Food and Agriculture Organization of the United Nations

FOOD SECURITY AND EARLY WARNING INFORMATION SYSTEM

Yemen

AGROMETEOROLOGICAL UPDATE

May Issue (Ref: #22) | 01 - 31 May 2022

HIGHLIGHTS

- Abnormally dry conditions persist across Yemen with several areas experiencing mild to severe drought
- Sheep and goat pox together with foot and mouth diseases were widely reported in the Highlands and Tihama plain
- The weather forecast shows suppressed rainfall across the whole country which will favour further development of drought
- Expected drought conditions suggest that animal diseases observed in May are likely to continue especially in the first half of the month. Therefore, preventive measures are strongly advised

I. METEOROLOGICAL REVIEW

With climate change, the incorporation of climate information into development planning and policy processes is more crucial than ever, especially in developing countries like Yemen where climate extremes result in catastrophic agroeconomic losses every year. A close examination of May 2022 reveals a continuum of abnormally dry and drought conditions in many parts of Yemen. The only areas that experienced rainfall activities include Taizz (Al Maafer, 129 mm), Taizz (Airport, 100 mm), Ibb (58 mm), Al Mahwit (Almahweet, 34 mm), Dhamar (29 mm), Ibb (25 mm), and Ibb (Alsaddah, 22 mm) Governorates. All the remaining areas received light to no rainfall generally not exceeding 5 mm cumulatively (Fig. 1A and B; Table 1).

An examination of rainfall progress shows that much of the rains fell at the beginning and end of the month while the middle remained relatively dry (Fig. 3A - C). Rainfall anomalies (difference from long term average, 1981 - 2010) on the other hand show that the rainfall received was atypically less (Fig. 2A); the whole country was abnormally dry with the below-average rainfall translating into drought, especially across the western parts of the country and this was further reflected in the vegetation anomalies (Fig. 2B). Overall, the progress of vegetation stress mimicked the spatial distribution of rainfall (Fig. 3A – 3C).

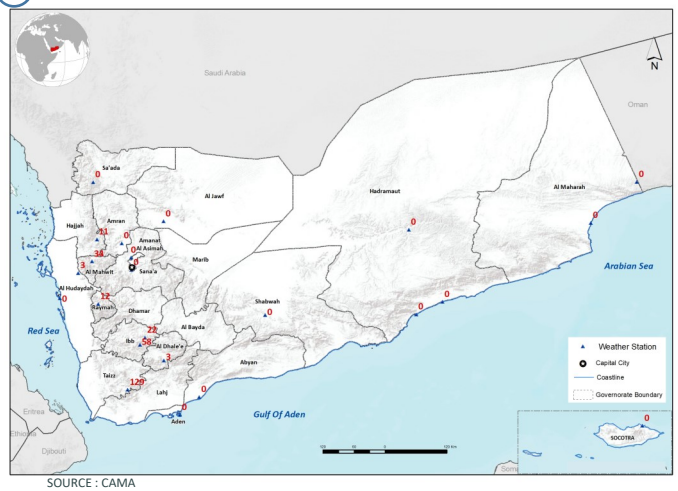
Although most cropped areas were off-season (see Fig. 6A – C), the Agricultural Stress Index (ASI), a widely used indicator of the likelihood of drought conditions across cropped areas showed continued stress across the western parts of the country thus complementing other drought metrics that show drought conditions across the country and these had ripple effects on agricultural activities throughout May 2022.

The observed drought conditions were further enhanced by very hot temperatures that encouraged evaporation thereby reducing surface water, soil moisture, and drying vegetation (See Section II). The highest temperatures as observed by field weather stations were reported in Hadramaut (Seiyoun, 43.1°C), Al Hudaydah(Al Kaden, 43.0°C), Al Maharah (Algaidha, 42.9°C), Shabwah (Ataq, 41.0°C), Hadramaut (Al Shaher, 40.8°C), and Aden (40.0°C; Fig. 5A and Table 1). Apart from Dhamar (7°C) and Amran (8.4°C), all other areas experienced minimum temperatures of over 10°C (Fig. 5B and Table 1).

