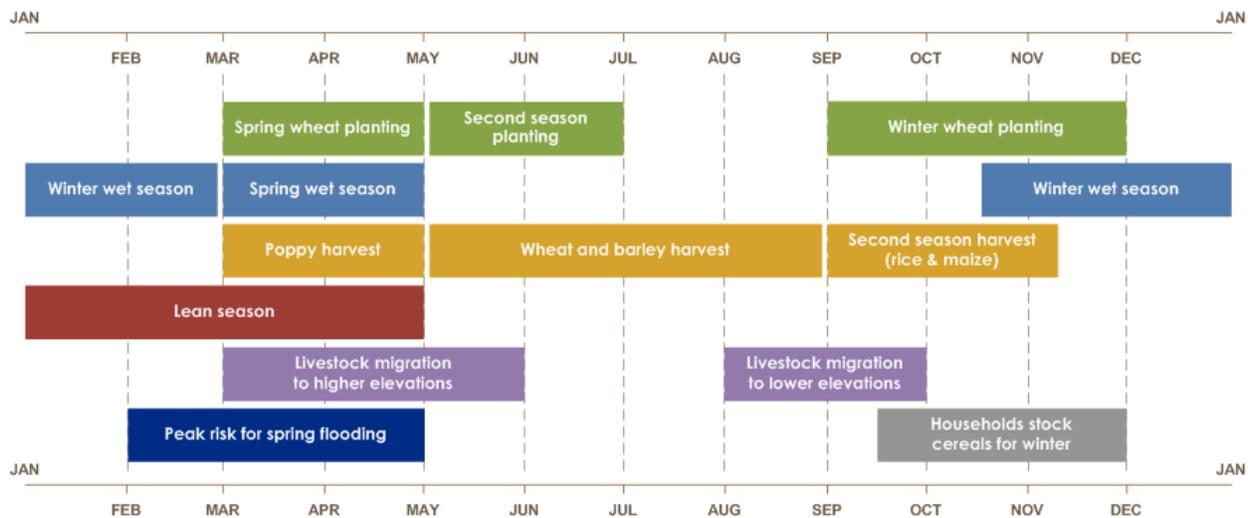


Frequent and well distributed precipitation ensures abundant supply of water for normal growth of seasonal crops and pastures

KEY MESSAGES

- Prevailing weak El Nino conditions have generated multiple low-pressure systems across Afghanistan resulting in high elevation snow in the northeast and in central highlands as well as widespread above-average rainfall in central and southern provinces through the 2nd week of March 2019.
- Above-average precipitation since January 2019 has led snow water volumes to significantly exceed the corresponding long-term average volumes in most basins. While the snow water volumes in the Bala Murghab Kushk, Helmand, Khash-Khushpas, and Sari Pul basins have exceeded more than 50% above their long-term averages, the snow water volumes in Arghandab, Balkhab, Ghazni, Hari Rod, Khulm, Kabul, Kunduz, Shirin Taghab, and Shamal basins have reached record maximum levels since 2002. The snow water volumes in Khanabad, Khokcha-Ab-I-Rustaq and Panj basins are observed to be around their long-term average levels.
- The above-average rainfall in the central, southern and southwestern provinces has led to flash floods in Farah, Helmand, Herat, and Kandahar provinces. The above-average rainfall and water availability conditions in these and remaining parts of the country are expected to support healthy vegetative growth of winter wheat. Further, these conditions are also beneficial for ongoing land preparation/sowings of spring wheat in the country.
- The higher temperatures in April-June may accelerate snow melt runoff, which may increase the flooding risks in basins that are already showing significantly high snow water volumes. These areas need to be monitored for probable flooding risks in the coming months.

