METEOROLOGICAL SERVICES DEPARTMENT NEWSLETTER

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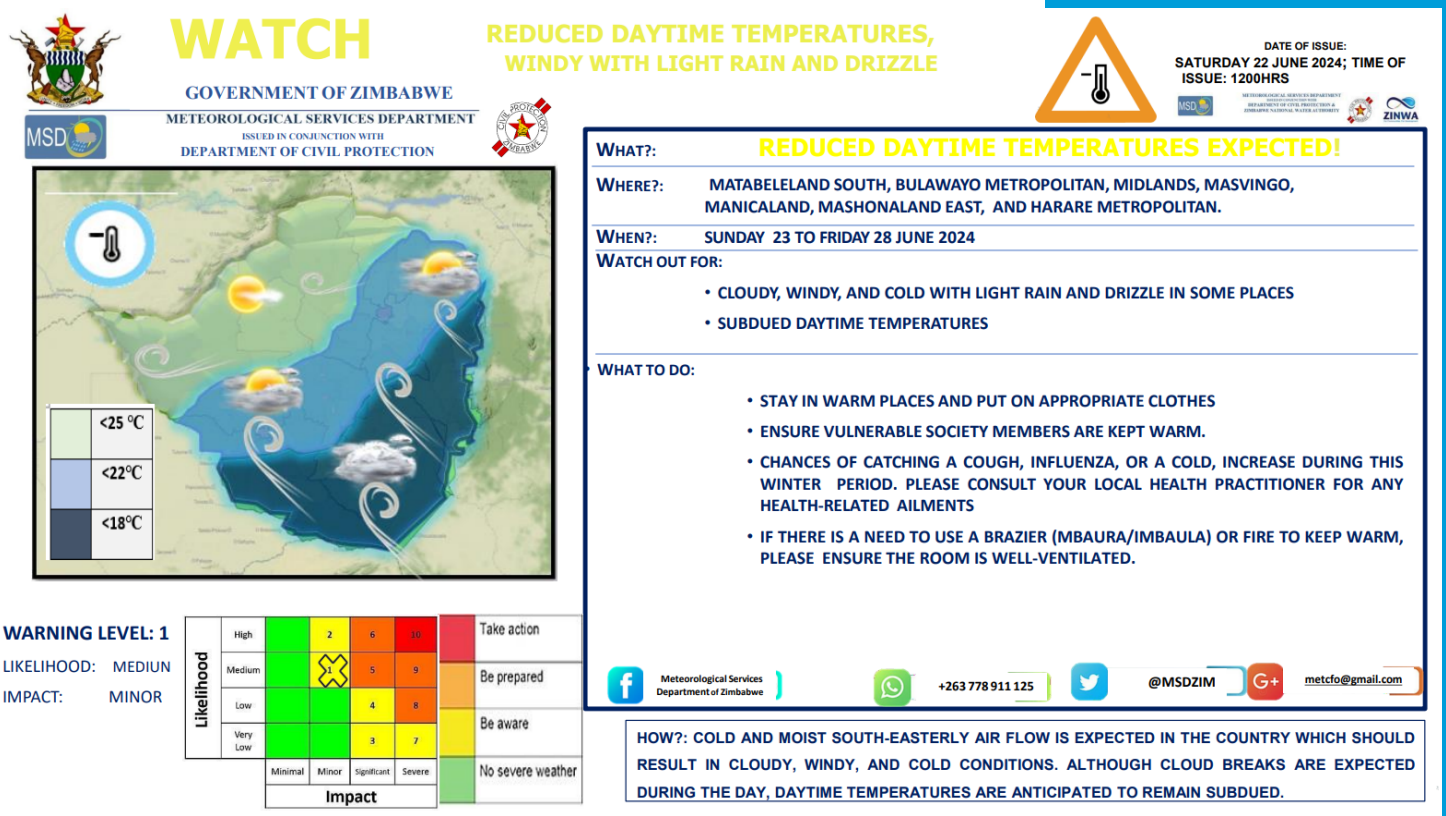
PRODUCTS AND SERVICES