The weather outlook up to 16 June 2022 shows suppressed rainfall across the whole country which will favour further development of drought (Fig. 7). Decision making should enhance drought mitigation measures which may include but cannot be limited to public awareness of the need for water conservation, augmentation of water supplies, and use of water-efficient irrigation systems.

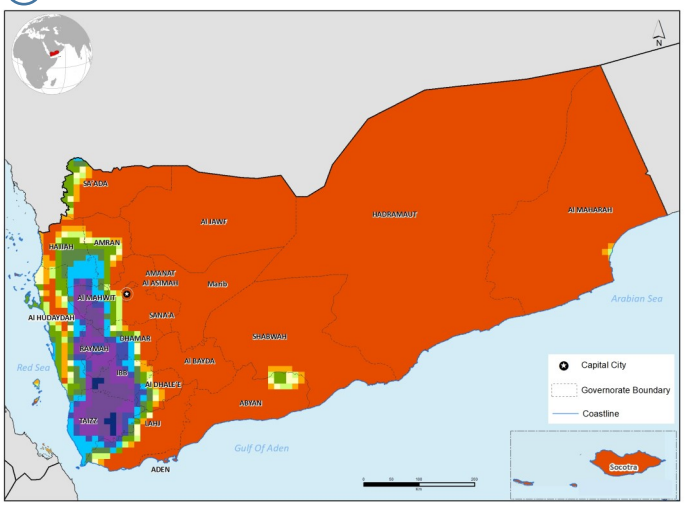
Fig. 1: Progress of monthly rainfall and vegetation conditions A) Observed rainfall (mm) B) Satellite-based rainfall estimates (mm) C) Vegetation Condition Index.

A



SOURCE : CAMA

B

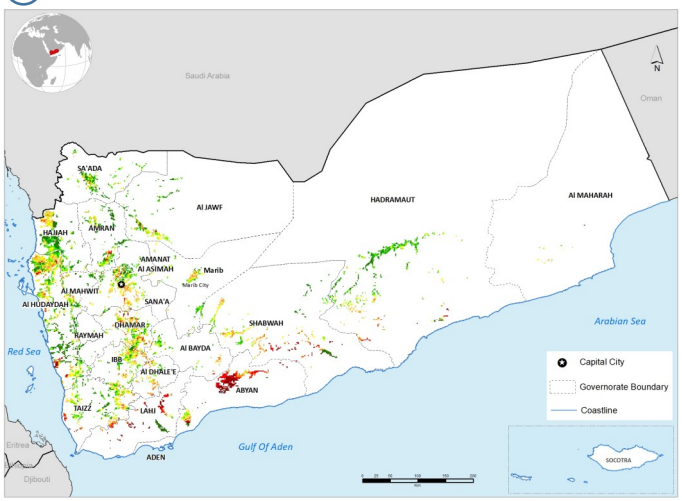


SOURCE : CPC

Rainfall (mm)

< 5	5 - 10	10 - 15	15 - 20	20 - 40	40 - 60	60 - 100	100 - 150	150 - 200	200 - 300	Above 300

C



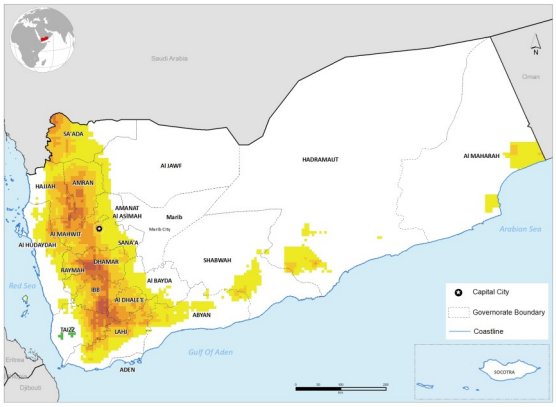
SOURCE : VCI – GIEWS, Crop mask – JRC

VCI

< 0.15	0.15 - 0.25	0.25 -0.35	0.35 - 0.45	0.45 - 0.55	0.55 - 0.65	0.65 - 0.75	0.75 - 0.85	> 0.85	missing	cloud	snow

Fig. 2: Monthly anomalies (difference from long term average, LTA) for A) rainfall (LTA: 1983 – 2013) B) Normalized Difference Vegetation Index (LTA: 1984—2015)

