Republic of Zambia
Ministry of Green Economy and Environment
Zambia Meteorological Department

Period: 1 – 10 December 2024 **Issue No. 03** **Season: 2024/2025**

Agro Meteorological Bulletin

Highlights

- **Dry Conditions:** Most parts of Zambia are experiencing insufficient soil moisture and below-normal rainfall.
- **Forecast Improvement:** An improvement in rainfall is expected from December 14th to 23rd.
- **Crop Diversification:** Practice crop diversification to enhance resilience.
- **Planting Early Maturing:** Plant early maturing varieties as soon as sufficient soil moisture is available.
- **Pest and Disease Resistance:** Prioritize planting pest and disease-resistant varieties.
- **Avoid Dry Planting:** Refrain from planting until adequate soil moisture is present.
- **Moisture Conservation:** Minimize moisture loss by avoiding activities like mechanical weeding.
- **Pest and Disease Monitoring:** Be vigilant for outbreaks and report unusual activity to agricultural offices.

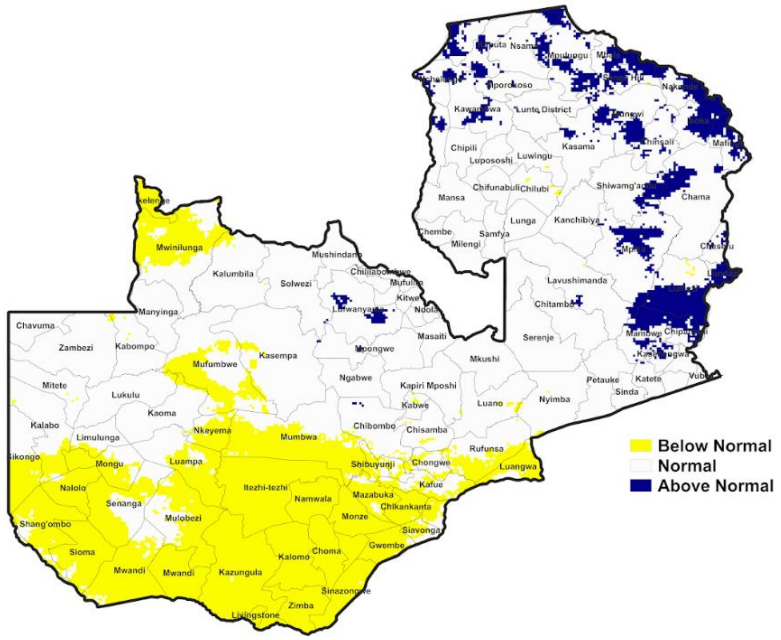

Figure 1: Rainfall Departure from the Normal
Period: 1st October to 10th December, 2024

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RAINFALL PERFORMANCE

Dekadal Rainfall performance

Period: 1st - 10th December, 2024

The periods from 1st to 10th December 2024 was characterized with a dry spell in most parts of Zambia and isolated rainfall was confined to the northern parts of the country. This was due to a relatively dry airflow from the south east that covered most areas.

High amounts of rainfall recorded during the dekad from meteorological stations were from Mbala 215mm, Misamfu 190mm and Kasama 101mm. other amounts include 47mm from Mpika, 44mm from Chipata and Mansa each and 43mm from Kalabo. The rest of the stations recorded rainfall less than 40mm with no rainfall reported from Chipepo and Kawambwa.

The satellite rainfall map further indicates that during the dekad, most parts of southern Zambia had rainfall less than 33mm with higher rainfall covering mainly the northern parts where some deep green color indicate rainfall exceeding 72mm. ***(See figure 2 & Table 1).***

