1941	0605	1945	0648	1932	0638	1932	0629	1933
13	0631	1937	0618	1941	0606	1945	0648	1931	0639	1932	0630	1932
14	0632	1937	0618	1941	0607	1945	0649	1931	0639	1931	0630	1932
15	0632	1938	0619	1941	0607	1945	0649	1930	0640	1931	0631	1931
16	0633	1938	0620	1941	0608	1945	0650	1930	0640	1930	0632	1930
17	0633	1938	0621	1941	0609	1945	0650	1929	0641	1929	0633	1929
18	0634	1938	0621	1941	0610	1945	0651	1929	0641	1929	0633	1929
19	0635	1938	0622	1941	0611	1945	0651	1928	0642	1928	0634	1928
20	0635	1938	0623	1941	0611	1944	0651	1927	0643	1927	0635	1927
21	0636	1938	0623	1941	0612	1944	0652	1927	0643	1926	0635	1926
22	0637	1938	0624	1941	0613	1944	0652	1926	0644	1926	0636	1925
23	0637	1937	0625	1941	0614	1944	0652	1926	0644	1925	0636	1924
24	0638	1937	0626	1940	0615	1943	0653	1925	0645	1924	0637	1923
25	0638	1937	0626	1940	0615	1943	0653	1924	0645	1923	0638	1922
26	0639	1937	0627	1940	0616	1943	0654	1924	0646	1922	0638	1921
27	0640	1937	0628	1940	0617	1942	0654	1923	0646	1922	0639	1921
28	0640	1937	0628	1939	0618	1942	0654	1922	0646	1921	0640	1920
29	0641	1937	0629	1939	0619	1941	0654	1922	0647	1920	0640	1919
30	0641	1936	0630	1939	0619	1941						
31	0642	1936	0630	1938	0620	1940						

PHASES OF THE MOON

MONTHS 2002	NEW MOON			FIRST QUARTER			FULL MOON			LAST QUARTER		
MONTH	Day	H	M	Day	H	M	Day	H	M	Day	H	M
JANUARY	21	23	05	29	08	03	07	17	40	15	06	46
FEBRUARY	20	11	18	28	05	24	06	10	47	13	15	40
MARCH	21	00	41	29	01	48	07	01	14	13	23	01
APRIL	19	15	21	27	19	32	05	13	03	12	05	46
MAY	19	06	52	27	09	57	04	22	33	11	13	04
JUNE	17	22	27	25	21	08	03	06	20	09	22	02
JULY	17	13	24	25	05	37	02	13	09	09	09	34
							31	20	05			
AUGUST	16	03	24	23	12	12	30	04	22	08	00	01
SEPTEMBER	14	16	29	21	17	54	28	15	09	06	17	11
OCTOBER	14	04	48	20	23	59	28	05	07	06	12	12
NOVEMBER	12	16	27	19	07	50	26	22	07	05	07	53
DECEMBER	12	03	29	18	18	40	26	17	06	05	02	53

H: Hour, M: Minute

The times of moon phases are given in S.A standard time and have been extracted from the United States Naval Observatory Circular No. 119.

Temperature Conversions

Fahrenheit	Celcius
32	0
40	4.4
50	10.0
60	15.6
70	21.1
75	23.9
85	29.4
95	35.0
105	40.0

SURFACE WATER SYSTEM

WEEKLY DAM BULLETIN

Date of this bulletin: 08/12/03

Date of last bulletin: 01/12/03

NAME OF RESERVOIR	Full Supply		Lowest Abstraction		Present Water Stage (m RSL)	Present Content (Mm ³)	Present % of Full Capacity	Change Since Last Bulletin (Mm ³)	% Last Season
	Level (m RSL)	Capacity (Mm ³)	Level (m RSL)	Capacity (Mm ³)					
SWAKOPPOORT DAM	1135.00	63.489	1115.70	1.431	1127.10	20.695	32.6	-0.188	44.6
VON BACH DAM	1350.00	48.560	1329.50	2.073	1336.62	8.788	18.1	-0.283	38.1
OMATAKO DAM	1359.00	43.499	1353.20	4.073	1350.14	0.212	0.5	-0.011	0.1
FRIEDENAU DAM	1649.21	6.723	1633.50	0.391	1646.45	4.696	69.8	-0.045	75.0
GOREANGAB DAM	1585.31	3.621	1574.31	0.010	1582.65	1.786	49.3	-0.058	53.3
AVIS DAM	1717.00	2.417	1708.00	0.010	1709.48 e	0.126	5.2	-0.004	0.0
SUB-TOTAL WINDHOEK		168.309		7.988		36.303	21.6	-0.589	32.5
OTJIVERO MAIN DAM	1575.50	9.808	1561.15	0.066	1564.05	0.448	4.6	-0.005	16.7
OTJIVERO SILT DAM	1576.00	7.795	1568.98	0.096	empty	0.000	0.0	0.000	0.7
TILDA VILJOEN DAM	1436.04	1.224	1425.71	0.028	1426.59	0.065	5.3	-0.011	45.4
DAAN VILJOEN DAM	1432.22	0.429	1426.00	0.000	empty	0.000	0.0	0.000	3.4
SUB-TOTAL GOBABIS		19.256		0.190		0.513	2.7	-0.016	11.6
HARDAP DAM	1135.00	294.593	1114.80	4.299	1127.12	114.805	39.0	-1.381	66.1
NAUTE DAM	732.00	83.580	711.30	1.320	729.12	56.110	67.1	-0.324	77.6
OANOBO DAM	1453.00	34.505	1424.50	0.417	1448.40	21.250	61.6	-0.210	59.4
DREIHUK DAM	895.00	15.493	884.13	0.206	empty	0.000	0.0	0.000	0.2
BONDELS DAM	947.56	1.103	944.70	0.007	empty	0.000	0.0	0.000	0.0
SUB-TOTAL SOUTH		429.274		6.249		192.165	44.8	-1.915	65.3
OLUSHANDJA DAM	1106.00	42.331	1101.50	0.000	1105.30	24.669	58.3	0.000	64.9
OMARURU DELTA DAM	262.20	41.288	242.96	1.222	empty	0.000	0.0	0.000	0.0
OMATJENNE DAM	1362.92	5.063	N/A	N/A	empty	0.000	0.0	0.000	0.0
TOTAL		705.521		15.649		253.650	36.0	-2.520	50.9

A blank space indicates no readings received.

e indicates that the water level has been estimated

Omatjenne Dam does not have abstraction facilities.

The dam contents are according to the latest dam basin surveys.

The inflow that is reflected in the bulletin does not take into account evaporation and extraction of water.