

Early season snowpack development is slightly below normal

KEY MESSAGES

- Afghanistan received above average precipitation except in the northern parts which received below average precipitation during October through December. Above average temperatures have been observed across the country during the same period.
- Above average snow depth anomalies have been observed at lower elevations while below average have been seen at higher elevations in the eastern, central, southern and northeastern parts of the country.
- Although below average snow water volumes have been observed in most basins through end of December, they are expected to increase due to heavy snow forecast in the first half of January 2020.
- Above average temperatures along with average precipitation are expected during January through March 2020 due to prevailing ENSO-neutral conditions. In view of heavy precipitation expected in January there is a possibility of flooding risk due to snowmelt in February and March in the eastern and northeastern parts of Afghanistan.

UPDATE ON SEASONAL PROGRESS

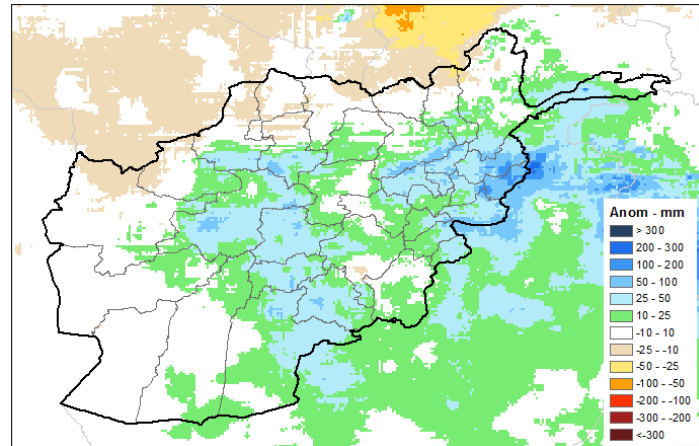
Precipitation anomalies:

Strong rainfall performance since the start of 2019/20 winter wet season resulted in above average cumulative rainfall anomalies across most of Afghanistan. Central, eastern, southern, and northeastern provinces indicate above average anomalies whereas Balkh, Jawzjan and Kunduz provinces in the north reflect slightly below average cumulative rainfall anomalies through end of December (**Figure 1**). With completion of winter wheat planting, focus is now on the critical snowpack development in the coming months as it determines water availability for agriculture during spring and summer months.

Snowpack and snow water volume:

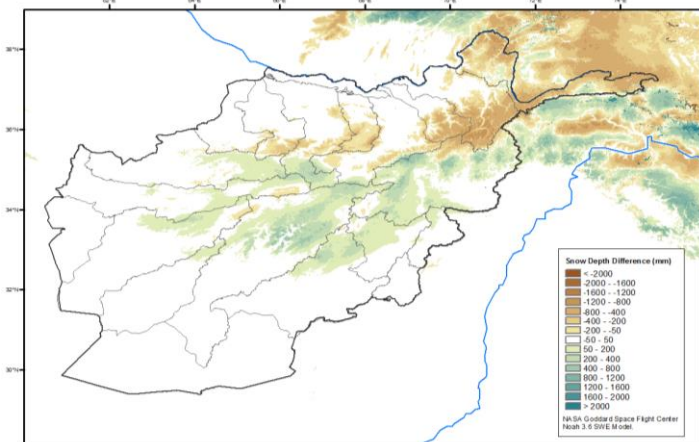
Currently, spatial distribution of snow depth anomalies (**Figure 2**) indicate below average anomalies at higher elevations in the northern, northeastern and eastern parts of the country while above average anomalies are present at lower elevations

Figure 1: October 1- December 31, 2019 cumulative precipitation anomaly relative to the average of 1981-2010 in mm.



Source: USGS/UCSB

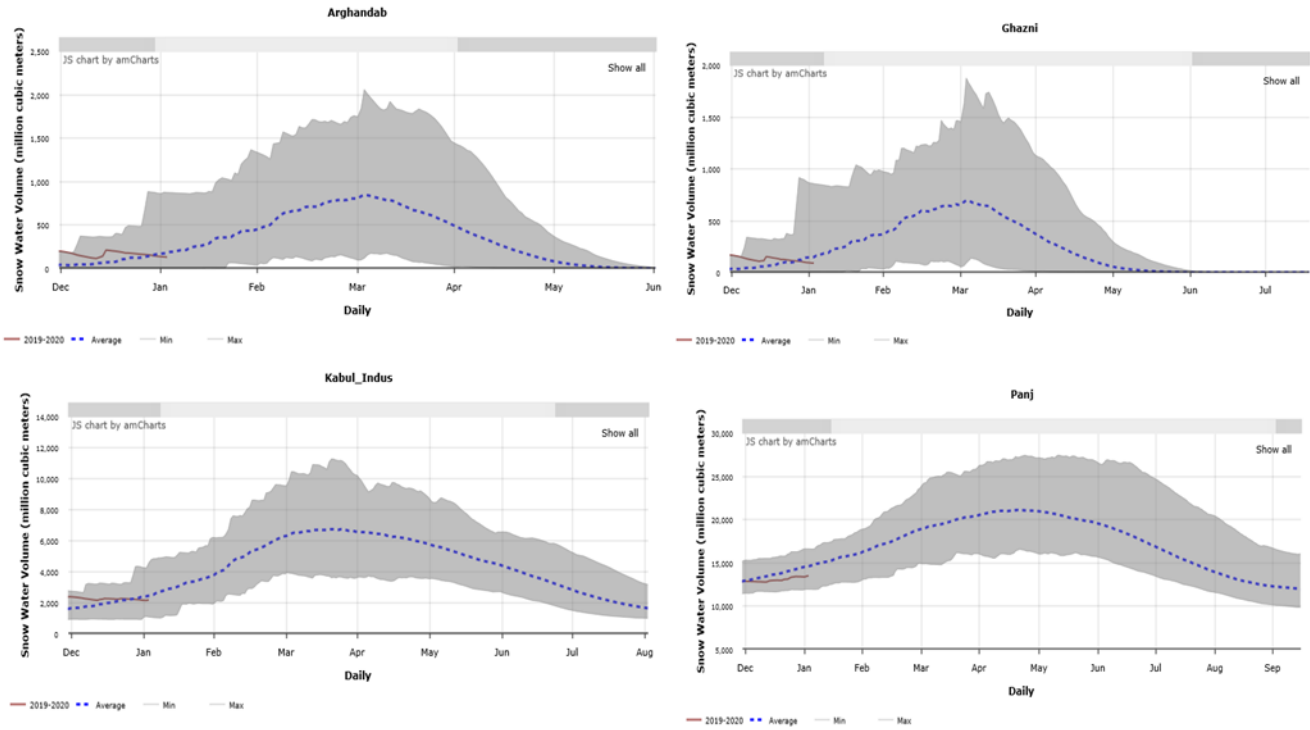
Figure 2: Snow depth difference anomaly relative to the average of 2002-2016 in mm as of January 03, 2020.