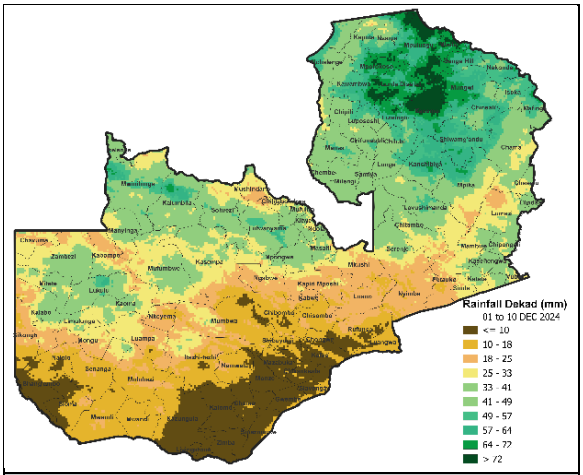

Figure 2: Dekadal Rainfall
1st to 10th December, 2024

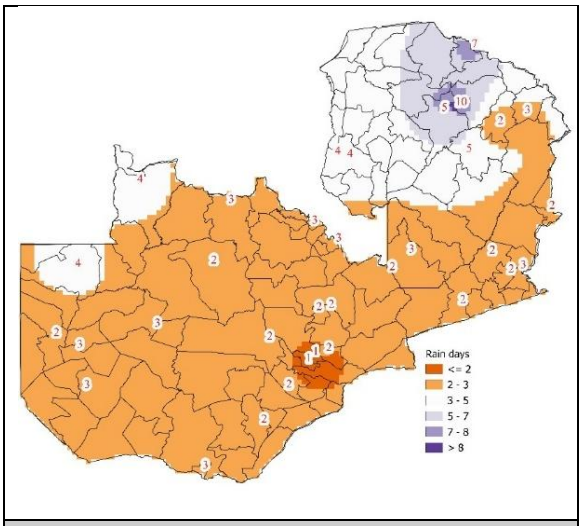

Figure 3: Number of Rain days
1st to 10th December, 2024

Rain-days:

Period: 1st - 10th December, 2024

The rainfall distribution for the period 1st to 10th December, 2024, was poorly distributed both in amount and space. Most parts of Zambia recorded less than 3 days. Few stations in Northwestern, Luapula, Muchinga and Northern Provinces recorded more than 3 rain days with Northern Province recording more that 5 rain days. The station with the highest number of rain days was Misamfu that recorded 10days. Mbala and Kasama had 7 rain days and 5 rain days respectively (***See figure 3 & Table1***).

Onset of the 2024/2025 Rainfall Season

The onset of the growing season is defined with a criterion of an area receiving a total of 25mm of rainfall in the first 10 days followed by a total of 20mm in the next 20 days. Therefore, the 2024/2025 rain season indicates that rainfall is set in most parts of the Zambia except for a few areas shaded in yellow where the onset is not yet set. These areas include parts of Western, Southern and Lusaka Provinces, including few areas in Mkushi, Serenje

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and Mpika. For most areas over Luapula, Northwestern, and Copperbelt, the onset was noted around the month of October (in blue colours) while some parts of Western Province had their onset in the first dekad of November (In deep green colour). The light green colour indicates areas that had their onset in the second dekad of November (11th to 20th November) and the much lighter green areas had their onset in the third dekad of November (21st to 30th November). Therefore, we can conclusively say most areas achieved their onset of rainfall in the month of November with the northern parts recording their onset in October 2024 (***See figure 4***).

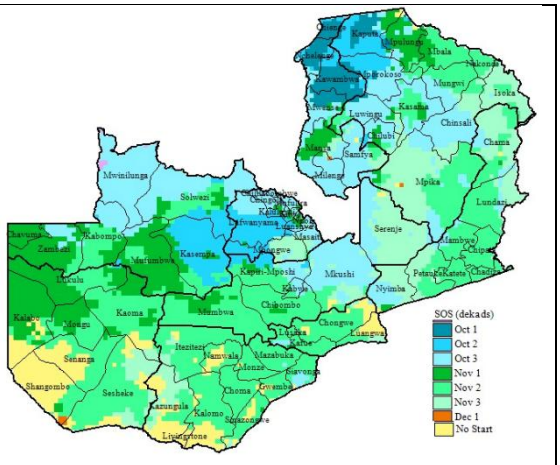

Figure 4: Onset of 2024/25 Season as of 10th December, 2024

2023/24 Season Rainfall Onset Anomaly

The onset of the 2024/2025 rain season indicates an earlier than normal onset by 10 days or more for much of Luapula Province and parts of Copperbelt and Northwestern Provinces (blue colours). Normal onset was observed for much of Lusaka, Central and Northwestern Provinces including parts of Southern and Western Provinces; and few areas in Eastern Province (grey colour). However, a delayed onset of about 10 to 20days was observed mainly over Muchinga and Eastern Provinces, including parts of Northern, Southern, Western and a few areas in Northwestern Province (In pink color) while a 30-day delay has been noted around Shang'ombo, Parts of Livingstone, Kazungula, Luangwa and Chongwe districts. Furthermore, few areas around Senanga, Kaoma, Sesheke, Itezhi tezhi, Namwala, Kazungula and Kalomo had their onset delayed by 40days or more (Maroon color) (***See figure 5***).