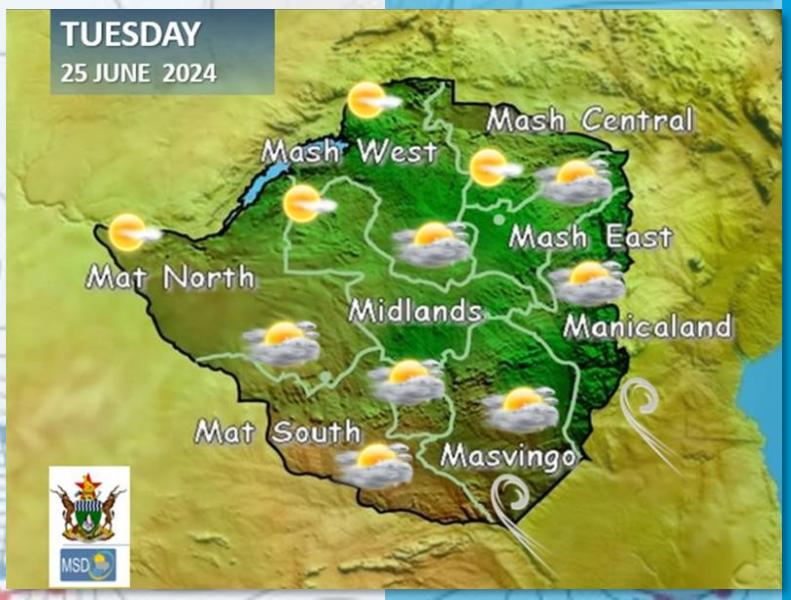
Cold Weather Advisory

A cold and moist south-easterly airflow should lead to reduced maximum temperatures during most parts of the period from Sunday 23 - Friday 28 June 2024. it should be cloudy and windy in some areas with possible light rain and drizzle.



Weather Outlook For Tuesday 25 June 2024

Cloudy, windy and cold conditions with drizzle in some places should persist over Matabeleland south Bulawayo Metropolitan, Masvingo, southern parts of Midlands, Manicaland, some parts of Mashonaland East Provinces. As the day progresses mild conditions are anticipated. The remaining provinces should be mostly sunny with a fresh breeze, cold in the morning and mild by afternoon.



PRODUCTS AND SERVICES

GCF 10 Day Weather Advisory

BUHERA DISTRICT: ISSUE DATE AND TIME	TUESDAY 18 JUNE 2024 @1600HRS
VALID	TUESDAY 18 JUNE 2024 - THURSDAY 27 JUNE 2024

Period	Weather Conditions	Local Language
FRI 21 - THUR 27 2024	• Anticipate partly cloudy, windy and cool conditions with a slight chance of drizzle. Mild afternoons under mostly sunny conditions are expected.	• Kuno tarisirwa kuti kuchange kuine makore pano neapo, kuine mhepo uye kuchitonhorera kuine mukana wekuna-ya twupfunha-mbuya ari mangwanani. Nguva dzemasi-kati kuno tarisirwa kuti kunenge kwave kutanga kudziya zviri pakati nepakati kuine zuva.

ADVISORY: English	ADVISORY: Local Language
• Farmers are advised to keep poultry and newly born live-stock warm. • Farmers are advised to put wind barriers and protect their plants from frost demage.	• Varimi vanokurudzirwa kuchengetedza zvipfuyo zvidiki uye huku kubva kuchando • Varimi vanokurudzirwa kuvaka mipanda inodzivirira mhepo nechando kuzvirimwa.

BULILIMA DISTRCT: ISSUE DATE AND TIME	TUESDAY 18 JUNE 2024 @1600HRS
VALID	TUESDAY 18 JUNE 2024 - THURSDAY 27 JUNE 2024

Period	Weather Conditions	Local Language
FRI 21 - THUR 27 2024	• Anticipate partly cloudy, windy and cool conditions with a slight chance of drizzle. Mild afternoons under mostly sunny conditions are expected.	• Kuzabe kulamayezi athe qga qga ,kulomoya ku-khudumala lamathuba amancane omfefezo.kundikindiki emini kulelanga.

ADVISORY: English	ADVISORY: Local Language
• Wear warm clothes. • Keep your young livestock warm. • Water in the mornings and evenings. • Protect your crops from windy conditions by putting wind breaks. • Pratice winter cropping. • For more information get in touch with your nearest Vet or Agritex officers.	• Asiqgokeni sikhudumale. • Asigcineni izifuyo zethu zikhudumala. • Sithelele ekseni lantambama. • Asivikele izilimo emoyeni ngokufaka izivikela moya • Asilimeni izilimo ezivuma umqando. • Ukuthola ulwazi olujulileyo thintana labe Vet kumbe aba-limisi.