A

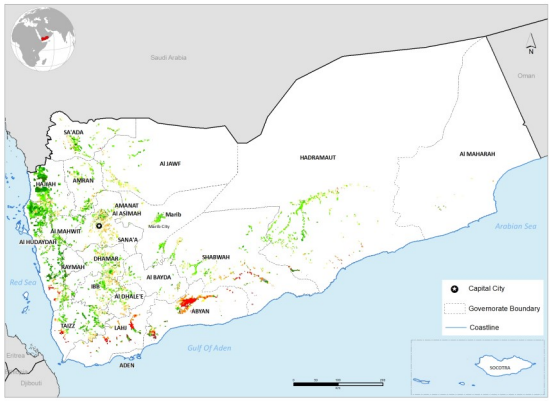


SOURCE : CPC

Difference to LTA (mm)

< - 25 | -25 to - 20 | -20 to -15 | -15 to -10 | -10 to -5 | Normal | 5 to 10 | 10 to 15 | 15 to 20 | 20 to 25 | > 25

B



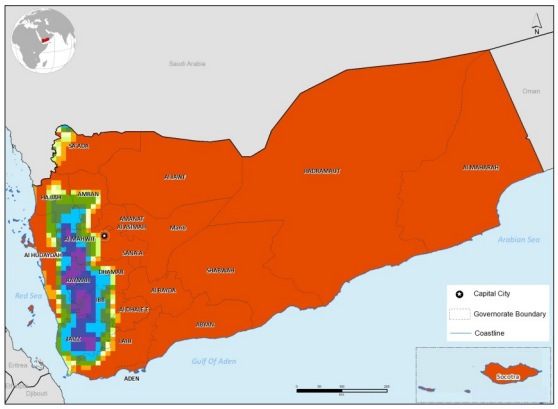
SOURCE : NDVI anomalies – GIEWS, Crop

Difference to LTA

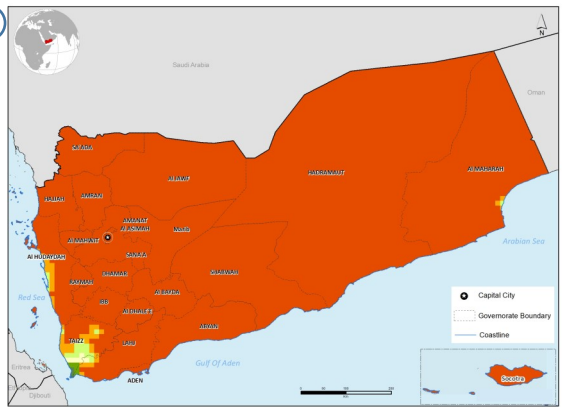
< -75% | < -50% | < -25% | < -10% | Normal | > 10% | > 25% | > 50% | > 75% | missing | cloud | snow

Fig. 3: Progress of rainfall estimates A) 1 to 10 May B) 11 to 20 May C) 21 to 31 May.

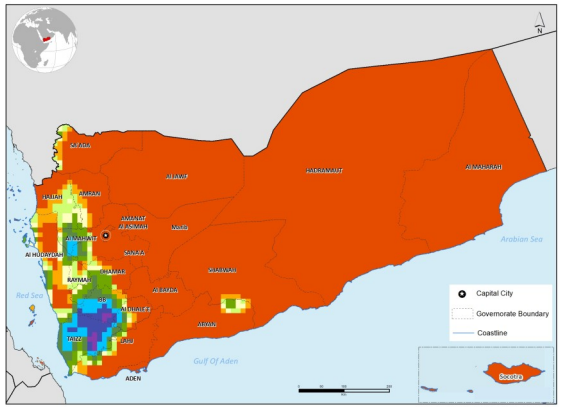
A



B



C



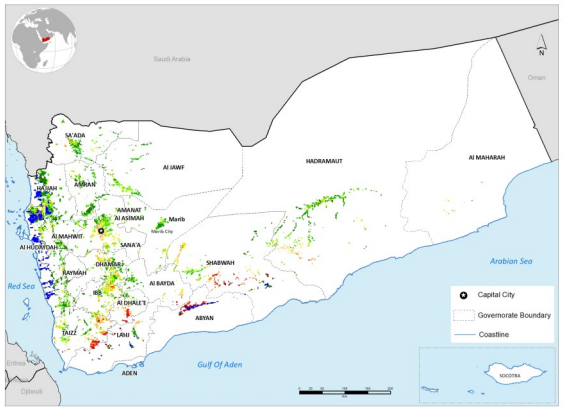
SOURCE : CPC

Rainfall (mm)