Source: USGS/NASA

in the country. The slow pace of snowpack development in December has yet to bring the snow water volumes to average levels across all basins in Afghanistan (**Figure 3**). The anticipated heavy precipitation over the next two weeks will most likely increase snow water volumes to near average or above average levels in the major basins in the country.

Figure 3. Daily progression of snow water volume in million cubic meters in Arghandab, Ghazni, Kabul and Panj basins as of January 02, 2020.



Source: USGS/NASA

FORECAST

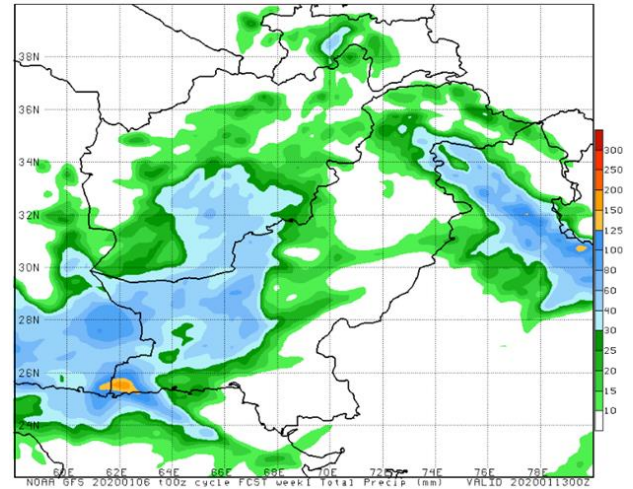
Precipitation:

According to the Global Forecast System 7-day total precipitation forecast, 20-80 mm total precipitation is expected over central, eastern, north eastern, southern and south western Afghanistan while dry conditions are forecast in the north and the north western parts of the country in the week ending January 13, 2020 (**Figure 4**). Similar widespread total precipitation patterns (20-80 mm) are forecast across the country, except for parts of the southwest, the week ending January 19, 2020. The forecast of widespread and heavy precipitation in the next two weeks will help increase snow water volumes in the country.

Temperatures:

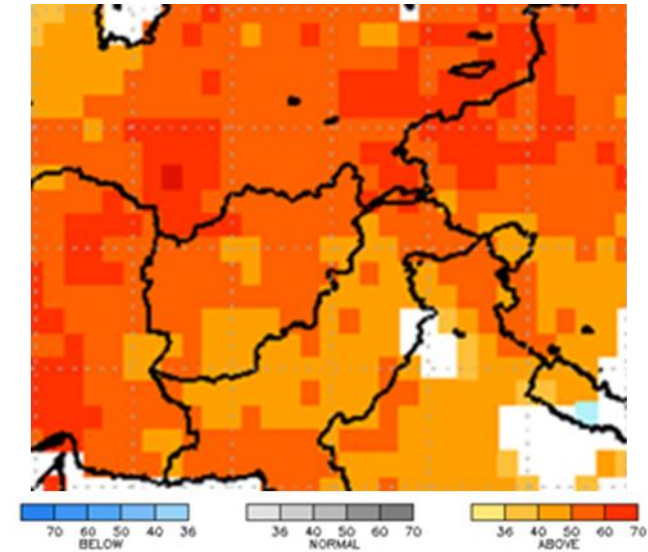
The 2019/20 winter wet season began with above average temperatures from October through the end of December 2019. The North American Multi-Model Ensemble forecast for February-April 2020 continues to indicate relatively high probability of above average temperatures across the country (**Figure 5**). The forecast of persistent above average temperatures may influence winter wheat growth during February through April 2020.

Figure 4. The Global Forecast System 7-day forecast of total precipitation in mm for the period ending January 13, 2020.



Source: NOAA CPC

Figure 5. The North American Multi-Model Ensemble temperature (°C) forecast for February-April 2020 with December initial condition.



Source: NOAA CPC