

## HIGHLIGHTS

- Temperatures continue to decrease across the whole country
- Light rainfall is in the forecast across western Yemen
- Farmers are advised to start land preparations in January as rainfall will likely retain sufficient soil moisture
- Rainfall likely to increase the productivity of pasturelands

## I. METEOROLOGICAL REVIEW

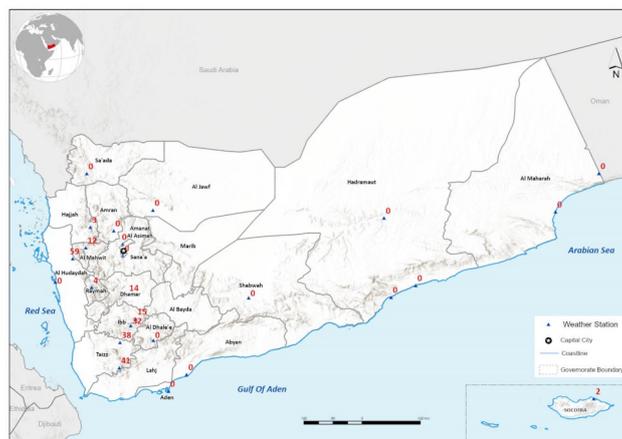
Localized climate information products and services are indispensable to agriculture because they provide advisory that relates to the impacts of climate on livestock and crops, together with management practices that can reduce risks. Here, agrometeorological conditions in November 2022 are examined. Results show that as expected, during this time of the year, much of the country was dry apart from Socotra (Socatra, 24 mm), Al Maharah (Algaidha, 11 mm), Hajjah (11 mm), and Ibb (3 mm) Governorates (Fig. 1A). The observed rainfall patterns were corroborated by satellite estimates which captured scanty rainfall dotted across the Red Sea coastal strip of the country (Fig. 1B and 3A – C). An assessment of rainfall anomalies (difference from long-term average, LTA) showed generally normal conditions (Fig. 2A) which added credence to the earlier observation that the rainfall experienced in November was as expected across much of Yemen.

Temperatures across the whole country were observed to have plummeted signalling the ushering in of winter conditions. Field weather stations reported the lowest temperatures in Dhamar (Maqar-Alhya'a, 1°C), Amran (Qa'a Alboon, 4°C), Sa'ada (Sadah, 4.8°C), and Amanat Al Asimah (Aljamaah, 5°C). Further temperature decreases are expected towards the end of December and the beginning of January; this is likely to induce cold stress in livestock across pastoral regions, especially over the highlands. Farmers are encouraged to stock enough feed for livestock during cold spells. An increase in high-quality feed intake helps animals to meet their energy requirements.

**The weather outlook** until early January indicates a high likelihood of the return of rains across the western parts of the country. Specifically, sporadic rains of up to 40 mm are expected in Taizz, Ibb, Dhamar, Amran, and Hajjah. Rainfall triggered by tropical activity is however not expected. Compared to 2021, tropical activity is generally calm this year. Currently, only Tropical Cyclone Darian (TC Darian) is active in the South Indian Ocean region. Although TC Darian is intense and is travelling at 205 km/hour, it is very far from Yemen and forecasts indicate that it poses no threat to the country. Farmers and the general public are however encouraged to continue following updates.

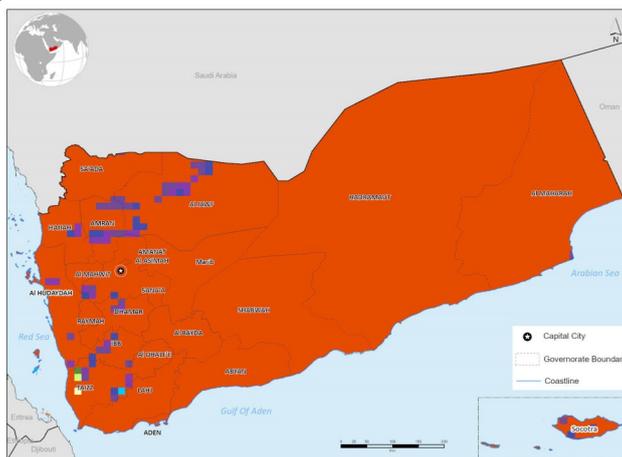
Fig. 1: Progress of monthly rainfall and vegetation conditions A) Observed rainfall (mm) B) Satellite-based rainfall estimates (mm)

