CLIMATE IMPACT COMPANY
www.climateimpactco.com

Scott A. Yuknis
High impact weather forecasts, climate assessment and prediction.
14 Boatwright's Loop
Plymouth, MA 02360
Phone/Fax 508.927.4610
Cell: 508.813.3499
ClimateImpact@comcast.net

Climate Impact Company Season 1-3 Ahead Outlook for Europe

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Highlight: Rain showers temper summer heat risk.

Executive Summary: The Climate Impact Company season 1-3 ahead climate forecast valid summer 2018 to winter 2018-19 is updated. Most prominent across Europe during summer is an extension eastward of the North Atlantic low pressure trough located across the North Atlantic cool SSTA pool. The upper trough promotes a showery regime suppressing summer heat. An upper ridge brining widespread anomalous warmth generates for autumn. A cold trough is modified over Eastern Europe by the warmer than normal North Atlantic.

Climate discussion: Most prominent across Europe during spring is the 500 MB ridge pattern bringing exceptional anomalous warmth and dryness. The cause of this pattern is a lingering upper trough in north-central Russia from winter and a strong upper trough across the northern North Atlantic linked to a cool SSTA pool south of Greenland forcing the warm and dry ridge pattern in-between across Europe (***Fig. 1-2***). Will this pattern break for summer-to-autumn 2018 or persist?

The persistent upper trough across the cool SSTA zone south of Greenland is the key to the summer/early autumn forecast. Will the cool pool prevail and sustain the upper trough and the upstream ridge pattern across Europe? The trend of global SSTA models valid for mid-to-late summer (***Fig. 3***) is additional warming north and northwest of Europe while the cool pool shift to southeast of Greenland and is weak although in-between 2 very warm zones.

The majority of the Europe summer/autumn climate forecast is based on the North Atlantic SSTA pattern which implies the upper trough so prominent this spring over southern Greenland weakens during the warm season. Upstream high pressure ridging for northern Europe should flourish given warm SSTA north and northwest of Europe.