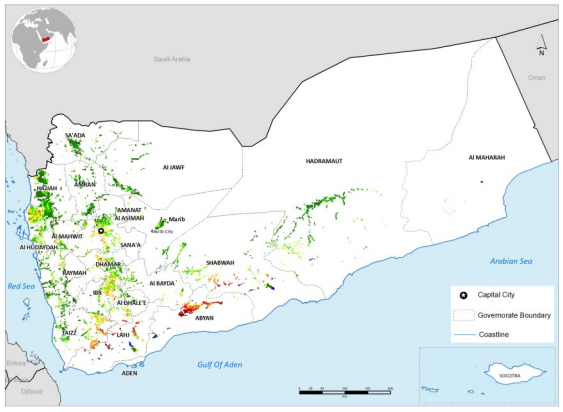
< 5 | 5 - 10 | 10 - 15 | 15 - 20 | 20 - 40 | 40 - 60 | 60 - 100 | 100 - 150 | 150 - 200 | 200 - 300 | Above 300

Fig. 4: Progress of vegetation conditions for A) 1 to 10 May B) 11 to 20 May C) 21 to 31 May.

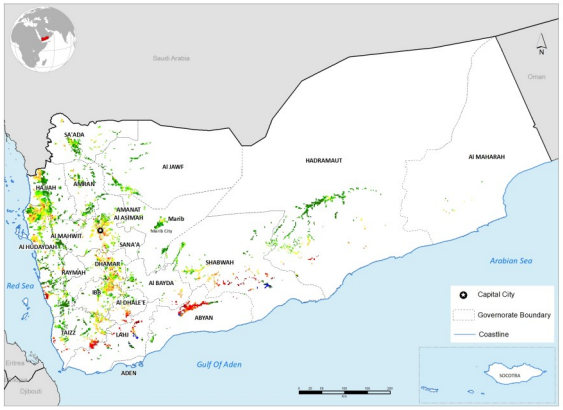
A



B



C



SOURCE : VCI – GIEWS, Crop mask – JRC

VCI

< 0.15 | 0.15 - 0.25 | 0.25 -0.35 | 0.35 - 0.45 | 0.45 - 0.55 | 0.55 - 0.65 | 0.65 - 0.75 | 0.75 - 0.85 | > 0.85 | missing | cloud | snow