A



SOURCE : CAMA

B



SOURCE : CPC



Fig. 2: Monthly anomalies (difference from long term average, LTA) for rainfall (LTA: 1983 – 2013)

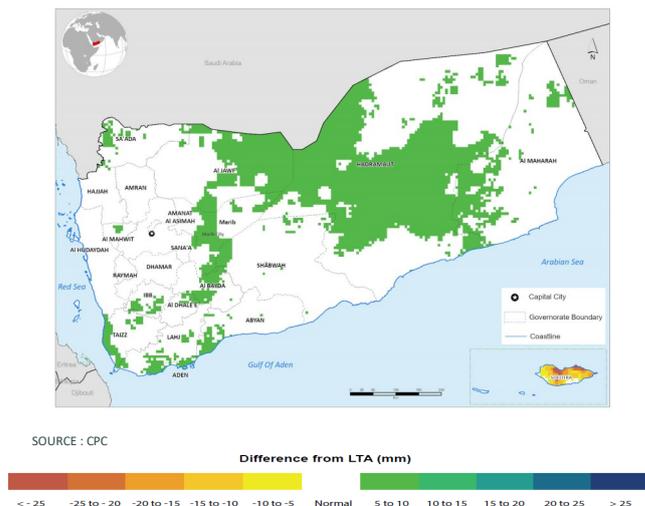


Fig. 3: Progress of rainfall estimates A) 1 to 10 Nov B) 11 to 20 Nov C) 21 to 30 Nov .

