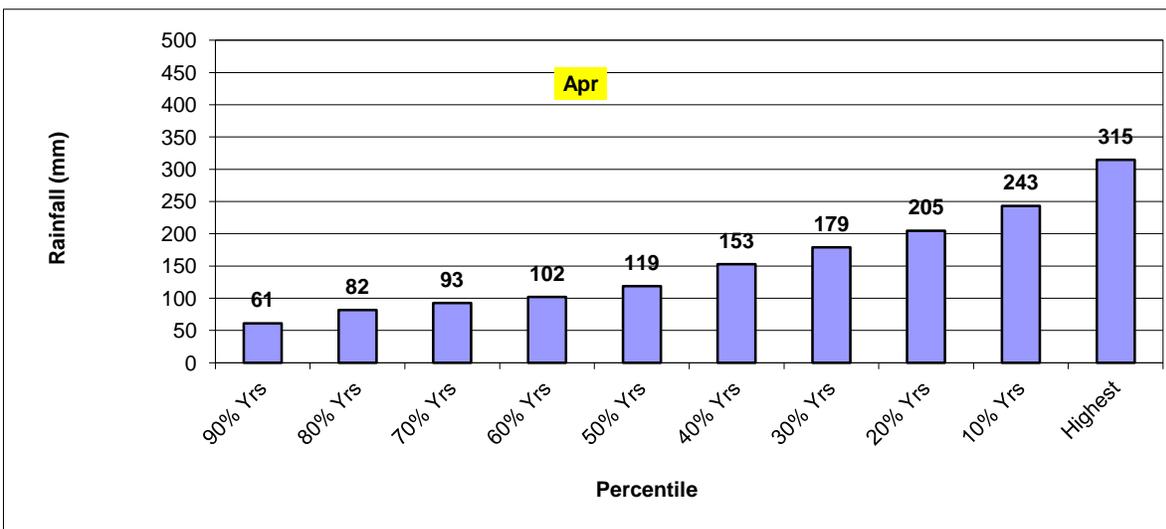


The Rainfall Analyzer



[Ver1]

K.P.C. Rao, A. Oyoo, and W. Ndegwa

RAINFALL ANALYSER User Manual

The Rainfall Analyser is a simple Ms Excel based tool to automate calculations required for characterizing the temporal variability in rainfall.

Table of Contents

Contents

<i>Table of Contents</i>	<i>0</i>
<i>1. Introduction</i>	<i>1</i>
<i>2. Purpose</i>	<i>1</i>
<i>3. Problem Reporting Instructions</i>	<i>1</i>
<i>4. Overview</i>	<i>1</i>
<i>5. Functional Description</i>	<i>1</i>
<i>6. Instruction</i>	<i>2</i>
<i>7. Error messages and causes</i>	<i>4</i>

1. Introduction

The Rainfall Analyser is a simple Ms Excel based tool to automate calculations required for characterizing the temporal variability in rainfall.

2. Purpose

The main aim of this tool is to assist the user in generating information that can help in understanding the distribution and trends in rainfall and average Rainfalls at any given location. The Rainfall Analyser" allows the user to automatically analyse long-term daily Rainfall observations and compute monthly, dekadad and weekly averages, understand the associated variability through simple statistical and trend analysis. It will also allow the user to group the available data into periods and compare them.

3. Problem Reporting Instructions

Mail your comments to K.P.C. Rao (k.p.rao@cgiar.org)

4. Overview

The Rainfall Analyser" allows the user to automatically analyse 50 years of long-term daily daily rainfall observations data and compute monthly, dekadad and weekly rainfall totals, understand the associated variability through simple statistical and trend analysis. It also allow the user to get usefull information on how climatic phenomenon like ENSO influence the local rainfall patterns ,group the available data into periods and compare them. The tool is easy for the user to customize the calculations to suit local conditions by any user familiar with Ms Exel spreadsheets. The rainfall analysis is limited to some basic and routine analysis which many researchers normally do

