

HIGHLIGHTS

- Torrential rains exceeding 100 mm reported in most parts of the country. Infrastructural damage resulting from heavy precipitation reported in many places
- With cumulative precipitation of 1014.6 mm in dekad 3 of April (21 – 30), this was the wettest 10-day period since the beginning of 2021
- Improvement in vegetation was registered in most areas and it is expected to improve further as the rainy season develops thereby, potentially increasing pasture availability. The growth of cereal crops is also expected to increase across rainfed areas as precipitation continues
- Heavy precipitation to continue in the first week of May 2021 and to gradually decrease thereafter
- With wet weather conditions being expected, there is a high likelihood of locust outbreaks

The weather outlook up to the end of May indicates that although precipitation activities are expected to continue, the second half of the month will generally be characterized by a gradual decrease. Overall, light to moderate precipitation is forecasted over western parts of the Highlands with scattered showers extending to Socotra (Fig. 7). Cumulatively, precipitation is expected to be less than 40 mm across each region.

I. METEOROLOGICAL REVIEW

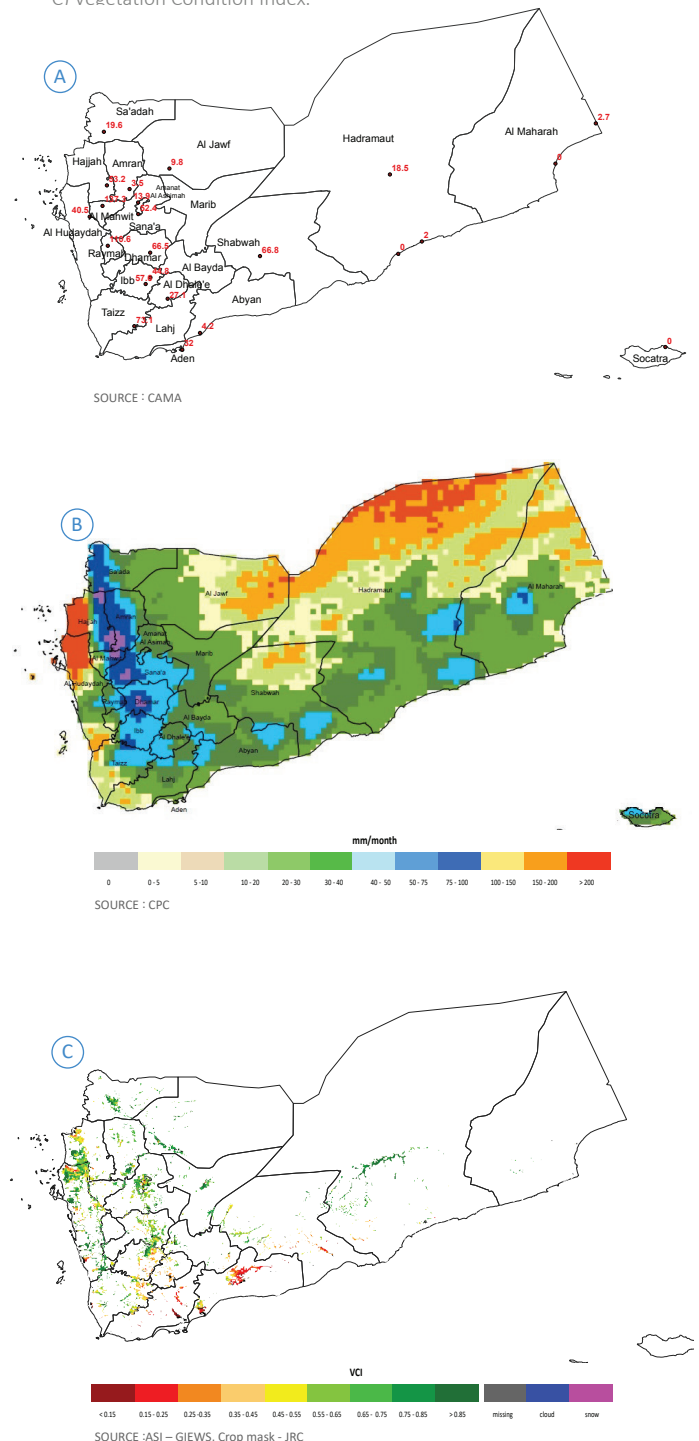
A cursory review of April 2021 shows heavy precipitation over most parts of Yemen (Fig. 1A and B) with cumulative amounts exceeding 70 mm being reported in Al Mahwit (Almahweet, 137.3 mm), Rimah (Al Jabeen-Rimah, 110.6 mm), Dharmar (AREA-HQ, 85.0 mm), and Taizz (Al Maafer, 73.1 mm) governorates. The remaining areas mostly received between 20 and 70 mm. The observed torrential rains which started in mid-April triggered pluvial floods which resulted in large-scale damage especially in areas with poor drainage infrastructure such as parts of Aden, Abyan, Al Dhale'e, Lahj, Hadramaut, Marib and Taizz governorates¹. As floods exacerbated, several homes were reported to have been swept leaving many people homeless². Further, precipitation anomalies (difference from long term average, 1983- 2013) indicate normal to above normal precipitation across the whole country, except for a few patches near desert areas (Fig. 2A). Prior to heavy precipitation, the National Meteorological Centre issued flood warning messages through television channels, social, and the print media.