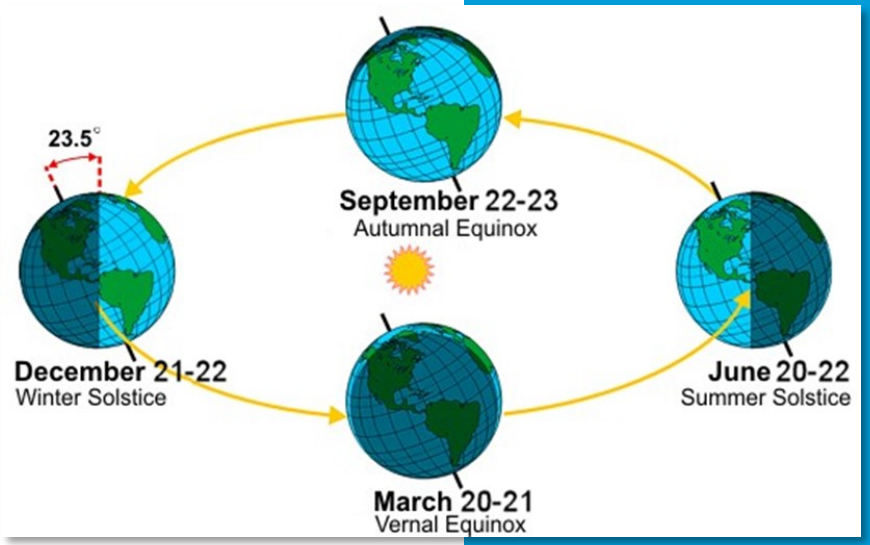
PRODUCTS AND SERVICES

Winter Solstice: Thursday 20 June - FRIDAY 21 June 2024

Moven Manjowe - Training School Officer, MSD

The winter solstice is that day of the year characterized by the shortest day and longest night. The exact length of this day varies with latitude. A winter solstice in the Southern Hemisphere coincides with a Summer Solstice in the Northern Hemisphere. **Summer Solstice in the Northern Hemisphere** falls on 20 or 21 June while the Winter Solstice falls on December 21 or 22 each year. On this day, the sun appears at its lowest point in the sky, resulting in the least amount of daylight, and the longest night of the year. Many cultures and traditions celebrate this time of year with festivals, and rituals to mark the return of the sun associated with longer days.

Consequently, for the **Southern Hemisphere, Winter Solstice** occurs on 20 or 21 June, while Summer Solstice occurs on 21 or 22 December of each year. On this day, the sun appears at its lowest point in the sky, resulting in the least amount of daylight and the longest night of the year. On these days according to the hemisphere one is in, the sun and the earth are at their furthest or nearest distance with summer solstice marking the shortest distance whilst winter solstice marks the longest distance. Therefore, decreased solar radiation reaching the Earth from the sun in winter is partly attributed to this long distance which means more radiation is absorbed and scattered as it travels the long distance between the Earth and the Sun.



The transition of seasons from summer to winter and the intermediates

Winter and summer are caused by the combination of two main factors: **1. Earth's Axial Tilt:** The Earth rotates on its axis, which is tilted at an angle of about 23.5 degrees. This tilt causes the amount of sunlight to vary throughout the year. **2. Earth's Orbit:** The Earth orbits the sun in an elliptical path, which means its distance from the sun varies throughout the year. These factors combined, create the changing seasons, with winter occurring when the Northern Hemisphere is tilted away from the sun, and summer occurring when it's tilted towards the sun as illustrated.

These factors combine to create winter and summer: **Winter:** The Earth is tilted away from the sun, resulting in less direct sunlight reaching the Northern Hemisphere. The sun's rays hit the Earth at an angle, which spreads out and weakens the sunlight. The shorter days and weaker sunlight lead to colder temperatures. **Summer:** The Earth is tilted towards the sun, resulting in more direct sunlight reaching the Northern Hemisphere. The sun's rays hit the Earth directly, concentrating the sunlight and warming the surface. The longer days and stronger sunlight lead to warmer temperatures.

The Equinoxes can be regarded as the seasonal intermediates as they mark the transissions from one of the 2 major seasons to the other.

