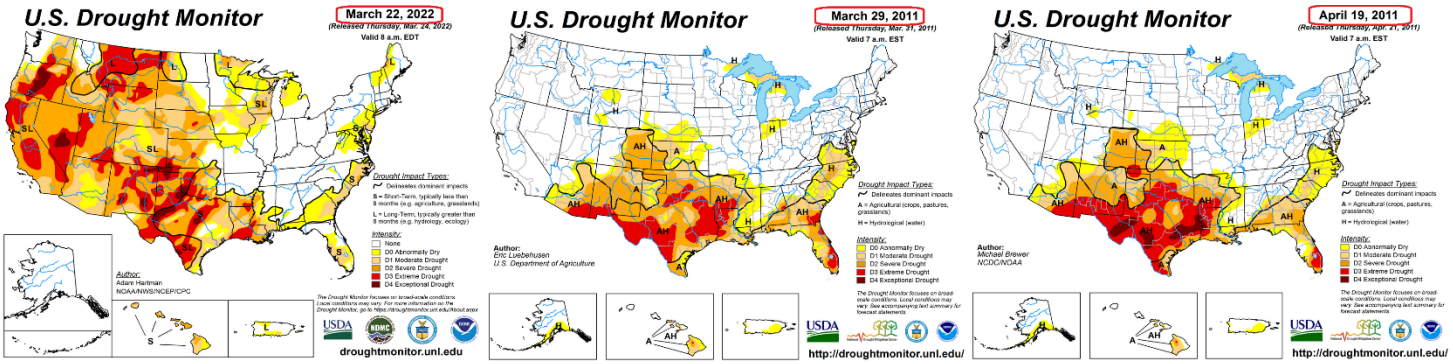
Current Conditions.

Drought

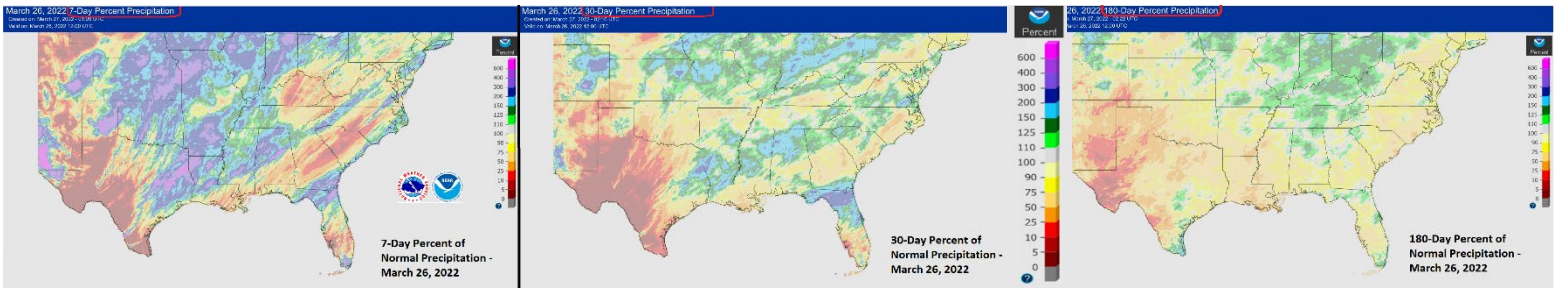
Typically, in the Southeastern US during the spring fire season (RX and wildfire), rainfall frequency is the most important barometer when assessing wildfire risk. Vegetation after 7-10 days without rain become very receptive to fire ignition and rapid spread and can be problematic, especially when high wind and low relative humidity are factors. During La Nina years, which the Southeastern US is currently experiencing, these conditions and factors are heightened due to overall warmer and dryer atmospheric conditions and those influences upon the fire environment. 5-7 and even 3-5 days without rain may be a better indicator for elevated risk, especially in areas experiencing cumulative drought coupled with high winds and low relative humidity. In the most extreme case, as is currently being experienced across west Texas and Oklahoma, critically high dead fuel loading significantly aids a fire environment in which 2-3 days without rain, combined with low relative humidity and high wind, create extreme wildfire risk.

Currently, the fire environment is trending like those conditions experienced in 2011, which was a similar La Nina year. The US Drought Monitor image below displays current conditions (03/22/22) as compared to both March 29, 2011, and April 19, 2011. For the southeast these comparison images could offer our best forecast for the coming month.