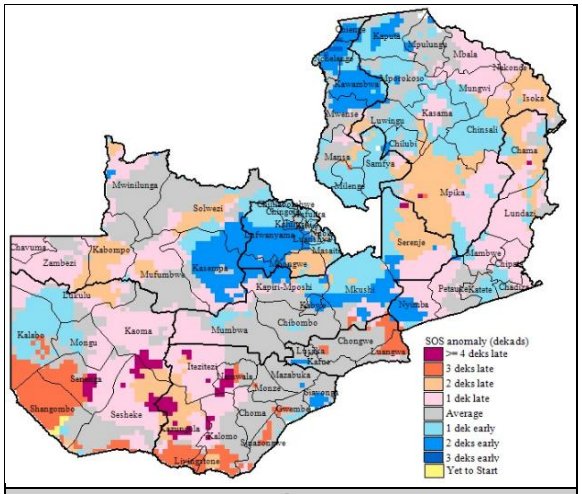

Figure 5: 2024/25 Season Onset Anomaly as of 10th December, 2024

Cumulative Rainfall since start of season

Period: 1st October – 30th November, 2024

The cumulative rainfall performance up to 10th December, 2024 indicates that the highest recorded so far from meteorological stations include Mbala with 507mm, Kasempa 427mm, Kawambwa 347mm, Misamfu 284mm, Kasama 232mm, Solwezi 213mm and Mansa Agro 210mm. The rest of the stations recorded cumulative rainfall amounts less than 200mm with the lowest cumulative rainfall of 39mm recorded in Lundazi (***See fig 6 & Table 1***).

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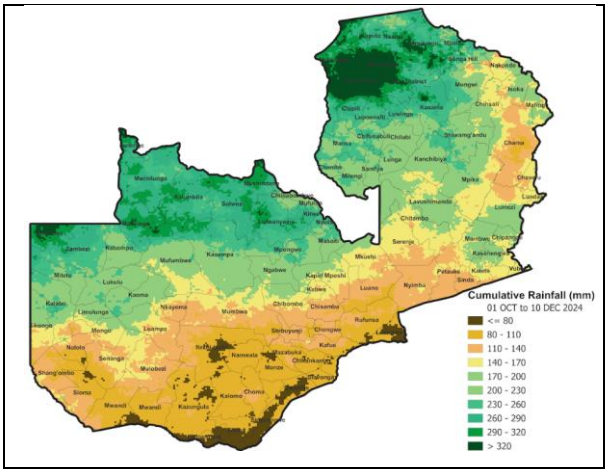

Figure 6: Cumulative Rainfall
1st October to 10th December, 2024

Rainfall Departure:

Period: 1st October to 10th December 2024
As of December 10th, 2024, most regions in Zambia have experienced normal to below-normal cumulative rainfall. However, some areas in the eastern half of the country have recorded above-normal rainfall.

Rainfall Surplus:
Mbala has recorded the highest rainfall surplus of 314mm, followed by Kasempa (182mm), Misamfu (57mm), Chinsali (36mm), and Kawambwa (34mm).

Rainfall Deficit:
Mwinilunga has experienced the most significant rainfall deficit of 181mm.

Other areas with substantial deficits include Kaoma (119mm), Choma (102mm), Kafironda (92mm), Livingstone (91mm), Mongu (86mm), Kabwe (82mm), Lundazi (78mm), Solwezi (74mm), Simon Mwansa Kapwepwe International Airport (70mm), Kenneth Kaunda International Airport (54mm), Chipata (53mm), and Chipepo (51mm).

Percentage Departure from Average:
Mbala, Kasempa, and Chinsali have recorded above-average rainfall, with Mbala experiencing the highest percentage departure of 163%.

Lundazi has the highest percentage departure from the average for below-normal rainfall, at -67%. Other areas with significant deficits include Livingstone (-64%), Choma (61%), Kaoma (60%), Mwinilunga (53%), Chipepo (49%), Kabwe (47%), and Mongu (46%).