Given the heavy precipitation across much of the country from mid-April (Fig. 3B – C), the Vegetation Condition Index (VCI), which is an effective metric for evaluating the current state of vegetation in comparison to past trends using the Normalized Difference Vegetation Index (NDVI) showed cloudy conditions over most areas in dekad 2 and 3 (Fig. 4B and C). Taken together, precipitation was light in dekad 1 (Fig. 3A), increased in dekad 2 (Fig. 3B), and was heaviest in dekad 3 (Fig. 3C). Similarly, no cloudy conditions were observed to obscure vegetation in dekad 1 (Fig. 4A), the development started in dekad 2 (Fig. 4B) and intensified in dekad 3 (Fig. 4C). Further, most areas generally had normal vegetation conditions (≥ 0.55 i.e., equal to or greater than 55 percent) although it is notable that a few areas towards the Arabian Sea Coast experienced below normal conditions. These are expected to improve as the rainy season intensifies further. Overall, the total amount of precipitation during April was 1124.7 mm (Table 1) of which 90.2 percent (1014.6 mm) was recorded during the third dekad making it atypically the wettest dekad since the beginning of 2021.

Agricultural production activities in April were, as expected, mainly characterised by land preparation and planting of seedlings. Therefore, the Agricultural Stress Index (ASI) which is used as an indicator of likelihood of drought conditions across cropped areas showed that most parts of the country had no crops or were offseason during all the dekads in April (Fig. 6A – C). This is however expected to change as the end of April marks the general cessation of land preparation activities on the seasonal calendar.

High temperatures were still prevalent across most areas while in some selected parts of the country, they plummeted (Fig. 5A and Table 1). Field weather stations reported the highest temperature in Al Mahara (Algaidha, 41.0°C) which was higher than the average (32.4°C) by 26.5 percent and roughly similar to the previous month's maximum temperature (41.3°C). Other stations that recorded maximum temperatures above 35°C include Al Hudaydah (Al Kaden, 39.3°C), Sa'ada (Sadah, 38.6°C), Hadramaut (Seiyoun, 38.2°C), Al Jawf (Al Jouf, 37.1°C), Abyan (Al Kood, 35.6°C), and Shabwah (Ataq, 35.4°C). The lowest minimum temperatures, generally below 10°C, were observed in Dharmar and Amran which both reported 7.2°C. Others include Sana'a (7.8°C) and Dharmar (Area-HQ, 8.0°C; Fig. 5B and Table 1).

