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Climate Impact Company Global Soil Moisture Outlook

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Executive Summary: In the updated Climate Impact Company drought risk to crop areas around the globe many regions are near or well within drought risk. The strongest drought is across southern Europe, Australia and Brazil. The southern hemisphere drought condition intensifies as summer approaches. Areas of strengthening drought for late 2017 include Ukraine, China, India, Southeast Asia, Australia and South-Central Africa.

Country	AUG/SEP 2017	OCT/NOV 2017	DEC/JAN 2017-18
Canada	(45) **65**	(45) **50**	(40) 40
United States	**(60) 60**	**(55) 55**	**(50) 50**
Europe	**(55) 70**	**(50) 60**	**(50) 55**
Ukraine	**(55) 60**	**(50) 55**	**(50) 55**
Russia	(45) 40	(45) 45	(45) 45
China	**(55) 55**	**(50) 55**	(45) **50**
India	(45) **55**	(45) **55**	(45) **60**
SE Asia	(40) 45	(40) **50**	(40) **55**
Indonesia	**(55) 55**	**(60) 60**	**(60) 55**
Australia	**(70) 70**	**(65) 70**	**(65) 60**
South Africa	**(55) 55**	**(55) 65**	**(50) 65**
Brazil	**(75) 75**	**(75) 75**	**(65) 65**
Argentina	(35) 40	(40) 40	(40) 45

Table 1: *The Climate Impact Company drought forecast expressed in % risk for agriculture areas in countries listed for the next 6 months. Parenthesis indicates the June forecast.* ***Red indicates drought alert.***

Observational discussion: During the past 3 months regional soil moisture changes include a drier trend across vast portions of North and South America while Central America to the eastern U.S. were wetter. Wetter changes were notable in Western Russia, western tropical Africa, eastern Saudi Arabia and western India. East-Central Russia to northern China were much drier the past 3 months similar to Australia where drought is intensifying. Dryness was also dominant across Interior Southeast Asia plus the western portion of Indonesia.

The dryness across the western U.S. and southwest Canada is due to a persistent upper ridge pattern returning after an exceptional wet last winter. The long-term drought wiped out by last winter's rainfall has re-emerged. Vast dryness also affects eastern Canada due to a dry land wind in that region. A persistent upper trough over the Great Lakes lead to a wetter soil moisture trend in the east and southeast portion of the U.S.

A cool pool of water across the north-central North Atlantic correlates to a persistent upper trough in that same region. East of the upper trough a well-amplified upper ridge causes a harsh drought in southern Europe. Farther upstream a dominant upper trough in north-central Russia causes a vast wet soil moisture regime for that region although Ukraine has been somewhat drier.

While west/west-central Russia turned wetter the past 3 months the east-central portion of Russia to northeast China trended much drier. The dryness has generally included the Korean Peninsula. A large area of high pressure has dominated southern Russia, Mongolia and northern China the past 3 months. Southeast Asia has been mixed while dryness is strengthening across Western Indonesia.

The Indian Monsoon has varied in intensity and duration mostly linked to the Madden Julian oscillation regime. Western India has observed much wetter conditions.

A widening drought is occurring in Australia largely due to the cool SSTA pattern west and southwest of Australia lowering available moisture transported across Australia by the prevailing storm track.

In South America dryness has been widespread. While central and southeast Argentina maintain a wet signature far northeast Argentina to southeast Brazil trended drier. Western Brazil dryness has developed leaving most of Brazil in a drought.

