

WISER Western Project
Proposal for a daily weather forecast for
Western Kenya
(2nd draft)



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July 31st 2016

Supported by:



Fund Manager:



Delivery Partners:



Executive summary

It is proposed that Kenya Meteorological Department (KMD) should produce and disseminate a regional daily weather forecast for Western Kenya

This new product would complement the downscaled weekly, monthly and seasonal weather forecasts produced and disseminated by its County Meteorological Directors (CDMs) in the region.

KMD's current daily weather forecast for the whole of Kenya is widely ridiculed as being locally inaccurate by people who hear it daily on the radio.

The contempt in which the daily national forecast is widely held threatens to undermine public confidence in KMD's downscaled weekly, monthly and seasonal produced at the county level

The daily publication of an, accurate and reliable weather forecast for Western Kenya would provide a useful new source of weather information for people in the region.

It would also strengthen public trust in KMD amongst people in Western Kenya and would help to build the confidence of farmers to use KMD's other downscaled forecasts to inform their decision making.

The regional forecast for Western Kenya would be produced in English by KMD's National Meteorological Centre in Nairobi every day of the year.

It would cover the 14 counties of Western Kenya whose climate is strongly influence by proximity to Lake Victoria: Trans-Nzoai, Uasin Gishu, Bungoma, Busia, Kakamega, Siaya, Kisumu, Kericho, Nandi, Homa Bay, Migori, Kisii and Nyamira.

The forecast would be disseminated by email to the media and other subscribers, It would also be posted on the Western Kenya regional page of the soon-to-be-upgraded KMD website.

However, the forecast would reach most people in Western Kenya through the radio.

Regional and local radio stations broadcasting in Swahili and local languages to communities in Western Kenya would use the regional forecast as source material to create their own daily weather forecasts.

Each radio station would customise the forecast to suit the information needs of its target audience. Each one would produce a forecast that gave the weather outlook for people living in its own broadcast coverage area.

The two-page forecast would be published at 16,00 every day.

It would forecast the weather for the next 36 hours.

This period would encompass the afternoon, evening and night of the day of issue and the whole of the following day and night.

The forecast would consist of the following components:

- A map of Western Kenya showing the topography and the location of the 14 county headquarters towns for which precise daily forecasts would be given
- A jargon-free text summary of the regional forecast in simple English. This would be no longer than 200 words
- A short section highlighting any hazard warnings that might be in force during the period of the forecast.
- A table forecasting the weather in the 14 county headquarters towns of Western Kenya.

Unlike the downscaled county forecasts produced by the County Directors of Meteorology (CDMs) in nine counties of Western Kenya, the daily forecast would not include advice to farmers. It would be aimed at a broader and more diverse audience.

Afternoon publication would allow the daily forecast to hit the main evening news programme of every local and regional radio station serving Western Kenya. These stations normally broadcast their main daily news programme during the peak evening listening period of 19.00 to 21.00.

Radio stations would also be encouraged to repeat the forecast in their early morning news bulletins the following day. It would still be valid at the stage for the 24-hour period ahead.

The CDMs based in the 14 counties covered by the forecast could be called upon to contribute information for the daily bulletin, especially in counties where KMD does not have a synoptic weather station at present

The CDMs would be charged with reporting back on to headquarters on the accuracy of the regional forecast. They would also be asked to relay feedback from users of the forecast in their respective counties to KMD headquarters in Nairobi.

This would help KMD to assess the impact of the forecast and to improve its content and presentation over time.

Introduction

Kenya Meteorological Department's daily weather forecast for the whole of Kenya is widely ridiculed as locally inaccurate by people who hear it daily on the radio.

The national daily forecast displayed on the home page of KMD's website shows the weather conditions expected in 18 cities and towns around the country.

For each location marked on the forecast map there is a pop-up box. This contains weather icons for the morning and afternoon respectively and a couple of words describing the weather conditions expected in each period. The pop-up box also shows the maximum and minimum temperatures forecast for the location.

However, the national daily forecast published on KMD's website does not give any indication of weather conditions in other parts of Kenya. These may be very different, due to factors such as topography and altitude, even when such places are geographically close to one of the locations for which a local forecast is given.

The perceived inaccuracy of KMD's daily forecast threatens to undermine public confidence in KMD's longer term forecasts. Of particular concern in this instance are the downscaled weekly, monthly and seasonal forecasts for selected counties of Western Kenya. The content, style and method of dissemination of these forecasts is being improved with the assistance of the WISER Western Project.