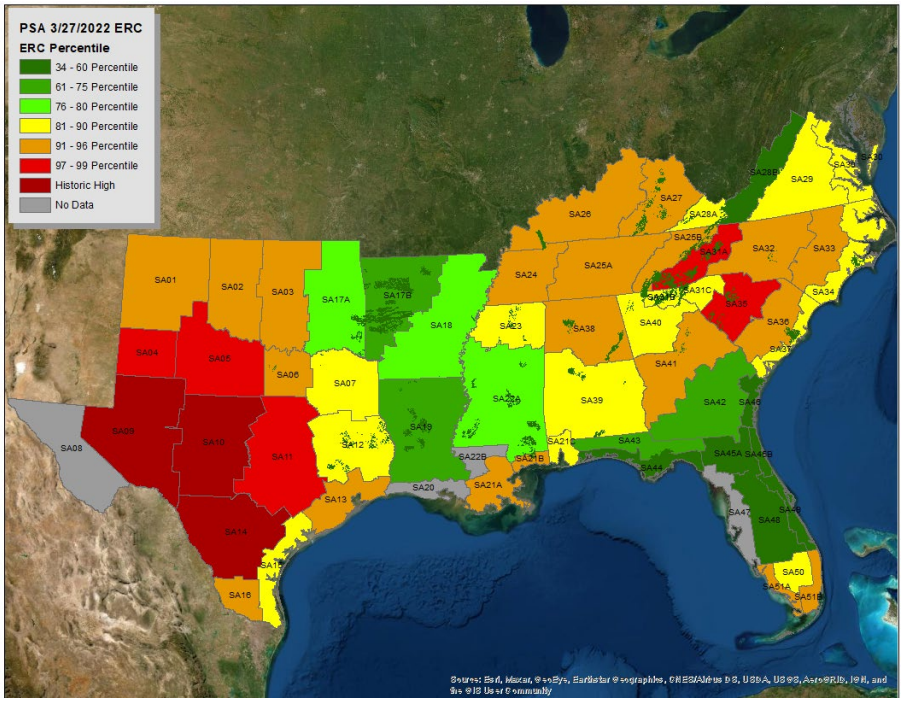


Percent of Normal Precipitation

The percent of normal precipitation images below display the contrast in rainfall experienced across the Geographic Area since September 2021. Rainfall deficits across Texas, Oklahoma, and the Eastern Atlantic Coastal Plain and Piedmont are noticeable, and directly support observations of the US Drought Monitor. The mountains of North Carolina and Virginia have trended below normal over the past six months and have only moderated periodically thanks to several wetting systems. Fuel is dry enough in these areas that elevated wildfire risk in could occur at around 5-7 days without rain, depending on that overall frequency (e.g., the mountains of NC and VA have experienced similar conditions over the past six months. NC currently maintain ERCs over the 90th percentile while VA trends at much lower levels. Contributing factors of RH, wind, temperature, snow, recent precipitation all dictate how receptive fuels are to ignition and spread). Overall, conditions across the remaining Appalachian states have been near normal for the past six months however, the past month and specifically the last seven days have ranged between 75 and 10 percent of normal precipitation. This could be indicative of a flash type drought however, coupled with the overall La Nina influence, these areas should be continually monitored and assessed. For the foreseeable future, 3-5 days without rain coupled with low relative humidity (less than 25%) and sustained high winds (mid-teens and greater) could significantly elevate wildfire risk.