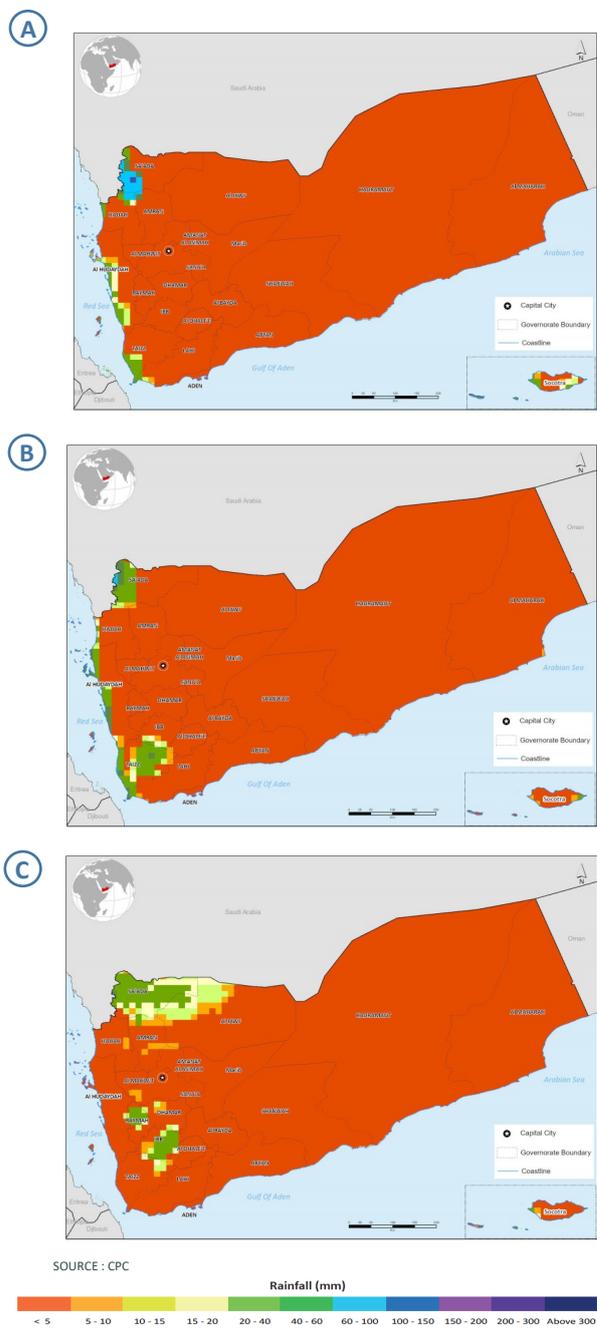
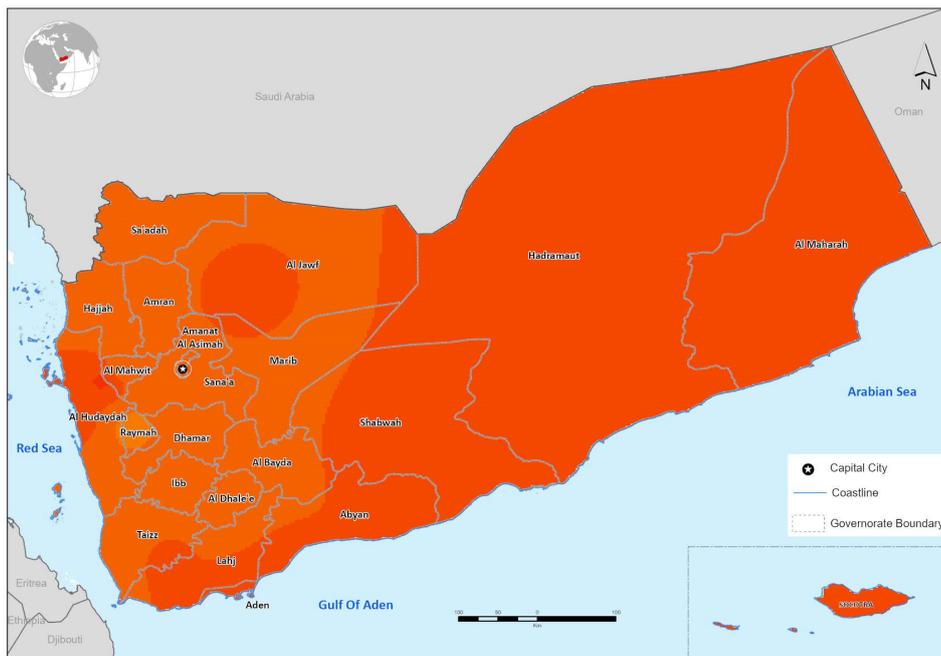
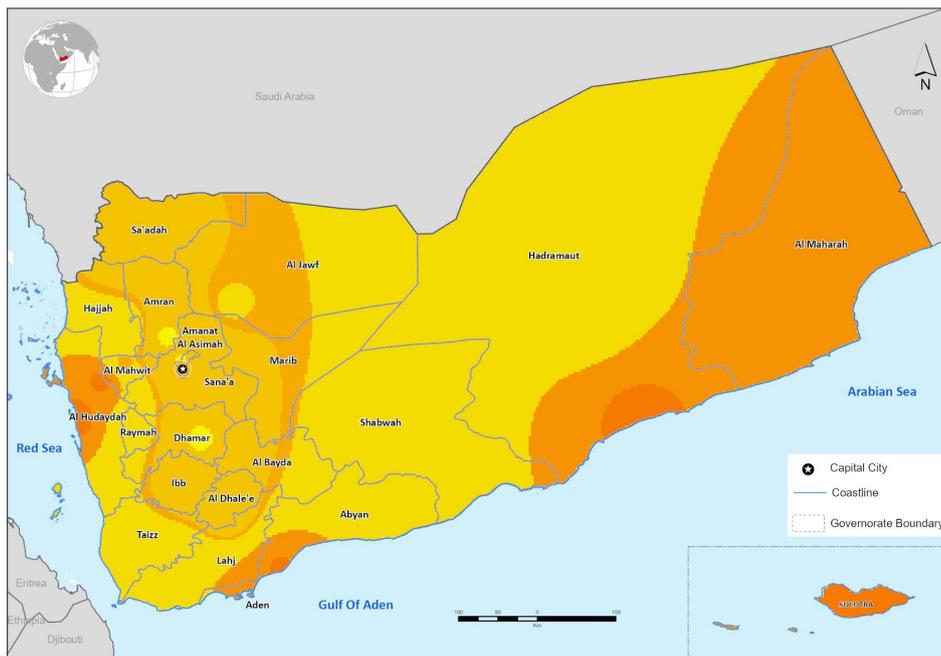