Fig. 5: Progress of monthly temperature conditions for A) Maximum B) Minimum

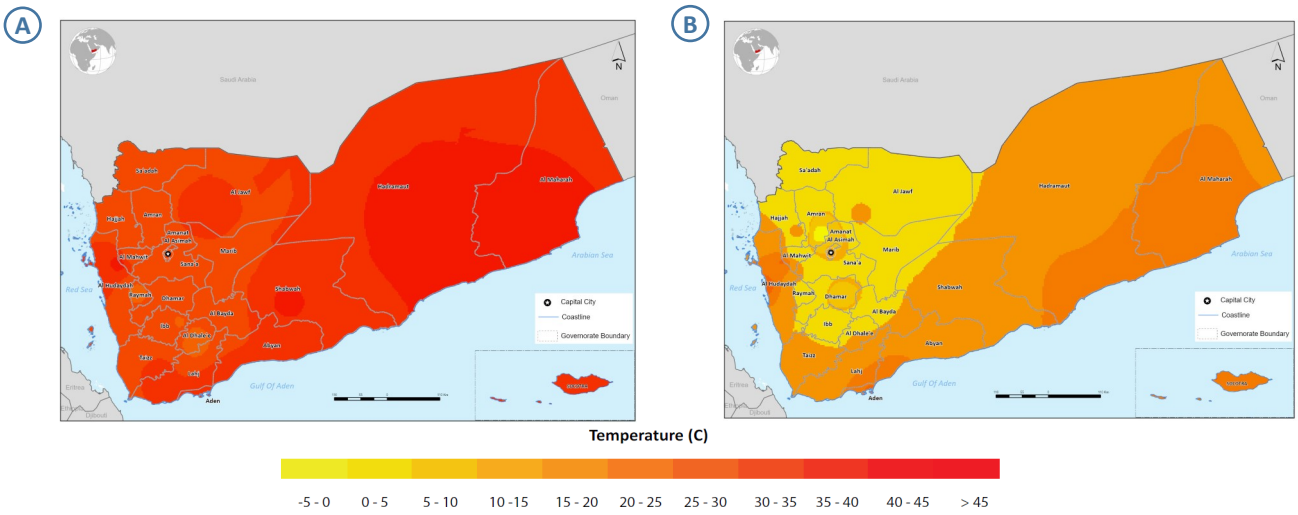
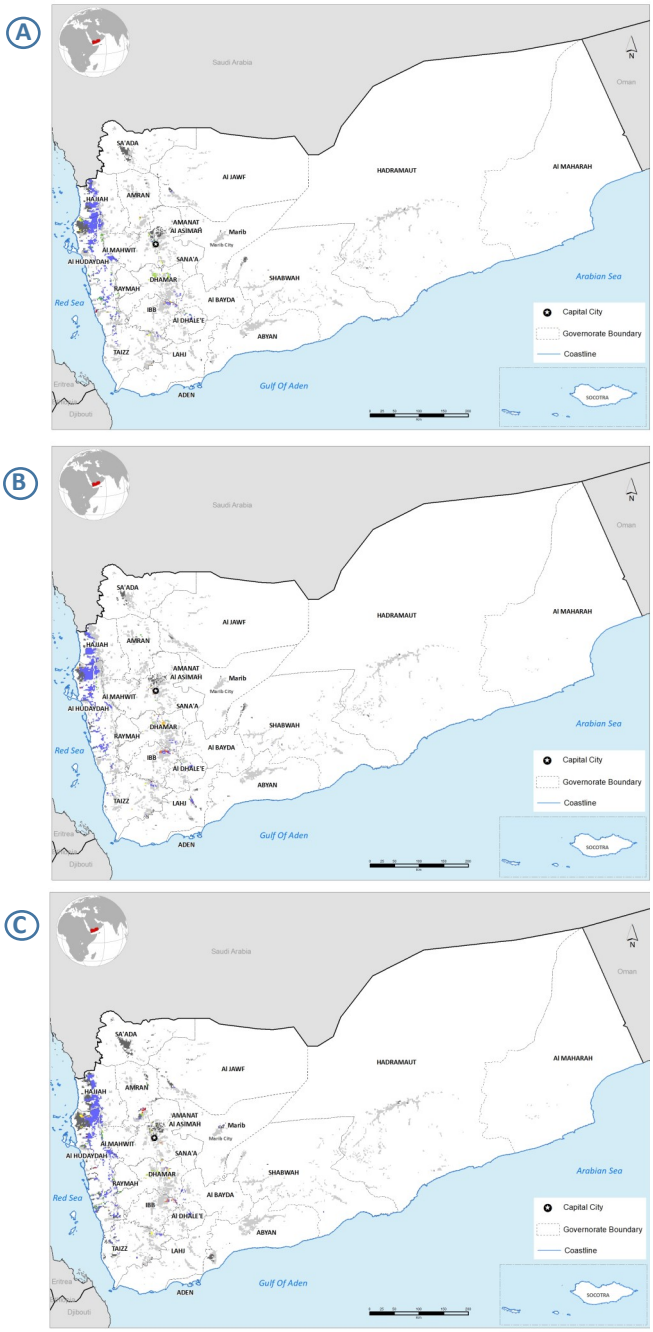


Fig. 6: Progress of Agricultural Stress Index (ASI) for A) 1 to 10 May B) 11 to 20 May C) 21 to 31 May



II. IMPACT ON AGRICULTURE

In May 2022, Yemen experienced increased rainfall deficits amid drought conditions coupled with very hot weather; these conditions negatively impacted agricultural activities and constrained fodder availability. An increase in human, animal, and plant diseases was especially apparent. For instance, sheep and goat pox together with foot and mouth diseases were widely reported in the Highlands and Tihama plain (see Fig. 8). In the same areas, drought-induced fodder scarcity was found to reduce milk productivity. The unusual drought environment also sparked the spread of dusty conditions which led to a high number of poultry mortality.