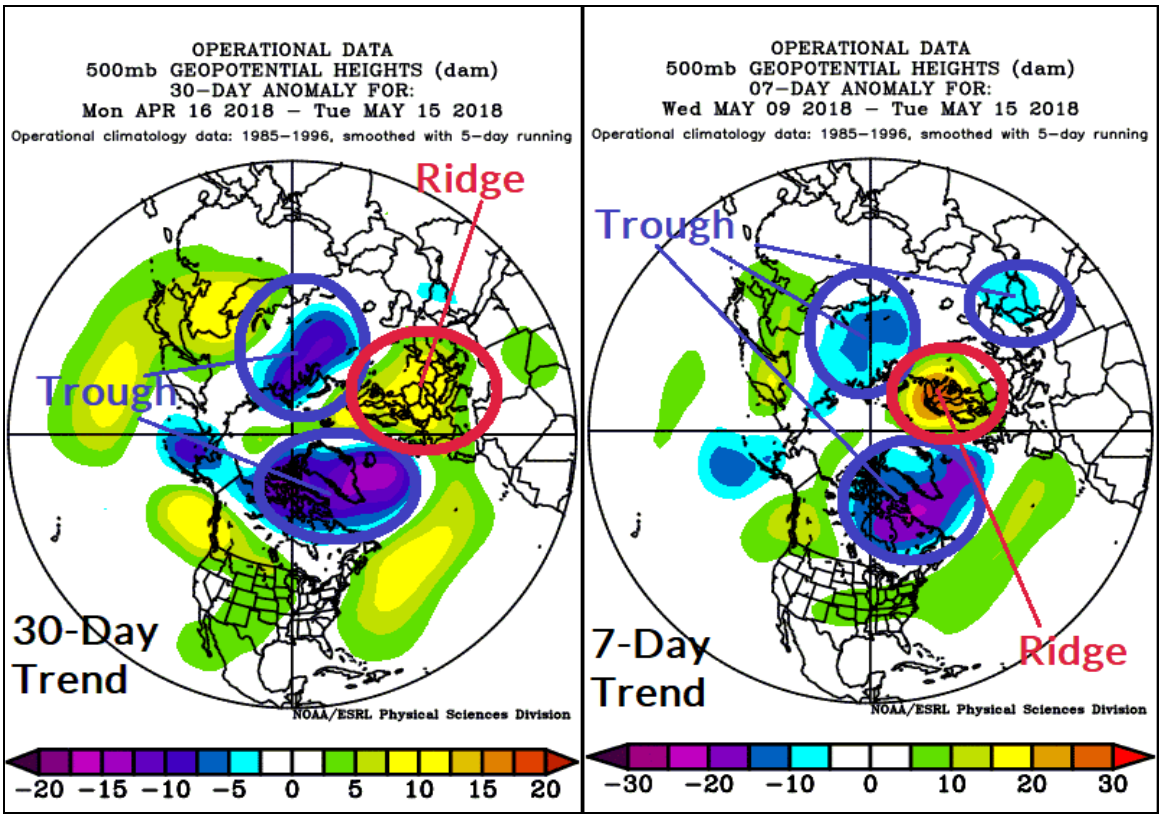


Fig. 1-2: *Depicting the evolution of the climate pattern during the past 30 days across Europe is the 30-day and 7-day 500 MB anomaly observations.*

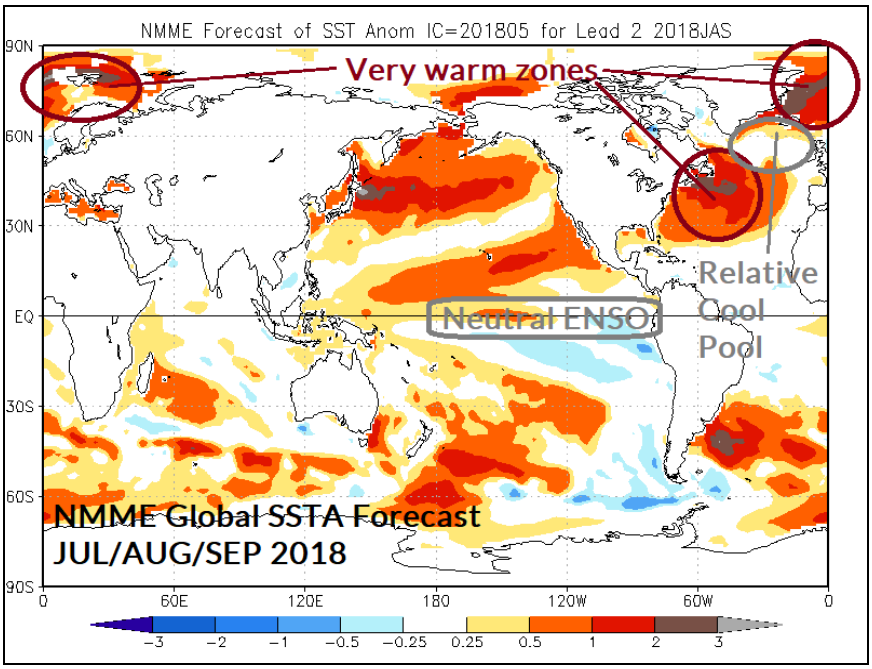
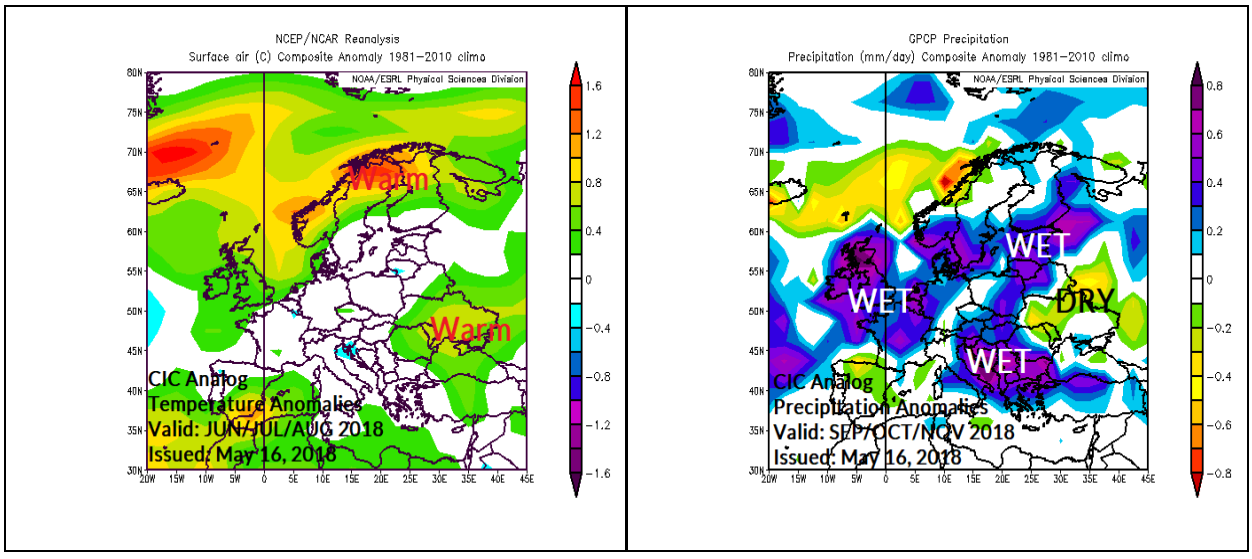