This proposal to create a daily weather forecast for Western Kenya aims to strengthen public confidence in KMD in Western Kenya and build trust in the reliability of KMD's downscaled forecasts for farmers and fishermen in the region.

At present, KMD only provides information for only three locations in Western Kenya in its national daily forecast: Kisumu, Kakamega and Kitale.

This proposal aims to create a daily forecast that gives a text summary of expected weather conditions throughout Western Kenya, plus specific location forecasts for the 14 county headquarters towns in the region.

The new KMD regional forecast, or at least the parts of it that are locally relevant, would reach the population of Western Kenya in the form of daily weather forecasts broadcast by local and regional radio stations.

It would provide a much more accurate and reliable daily weather forecast than anything KMD has offered the public in Western Kenya until now.

The forecast would be useful to people in its own right, helping both rural and urban communities to plan their activities for the day ahead.

It would also alert these communities to any weather-related hazards they may face at a local level.

But most of all, the new regional forecast would inspire public confidence in KMD's longer term forecasts, particularly among farmers.

It would get people in Western Kenya used to hearing accurate KMD weather forecasts every day of the week. And it would gradually persuade them to trust KMD's other weather forecasts for the region.

Unless KMD can win the trust of farmers in Western Kenya in this way, they are likely to be sceptical about using KMD's downscaled weekly, monthly and seasonal forecasts to inform their decision-making.

Forecast coverage area

The daily forecast for Western Kenya would cover 14 counties of Western Kenya whose climate is strongly influenced by their proximity to Lake Victoria. These are:

- Trans-Nzoia
- Uasin Gishu
- Bungoma
- Kakamega
- Busia,
- Vihiga
- Siaya,
- Kisumu
- Nandi
- Kericho
- Homa Bay
- Migori
- Kisii
- Nyamira

This region includes the four counties targeted directly by the WISER Western Project; Kisumu, Siaya, Kakamega and Trans-Nzoia.

It also includes five other counties, which would be served by WISER Western weather forecasts distributed by radio and SMS; Bungoma, Busia, Vihiga, Homa Bay and Migori.

Finally, the daily forecast for Western Kenya would cover five additional counties that lie on the eastern inland fringe of the climatic zone: Uasin Gishu, Nandi, Kericho, Nyamira and Kisii.

Time of publication and period of forecast coverage

The daily forecast would be issued by KMD at 16.00 seven days per week.

It would cover weather conditions in Western Kenya over the next 36 hours.

The forecast would be issued in the late afternoon to meet the needs of local and regional radio stations in Western Kenya. These would be the main channel of communication for communicating the daily forecasts to members of the public.

The forecast would land on the news desks of these radio stations in time for it be edited and translated it into Swahili, Luo, Luhya, Kisii or Kalenjin for broadcast as part of the main evening news programme.

This normally goes out between 19.00 and 21.00 – the time of day when local and regional radio stations in Western Kenya enjoy their peak audience.

The forecast would enable radio stations to tell their listeners what weather conditions to expect overnight and throughout the following day.

It could be repeated the following morning to remind listeners who tune in at breakfast time or on their way to work what the weather will be like during the day ahead.

The early morning period between 05.00 and 07.00 is when radio stations usually record their second highest peak in listeners.

Few radio stations would use all the information contained in the regional forecast. Most would choose to highlight the weather conditions expected in their own broadcast coverage area.

Each radio station would normally concentrate the weather in a geographic area of up to six counties, whereas the KMD forecast would cover a total of 14.

For instance, Radio Nam Lolwe, a Luo language radio station based in Kisumu, would normally zoom in on the weather expected in Kisumu, Siaya, Homa Bay and Migori counties, where most of its Luo-speaking listeners are based. It might also choose to report on the weather in one or two other counties where there are large minorities of Luo-speakers.

But Imani FM, a Swahili language radio station in Kitale, would probably focus exclusively on the forecast for Trans-Nzoia County, where nearly all its listeners live.

Most radio stations would pick and choose the parts of the regional forecast they were interested in to prepare a short bulletin lasting up to one minute,

Each station would pull the information it needed off the daily forecast posted on the Western Kenya regional page on the KMD website. Alternatively it might extract the same information from a copy of the same forecast emailed directly to its newsroom.

There is no need for KMD to prepare a special version of the daily forecast for radio stations that is different from the standard version disseminated by the internet. The standard internet version of the forecast should serve the needs of all media users adequately.

Meteorological content

The forecast would provide information about the weather expected during the rest of the day of publication and during the following day and night.