Satellite Analysis:
Above-average rainfall (exceeding 20mm) has been observed in most parts of eastern and northern Zambia.

Rainfall deficits of more than 10mm below average have been observed primarily in Lusaka, Southern, Western, and parts of Northwestern provinces (***See figures 1,7 and Table1***).

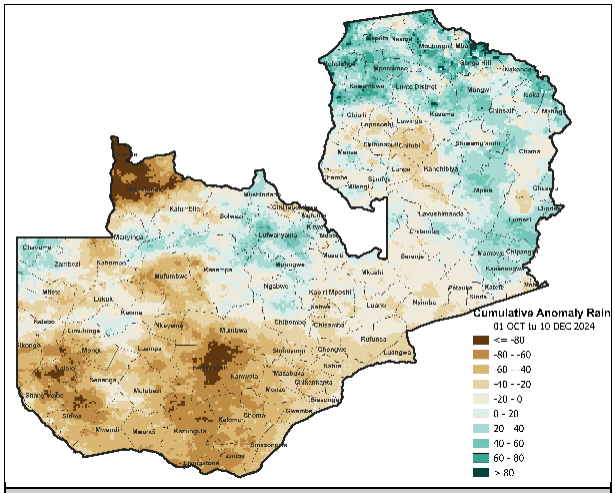

Figure 7: Rainfall Anomaly
1st October to 10th December, 2024

7 -DAY WEATHER FORECAST

General Situation

14th to 23rd December, 2024
There is a high probability (over 80%) of significant rainfall (exceeding 25mm) in much of northern and western Zambia. Conversely, many areas in southern and eastern Zambia have a low probability (less than 40%) of experiencing such rainfall (25mm) during the forecast period.

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Detailed Forecast:

Period: 14th to 15th December, 2024

Lusaka, Central, Eastern, Muchinga, Northern, Luapula, Copperbelt and Northwestern Provinces:

Mornings: Few clouds, slightly windy, warm to hot by late morning. Temperatures will range from 15°C to 20°C.

AFTERNOONS: Partly cloudy, slightly windy and hot with isolated thundershowers. Temperature will be warm to hot ranging from 28°C to 35°C.

NIGHTS: Partly cloudy, slightly windy and warm to mild with isolated rain and occasional thunder**.**

Western and Southern Provinces:

Mornings: Few clouds, slightly windy and warm. Temperature will be ranging between 15°C and 21°C.

AFTERNOONS: Partly cloudy, slightly windy and hot to very hot with a chance of isolated thundershowers. Temperature will be ranging between 29°C and 38°C.

NIGHTS: Partly cloudy, windy at times and warm to mild with a chance of isolated light rain.

Period: 16th to 23rd December, 2024

Most parts of Zambia:

Mornings: Few clouds, windy at times becoming partly cloudy late with isolated rain and occasional thunder. Temperature will be ranging between 15°C and 23°C.

AFTERNOONS: Partly cloudy, slightly windy and warm to hot with isolated thundershowers. Temperature will be ranging from 26°C to 36°C.

NIGHTS: Partly cloudy, windy at times and mild with isolated rain and occasional thunder**.**

The forecast rainfall map for the period 14th to 23rd December 2024 indicates that most parts of the country are expected to record rainfall amounts 40mm. However, rainfall less than 40mm is anticipated over Copperbelt, Central, Lusaka, Eastern and parts of Muchinga provinces ***(See figure 8)***.

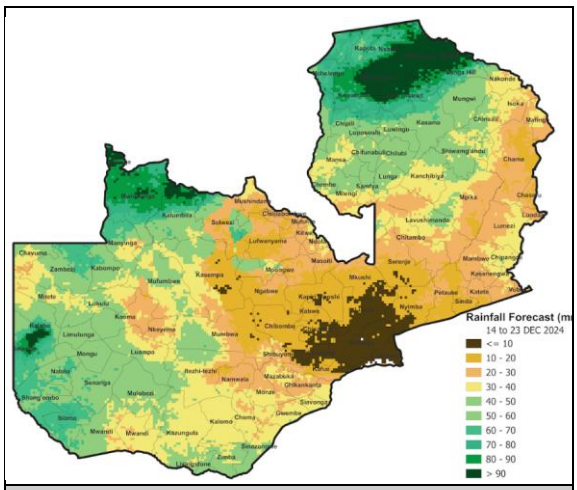

Figure 8: Forecast Rainfall
14th to 23rd December 2024

The forecast for December 14th to 23rd indicates that central and eastern Zambia will likely experience below-average rainfall, with deficits exceeding 40mm. In contrast, southern, western, northwestern, northern, and parts of Luapula provinces are expected to receive above-average rainfall, with surpluses exceeding 10mm ***(figure 9)***.

