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Data Article

Description of long-term climate data in Eastern and Southeastern Ethiopia



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ABSTRACT

This article presents long-term analyzed climate data from nine weather stations in eastern and southeastern parts of Ethiopia. At the outset of this data process, unrefined meteorological data was obtained from National Meteorological Agency (NMA) of Ethiopia for the analysis. The analyzed data in this article shows patterns of rainfall variability, frequency of drought years, seasonal concentration of precipitation and temperature conditions. As issues related to climate conditions are very intricate, different techniques and indices were applied to analyze and refine the data. The analysis reveals that eastern and southeastern parts Ethiopia are severely affected by recurrent droughts, erratic rainfall, and high and increasing temperature conditions. The long-term (1981–2009) mean annual total rainfall had been fluctuating between about 850 mm and 1350 mm. Most stations receive maximum rainfall in summer (June, July and August) except Gode which gets over 50% of its rainfall in spring season (March, April and May). The inter-annual rainfall difference was found to be very high. The Precipitation Concentration Index (PCI) is greater than 11 for all the stations showing that rainfall is concentrated in a few months. PCI is extremely high (greater than 20) for very dry stations such as Gode. Food production and consumer price index were found to be fluctuating with rainfall patterns.

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Specification Table

Subject area	Environmental Studies
More specific subject area	Climate Change
Type of data	Figure and table
How data was acquired	Unprocessed secondary data
Data format	Analyzed
Data source location	Adama; Arba Minch; Ciro; Dire-Dawa; Gode; Jiggiga; Moyale; Yabello and Ziway meteorological stations.
Experimental factors	Data were obtained from the NMA and CSA of Ethiopia.
Experimental features	Computational analysis: Precipitation concentration indexes (PCI), percentages, averages, total values and graphic trend analysis were computed by using SPSS version 20 and Microsoft Excel softwares.
Data accessibility	The data is with this article.

Data value

- Gives picture on the changing environment in Ethiopia.
- Provides information on the patterns of rainfall variability, frequency of drought years, seasonal concentration of precipitation and temperature conditions in Ethiopia.
- Can be used to identify areas vulnerable to climate change for various forms of interventions.
- Useful to researchers and experts working in climate change, disaster risk management, food security and other related fields.

1. Data

The figures and tables in this article show analyzed data gathered from the nine weather stations across eastern and southeastern part of Ethiopia. Fig. 1 shows the location of the sources of data (*i.e.* sample meteorological stations) in Ethiopia. Data related to long-term annual total rainfall (Fig. 2) and mean annual total rainfall and seasonal variability in Ethiopia (Fig. 3) are presented. Fig. 4 demonstrates the inter-annual rainfall differences in southern and south-eastern Ethiopia. The data in this figure shows that the mean total annual rainfall fluctuates highly. The inter-annual coefficient of variation is 20% implying severe moisture scarcity and substantial inter-annual rainfall variability. Figs. 5–11 show rainfall and temperature patterns of the sample stations. Rainfall variability is higher at drier stations (such as Gode and Dire Dawa) than wetter stations like Arba Minch and Adama. The inter-winter coefficient of variation is computed to be 0.69, while the variation between autumns, summers and springs is 0.31, 0.20 and 1.61, respectively. Following this the analysis of long-term annual rainfall and temperature conditions of Adama Weather Station (Fig. 6), Arba-Minch (Fig. 6), Ciro (Fig. 7), Dire-Dawa (Fig. 8), Gode (Fig. 9), Jiggiga (Fig. 10), and Ziway (Fig. 11) are presented. The graphs and tables farther show years of maximum and minimum rainfall or drought years across the areas. The trends of the spring (*belg*) rains of the weather stations (Fig. 11A–H) mean seasonal rainfall values of the stations (Fig. 13) and trend of temperature conditions (Fig. 14) in Ethiopia are shown. Table 1 shows the sample weather stations by PCI (Precipitation Concentration Index). Long-term mean annual rainfall and temperature values of the stations and long-term mean seasonal values of the stations are presented in Tables 2 and 3 respectively. Finally, in Figs. 15,16

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