Fig. 4: Progress of monthly temperature conditions for A) Maximum B) Minimum

A



B



SOURCE : CAMA

Temperature (C)



## II. IMPACT ON LIVELIHOODS

The recorded drop in temperatures, especially across the Central and Northern Highlands where they neared 0°C negatively affected farmers, crops, and livestock. Field reports indicate that the cold wave triggered the spread of diseases, especially on vegetables and fruits in Dhamar, Sana'a, and Amran governorates. Notwithstanding the drop in temperatures, the cultivation of winter crops such as wheat, barley, lentil, millet, and pulses along with land preparations for vegetables continued across much of the Central Highlands.

In the Red Sea Coast and Tihama plain, farmers were mainly engaged in the harvesting of sorghum, millet, sesame, and watermelon. Further, given the generally dry weather conditions as expected during this time of the year, farmers with access to irrigation facilities kickstarted the cultivation of irrigated vegetables and fruit trees. Due to the reported dryness across much of the country, a general decrease in fodder availability was also reported and this will likely lead to undernutrition in animals which will potentially reduce their productivity.

Throughout November, field teams reported the presence of Fall Armyworms (FAW) in Taiz, Ibb, and Raymah Governorates. The FAW mostly targeted cereal, particularly sorghum and maize crops. Farmers in the affected areas are encouraged to communicate with the Department of Plant Protection in Sana'a and Aden to receive available bio-pesticides and start the control process to avoid the spread of FAW to unaffected areas. Regarding Desert Locusts (DL), the situation was generally calm throughout November apart from a few adults that were spotted along coastal areas<sup>1</sup>.

**Outlook for December:** Further temperature decreases are in the forecast for the remainder of December and early January 2023, especially across the highlands. While it is notable that crops have different levels of cold tolerance, temperature reductions can affect plants in several ways which include but are not limited to the freezing of water within the cells of plants thus leading to expansion and consequently crop failure. To minimise the damage and protect crops, farmers are encouraged to apply mulch to their fields. Examples of mulch that are effective in keeping soil temperatures consistent thus preventing disruptive freeze-thaw in plants include sawdust, chopped leaves, compost, straw, grass clippings, shredded bark, and wood chips.

The forecasted rains, if sustained, will likely increase the productivity of pasturelands. The rains will also supply sufficient soil moisture for land preparation in January and February across cropped areas. Farmers are therefore advised to kickstart land preparations in January.

