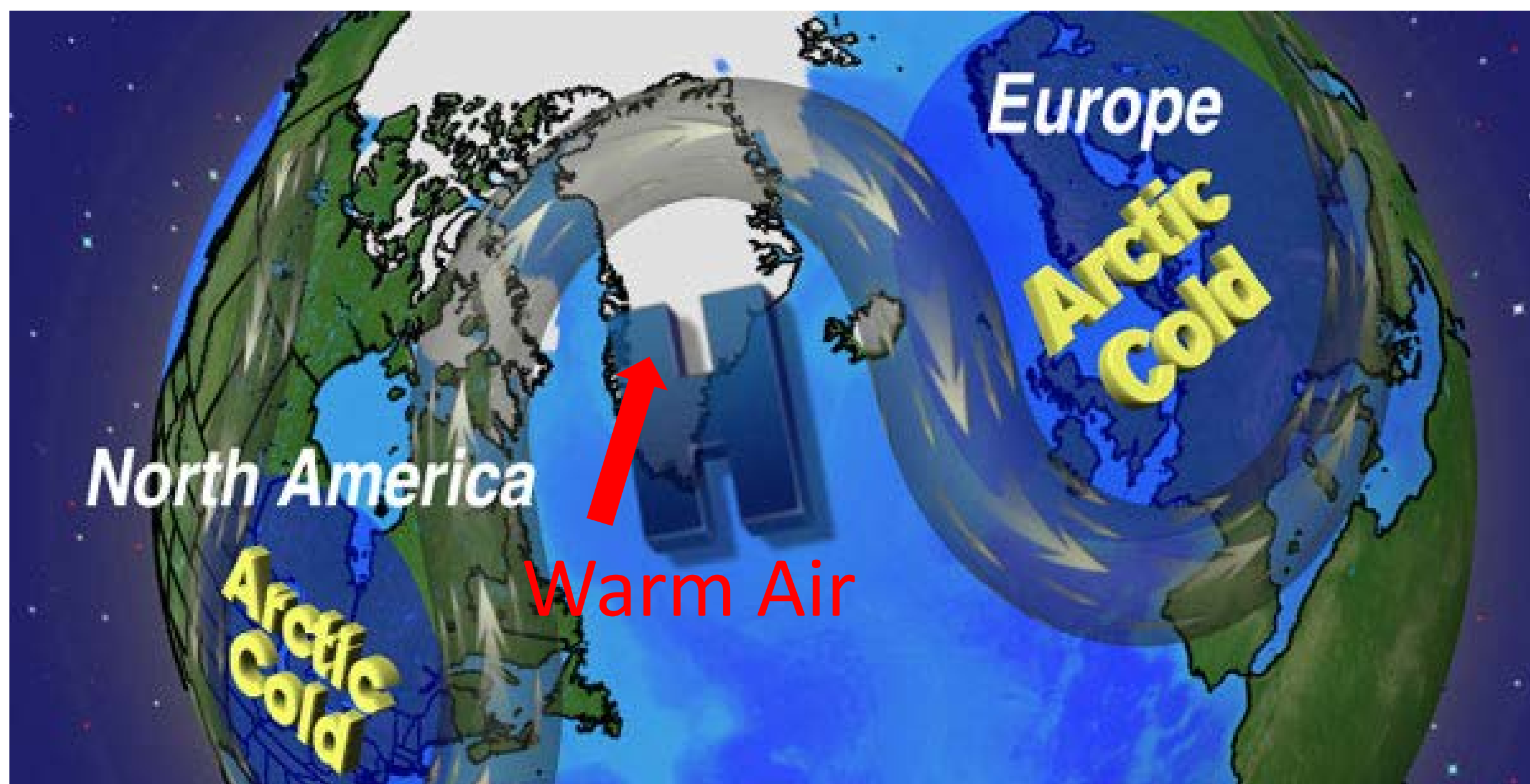


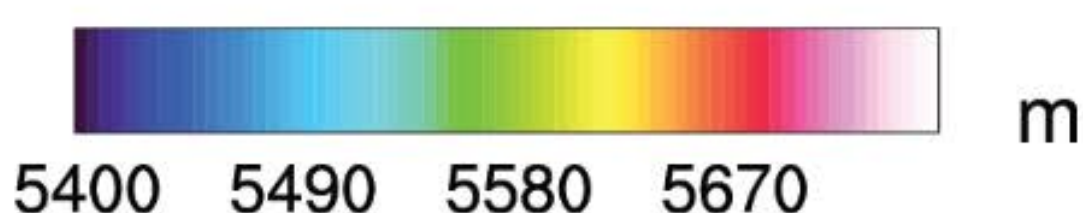