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



¹ <https://reliefweb.int/disaster/fl-2021-000043-yem>

² <https://flipboard.com/video/accuweather/81e3f86a51>

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

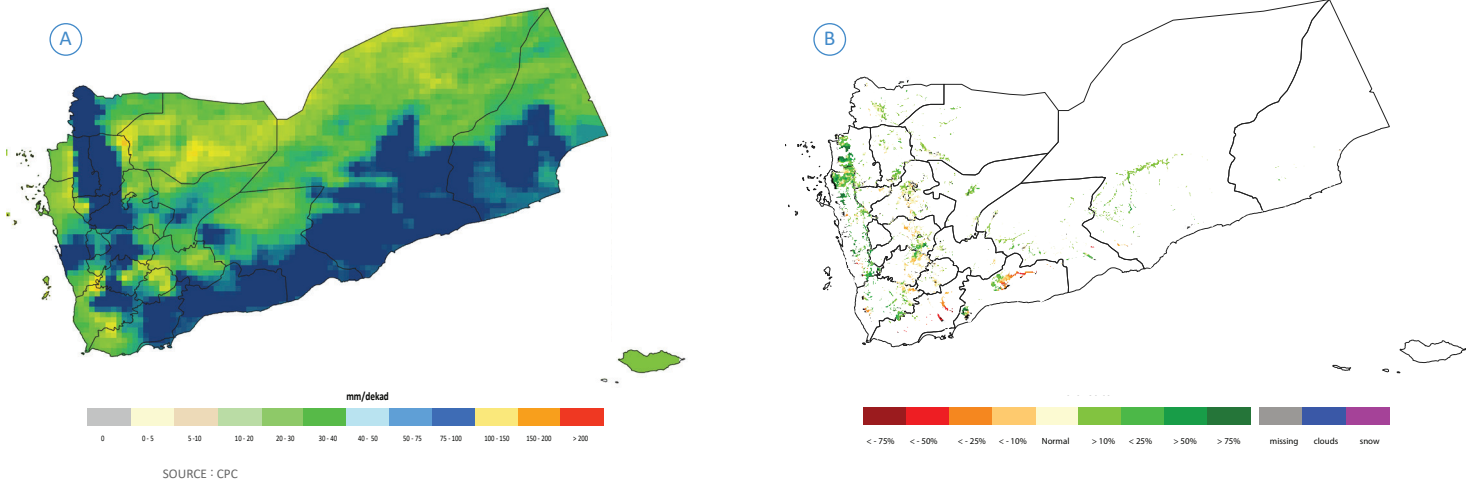


Fig. 3: Progress of dekadal precipitation estimates A) dekad 1 (1 to 10) B) dekad 2 (11 to 20) C) dekad 3 (21 to 30)