SEASONAL CALENDAR IN A TYPICAL YEAR



Source: FEWS NET

UPDATE ON SEASONAL PROGRESS

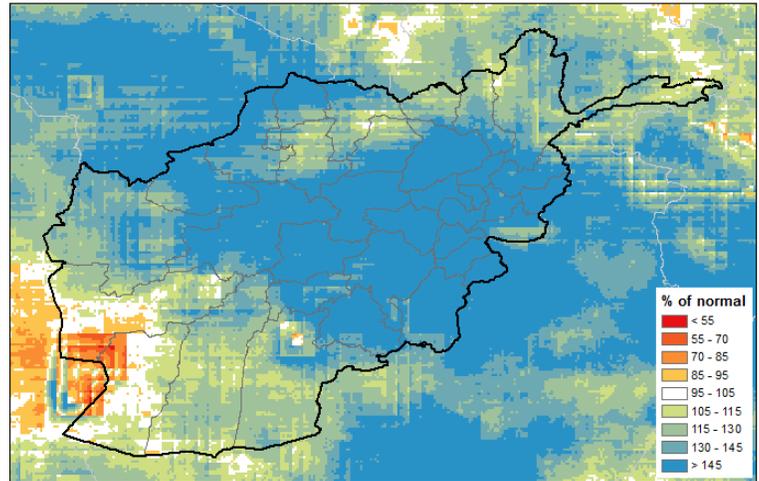
Precipitation anomalies:

The spatial variability of the cumulative rainfall during the period Oct 1, 2018 through Mar 15, 2019 indicates that most of the provinces in Afghanistan, have received rainfall ranging from 100% to 145% or more of the long-term average (**Figure 1**). Although there are few localized deficit precipitation areas in Nimroz and Helmand provinces the province-level cumulative rainfall (Oct 1, 2018 – Mar 15, 2019) are above-average in these provinces on the date of reporting.

The spatial distribution of accumulated precipitation (Oct 1, 2018 through Mar 15, 2019) indicates above-average precipitation in all provinces of Afghanistan (**Figure 2**). Based on CHIRPSv2.0 data, the total rainfall received during the above period (compared to corresponding average of 1981-2010) indicates that Bamiyan, Ghazni, Kabul, Kapisa, Khost, Paktya, Panjsher, Parwan, and Wardak provinces have received rainfall in excess of 100%; Baghlan, Dayakundi, Kunar, Laghman, Nangarhar, Uruzgan, and Zabul provinces received excess rainfall in the range of 75-100%; Ghor and Nuristan received 50-75% excess; lastly Farah, Helmand and Nimroz provinces also received up to 25% excess rainfall for the above period.

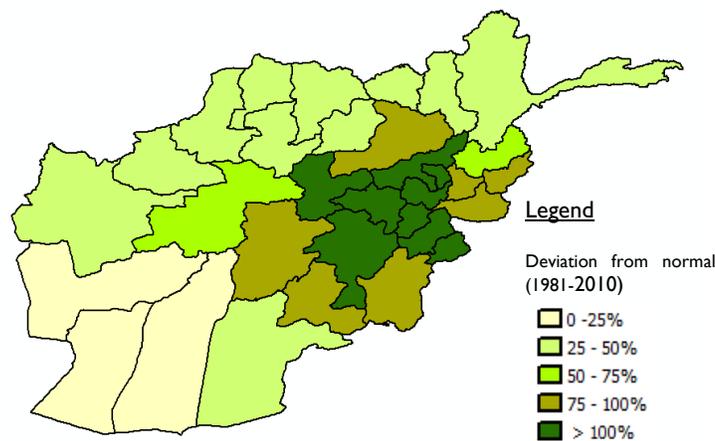
Despite the flash floods damaging houses present in the flood plains of streams and rivers, the abundant moisture conditions in the country will most likely ensure healthy vegetative growth of irrigated winter wheat and facilitates favorable conditions for the ongoing land preparation and sowing of spring wheat.

Figure 1. October 1, 2018 - March 15, 2019 percent of normal (1981—2010) precipitation accumulation.



Data: CHIRPS version 2.0 prelim., Source: USGS/UCSB

Figure 2. Province-wide seasonal rainfall (Oct. 1, 2018 through Mar. 10, 2019) expressed as percent deviation from average (1981-2010) for the corresponding period in Afghanistan.