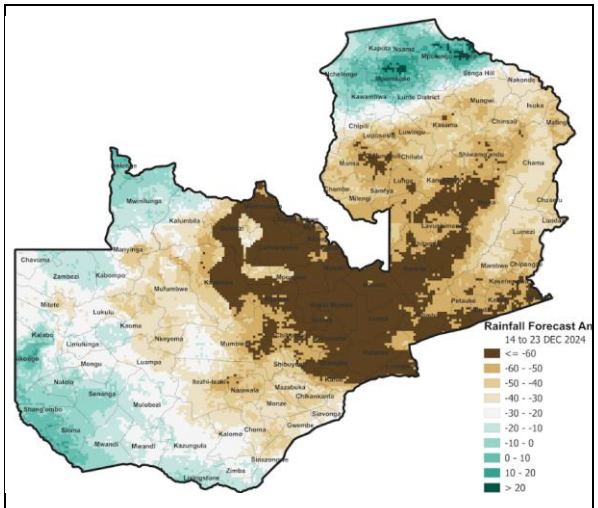

Figure 9: Forecast Rainfall Anomaly
14th to 23rd December 2024

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AGRO-METEOROLOGY CONDITIONS

Soil Water Index

The soil water index as of 10th December, 2024 indicates insufficient soil moisture (10% to 50%) in most parts of Zambia as most areas are water stressed. Areas over Southern, Lusaka and Central provinces (in brown) indicate possibilities of wilting to crops is available due to depreciation in soil moisture (less than 10%). This is as a result of the dry spell coupled with high temperature that affected those areas. However, sufficient moisture (above 50%) has been observed in Northwestern, Luapula, Northern and some parts of Eastern Provinces. Areas in pink indicate that the onset of the rains is not yet set.

The forecast for the next 10 days indicates an improvement in rainfall across the country; this is likely to improve the soil moisture especially in areas that are experiencing some moisture deficits.

The Soil Water Index quantifies the moisture conditions at various depths in the soil and is mainly driven by rainfall infiltration, penetration and surface water evaporation processes

(See figure 10).

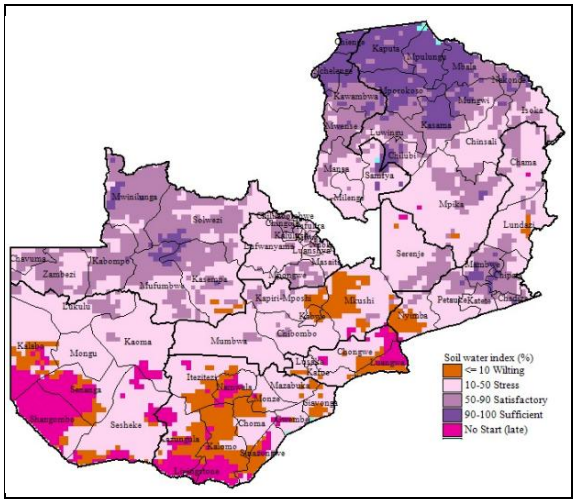

Figure 10: Soil Water Index
As of 10th December, 2024

AGRICULTURE ADVISORIES

Areas with sufficient soil moisture and receiving normal to above normal rainfall

Farmers should always practice crop diversification in order to strengthen their resilience. Farmers are encouraged to continue planting pest and disease tolerant medium maturing maize varieties and other medium maturing crops

Farmers are further advised to regularly control weeds and also improve drainage and reduce runoff to prevent soil erosion, nutrient losses and avoid water logging

Farmers are advised to use precautionary measures when using chemicals to avoid runoffs into natural water bodies

Areas with insufficient soil moisture and receiving normal to below normal rainfall

Farmers should always practice crop diversification in order to strengthen their resilience by planting drought tolerant crops and early maturing crop varieties such as millet, cowpeas, sorghum and cassava when sufficient soil moisture levels are attained.