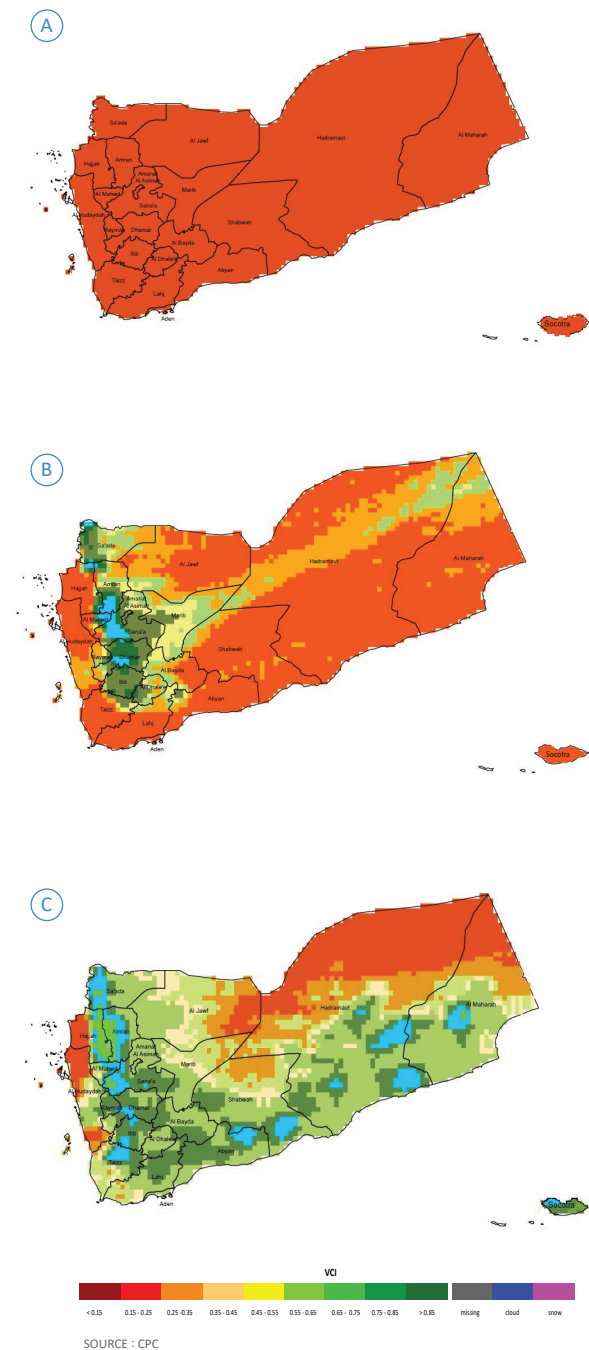


Fig. 4: Progress of dekadal vegetation conditions for A) dekad 1 (1 to 10) B) dekad 2 (11 to 20) C) dekad 3 (21 to 30)