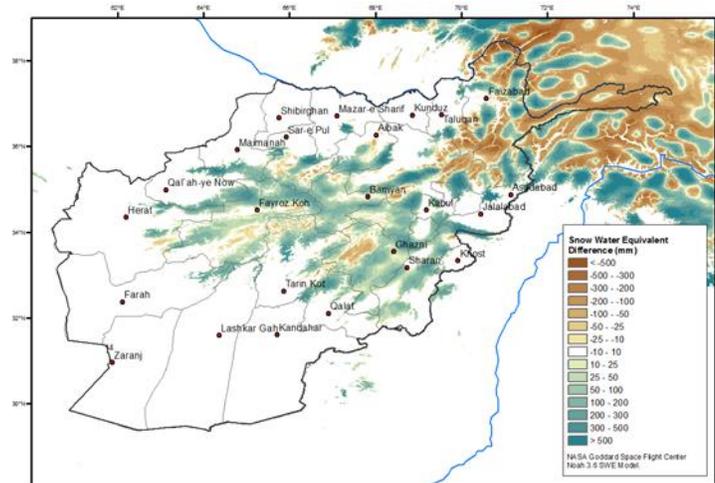
Data: CHIRPS version 2.0 prelim, Source: USGS/UCSB

Snowpack and snow water storage:

Figure 3 depicts the spatial distribution of the snow depth anomalies with respect to the average (2002-2016) as of March 14, 2019. The precipitation (rain and snow) since January 2019 has resulted in patches of mostly excess snow accumulation in central highlands. However few localized deficit snow accumulation spots are noticeable in the high-elevation portions of the northeast Afghanistan.

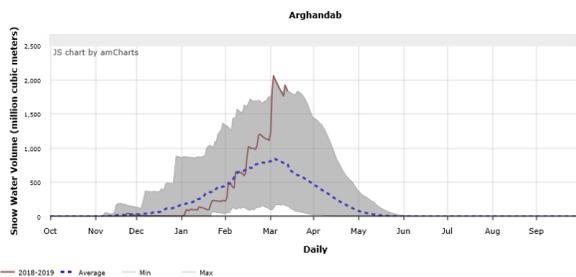
Figures 4 (a) through (d) highlight the current above-average snow water volumes in Arghandab, Balkhab, Hari Rod and Kabul basins which are currently at maximum record levels since 2002 as of March 14, 2019. The above-average snow water volumes in these basins and others will most likely ensure irrigation water for healthy growth of winter wheat and second season cropping in the country.

Figure 3. Snow depth difference from average (2002-2016) in mm as of March 14, 2019.

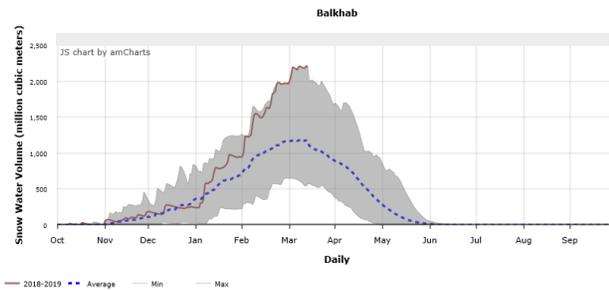


Source: USGS/EROS

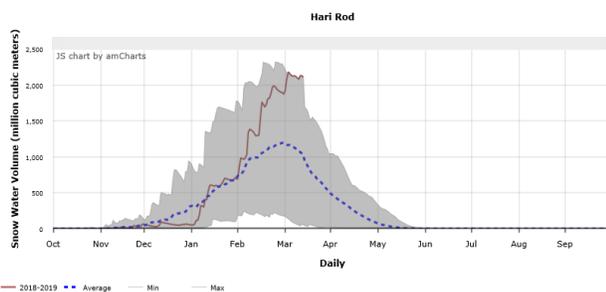
Figure 4. Daily progression of snow water volume in (a) Arghandab, (b) Balkh, (c) Hari Rod, and (d) Kabul basins as of March 14, 2019.