Fig. 3: *NMME global SSTA forecast for JUL/AUG/SEP 2018 is warm in the North Atlantic.*

The soil moisture trend across Europe is also relevant to the summer outlook. After April soil moisture was wet in Western Russia to Spain and dry in Turkey plus northern Europe. The recent 2-month trend is changing that pattern. The current trend is drier in Western Russia and wetter across southern Europe. The soil moisture trend lends support for a warm pattern this summer season north of the wetter Southern Europe soils.

Forecast discussion: The outlooks are based on weak cool pool SSTA presence southeast of Greenland with anomalous warmth dominant in the central and northern portion of the North Atlantic basin. The analogs are taken from the 1995-ceurrent climate cycle occurring during an ENSO transition of weak La Nina toward weak El Nino. The analogs are carried forward through next winter season. The best analog years are 2004, 2009 and 2014.

JUN/JUL/AUG 2018: The persistent upper trough across and south of Greenland during spring shifts east and into Western Europe. As a result wet weather is forecast for summer 2018 across U.K. through France to the Baltic nations and also across Southeast Europe. The wetter than normal climate suppresses anomalous heat risk. Only northern Europe is drier and warmer than normal during summertime. European wheat crop areas are generally wetter than normal for the summer season. Drier than normal climate is far to the east in the Black Sea region.