5. Functional Description

The rainfall analyser has 9 worksheets each performing different functions

- Worksheet 1:** The worksheet is labeled “**About**” – Gives the general information of the tool, Title, Authors and collaborating institutions.
- Worksheet 2:** The worksheet is labeled “**Data**” is the interactive worksheet of the tool. Its main function is data entry. The worksheet also displays the descriptive statistics of the data.
- Worksheet 3:** The worksheet is labeled “**Trends**” - It gives time series analysis of the data including trends at various years of moving averages.
- Worksheet 4:** The worksheet is labeled “**Rain Days**” – It displays count of rain days.
- Worksheet 5:** The worksheet is labeled “**Monthly Chart**”
- Worksheet 6:** The worksheet is labeled “**Dekadal Chart**”
- Worksheet 7:** The worksheet is labeled “**Weekly Chart**”
- Worksheet 8:** The worksheet is labeled “**Notes**”
- Worksheet 9:** The worksheet is labeled “**How to paste**” It gives instruction on how to input data copied from other source by pasting on the input location of worksheet 2 above.

6. Instruction

How to Use the Rainfall Analyser

The Columns A, B, C, D and E of the worksheet labeled “**data**” (worksheet 2) contain data on years, month, week and dekad. The columns are locked, so the user may not edit the columns. The worksheet has points to input station name, Latitude, Longitude and Elevation of rain gauge station at row 2, row 3, row 4 and row 5 of the four columns respectively.

The user must next input daily rainfall data in column “F” of the worksheet labeled “**data**” (worksheet 2). The user may choose to input data one point at a time or may paste the daily rainfall data in the column “F” in the worksheet labeled “**Data**”. Once data is input in the worksheet, it is recommended for the user to refresh the worksheet in order to

reflect new data entries in all the analysis. This is done by choosing the “**Refresh all**” key on Data Menu of the Ms Excel.

Once the data has been entered and the worksheet refreshed, the user may now proceed to study the proceeding results of the analysis.

Column H – BH of the worksheet labeled “**data**” are 3 Pivot tables. The Pivot tables are programmed to compute the monthly, decadal and weekly totals of rainfall respectively, for each of the years of record. Each pivot table has a position for adjusting the years and months so that the analysis fits only in the years and months whose data is available. Each of the pivot tables also computes the Annual and seasonal (MAM and OND seasons) rainfall totals.

Column BI – BV of the worksheet labeled “**data**” gives the descriptive statistics (Mean, Minimum, Maximum, Range, Median, Standard deviation, Variance, Standard Error, Kurtosis, Skewness, and Coefficient of variation CV (%)) of the rainfall totals computed for respective Pivot table Monthly, decadal or weekly.

Column CO – DC Give the mean monthly rainfall for corresponding El-nino and La-nina episodes.

Worksheet labeled “Trends” This worksheet analysis the temporal trends at various year moving averages.

These are displayed in:

Column B – S: trends of 5 year moving averages of monthly, seasonal and annual rainfall.

Column U – AL: Trends of 5 year moving averages of monthly, annual and seasonal rainfall anomalies (departure from climatological mean)

Column U – AL: trends of 10 year moving averages of monthly, seasonal and annual rainfall.

Column AN – BE: Trends of 10 year moving averages of monthly, annual and seasonal rainfall anomalies (departure from climatological mean)

Worksheet labeled “Rain Days”: Analysis of Rain days for the data period. The worksheet analysis the rainy days within categories of > 1mm, >2mm, >5mm, >10mm, >25mm, >50, >75mm, and >100mm.

The worksheet also analyses of Rain days within categorical intervals of 1-2mm, 2-5mm, 5-10mm, 10-25mm, 25-50mm, 50-75mm, 75-100mm and >100mm.

Worksheet labeled “Monthly Chart” The worksheet analysis in graphical form the mean monthly distribution of rainfall.

Worksheet labeled “Dekadal Chart” The worksheet analysis in graphical form the mean decadal distribution of rainfall.

Worksheet labeled “Weekly Chart” The worksheet analysis in graphical form the mean weekly distribution of rainfall.

Worksheet labeled “Notes” This worksheet gives notes on standard meteorological periods (week & dekad) as used in the tool.

7. Error messages and causes

Users needs to remember to refresh the worksheet everytime new data is input.

Missing gaps in the datasets are likely to result into Error messages in the respective worksheets.