In the Northern and Central Highlands, agricultural activities were mainly centred on land preparation, ploughing, and manure application for the planting of cereals. Given the drought conditions experienced throughout May 2022, irrigation, especially for citrus trees, was part of the main agricultural activities across the Northern and Central Highlands. At the same time, Almonds, Apples, Peaches, and apricots were harvested in some areas.

In other parts of Yemen such as the Southern Highlands, many farmers were engaged in irrigation and fertilizer application to vegetables while in the Tihama plains, the planting of summer sorghum and harvesting of mangoes, bananas, papayas, and okra took centre stage.

The outlook for June indicates sustained drought conditions coupled with high temperatures. These expected conditions suggest that animal diseases observed in May are likely to continue especially in the first half of the month. To prevent the spread of sheep and goat pox, farmers are strongly advised to separate sick animals; this is because the disease is mostly transmitted by direct contact with sick animals and indirectly, animals can get sick by coming into contact with infected objects.

Given the expected continuation of drought conditions, farmers are encouraged to irrigate their plants early in the morning. While evening watering is also good, morning watering should be preferred because it allows plants to dry before sunset whereas evening watering allows the water to rest around the root zone and foliage which in the long run can encourage fungal growth, insect infestations, and rotting.

Pastoralists are strongly encouraged to avoid exposing livestock to heat stress and dusty winds by keeping them in shades and paying attention to ventilation and nutrition. The expected gusty winds will potentially enhance ocean circulations and thus trigger turbulent waters. Therefore, fishermen and sea-goers in the Socotra Archipelago need to take precautions against sea turbulent waters.

Regarding Desert Locusts (DL), the situation remained calm in the DL summer breeding areas in Al Jawf, Marib, Shabwah, Abyan, Hadramout and Al-Maharah Governorates up to the Oman border. The DL forecast further shows that no significant developments are likely in June apart from in a few places that will experience light rains where small-scale breeding may occur.

Fig. 7: Forecast for 1 – 16 June 2022

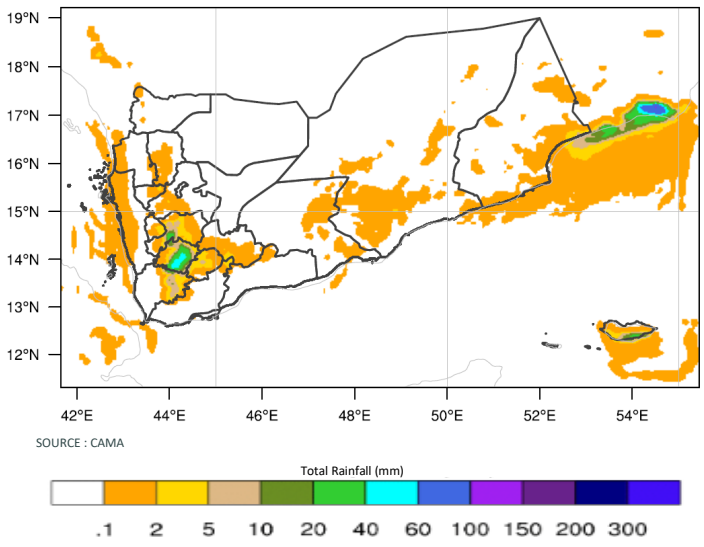
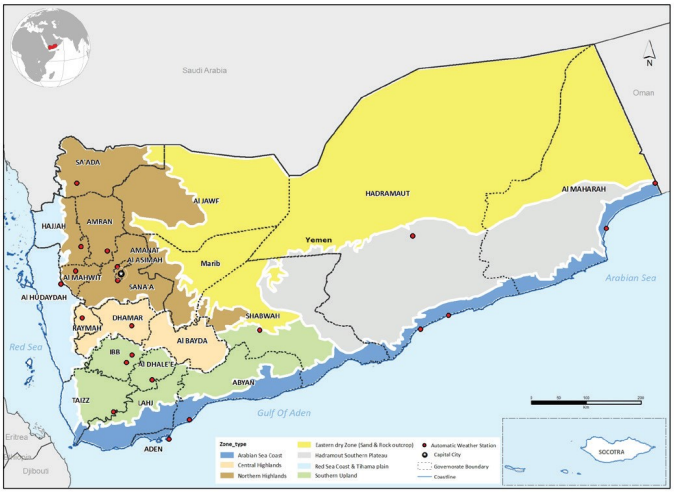


