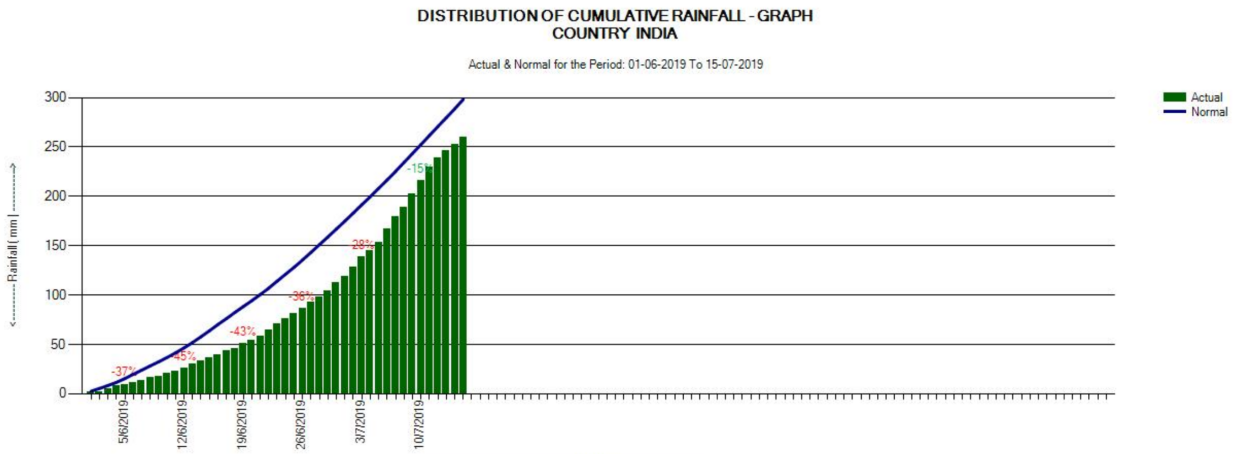
July 17, 2019

2019 Indian Monsoon Progress - Agricultural and Water Watch

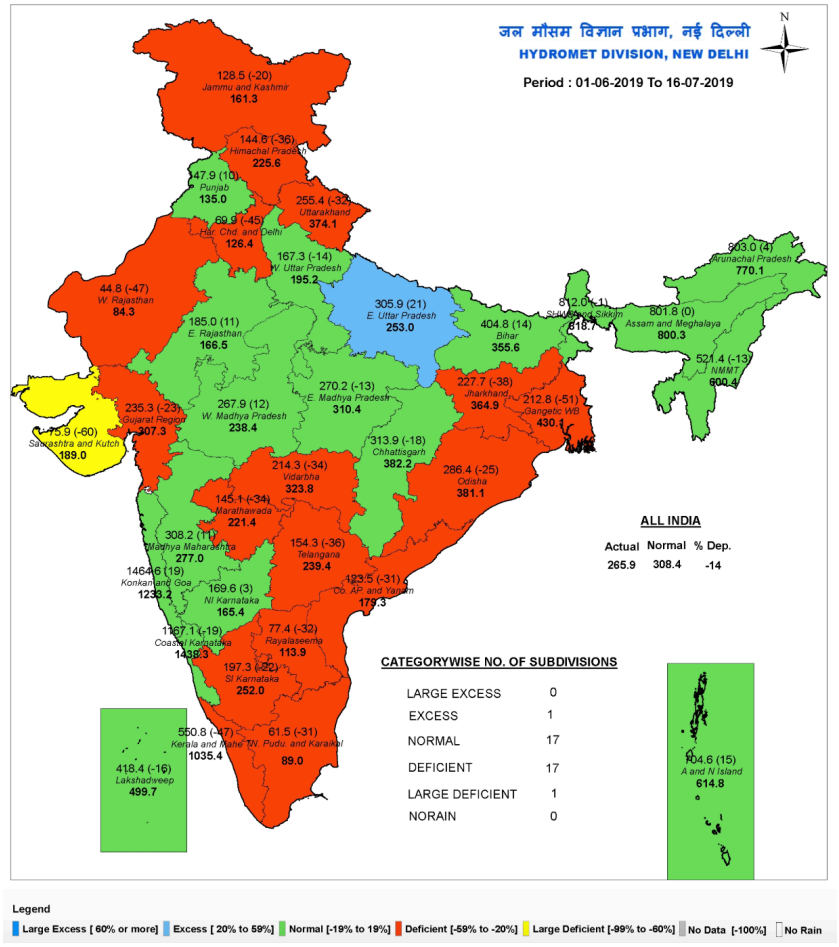
Now that the 2019 Indian Monsoon campaign is 1.5 months in, we can start to look at regional and subregional progress and highlight areas to monitor where ongoing moisture deficiencies may carry a higher potential risk regarding production and yield potential. The onset of the seasonal rains were once again delayed this year, and while the pattern has picked up in recent weeks, country-wide precipitation is still decidedly below normal. The chart below depicts weekly cumulative precipitation totals (bars), which are running well below seasonally expected normals (solid line) from the onset in early June through 15 July. While it is certainly far too early to start declaring a Monsoon failure, there are regions where supply side agricultural concerns should start to monitor.