It would highlight any rainfall expected over this 36-hour period. It would also comment on the expected volume and geographic distribution of such rainfall.

The forecast would also give an indication of expected cloud conditions and temperature.

Finally it would highlight any weather-related hazards that were likely to occur in particular counties or districts. These would include violent thunderstorms, high winds, unusually high or low temperatures, floods, flash floods and landslides.

It is proposed that KMD use a three-colour traffic light system to classify hazards, similar to that proposed for the daily weather forecast for fishermen on Lake Victoria. The following classification is proposed

Green – No hazard warnings in force.

Amber - Potentially dangerous weather is expected. **Be prepared.**

Red – Dangerous and potentially life threatening weather conditions are expected. **Take immediate and appropriate action to ensure your safety.**

The appropriate colour code(s) would be prominently marked in the section of the forecast reserved for hazard warnings to give such alerts a high visual impact.

Like the weekly weather forecasts issued for each county, the daily weather forecast would describe the weather conditions expected in three periods in each day:

- **Morning** – sunrise to noon
- **Afternoon** – noon to sunset
- **Night** – sunset to sunrise

These periods reflect the way that most ordinary Kenyans divide up the activities of their daily life.

The forecasts for individual locations would therefore describe the weather expected during the 36 hours ahead in terms of the following periods:

- This afternoon
- Tonight
- Tomorrow morning
- Tomorrow afternoon
- Tomorrow night

Each square of the table would contain the forecast for one of these segments.

Each segment would contain the following information:

- An icon showing the weather conditions expected
- A one to three word description of the weather conditions illustrated by the icon
- The maximum temperature expected during the morning and afternoon or the minimum temperature expected at night.

The text summary would give an overview of weather conditions expected in the region.

Since most Kenyans do not understand the impact of rainfall expressed in millimetres, temperature expressed in degrees centigrade or wind speeds expressed in knots or kilometres per hour, the summary would contextualise these in colloquial speech.

This approach would be particularly important for highlighting the potential impact of unusual or extreme weather conditions.

The forecast summary would use phrases such as “unusually cool for the time of year,” or unusually hot or cold for this month” to highlight temperatures that deviated significantly from the seasonal norm.

Similarly for high winds, the summary would use qualifying phrases such as “strong enough to flatten crops” or strong enough to blow the roofs off houses” to describe winds of unusually high and potentially damaging strength.

Exceptionally heavy rainfall would be described in terms of its capacity to make rivers burst their banks, cause gully erosion or landslides on slopes, floods in low lying areas or flash floods in normally dry river beds.

Structure of the forecast

Each daily forecast for Western Kenya would contain the following sections:

- A map showing the area covered by the forecast. Any hazard warnings in force could be highlighted by placing appropriate hazard icons on areas of the map where the danger exists.
- A written summary of weather conditions expected over the next 36 hours. This would be written in plain jargon-free English. It would also be written in short easy to read sentences.
- A short hazard warnings section. This would show the appropriate colour code for conditions expected during the forecast period. It would give a brief description of any hazards expected and indicate where and when they were most likely to occur
- A table showing the weather conditions expected in all 14 county headquarters towns in Western Kenya.
- A key to the three-colour code used for hazard warnings

Each forecast would run to just over two A4 pages. The second page would be filled entirely by the table of weather forecasts for the 14 county headquarters towns.

See the proposed template for the daily forecast at the end of this proposal document.

It is followed by a mock-up example of how a daily forecast it might look in practice.

Choice of locations included in the forecast table

The weather forecasts by location would focus on the headquarters town in each county for the following reasons.

1. To provide a varied geographic spread of well-known locations throughout Western Kenya
2. To ensure that each county is represented in the forecast for political reasons

3. Because the County Directors of Meteorology (CDMs) are all based in county headquarters towns. The CDMs are well placed to check the accuracy of each daily forecast and report back to headquarters accordingly. The CDMs are also experts on the local weather who can be consulted by KMD forecasters in Nairobi whenever the regional forecast is being put together.
4. Most of the radio stations serving Western Kenya are based in the county headquarters towns (although some of the smaller ones are not).

It is recognised that weather conditions will not necessarily be uniform across the whole county on any given day.

Nevertheless, being able to accurately forecast the weather in 14 locations in Western Kenya on a daily basis would be a big improvement on the national forecast, which only forecasts the weather for three towns in the region.

Responsibility for producing and disseminating the forecast

The daily forecast for Western Kenya should be produced and disseminated on every day of the year by the KMD National Meteorological Centre in Nairobi.