Fig. 5: Forecast for 21 – 31 December 2022

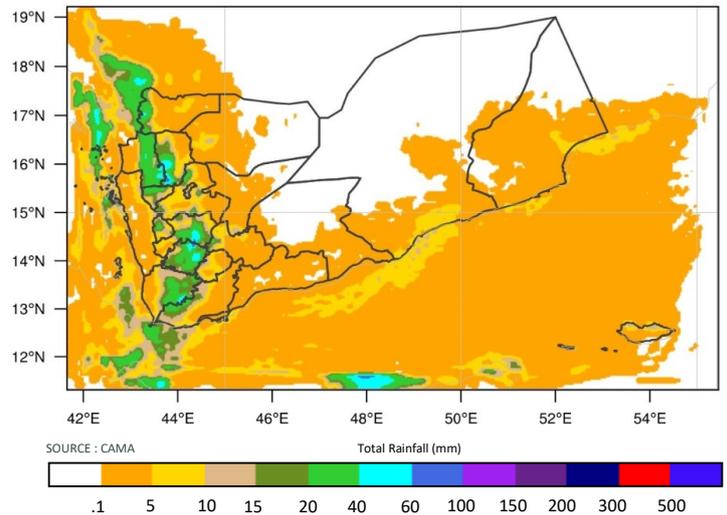
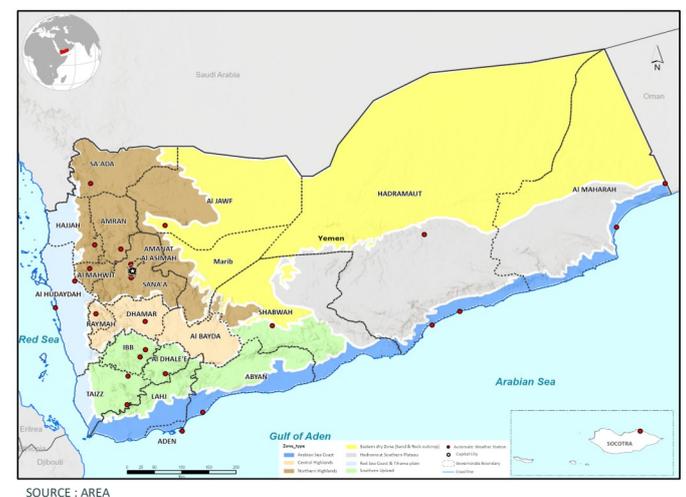


Fig. 6: Agro-ecological zones and location of observatory stations



<sup>1</sup> <https://www.fao.org/ag/locusts/en/info/info/index.html>

### Sources:

- Primary data are sourced from the Civil Aviation and Meteorology Authority (CAMA), Ministry of Agriculture and Irrigation (MAI) and FAO Global Information Early Warning System (GIEWS).
- Vegetation indicators are sourced from FAO GIEWS and are based on 10-day (dekadal) vegetation data from the METOP-AVHRR sensor at 1 km resolution (2007 and after). Data at 1 km resolution for the period 2006-1984 are derived from the NOAA-AVHRR dataset at 16 km resolution. <http://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=YEM#> and from the European Union's anomaly hotspots of agricultural production (ASAP).
- Rainfall estimates (RFE2) are sourced from the Climate Prediction Centre (CPC) of The National Oceanic and Atmospheric Administration (NOAA)

#### Technical Partners

#### Food Security and Early Warning Information System Programme

is funded by the European Union and implemented by Food and Agriculture Organization of the United Nations (FAO) and government partners.