National Fire Danger Rating

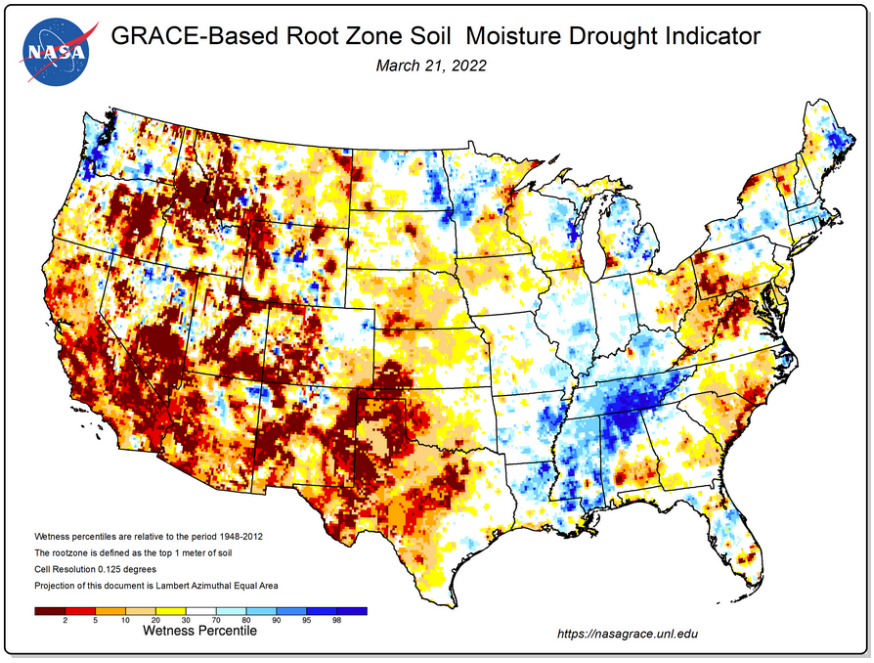


The map to the right displays March 27th Energy Release Component (ERC) percentiles for selected PSAs across the Geographic Area. Most notable are ERC conditions throughout the piedmont and mountain regions. A 91st percentile means that only 9 percent of days have historically held a higher ERC value. This data is based on 20 years of climatology, January through December. Though there is much variability, optimal RX conditions can exist anywhere from the 50th to 90th percentile and management and resource objectives dictate what environmental conditions are needed to meet resource objectives. In the Southeast, fire managers walk the line between prime RX conditions and elevated wildfire risk throughout the dormant and growing seasons. It is imperative for managers to be aware of and continually assess La Nina drought influence and the coupled affects upon the fire environment due to low relative humidity, low dead and live fuel moisture, and high wind.

Root Zone Soil Moisture

Scientists at NASA's Goddard Space Flight Center generate groundwater and soil moisture drought indicators each week. They are based on terrestrial water storage observations derived from GRACE-FO satellite data and integrated with other observations, using a sophisticated numerical model of land surface water and energy processes. The drought indicators describe current wet or dry conditions, expressed as a percentile showing the probability of occurrence for that particular location and time of year, with lower values (warm colors) meaning dryer than normal, and higher values (blues) meaning wetter than normal.

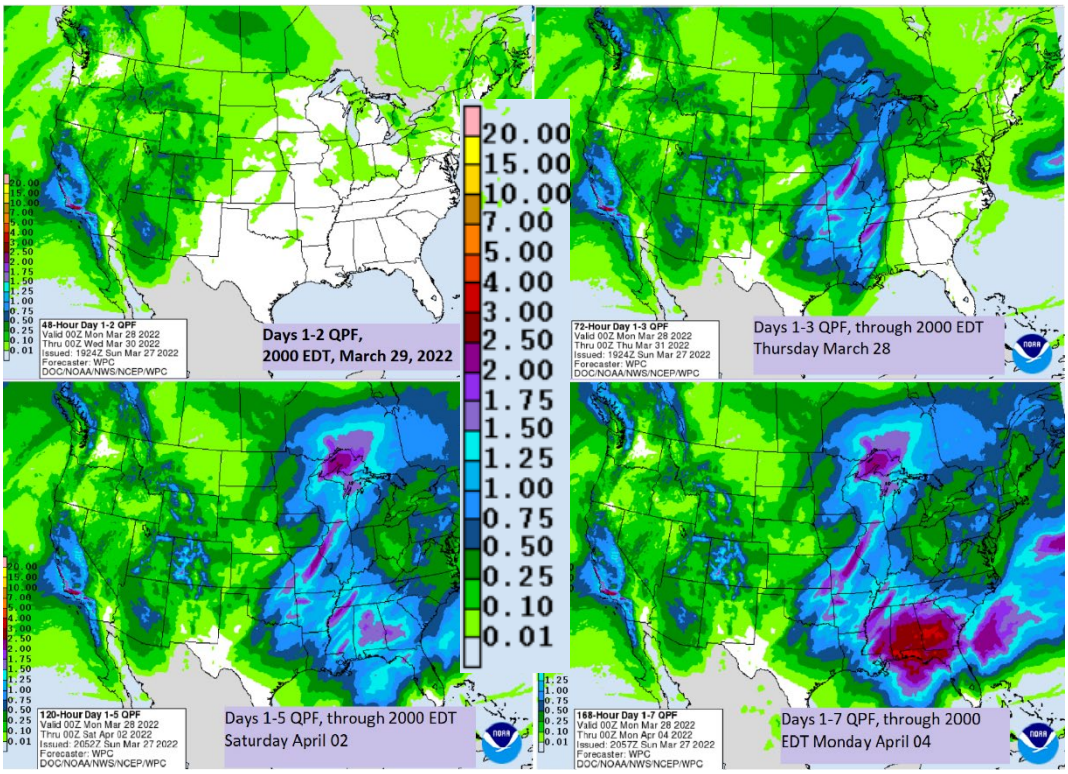
Current NASA Root Zone Soil Moisture model compares favorably to the current US Drought Monitor. The image below displays the current NASA drought indicator and does a good job of depicting those areas currently experiencing drought condition.