The forecasters in Nairobi would obtain most of their information from downscaling the national daily forecast. However, they would also seek regular inputs from the CDMs in the four counties, some of whom currently produce and circulate their own daily forecast for the county. Such inputs would be particularly useful from CDMs based in counties, such as Siaya and Migori, which do not host any synoptic weather station at present.

The Nairobi-based producers of the the regional forecast for Western Kenya would be responsible for posting it on the Western Kenya regional page of the KMD website and for sending it by email to a contact group of subscribers.

Interest in the daily forecast is likely to extend well beyond the media. Many senior officials in government departments, business organisations and NGOs may wish to subscribe to it directly by email..

It would be unrealistic to expect the 14 CDMs in Western Kenya to put together a daily forecast for the region on their own. **This forecast can only be produced and disseminated on a regular basis and can only achieve the desired impact if the KMD National Meteorological Centre in Nairobi is prepared to take on the responsibility for producing it without interruption for 365 days of the year.**

Checking the accuracy of the forecast and obtaining user feedback

It will be important to check the accuracy of the forecast and gather regular feedback from users to find out whether or not the product meets their needs adequately.

Such feedback can be used to progressively improve the content and format of the forecast.

The people best placed to gather and deliver this feedback are the CDMS.

It is recommended that each CDM be required to report monthly to KMD headquarters in Nairobi on the accuracy of the previous month's daily forecast for his/her county.

The report should also contain feedback gleaned from users of the forecast in the 14 counties. This should include information provided by radio stations, government departments, farmers, NGOs and business organisations.