#### Resource Partner



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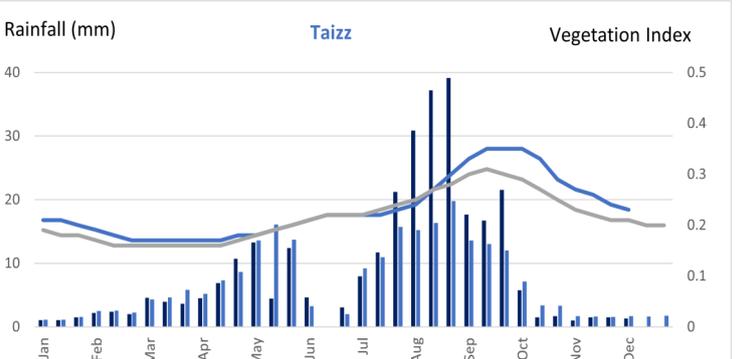
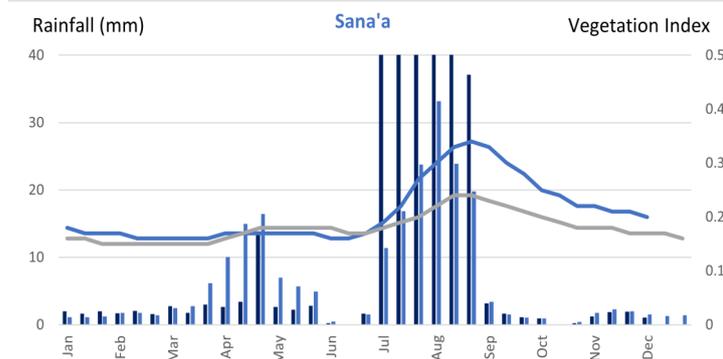
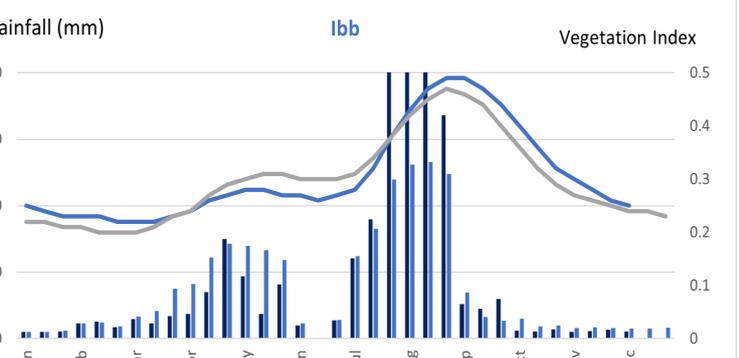
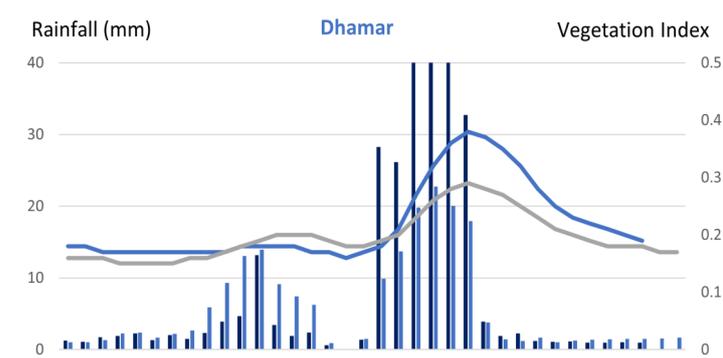
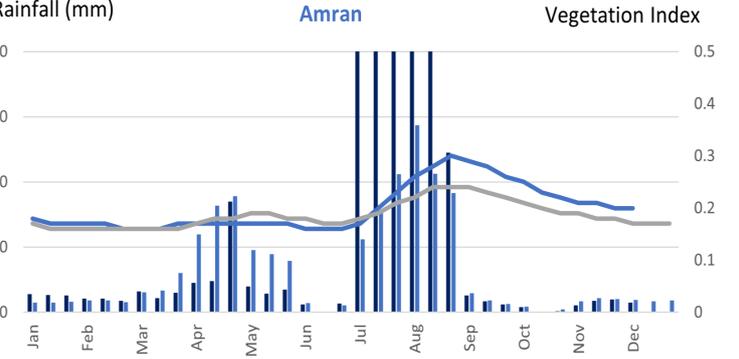