1. Vernal equinox (spring equinox): Around March 20/21 in the Northern Hemisphere, marking the beginning of spring.

2. Autumnal equinox (fall equinox): Around September 22/23 in the Northern Hemisphere, marking the beginning of autumn.

On an equinox, day and night are approximately 12 hours long, and the sun rises due east and sets due west. The Earth's axis is tilted neither towards nor away from the sun. Equinoxes are significant in many cultures and traditions, often celebrated with festivals and rituals to mark the balance and harmony of the seasons.

PROGRAMS AND PROJECTS

Count down to the hosting of the SADC Climate Services Centre (SADC CSC) Climate Experts Meeting (CEM) and the Southern Africa Regional Climate Outlook Forum

CALENDAR

18 August - 25 August SADC Climate Experts

26 August - 28 August SARCOF

Mr. Isaac Masawana - Senior Meteorologist, MSD

Mrs. Pasipangodya - Deputy Director (Agromet), MSD

Count down to the hosting of the SADC Climate Services Centre (SADC CSC) Climate Experts Meeting (CEM) and the Southern Africa Regional Climate Outlook Forum (SARCOF). The Ministry of Environment, Climate and Wildlife through the Meteorological Services Department will be hosting the SADC regional meetings for the 2024/2025 seasonal rainfall outlook from 19th to 28th of August 2024. Zimbabwe last hosted such meetings back in 2016. Since then other member states have been hosting these meetings with the last one held in Maputo, Mozambique in January of this year.

The regional meetings are coordinated by the SADC Climate Services Centre, which is based in Botswana. There are two meetings, the first meeting will be held 19 to 25 August 2024 and will be attended by Meteorologists from the SADC member states who will work tirelessly during a week-long period to produce a consensus forecast for the region. Due to the automation of some of the forecasting processes, this period has been shortened to a week but prior to this it would take two weeks for the generation of the forecast. This is where such terms as “swimming” were popular during the two week long activity whilst looking for the ocean basins with the best correlation manually. However with technology all this is now automated and at times just requires a click of a button.

With such technological advancement, there is always the need to continuously interact at a regional level to ensure the forecasting processes are robust incorporating the latest knowledge and technology.

The collaborative approach by the Meteorological Services within the SADC region in the generation of the seasonal rainfall outlook supports the saying “weather knows no boundaries”.

The regional rainfall outlook will be shared through the Southern Africa Regional Climate Outlook Forum (SARCOF). This is the interface platform for the providers of weather and climate information and their stakeholders across the climate-sensitive sectors to interact. SARCOF enables stakeholders’ involvement in the climate services value chain for sector-specific products and services. For improved weather and climate services, this interaction to ensure tailored weather and climate products that meet the users’ specific requirement whether this is for agriculture, water, energy, tourism, health and DRR is required. This is important particularly as we thrive to achieve early warning for all in Southern Africa, which in recent years has faced extreme climate events in the form of cyclones and the current drought.

As we begin the count down to the hosting of these two important meetings for the Meteorological Community in SADC, the Meteorological Services Department has begun preparations to ensure that their colleagues from the member states have a memorable stay during the two weeks they are in Harare.

Interesting facts

1. Zimbabwe has hosted most of the Climate Experts and SARCOF meetings compared to other member states. The first such meeting was held in Kadoma.

2. The SADC CSC is formerly the Drought Monitoring Centre, established in 1990. The Drought Monitoring Centre was once housed at the Meteorological Services Department.

PROGRAMS AND PROJECTS

The Seasonal Forecasting Process

Mr. Isaac Masawana – Senior Meteorologist, MSD

The rainfall seasonal forecast is a very instrumental tool for decision making among climate sensitive sectors. The importance of the seasonal rainfall outlook lies in its ability to provide valuable information about the upcoming rainfall patterns and climate conditions, The following are some of the essential reasons for its use:

1. Agriculture and Food Security: Seasonal forecasts can help farmers plan their planting, irrigation, and harvesting activities more effectively, leading to improved crop yields and productivity. **2.** Water Resource Management: Seasonal forecasts can help water managers plan and allocate water resources more efficiently, such as managing reservoir levels, irrigation scheduling, and hydropower operations. **3.** Disaster Risk Reduction: Seasonal forecasts can provide early warnings about the likelihood of extreme weather events, such as droughts, floods, or heat waves. **4.** Energy Sector Planning: Seasonal forecasts can help energy providers anticipate changes in energy demand and supply, allowing them to adjust their production, distribution, and storage strategies accordingly. **5.** Health and Disease Control: Seasonal forecasts can help public health officials predict and monitor the spread of climate-sensitive diseases, such as malaria, dengue, and cholera.