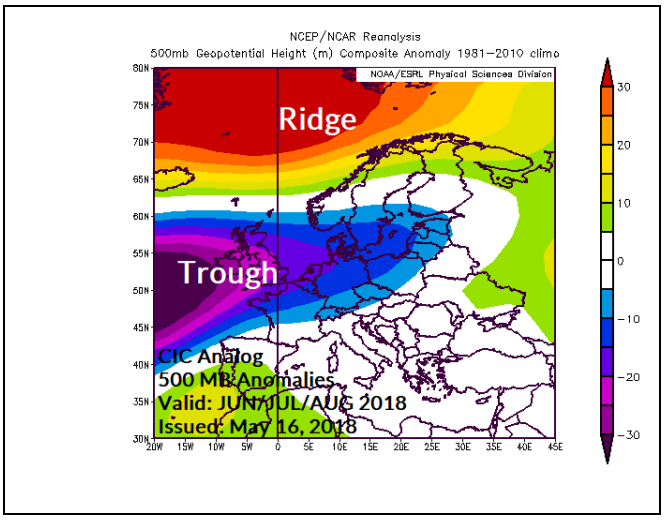
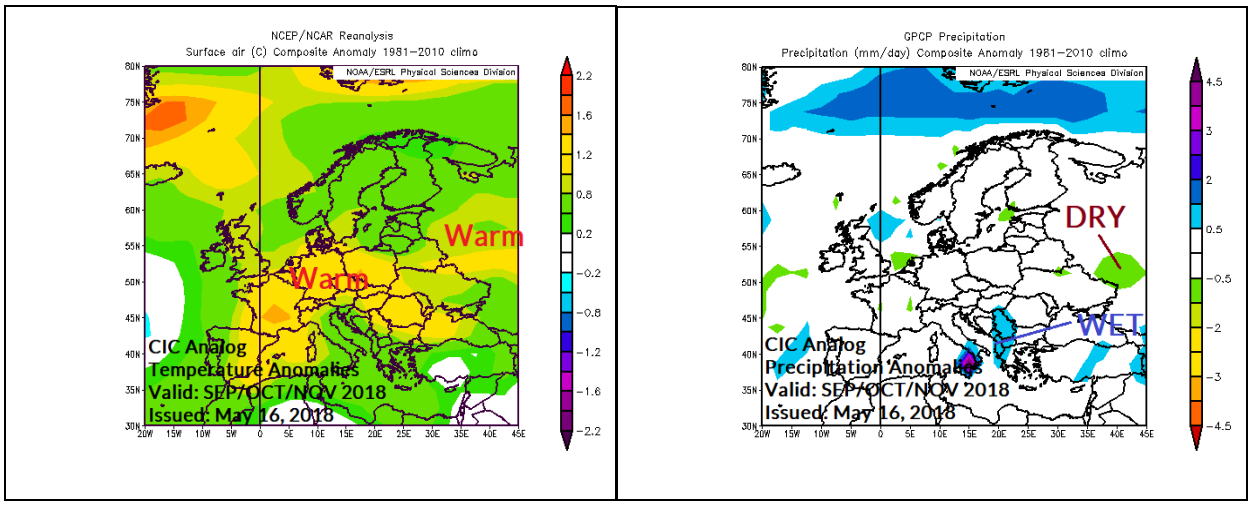


Fig. 4-6: *The Climate Impact Company constructed analog temperature and precipitation anomaly forecast for JUN/JUL/AUG 2018 across Europe. The projected 500 MB anomaly pattern is below.*

SEP/OCT/NOV 2018: An upper ridge pattern evolves over Western Russia during autumn. The upper ridge leads to a late warm season pattern which is warmer than normal for most of Europe and likely drier than indicated. The only wet weather expected is in Southeast Europe while north of the Black Sea a dry pattern is indicated.