2019 Indian monsoon rainfall to date (India Met Dept)

When India's Monsoon falls short, there is often a physical connection with the El Nino Southern Oscillation (ENSO) in the Pacific Ocean. During a positive phase ENSO event, a dipole pattern typically occurs exists between positive western to central Pacific Sea Surface Temperatures (SSTs) and strong westerly bursts, and a reduction in convective activity and onshore flow to the subcontinent from the Bay of Bengal, accompanied by stronger

continental high pressure (typically at 850-500 millibar levels) which serve to block moisture transport. This year, however, while the Southern Oscillation Index has been in negative phase for several months, (a positive ENSO indicator); there is not a pronounced warm water mass at either surface or subsurface levels, and more ENSO signals are now pointing to a neutral event for the next few months. So without a strong ENSO signal, the fact that precipitation totals are running low - significantly low in some growing districts - should signal an elevated risk to agricultural output, particularly in those states with more significant negative deviations.



State rainfall totals and +/- deviations from normal (India Met Dept)

The map above from the India Meteorological Department breaks down the rainfall totals to date by state, and shows the relationship to normal precipitation in parenthesis. While several central states appear in the normal category, when we look closer at all of the deviations, totals are certainly skewed negative. What's more important is that many of the moisture deficient regions are the same regions where water stress has been an ongoing and growing issue. Reservoir and groundwater levels are not being replenished and this highlights that while water security is central to agriculture, the current situation extends beyond agri into every facet of civilian and economic life. This also underscores the point that Atlas Research Innovations routinely highlights and discusses in public forums and conversations with clients - water is the lynchpin of global commercial activity.

As we continue to track the Monsoon's weekly progression, it is important to note that while many analysts will now be starting to add to or shave percentages from yield expectation models for individual crops based on weekly rainfall totals, it is perhaps more important to take a macro view and concentrate our efforts towards preparing for how India's economy will be driven by how much precipitable water falls from the atmosphere. Further, this is not just an Indian issue. A poor Monsoon spills over into the global supply and demand balance sheets for nearly every commercially traded and distributed commodity category. India is among the top single-origin producers for numerous commercial agriculture products with a liquid global market - #2 in Sugar, #2 in Cotton, #7 in Coffee, #2 in Tea, #5 in Soybeans, and #2 in Dairy to name a few - so Indian output across the physical commodity board carries significant economic, foreign exchange, and geopolitical weight.

Taking this a step further, Monsoon activity goes well beyond the income for the country's growers. When we consider all economic sectors that support agriculture including seed and fertilizer, food and beverage manufacturing, chemical inputs, transportation, and ag-infrastructure, the nearly $3 trillion dollar Indian economy directly touches over 40% of the domestic workforce. When a healthy Monsoon leads to strong agricultural production, the agricultural economy contributes to a stronger export economy, with additional discretionary income stimulating local demand. This in turn supports markets for other benchmark commodities, notably gold.

Atlas Research Innovations along with our network partners will continue to monitor how the 2019 Monsoon progresses, and we will share our observations regarding potential impacts to global markets. Our discussions will ***not*** include yield model projections; rather, they will focus on the network effects of global supply chains and explore the range of possibilities that could be expected as a function of available water. This approach, in our view, is proper lens through which to view risk and opportunity in global natural resource markets.