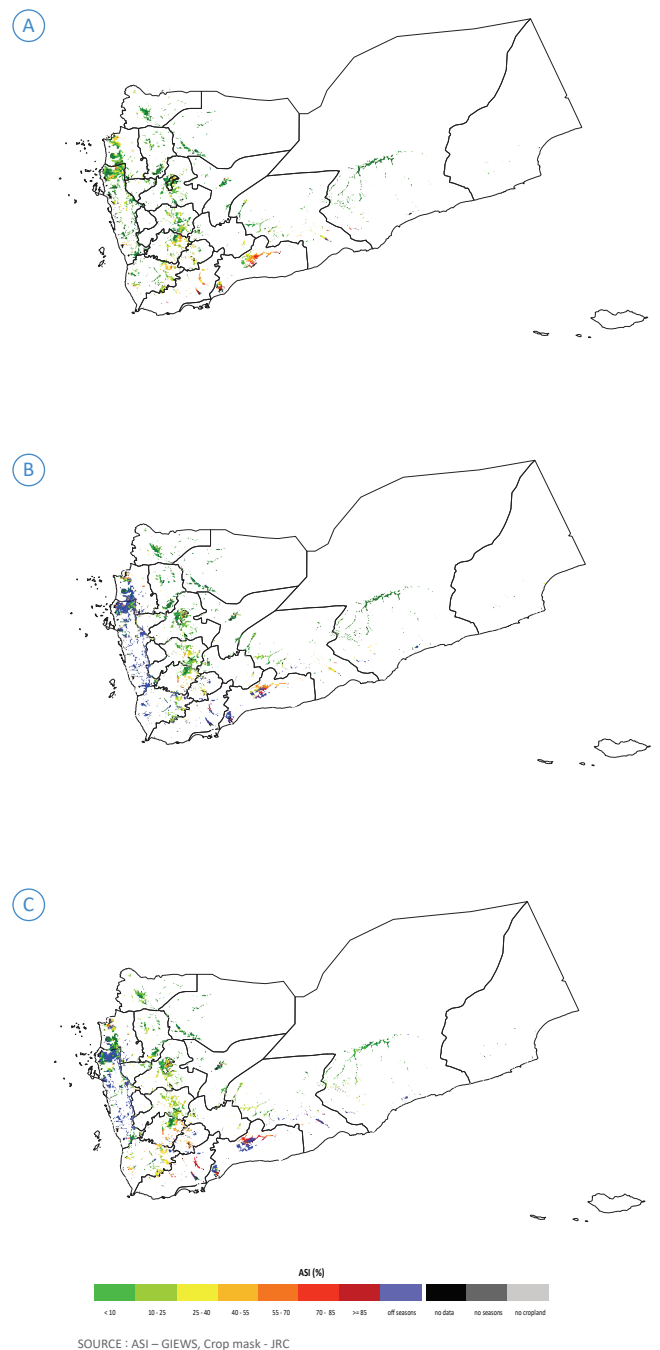
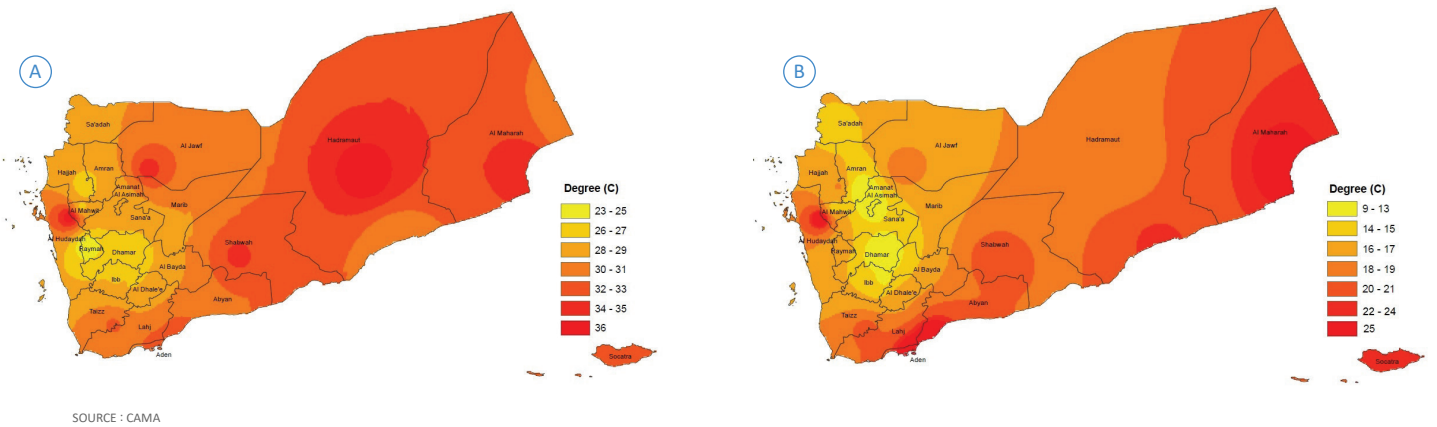