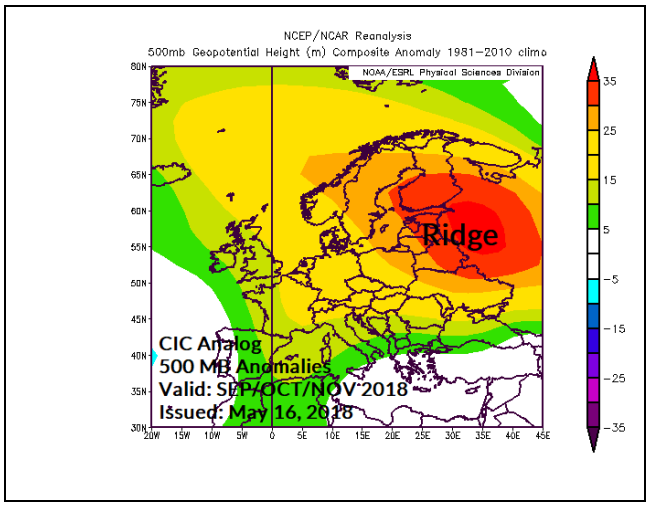
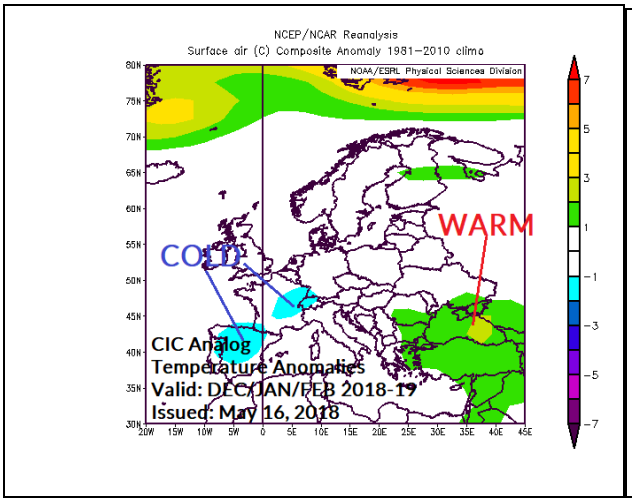
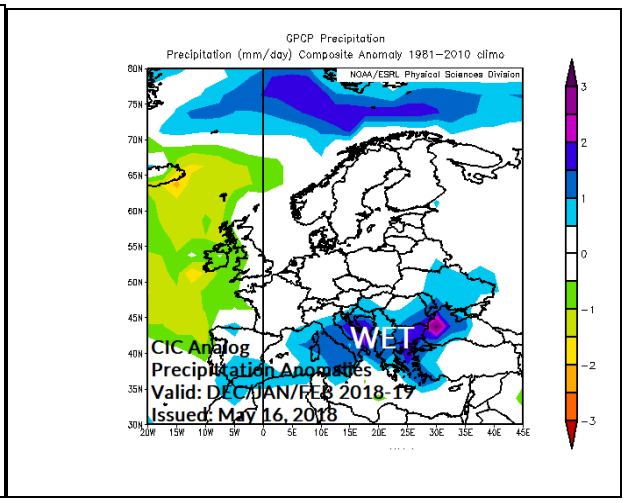


Fig. 7-9: *The Climate Impact Company constructed analog temperature and precipitation anomaly forecast for SEP/OCT/NOV 2018 across Europe. The projected 500 MB anomaly pattern is below.*

DEC/JAN/FEB 2018-19: Winter maintains the autumn ridge pattern albeit slightly farther east. An apparent negative phase of the North Atlantic oscillation (-NAO) becomes prominent as an upper trough is boldly set over Eastern Europe. The upper trough influence on temperature is modified by surrounding anomalous warmth of the North Atlantic. East of the trough significant precipitation is likely in Southeast Europe possibly becoming mostly snow later in winter.





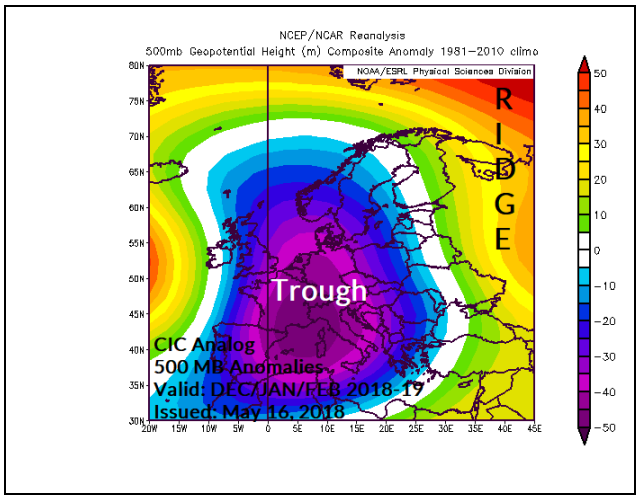


Fig. 10-12: *The Climate Impact Company constructed analog temperature and precipitation anomaly forecast for DEC/JAN/FEB 2018-19 across Europe. The projected 500 MB anomaly pattern is below.*