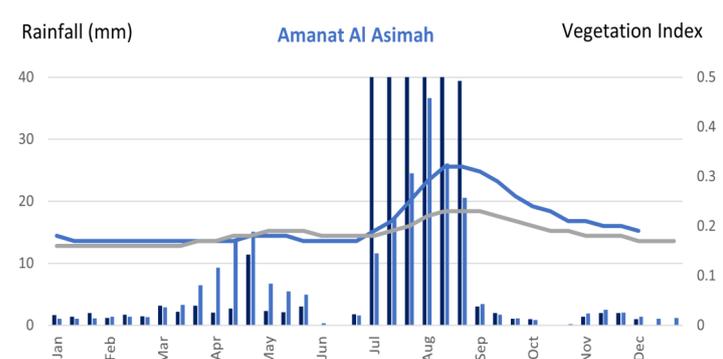
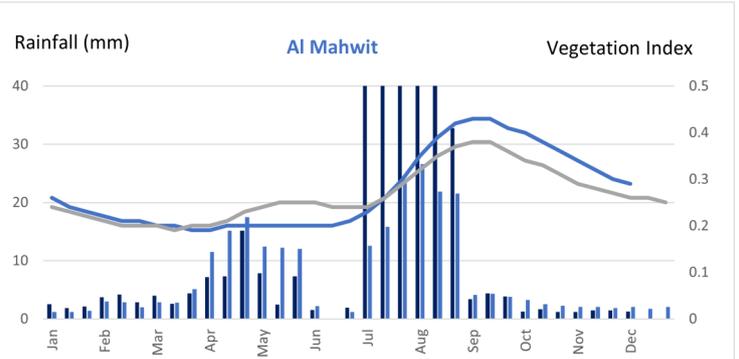
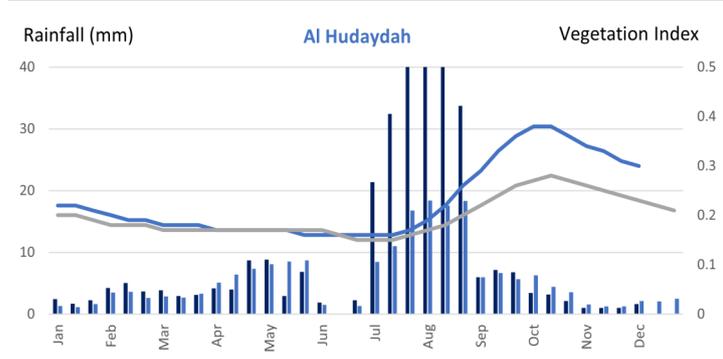
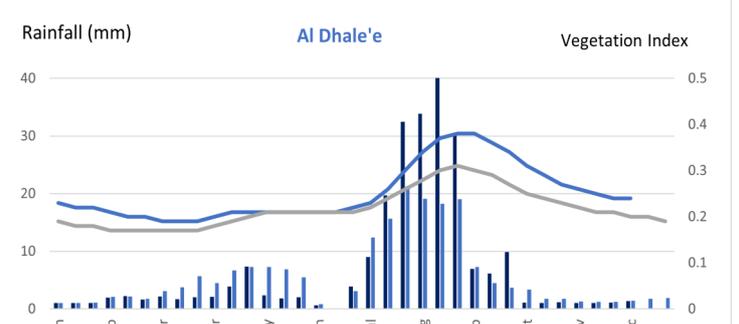
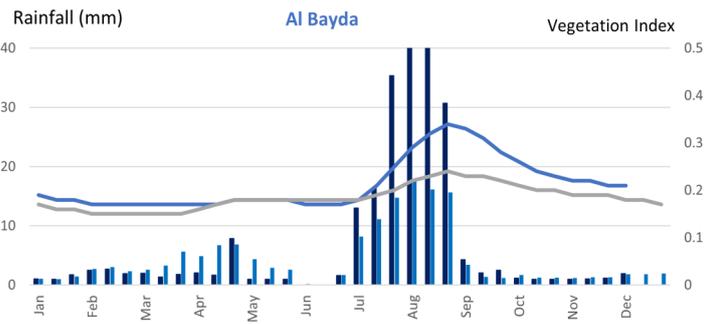
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# AGROMETEOROLOGICAL UPDATE