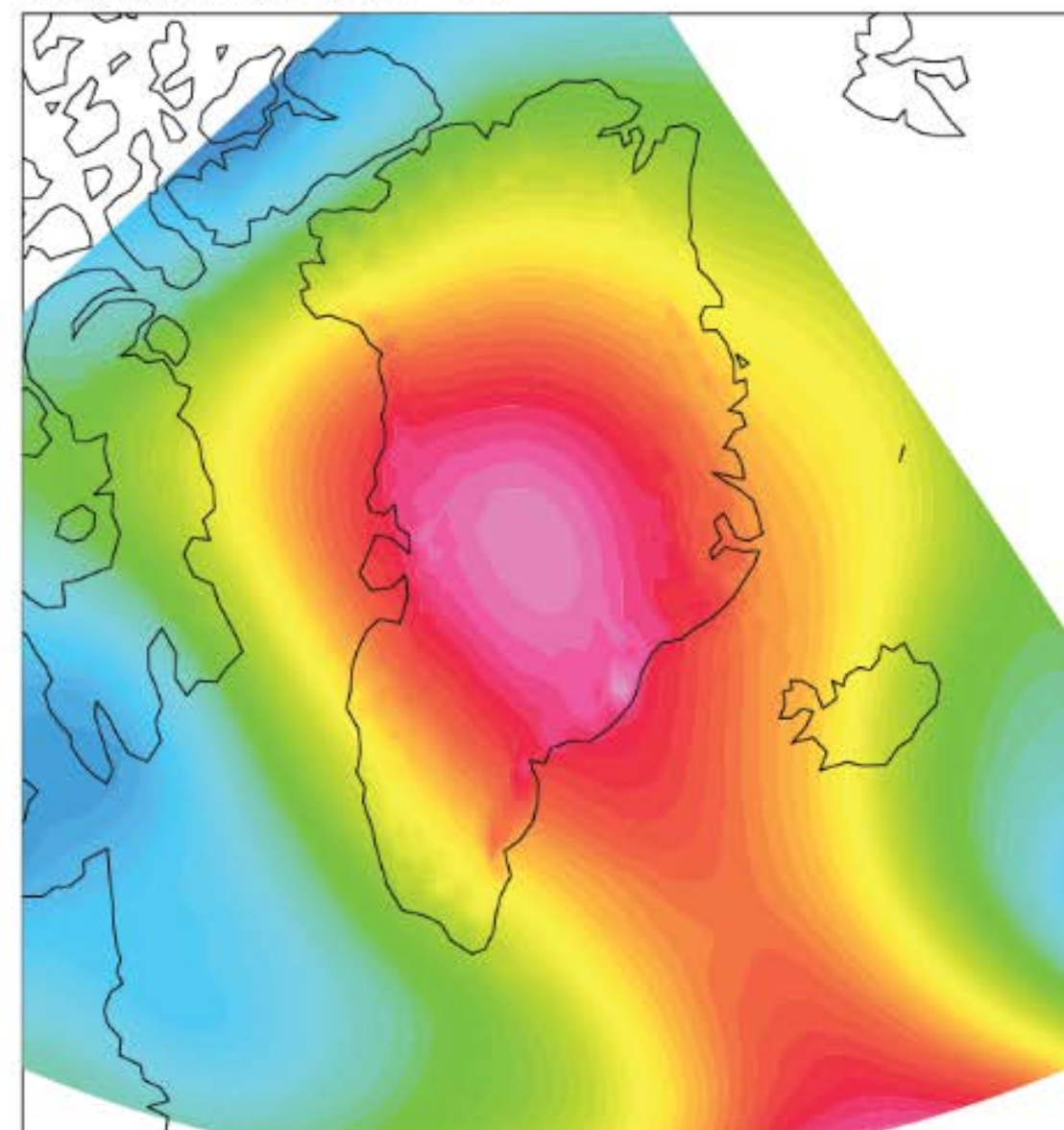
# Blocking and Greenland's Climate