Fig. 8: Agro-ecological zones and location of observatory stations



SOURCE : AREA

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 2006-1984are 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

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III. VARIATIONS OF RAINFALL AND NDVI

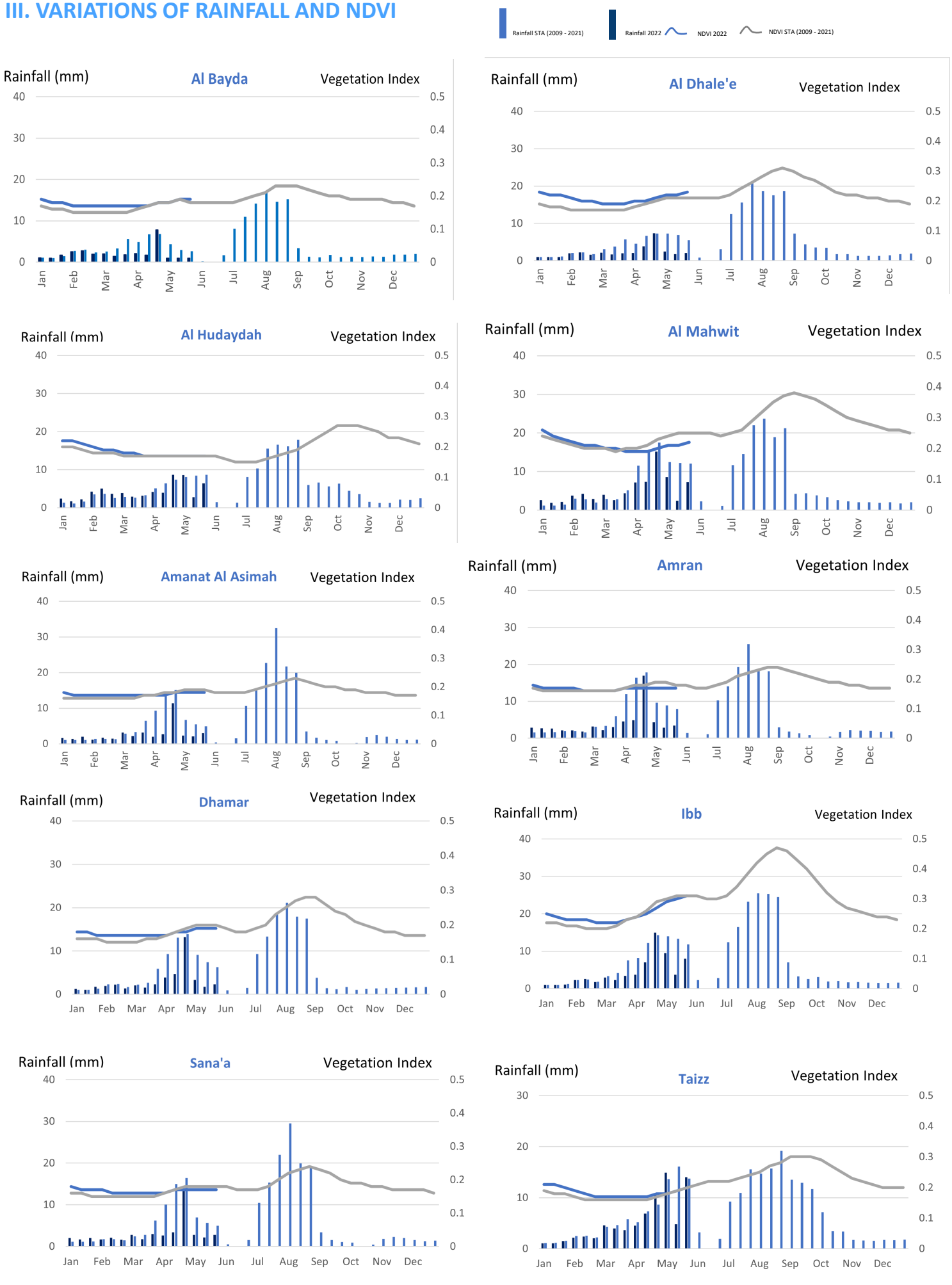

Table 1: Observed Station Data: Rainfall and Temperature

Governorate	Station	Rainfall (mm)	Temperature (°C)	
		Monthly	Max	Min
Abyan	Al Kood	0	39.4	23.8
Aden	Aden	0	40.0	26.0
Al Dhale'e	Al Dhala	3	36.9	28.6
Al Hudaydah	Al Kaden	3	43.0	25.4
Al Hudaydah	Al Hudaydah	0	36.4	28.4
Al Jawf	Al Jouf	0	39.3	16.1
Al Maharah	Algaidha	0	42.9	23.5
Al Maharah	Serfeet	0	37.1	18.4
Al Mahwit	Almahweet	34	31.4	12.0
Amanat Elasemah	CAMA/YMC Office	0	-	-
Amanat Elasemah	Al-Asbahi	2	-	-
Amanat Elasemah	Aljamaah	-	33.0	10.0
Amanat Elasemah	Alhasba	-	-	-
Amanat Elasemah	Baghdad	0	-	-
Amanat Elasemah	Shamlan	0	-	-
Amanat Elasemah	Sawan	24	-	-
Amanat Elasemah	Al Erah		-	-
Amran	Amran	0	30.6	8.4
Amran	Hamdah	-	-	-
Amran	Qa'a Alboon	-	31.0	10.0