How is the forecast generated?

The Meteorological Services Department participates annually in a week-long Climate Expert Meeting (CEM) with other SADC member states. The purpose being to develop a regional seasonal rainfall outlook for the upcoming season. The CEM rotates among the SADC member states, with Zimbabwe hosting it this August. Climate experts run forecasting tools like the Climate Forecasting Tool (CFT) and Climate Predictability Tool (CPT) to produce the outlook. The CEM process allows the sharing of scientific skills, and capabilities among the regional climate experts to enhance their knowledge which helps to create a comprehensive consensus forecast. The forecasting tools use climate predictors like sea surface temperature and pressure to determine how they will influence the upcoming season. Performing this in August/September is critical as these are transitional months. The climate experts also consider other prediction schemes, and their expert interpretation to determine the likelihood of above-normal, normal, and below-normal rainfall for the region. The regional seasonal forecast is then disseminated through the Southern Africa Regional Climate Outlook Forum (SARCOF). However, this has a lower resolution, so each country further downscales it through its National Climate Outlook Forum. The Meteorological Services Department also provides more frequent updates through 3-day, 10-day, and other forecasts as the season progresses. The CEM and SARCOF process happens twice per season, in August/September and December/January, to provide an updated forecast.

Timing of the forecasting process

It is critical to perform the forecasting process in August/September as these are transitional months from winter to summer, reducing uncertainties in the initial conditions. There are several reasons why the forecast is done as close to the forecast period as possible:

1. Ocean-atmosphere dynamics: Seasonal forecasts rely heavily on accurately predicting large-scale ocean and atmospheric patterns like El Niño/La Niña, which can evolve significantly over several months. Forecasts made closer to the season have better accuracy. **2.** Initial conditions: Seasonal climate models are very sensitive to the starting conditions, which are better known the closer you get to the forecast period. **3.** Verification and calibration: Seasonal forecasts can be continuously verified against observations, allowing forecasters to make adjustments and calibrate the models to improve their skill for the immediate upcoming season. **4.** Boundary conditions: Factors like sea surface temperatures that influence seasonal weather patterns are better known as you get closer to the forecast period. Earlier in the year, these boundary conditions are more uncertain.

A comprehensive statement for the rainfall outlook for the 2024-25 season will be issued in August/September 2024 as soon as it is ready. By the time of the issuance of the NACOF (National Climate Outlook Forum) statement, the updated global dynamic models will have been incorporated. Additionally, a comprehensive and updated report on the status and forecast of these global drivers will also be released.

PROGRAMS AND PROJECTS

The Seasonal Forecasting Process

Honorable Minister of Environment, Climate, and Wildlife Dr. Sithembiso Nyoni

On 23 June 2024, The Hon Minister of Environment, Climate, and Wildlife presented at the joint induction workshop for the Portfolio Committee on Environment, Climate, Wildlife, and Tourism; and the Thematic Committee on Climate Change, at Golden Peacock Hotel in Mutare, whose target is to reach out and enhance the capacity of all the Members constituting these two Committees. Hon Nyoni said, “By coming together, we exemplify the power of collective action and demonstrate our unwavering dedication to protecting the environment, pursuing climate resilience, and ensuring a sustainable future for our beloved nation, and the vulnerable communities we serve.”

Conserving the environment, and its ecosystems and mitigating climate change are global challenges affecting humanity. As a result of climate change, seasons have shifted, rainfall is no longer reliable, and there is a constant increase in the frequency and severity of extreme weather events amongst many other things said Hon Nyoni. This calls for the government to put in place measures to protect the environment and trigger real climate action with the potential to help people adapt and build climate resilience.The Hon Minister highlighted that, as part of the global movement, Zimbabwe joined other countries to ratify the United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement.

Following this ratification, the government is strengthening policy and institutional frameworks on climate change as part of the domestication process. Some of the policies, strategies, guiding frameworks, and pieces of legislation that have been put in place include the Constitution of Zimbabwe, the National Development Strategy (NDS1), the National Climate Policy, the National Climate Change Response Strategy, the Long-Term Low Emissions Development Strategy, the Nationally Determined Contribution and its Implementation Plan and Investment Framework to be launched soon, the Carbon Credit Framework and its Carbon Credit Trading (General) Regulations, 2023, amongst many.