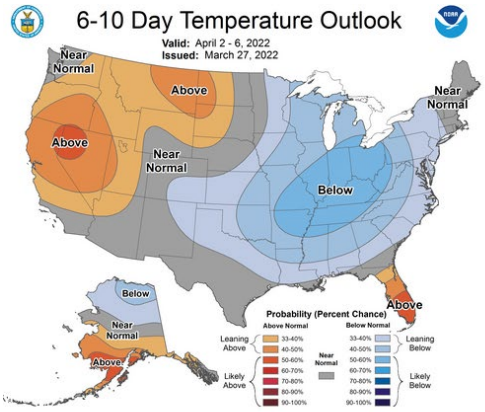


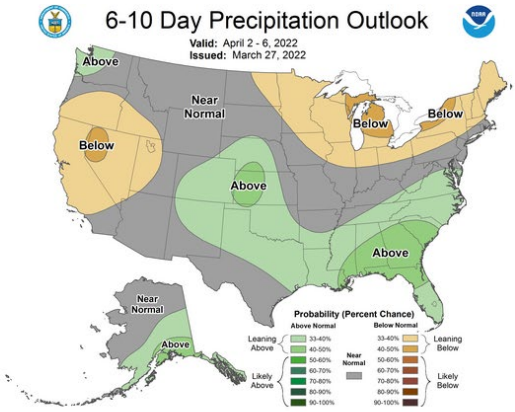
Outlook

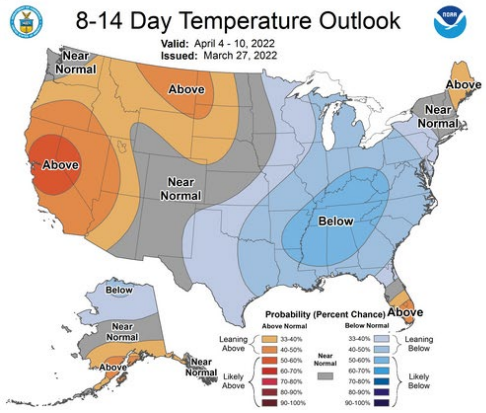
Shorter Term Outlook

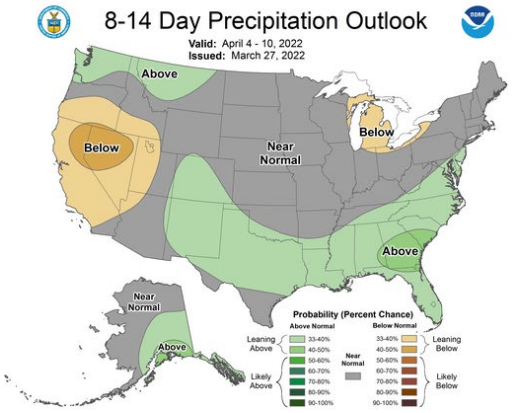
The Quantitative Precipitation Forecasts displayed below are valid Sunday March 27, 2022 and forecast through Sunday April 3, 2022. Days 1-2 show no rainfall in the Southeast so days 1-3 reflect expected rainfall Wednesday through Thursday. Days 1-5 display this front moving east through the interior Geographic Area with cumulative rainfall of Wednesday through Friday. Days 1-7 reflect total forecast rainfall over the next week (through 2000 EDT Monday April 4th). As we've typically experienced in the Southeast during La Nina years, these QPFs will need to be continually monitored and not counted when looking beyond the 3–4-day range.