Fig. 5: Progress of monthly temperature conditions for A) Maximum B) Minimum

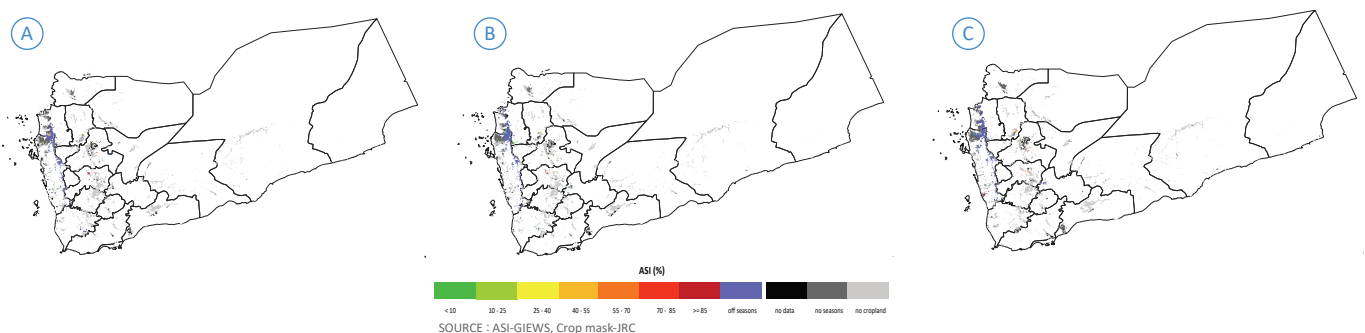


SOURCE : CAMA

Table 1: Observed Station Data: Precipitation and Temperature

Governorate	Station	Precipitation (mm)	Temperature (°C)	
		Monthly	Max	Min
Aden	Aden	-	34.5	21.7
Al Dhale'e	Al Dhala	27.1	32.2	13.0
Rimah	Al Jabeen-Rimah	110.6	25.6	12.6
Al Hudaydah	Al Kaden	40.5	39.3	22.7
Abyan	Al Kood	4.2	35.6	19.5
Taizz	Al Maafer	73.1	34.1	17.6
Hadramaut	Al Mukalla	-	-	-
Hadramaut	Al Shaher	2.0	33.3	22.4
Al Maharah	Algaidha	0.0	41.0	17.8
Al Mahwit	Almahweet	137.3	29.5	11.2
Al Jawf	Al Jouf	9.8	37.1	15.1
Ibb	Alsaddah	44.8	29.8	10.5
Amran	Amran	3.5	30.0	7.2
Shabwah	Ataq	66.8	35.4	14.8
Dhamar	Dhamar	66.5	28.0	6.5
Hajjah	Hajjah	53.2	28.0	14.2
Ibb	Ibb	57.6	29.0	11.0
Sa'ada	Sadah	19.6	38.7	11.0
Sana'a	Sana'a	13.9	30.0	7.8
Hadramaut	Seiyoun	18.5	38.2	14.4
Al Maharah	Serfeet	2.7	33.9	18.5
Socotra	Socatra	0.0	32.6	20.8
Amanat Al Asimah	CAMA/YMC Office	52.4	-	-
Sana'a	Hamdah	1.6	29.8	7.2
Amran	Qa'a Alboon	6.5	30.0	7.2
Amran	Amran Gov.	2.3	30.3	7.2
Dhamar	AREA-HQ	85.0	29.0	8.0
Ibb	Ibb (MAI)	57.0	29.0	11.0
Amran	Eial Sourih	0.0	-	-
Dhamar	Rosabh	44.4	-	-
Dhamar	Dhamar (MAI)	72.5	-	-
Amanat Al Asimah	Al-Asbahi	51.3	-	-

Fig. 6: Progress of dekadal Agricultural Stress Index (ASI) for A) dekad 1 (1 to 10) B) dekad 2 (11 to 20) C) dekad 3 (21 to 30)



SOURCE : ASI-GIEWS, Crop mask-JRC

II. IMPACT ON AGRICULTURE

The first half of April was characterised by generally dry weather conditions. Forecasting advisory issued by the Civil Aviation and Meteorology Authority (CAMA) and contained in the previous month's Agrometeorological update was widely reported to be very useful in informing farmers about the potential delay of the rainy season onset. Reports from farmers indicate that the dry conditions in the first half of April across most parts of the country were a first in over 20 years. CAMA and the Ministry of Agriculture and Irrigation (MAI) attributed the anomalous start of the rainy season to climate change and advised farmers to adopt adaptive mechanisms.

Wetter weather conditions that characterised the latter half of April compared to the former encouraged farmers to start seedling of crops. It is, therefore, notable that precipitation patterns in the latter half of the month had a positive impact on agricultural production in both arable and pastoral terms. Specifically, an improvement in vegetation was registered in most areas and it is expected to improve further as the rainy season develops thereby, potentially increasing pasture availability. The growth of cereal crops is also expected to increase across rainfed areas as precipitation continues.