Farmers that have not yet planted are advised to plant early maturing varieties where sufficient soil moisture is available.

Farmers that still have intentions of planting are advised to consider a lesser plant population by slightly increasing the intra-row spacing or intercrop with a cover crop and use locally available mulch where possible is encouraged.

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Farmers that have not yet planted should give preference to pest and disease tolerant varieties.

Farmers who have not yet planted to avoid dry planting until sufficient soil moisture is attained.

Farmers should avoid activities that enhance moisture loss such as mechanical weeding and consider different weeding options.

ALL PARTS OF THE COUNTRY

Scouting for insect pests and diseases, practicing IPM and most importantly timely and judicious application of agro chemicals to prevent crop losses is recommended.

Safe use of agro chemicals is highly recommended for personal safety and environmental safety too.

Stay updated on the latest weather forecasts and adjust farming practices accordingly.

Monitor crop health regularly and take timely action to address stress and pest infestations. Scout fields regularly and apply appropriate control measures if necessary.

For any unusual strange insects or disease on crops, report to the nearest Agricultural Office in your area.

For any further information, farmers can contact their local District Agricultural Coordinator's (DACO) office or Ministry of Agriculture field officers.

The Agrometeorological Bulletin is a joint publication of the Ministry of Agriculture and the Ministry of Green Economy and Environment.

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Table 1:

Period: 1 – 10 December 2024				**Issue No:** 03				**Season:** 2024/2025
Station	**Dekad Observations**			**Total Since 1st July 2024**				
	Rainfall (mm)	**Rain-days (>=1mm)**	**Normal Dekadal Rainfall (mm)**	**Cumulative Rainfall (mm)**	**Cumulative Rain-days**	**Normal Cumulative Rainfall (mm)**	**Rainfall Departure (mm)**	**Percentage Departure (%)**
North-Western Province								
Mwinilunga	34	4	79	163	17	345	-181	-53
Zambezi	24	4	54	187	30	236	-50	-21
Kasempa	37	2	60	427	30	246	182	74
Solwezi	36	3	84	213	24	287	-74	-26
Copperbelt Province								
Ndola	0	0	82	0	0	220	-220	-100
SMKIA	24	3	82	150	18	220	-70	-32
Kafironda	28	3	78	149	15	241	-92	-38
Luapula Province								
Kawambwa	0	0	61	347	31	313	34	11
Mansa	44	4	54	187	16	207	-19	-9
Mansa Agro	37	4	54	210	18	207	3	2
Northern Province								
Mbala	215	7	56	507	21	193	314	163
Kasama	101	5	72	232	20	228	9	4
Misamfu	190	10	73	284	19	227	57	25
Muchinga Province								
Mpika	47	5	56	163	17	167	-4	-2
Isoka	27	3	54	119	15	141	-22	-16
Chinsali	10	2	54	177	16	141	36	26
Eastern Province								
Msekera	29	2	64	110	14	156	-46	-29
Chipata	44	3	69	114	15	166	-53	-32
Lundazi	13	2	42	39	4	117	-78	-67
Mfuwe	8	2	44	123	14	140	-17	-12
Petauke	7	2	54	107	8	156	-49	-31
Central Province								
Serenje	15	3	62	108	13	161	-53	-33
Mumbwa	13	2	68	102	9	110	-8	-7
Kabwe Agro	12	2	62	86	11	176	-91	-51
Kabwe Met	7	2	62	94	15	176	-82	-47
Lusaka Province								
K.K I. Airport	15	2	61	102	16	156	-54	-35
Lusaka City	7	1	62	144	11	148	-4	-3
Mt Makulu	5	1	51	161	16	170	-9	-5
Southern Province								
Livingstone	6	3	50	51	10	142	-91	-64
Magoye	3	2	52	138	10	151	-14	-9
Choma	3	2	62	66	12	168	-102	-61
Chipepo	0	0	38	53	6	104	-51	-49
Western Province								
Kalabo	43	2	46	123	17	141	-19	-13
Mongu	26	3	69	103	21	189	-86	-46
Kaoma	11	3	55	79	14	197	-119	-60
Senanga	15	3	47	165	25	163	2	1

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