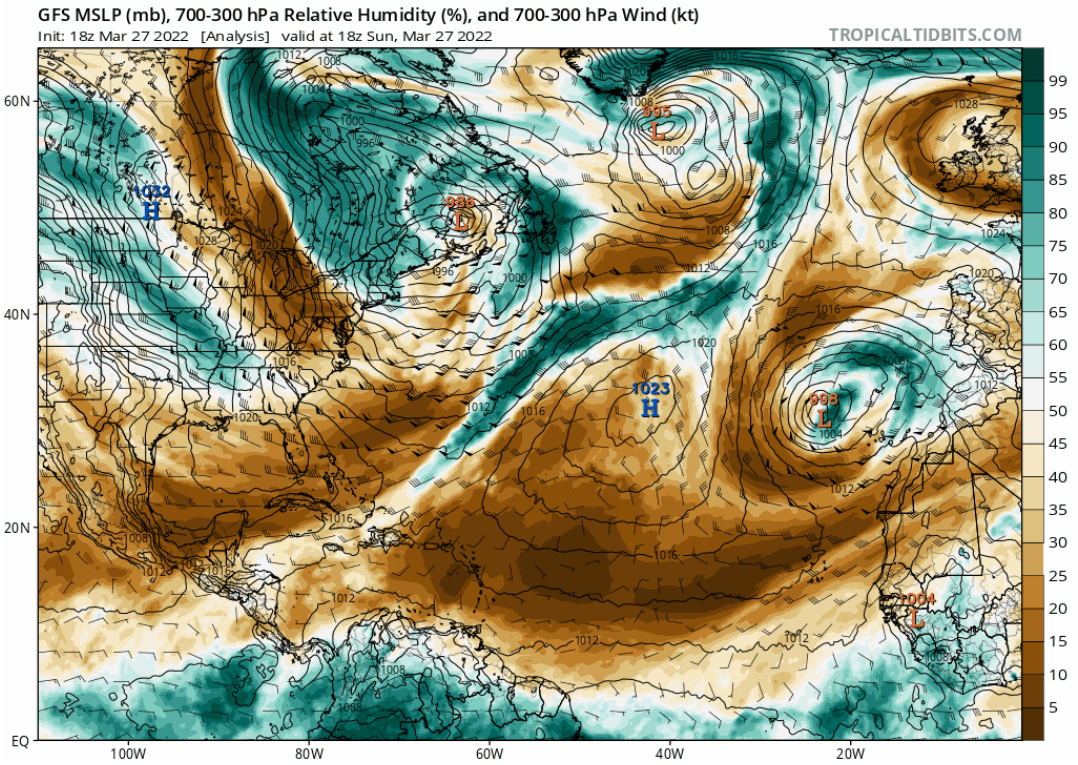






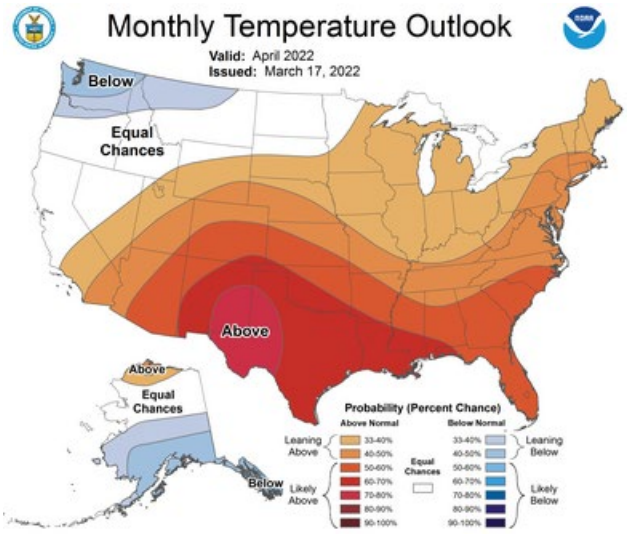
Both the 6-10- and 8-14-day Seasonal Outlooks are in alignment and support the QPF in along the Coastal Plain and piedmont of the Southeast. These areas are projected to see above normal probability of rainfall in the coming week.