Amran	Amran Gov.	-	31.0	10.0
Amran	Eial Sourih	-	-	-
Dhamar	Dhamar	0	30.0	7.0
Dhamar	AREA-HQ	-	-	-
Dhamar	Rosabh	-	-	-
Dhamar	Dhamar (MAI)	0	-	-
Dhamar	Maqar-Alhya'a	29	-	-
Dhamar	Qa'a Shrah	-	-	-
Hadramaut	Al Mukalla	0	-	-
Hadramaut	Al Shaher	0	40.8	24.2
Hadramaut	Seiyoun	0	43.1	18.9
Hadramaut	Assom	-	-	-
Hadramaut	Tarim	-	-	-
Hadramaut	Sah	-	-	-
Hadramaut	Aliotoof	-	-	-
Hadramaut	Seyun Pr	-	-	-
Hadramaut	Seyun Re	-	-	-
Hadramaut	Hawrah	-	-	-
Hadramaut	Doaan	-	-	-
Hadramaut	Shibam	-	-	-
Hadramaut	Ard Makharsh	-	-	-
Hadramaut	Brom	-	-	-
Hajjah	Hajjah	11	32.2	16.0
Ibb	Alsaddah	22	29.4	10.7
Ibb	Ibb	58	32.0	13.0
Ibb	Ibb (MAI)	25	31.0	13.0
Raymah	Al Jabeen-Rimah	12	28.5	14.2
Sa'ada	Sadah	0	32.0	15.0
Sana'a	Sana'a	0	31.3	10.2
Sana'a	Al Erah	-	-	-
Sana'a	Sanhan	0	-	-
Shabwah	Ataq	0	41.0	19.4
Socotra	Socatra	0	38.0	22.9
Taizz	Al Maafer	129	37.0	18.0
Taizz	Mashra and Hadnan	12	-	-
Taizz	Al Modafar	14	-	-
Taizz	Al Qahera	16	-	-
Taizz	Wadi Arafat	17	-	-
Taizz	Hawban Qadas	10	-	-
Taizz	Al Akahel	0	-	-
Taizz	Sabar almoadhm	0	-	-
Taizz	Airport	100	-	-