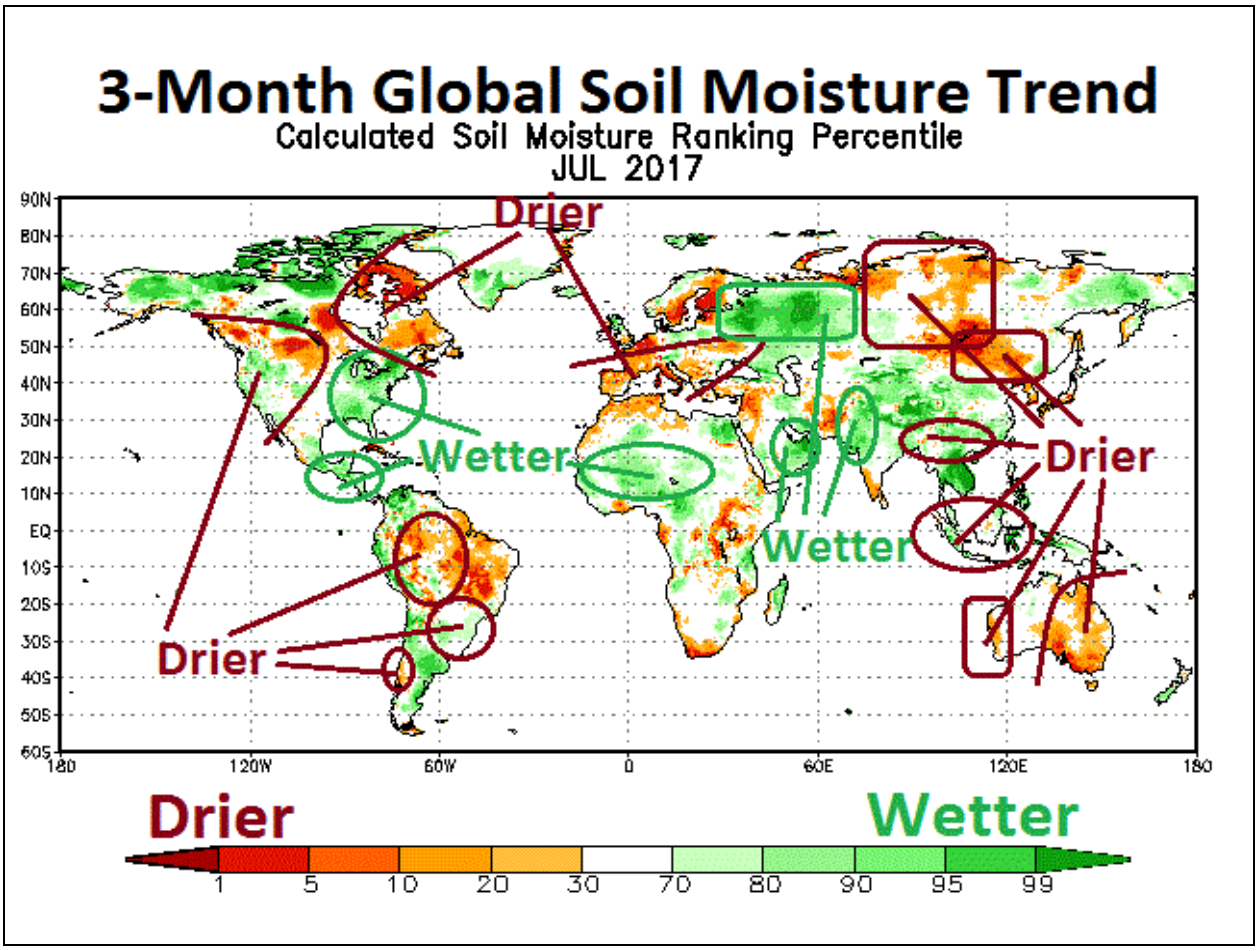

Fig. 1: *Global soil moisture ranking percentile for July 2017 and the 3-month soil moisture trend.*

Forecast discussion: The soil moisture trend forecast valid through the next 3 months is based on Climate Impact Company analogs, probability forecasts from the International Research Institute for Climate and Society and regional SSTA regimes.

In North America forecast confidence is above average that the western U.S. will trend drier once the (wet) monsoon season has subsided. In the Great Plains and most of the East U.S. the precipitation forecast does not favor a strong soil moisture change. The northern U.S. into southern Canada trends wetter. An above average confidence forecast is the wetter trend in the Caribbean Islands and southeast Mexico to northern Central America. Tropical cyclone activity drives the wetter Caribbean forecast while a persistent ridge dries out the West.

In Europe there is expected wet westerly flow as the persistent ridge pattern bringing summer drought collapses and a showery regime develops for autumn.

The southern Europe drought continues and a drier pattern is expected east of the Black Sea. In Russia the wet pattern across western areas continues while a recent dry trend central and eastern Russia reverses wetter (again).

Southeast Asia, western Indonesia and Australia are forecast to trend drier as the far western equatorial Pacific SSTA is cooler. Vietnam remains wet anticipating tropical cyclone activity. India remains dry southwest sections, wet n western sections and changeable eastern sections. The Indian Monsoon is controlled by the presence of the Madden Julian oscillation.