Across western coastal areas, most farmers have completed the seedling of cereal crops, water-, and sweet melon. Harvesting of tomatoes, mangoes, bananas, second season of sesame, and tobacco has continued. In the Central and Northern Highlands, most farmers have started planting cereal crops (sorghum and wheat), tomato, onion, and chilly. The cultivation of potato crops is also underway across most areas.

Pluvial and fluvial floods were reported in many regions particularly in the wadies located downstream of catchment areas. This was compounded by the lack of rehabilitation and maintenance of spate irrigation structures especially in Wadi Bana and Wadi Ahwer (Abyan Governorate), Raymah, AlMahweet and Taiz Governorates where agricultural lands were washed. In these flooded areas, agricultural activities were mainly centred on rainwater harvesting.

The desert locust situation in Yemen during April 2021 remained calm particularly in the winter breeding areas of the Red Sea and Aden Gulf coast.

Outlook for May indicates that precipitation, temperature, and humidity fluctuations will potentially force locusts to migrate from winter to summer breeding areas in the interior and eastern regions of Shabwah, Marib, Al Jawf, and Wadi Hadramout. As such, close monitoring of the locust situation and putting in place contingency plans across these areas is strongly encouraged.

Fig. 7: Forecast for 15 to 30 May 2021

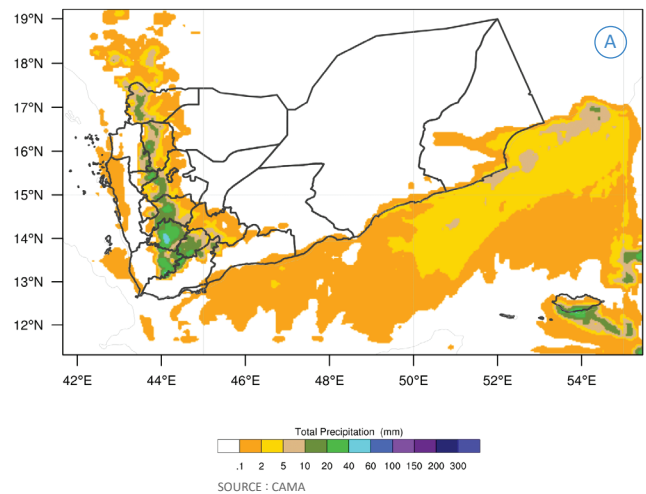
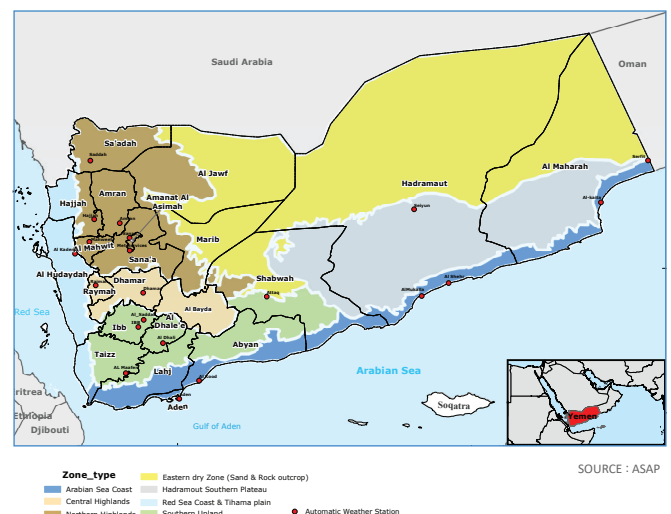


Fig. 8: Agro-ecological zones and location of observatory stations



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 1984-2006 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

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Resource Partner



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III. VARIATIONS OF PRECIPITATION AND NDVI

