Area Forecast Discussion: Innsbruck, Austria and Casablanca, Morocco
Date: Tuesday 02 April 2019
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Big Picture Perspective

Current AO conditions hover around neutral but are expected to become negative early on in the forecast period and persist until mid April. The negative AO conditions are evident as a high pressure block builds over Greenland and Scandinavia. Continuous low pressure systems from Eastern Canada are causing southerly winds over Greenland resulting in low f advection and WAA. These two mechanisms will help keep the high pressure block anchored. As discussed earlier this week a -AO signal and Scandinavian blocking is arguing for cold temperatures through Western and Central Europe, as outlined by the ECMWF newsletter. Cold temperatures return to climatological values as the Scandinavian block dissipates. The dissipation of this block occurs when the central position of the stratospheric polar vortex shifts closer to Scandinavia from Greenland.

Extended Range: Day 7-10

The Mediterranean parade of troughs will continue during this period as the forecasted trough over Spain propagates eastward and lifts before cutting off its base due to cyclonic wave breaking. Another trough is forecasted to start digging towards Spain and northern Africa as the first trough moves into the Mediterranean. Central Europe will have widespread precipitation during much of this period due to the low 500 hPa heights and southerly winds advecting moisture from the Mediterranean northward. This is especially true in the Alps where the mechanical lift of the mountains will enhance the precipitation and cause snow in some of the higher elevations. Innsbruck will have rain caused by the low heights and slightly anomalous precipitable water values throughout most of the period. The 850 temperatures will be slightly higher than climatology because of the warm air advection associated with persistent southerly winds. Casablanca will have some rain at the very beginning and end of the period. These times will be when the troughs in the polar jet stream are able to extend equatorward enough to cause southwesterly winds into Morocco and positive precipitable water anomalies as a result. The 850 temperature in Morocco will be slightly colder than climatology for almost the whole period because of the northerly winds and low geopotential heights.

Medium Range: Day 4-6

The polar jet stream in Europe will be displaced to the south, over the Mediterranean and northern Africa during this period, causing a large deformation zone over much of central Europe. Western and southern Europe will have widespread precipitation during the period as the cyclone over Spain and France slides into the Mediterranean, making way for another cyclone to intensify in its place. Northern Europe will have general troughy conditions due to the anticyclonic wave breaking to the west of Scandinavia cutting off the base of a skinny positively tilted trough. Casablanca will be dry at the beginning of the period with nearly climatological values of temperature and 500 hPa geopotential height. Towards the end of the period, the second trough digging into northern Africa will bring some moisture onshore to cause positive 1 sigma precipitable water anomalies and some rain on Tuesday. Innsbruck will have some precipitation at the beginning of the period forced by cyclonic vorticity advection with snow in the higher elevations. The middle of the period will be dry before more vorticity induced precipitation moves in at the end of the period. The temperature will be near climatology throughout the period.

Short Range: Day 0-3

Anticyclonic wave breaking creates a region of warmer air over the Scandinavian region causing the development a high pressure system. This area of warmer DT air results in a cut-off low due south resulting in a classic Rex block. The low pressure system sitting over Europe along with the jet pattern creates an atmospheric river crossing Northern Africa into the Mediterranean. The subtropical jet acts to advect warm moist tropical air while the cyclone creates southerly flow on the eastern edge bringing the moisture northeastward. Associated with this atmospheric river is 4 to 5 sigma precipitable water anomalies allowing for a lot of moisture for precipitation.

Probabilistic Forecast

Innsbruck, Austria:

Day 0-3:

Max Temp:	12ºC (10th),	13ºC (50th),	15ºC (90th)
Min Temp:	4ºC (10th),	6ºC (50th),	7ºC (90th)
Precip:	1 mm (10th),	2 mm (50th),	3 mm (90th)

Day 4-6:

Max Temp:	12ºC (10th),	13ºC (50th),	14ºC (90th)
Min Temp:	1ºC (10th),	2ºC (50th),	3ºC (90th)

Precip: 3 mm (10th), 5 mm (50th), 8 mm (90th)

Day 7-10:
Max Temp: 11ºC (10th), 12ºC (50th), 14ºC (90th)
Min Temp: 2ºC (10th), 4ºC (50th), 5ºC (90th)
Precip: 4 mm (10th), 8 mm (50th), 9 mm (90th)

Casablanca, Morocco:
Day 0-3:
Max Temp: 15ºC (10th), 18ºC (50th), 20ºC (90th)
Min Temp: 10ºC (10th), 11ºC (50th), 14ºC (90th)
Precip: 6 mm(10th),8 mm (50th),12 mm (90th)

Day 4-6:
Max Temp: 18ºC (10th), 21ºC (50th), 22ºC (90th)
Min Temp: 10ºC (10th), 12ºC (50th), 13ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 4 mm (90th)

Day 7-10:
Max Temp: 20ºC (10th), 22ºC (50th), 23ºC (90th)
Min Temp: 10ºC (10th), 12ºC (50th), 13ºC (90th)
Precip: 0 mm (10th), 0 mm (50th), 2 mm (90th)