Hon Minister Nyoni also said that the National Climate Policy adopted by the Government in 2017 seeks to create a pathway towards a climate-resilient and low-carbon development economy, in which our people have enough adaptive capacity and continue to develop in harmony with the environment. From the adaptation side, the Hon Minister said the Ministry has produced a draft National Climate Change Adaptation Plan to guide mainstreaming of climate change and inform enhanced adaptation actions across all sectors. The plan has just gone through the Cabinet Working Party and is now ready for consideration for approval by the Cabinet.

The National Adaptation Plan aims to reduce the country’s vulnerability to the impacts of climate change by building adaptive capacity and resilience, including ensuring the integration of climate change action in development planning at all levels of government. “In the area of environmental protection, the government in February 2012 ratified the Ramsar Convention on wetlands and has now designated seven wetlands as wetlands of international importance (Victoria Falls, Driefontein Grasslands, Middle Zambezi /Mana pools, Lake Chivero, Monavale Vlei, Chinhoyi Caves and Cleveland Dam," said the Hon Minister.

The Acting Secretary, Director Momo Masuka, unpacked the mandate, functions, and operations of the Ministry, where he summarized the functions, vision, and mission of the Ministry. Prof E. Gandiwa from Zimparks, Director C. Mushava from EMA, Acting DG Zingwena from Forestry Commission, Director Zhakata and Director at MSD, Mrs. Manzou, as well as officials from the Ministry, also attended the induction, which took place from Friday 21 June to 23 June 2024.

PROGRAMS AND PROJECTS

The impacts of climate change: Wildlife climate adaptation

The contraption of the evaporation pan at Kariba Airport Met Office

Garikayi Mchono – 1st Year Met Student, UZ

Zimbabwe is currently in a drought due to sporadic and insufficient rainfall experienced in the 2023 – 2024 season. One of the effects has been the depletion of surface water bodies such as small rivers, shallow water holes, and reservoirs. These water sources are very critical to the survival of wildlife. As human beings, we have a better end, since our adaptation abilities are more advanced than those of animals. Humans can extract underground water using boreholes but animals cannot. Regardless of their lower adaptation ability animals have to survive somehow.

In 2024 baboons have been contributing to the number of visitors at the Kariba Airport Met Office. However, their purpose of visiting has been to drink water from the evaporation pans, not to fly. In response to the frequent animal visitors, the Meteorological technicians manning the station have resorted to securely fastening the top wire mesh to prevent the baboons from toppling it to quench their thirst from the easy water source they had found, of course at their inconvenience as they have to untie the mesh to take their readings. Refer to the images to understand how the wire mesh is being secured. This is not being done in the name of animal cruelty, but to maintain the integrity of our evaporation readings.

Evaporation data is a very critical component of the entire Meteorological Services Department data catalogue. In the case of Kariba, the data is used to extract important information by the Zambezi River Authority. From the evaporation data, they interpolate the daily amount of evaporation that could have occurred in Lake Kariba to make decisions on water management.

Dead buffalo near a dry river

PROGRAMS AND PROJECTS

Ridgeville Junior School's Educational Visit to Mutare Fire Weather Station

Mutare Fire Station | Source—Pinterest

Tapiwa Maringo - Acting Manicaland PMO, MSD

Manicaland Provincial Meteorological Office welcomed Ridgeville Junior School at the Mutare Fire Weather Station on the 18th of June 2024. Mutare Fire Weather Station is one of the oldest part-time Met stations. The station was established well before independence. However, the station has since undergone modernization and has been fitted with state-of-the-art automatic and digital weather station equipment. The station records all elements recorded by the Meteorological Services Department, excluding sky observations. Upon arrival at the Mutare Fire Weather Station, the students were welcomed by the Fire Captain Mr. Mucheto, and Meteorological Officer, T. Maringo. Subsequently, a brief lecture was delivered to the students regarding weather and climate, with a particular focus on meteorological elements.

After the lecture, the pupils were shown how different equipment is used to measure elements such as temperature, precipitation, wind speed, wind direction, and barometric pressure. The students were also given the opportunity to interpret data from the instruments to gain a deeper understanding of how they function. Ridgeville Junior Primary School's visit to the weather station was an overwhelming success. The students gained a comprehensive understanding of weather prediction, and the technical methodology utilized to observe and interpret weather phenomena. The experience was not only informative, but also engaging, leaving the students with a newfound appreciation of the field of Meteorology and its practitioners.