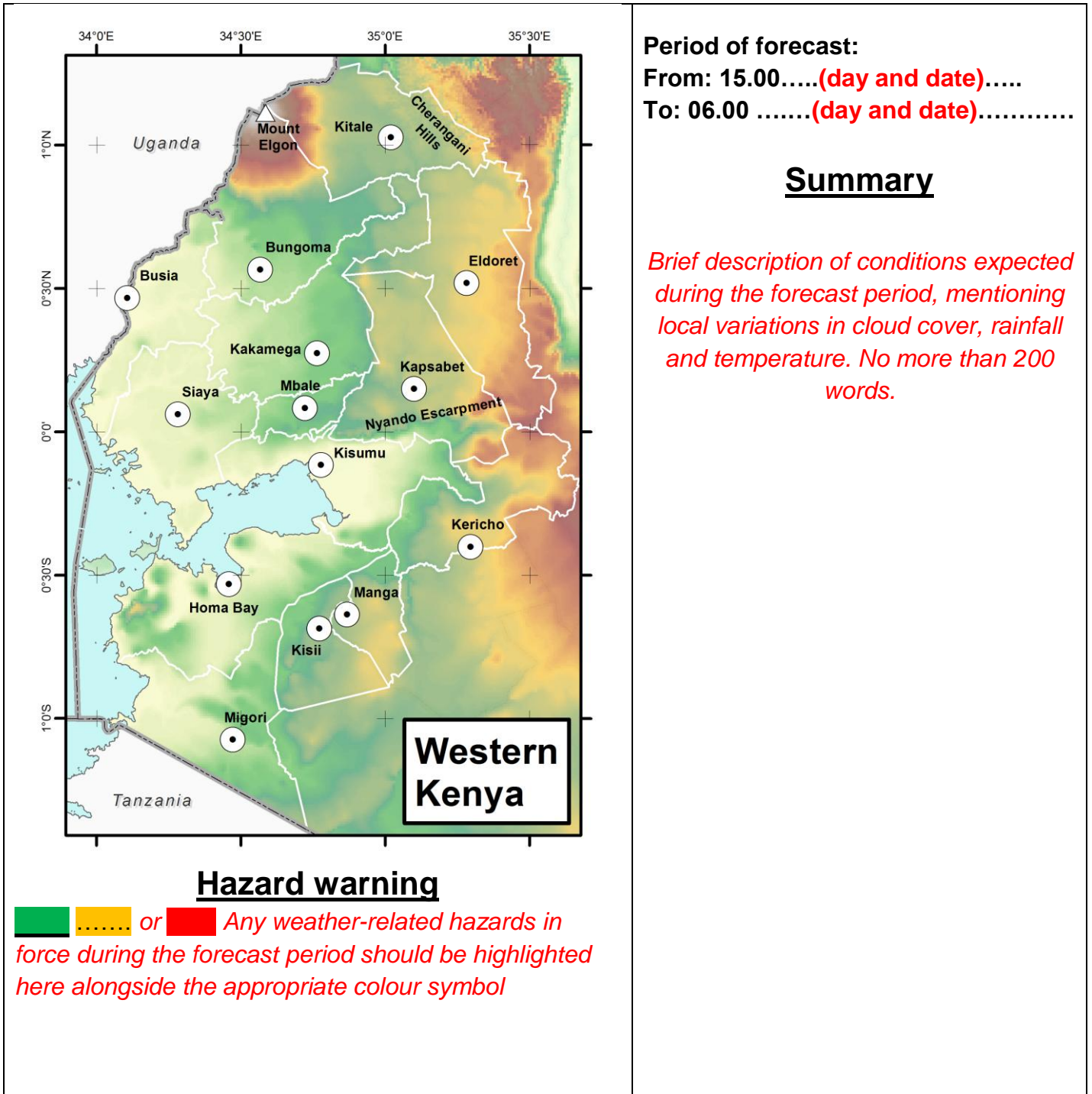
Robert Powell

July 31st 2016

Kenya Meteorological Department



Daily weather forecast for Western Kenya Issued at (time) on (day and date)



Period of forecast:
From: 15.00.....(day and date).....
To: 06.00(day and date).....

Summary

Brief description of conditions expected during the forecast period, mentioning local variations in cloud cover, rainfall and temperature. No more than 200 words.

Hazard warning

Green or **Red** Any weather-related hazards in force during the forecast period should be highlighted here alongside the appropriate colour symbol

	(Today) Afternoon	(Today) Night		(Tomorrow) Morning	(Tomorrow) Afternoon	(Tomorrow) Night
Bungoma	Weather icon 1- 3 word description and maximum temp	Weather icon 1- 3 word description and minimum temp		Weather icon 1- 3 word description and maximum temp	Weather icon 1- 3 word description and maximum temp	Weather icon 1- 3 word description and maximum temp
Busia						
Eldoret						
Homa Bay						
Kakamega						
Kapsabet						
Kericho						
Kisii						
Kisumu						
Kitale						
Mbale						
Manga						
Migori						
Siaya						

Key to Hazard warning colours

Green – No hazard warnings in force.

Amber - Potentially dangerous weather is expected. **Be prepared.**

Red – Dangerous and potentially life threatening weather conditions are expected.
Take immediate and appropriate action to ensure your safety.

For further information, please contact:

(Job title of meteorologist issuing the forecast)(name).....

Mobile:...(number).....

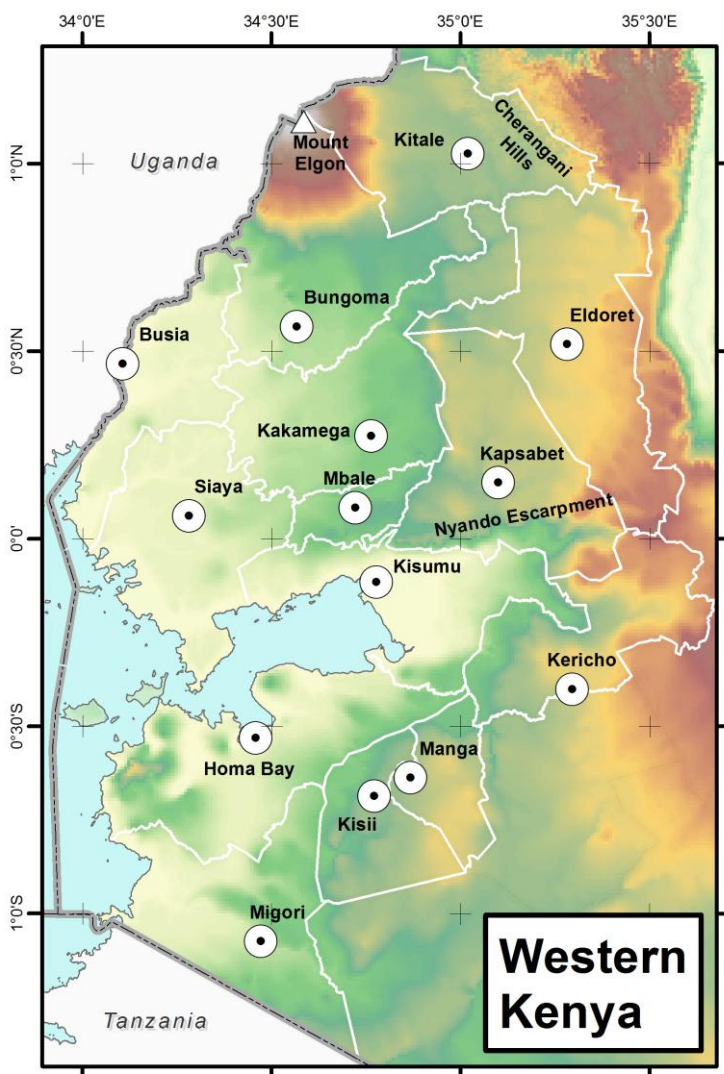
Email:(address)