## III. VARIATIONS OF RAINFALL AND NDVI

Rainfall STA (2009 - 2021) Rainfall 2022 NDVI 2022 NDVI STA (2009 - 2021)



## AGROMETEOROLOGICAL UPDATE

Table 1: Observed Station Data: Rainfall and Tempera-

Governorate	Station	Rainfall (mm)	Temperature (°C)	
		Monthly	Max	Min
Abyan	Al Kood	-	-	-
Aden	Aden	-	31.4	21.5
Al Dhale'e	Al Dhala	-	-	-
Al Hudaydah	Al Kaden	-	36.1	22.1
Al Hudaydah	Al Hudaydah	-	32.6	24.0
Al Jawf	Al Jouf	-	32.7	11.1
Al Maharah	Algaidha	11	35.0	18.9
Al Maharah	Serfeet	1	35.8	17.0
Al Mahwit	Almahweet	-	26.8	10.0
Amanat Al Asimah	CAMA/YMS Office	-	-	-
Amanat Al Asimah	Al-Asbahi	-	-	-
Amanat Al Asimah	Aljamaah	-	26.0	5.0
Amanat Al Asimah	Alhasba	-	-	-
Amanat Al Asimah	Baghdad	-	-	-
Amanat Al Asimah	Shamlan	-	-	-
Amanat Al Asimah	Sawan	-	-	-
Amanat Al Asimah	Al Erah	-	-	-
Amran	Amran	-	28.4	3.8
Amran	Hamdah	-	-	-
Amran	Qa'a Alboon	-	28.0	4.0
Amran	Amran Gov.	-	-	-
Amran	Eial Sourih	-	-	-
Dhamar	Dhamar	-	25.2	3.5
Dhamar	AREA-HQ	-	-	-
Dhamar	Rosabh	-	-	-
Dhamar	Dhamar (MAI)	-	25.0	3.0
Dhamar	Maqar-Alhya'a	-	24.0	1.0
Dhamar	Qa'a Shrah	-	-	-
Hadramaut	Al Mukalla	-	-	-
Hadramaut	Al Shaher	-	31.3	22.3
Hadramaut	Seiyoun	-	34.0	12.1
Hadramaut	Assom	-	-	-
Hadramaut	Tarim	-	-	-
Hadramaut	Sah	-	-	-
Hadramaut	Aliotoof	-	-	-
Hadramaut	Seyun Pr	-	-	-
Hadramaut	Seyun Re	-	-	-
Hadramaut	Hawrah	-	-	-
Hadramaut	Doaan	-	-	-
Hadramaut	Shibam	-	-	-
Hadramaut	Ard Makhharsh	-	-	-
Hadramaut	Brom	-	-	-
Hajjah	Hajjah	11	26.6	13.0
Ibb	Alsaddah	-	25.7	6.8
Ibb	Ibb	3	27.6	8.5
Ibb	Ibb (MAI)	-	27.0	8.0
Raymah	Al Jabeen-Rimah	-	22.1	11.3
Sa'ada	Sadah	-	26.7	4.8
Sana'a	Sana'a	-	-	-
Sana'a	Al Erah	-	-	-
Sana'a	Sanhan	-	-	-
Shabwah	Ataq	-	32.6	14.0
Socotra	Socatra	24	33.8	21.2
Taizz	Al Maafer	1	30.9	14.6
Taizz	Mashra and Hadnan	-	-	-
Taizz	Al Modafar	-	-	-
Taizz	Al Qahera	-	-	-
Taizz	Wadi Arafat	-	-	-
Taizz	Hawban Qadas	-	-	-
Taizz	Al Akahel	-	-	-
Taizz	Sabar almoadhmi	-	-	-
Taizz	Airport	-	-	-