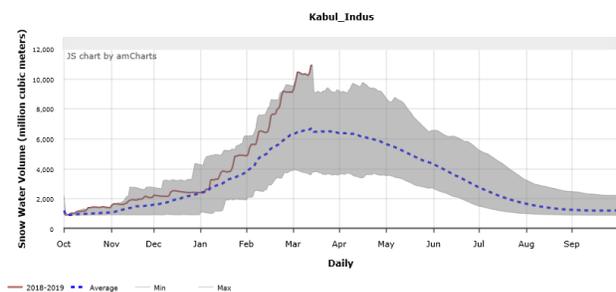
(a) Arghandab basin



(b) Balkhab basin



(c) Hari Rod basin



(d) Kabul basin

Source: USGS/NASA

FORECASTS

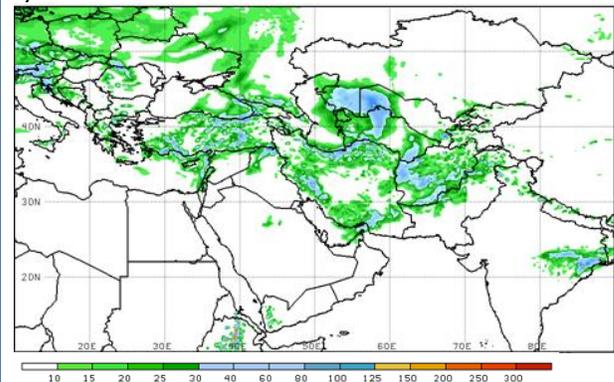
Precipitation:

Figure 5 (a) and **(b)** depict forecast precipitation totals for weeks ending on March 22 and 29. Moderate rain (> 50 mm) is forecast in the northwestern, west central, and southern provinces due to a strong low-pressure system moving across Afghanistan. Flash flooding potential is elevated due to the already saturated soils in some areas. There is also potential for added snow accumulation at higher elevations. Weekly totals for the period ending March 29 indicate a higher likelihood of precipitation in excess of 40 mm in the northern and northeastern areas with largely dry conditions in the south.

Temperatures:

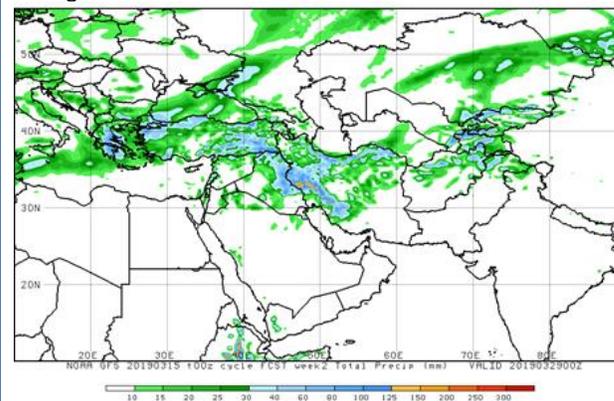
The actual air temperatures in the higher elevations for February to mid-March have been lower than last year's; and lower than short- and long-term averages as well. The NMME forecast of 2-M air temperatures for April - June 2019 indicates greater probability of above-normal air temperatures in the northwest and southeast portions of Afghanistan whereas it is expected to remain near-average in the remaining areas (**Figure 6**). Although the average temperatures are not expected to be much higher than near-average temperatures in April, however, they would provide requisite energy (heat units) for normal growth of winter wheat during the forecast period.

Figure 5 (a). Week 1 total precipitation in mm for the periods ending March 22, 2019 from the Global Forecast System



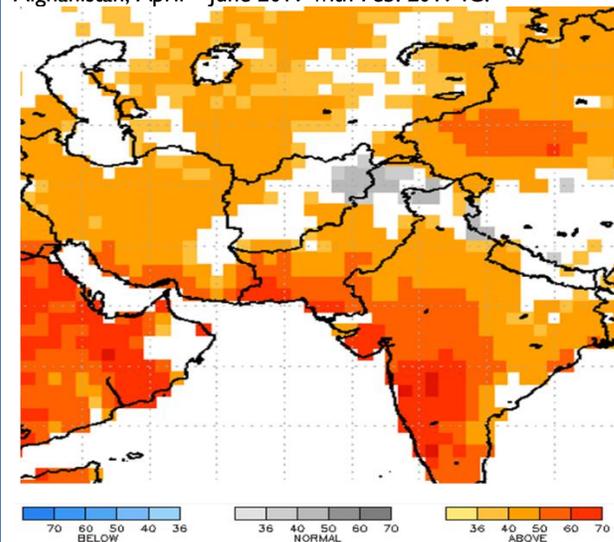
Source: USGS/EROS

Figure 5 (b). Week 2 total precipitation in mm for the periods ending March 29, 2019.



Source: USGS/EROS

Figure 6. NMME 2-Meter Air Temperature (°C) forecast for Afghanistan, April – June 2019 with Feb. 2019 IC.



Source: NOAA CPC