Kenya Meteorological Department



Daily weather forecast for Western Kenya

Issued at 16.00 on Monday, June 6th
2016



Hazard warning

No hazard warnings are in force at the present time.

Period of forecast:

From: 16.00 Monday, June 6th 2016

To: 06.00, Wednesday, June 8th 2016

Summary

Most parts of Western Kenya will remain dry with a lot of sunshine on Monday afternoon and evening. Away from the shore of Lake Victoria, there will be some cloud, but plenty of sunny intervals.

There could be some light rain in Kakamega and Bungoma counties on Tuesday afternoon and night. Nandi and Kericho might also see the odd shower.


































































Temperatures will be around normal for the time of year.






Nyamira will be hottest place on Monday afternoon, with highs of 31 degrees.

Kitale will be the coolest place on Monday night with temperatures dipping to a chilly 12 degrees.

On Tuesday, Homa Bay is likely to be the hottest place in Western Kenya, with afternoon highs of 31 degrees. Kakamega will be the coolest with clouds and rainfall limiting the afternoon high to 25 degrees.

Winds will be light across the region and variable in direction.

	Monday Afternoon	Monday Night		Tuesday Morning	Tuesday Afternoon	Tuesday Night
Bungoma	 Sunny intervals 28 max	 Partly cloudy 18 min		 Sunny intervals 30 max	 Light rain 25 max	 Light rain 19 min
Busia	 Sunny, clear sky 30 max	 Partly cloudy 21 min		 Sunny, clear sky 31 max	 Sun and showers 28 max	 Partly cloudy 22 min
Eldoret	 Sunny, clear sky 28 max	 Clear night 12 min		 Sunny, clear sky 26 max	 Sunny intervals 28 max	 Partly cloudy 15 min
Homa Bay	 Sunny, clear sky 30 max	 Partly cloudy 21 min		 Sunny, clear sky 28 max	 Sunny intervals 31 max	 Partly cloudy 20 min
Kakamega	 Sunny intervals 28 max	 Partly cloudy 14 min		 Sunny intervals 26 max	 Light rain 25 max	 Light rain 15 min
Kapsabet	 Sunny interval 28 max	 Partly cloudy 17 min		 Sunny intervals 29 max	 Sun and showers 30 max	 Partly cloudy 16 min
Kericho	 Sunny, clear sky 27 max	 Partly cloudy 17 min		 Sunny intervals 26 max	 Sun and showers 27 max	 Partly cloudy 18 min
Kisii	 Sunny intervals 29 max	 Partly cloudy 19 min		 Sunny, clear sky 30 max	 Sunny interval 30 max	 Clear night 17 min
Kisumu	 Sunny intervals 29 max	 Partly cloudy 19 min		 Sunny intervals 28 max	 Sunny intervals 30 max	 Partly cloudy 20 min
Kitale	 Sunny intervals 28 max	 Partly cloudy 12 min		 Sunny, clear sky 29 max	 Sunny intervals 29 max	 Partly cloudy 14 min
Manga	 Sunny, clear sky 31 max	 Clear night 16 min		 Sunny, clear sky 29 max	 Sunny intervals 30 max	 Clear night 16 min
Mbale	 Sunny intervals 28 max	 Partly cloudy 16 min		 Sunny intervals 27 max	 Sunny intervals 29 max	 Partly cloudy 17 min
Migori	 Sunny, clear sky 30 max	 Clear night 15 min		 Sunny, clear sky 28 max	 Sunny intervals 29 max	 Clear night 16 min

Siaya	 Sunny, clear sky 29	 Clear night 18 min	 Sunny, clear sky 28 max	 Sunny intervals 30 max	 Partly cloudy 18 min
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Key to Hazard warning colours

Green – No hazard warnings in force.

Amber - Potentially dangerous weather is expected. **Be prepared.**

Red – Dangerous and potentially life threatening weather conditions are expected.
Take immediate and appropriate action to ensure your safety.

For further information, please contact:

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