West Africa trends wetter implying above normal risk of stronger than normal tropical waves potentially leading to tropical North Atlantic hurricanes. South-central Africa is drier and drought conditions intensify.

In South America dryness dominates the northern half of the continent while a wet signature persists for much of Argentina.

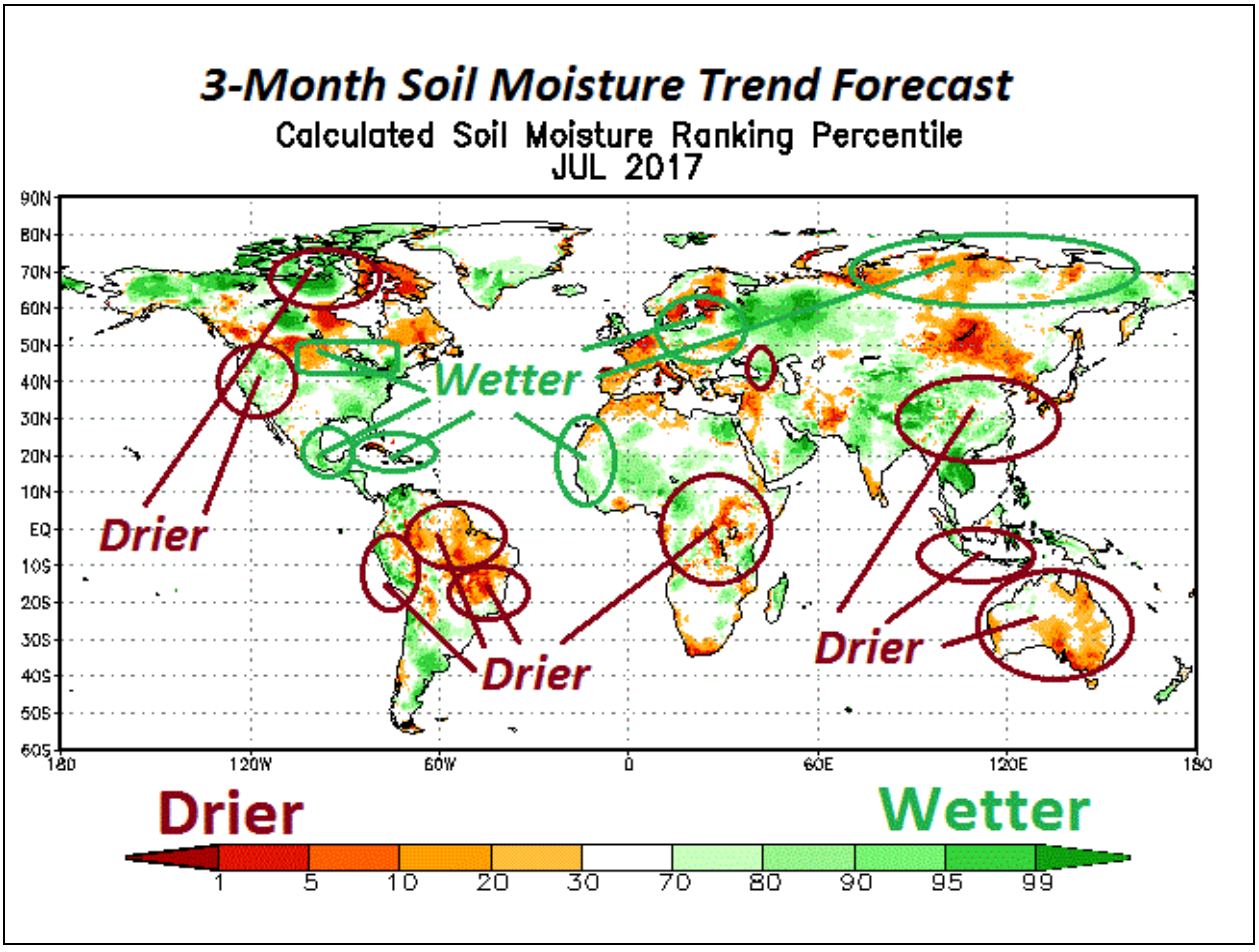

Fig. 2: *Global soil moisture ranking percentile and annotated 3-month forecast*