Soil Moisture Visualization descriptions

**Why Soil Moisture?**

Appropriate Surface soil moisture levels are necessary for the success of planting and harvesting activities for most crops with too little soil moisture during planting stifling the seed germination and too much soil moisture preventing fieldwork or heavy machinery access to the field (Bolten, Sazib, & Mladenova, 2018). Because most planting activities take place during the first 30 days of the growing season, this is the time period we have chosen to focus on for the Surface soil moisture section of our study.

**Average Soil Moisture**

This visualization shows the average surface soil moisture (in mm) by Zimbabwe’s natural regions. The average is taken over the first 30 days of the 2016-17 growing season, which takes place from November 19th to December 19th of 2016. From the visualization we can see that regions I, IIa, IIb, and III have dry surface soil moisture (10-15mm), while regions IV and V have extremely dry surface soil moisture (>10mm). These soil moisture levels suggest that while farmers in all regions of Zimbabwe are likely to experience stifled germination upon planting during the 2016/2017 growing season, farmers in regions IV and V are likely to be more impacted than their counterparts in the other regions.

**Soil Moisture at Planting**

This histogram chart shows the number of 3-day periods by region that fall within each of the four soil condition categories. The number of 3-day periods is taken over the first 30 days of the 2016-17 growing season, which takes place from November 19th to December 19th of 2016. From this visualization we can see that none of the regions experienced any wet periods, and Region V is unique in not experiencing any ideal periods. Furthermore, Regions I through III all had either four or five ideal 3-day periods, while Region IV only had two. This aligns with the previous visualization’s findings of Regions I through III having more soil moisture on average than regions IV and V.

**Soil Moisture at Planting Times**

This line chart shows by region the surface soil moisture in mm over the first 30 days of the 2016-17 growing season, which takes place from November 19th to December 19th of 2016. From this visualization we can see that the ranking of soil moisture levels by region remains largely consistent over the time period, the difference between the region with the highest soil moisture and the region with the lowest roughly doubles over the first 30 days of the growing season. In addition, while regions I – III experience soil moisture levels above the extremely dry threshold (10mm) as early as November 24th\*, regions IV and V do not reach those levels until December 9th\*.

**References**

Bolten, J. D., Sazib, N., & Mladenova, I. E. (2018). *Surface\_Soil\_Moisture\_SMAP.pdf*. NASA Goddard Space Flight Center Retrieved from <https://gimms.gsfc.nasa.gov/SMOS/SMAP/SoilMoisture_Profile_SMAP.pdf>