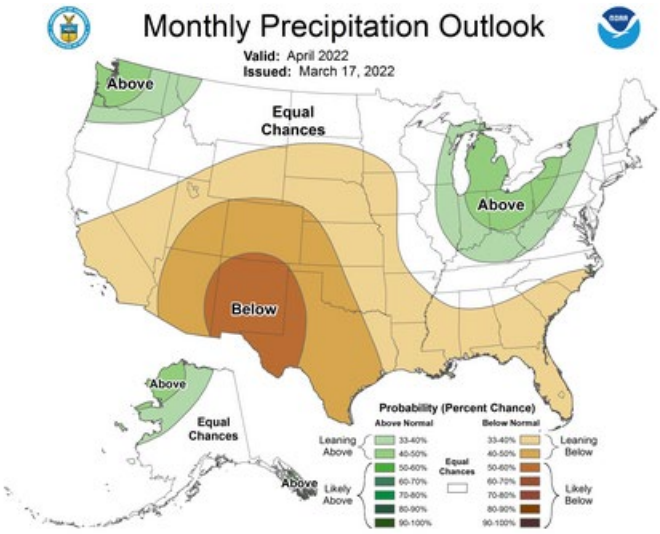
The gif below displays relative humidity forecast using the Global Forecast System (GFS) model. The forecast starts at 2000 EDT on 03/27/2022 and runs through Tuesday April 12th. RH at 700-300 hPa represents altitudes between 10,000 and 30,000 feet (this is an approximate range and varies) and is a good indicator of atmospheric moisture. When viewing the forecast RH progression, increased moisture should be expected mid-week across the Geographic Area. This forecast further supports both the Days 1-7 QPF and precipitation outlooks assessed above. What is also apparent is an expected strong drying trend setting up early next week, as well as sustained dry atmospheric conditions periodically influenced by rapid west to east moving moist systems every 3-4 days. Again, these dynamic models have a short shelf life and need to be continually assessed and evaluated every 4-5 days.



Longer Term Outlook

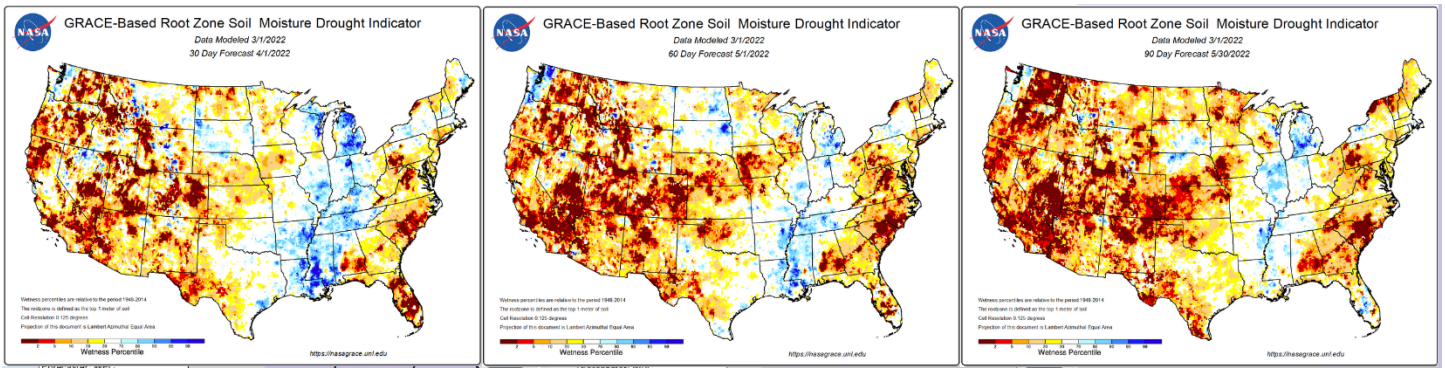
When looking at the One Month Temperature and Precipitation Outlooks, the overall pattern currently projects to be warmer and dryer than normal across the majority of the Geographic Area. Though the outlooks are 10 days old, they currently provide the best available projection for the coming month.





Using the GRACE-FO based moisture conditions as a starting point, NASA scientists forecast groundwater and soil moisture wetness or drought 1, 2, and 3 months into the future. The model is driven into the future using downscaled seasonal meteorological forecasts from NASA's GEOS-5 Earth system model. The resulting forecast maps describe wetness/drought conditions, expressed as a percentile showing the probability of occurrence within the period 1948-2014, with lower values (warm colors) meaning dryer than normal, and higher values (blues) meaning wetter than normal.

The NASA GRACE model forecast for the next 30, 60, and 90-days offer additional perspective on the long-term outlook. When looking at these modeled forecasts, which were modeled nearly a month ago, it is observed that the interior Geographic Area should continue to trend at near normal and even wetter than normal soil moisture. Both the western and eastern thirds of the Geographic Area are forecast to hold dry soil moistures through the next three months.



- Refer to the Southern Area Wildfire Risk Assessment for a more robust seasonal risk assessment.
- Refer to the Southern Area Fire Environment Outlook for a daily outlook of conditions and risk across the Geographic Area.
- Refer to the Severe Fire Danger Index forecast for 7-day SFDI, ERC, and BI forecast.