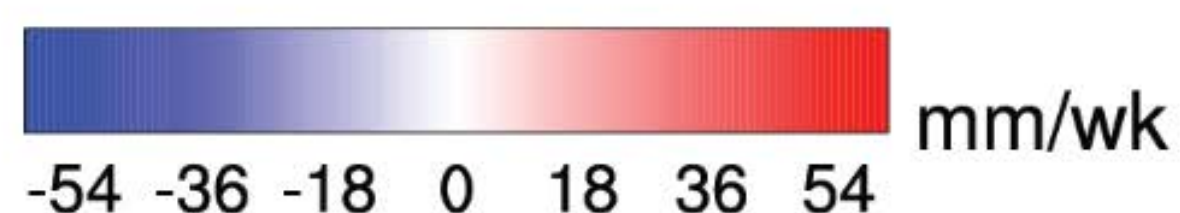
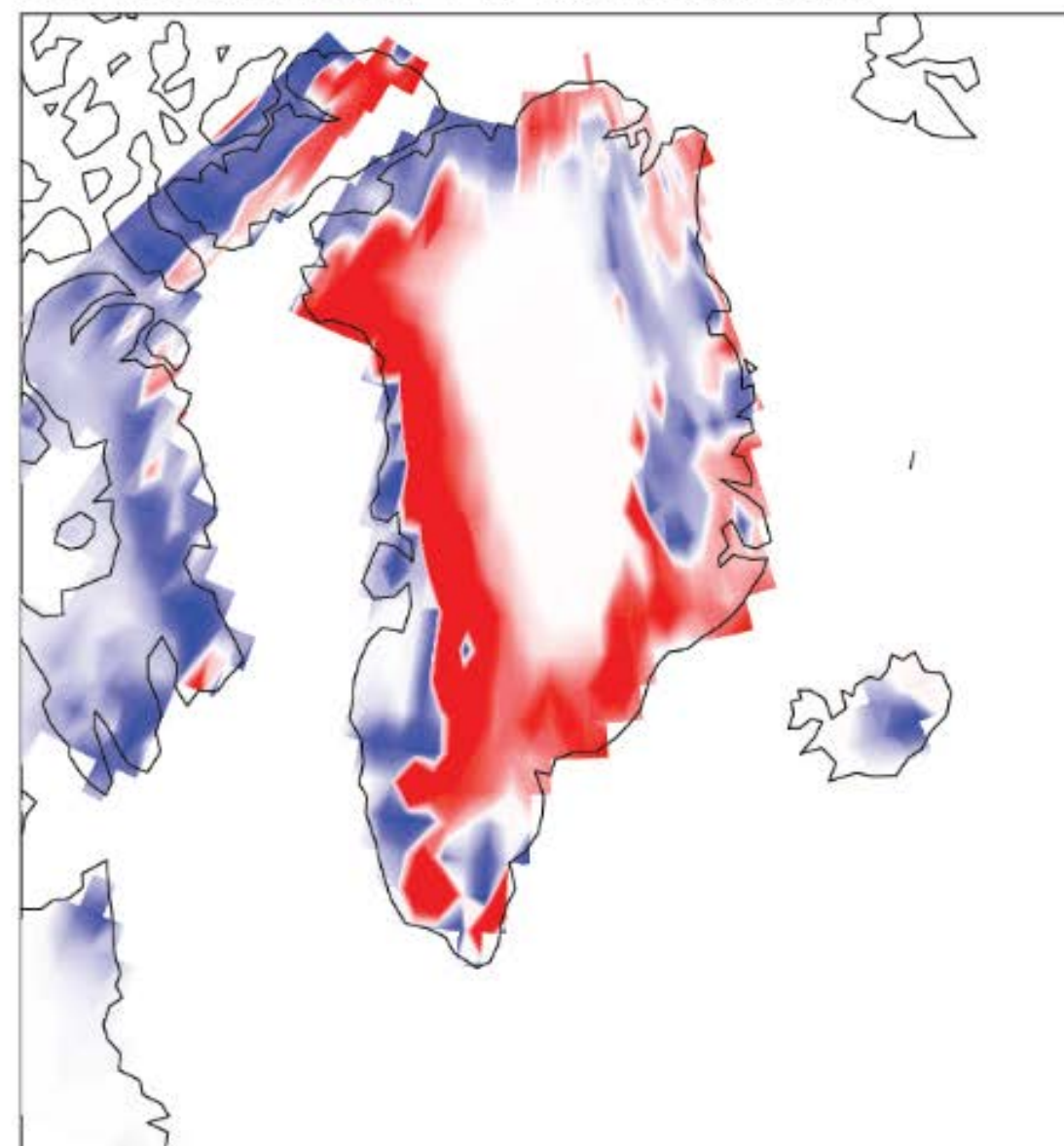
**Figure 1:** A schematic depicting a Greenland Block. The high pressure system remains stationary for days and diverts the jet streak northward while bringing warm air onto the GrIS (source: <https://wattsupwiththat.wordpress.com/2016/04/27/weather-pattern-changes-over-greenland-may-account-for-melting-storms-in-europe/>)

## Case: July 11, 2012

500mb GPH



Snowmelt Anomalies



**Figure 2:** MERRA-2 Reanalysis 500mb geopotential height (left) and offline CLM snowmelt anomalies (right) for July 11, 2012. The geopotential height pattern depicts a Greenland Block over the region.

Many processes can affect snowmelt on the Greenland Ice Sheet (GrIS): clouds, impurities in the snow, and snow metamorphism, to name a few. Another phenomenon affecting Greenland's climate is atmospheric blocking.

Atmospheric blocks are large-scale high pressure systems that deflect westerly winds, promote sunny conditions, and persist for days/weeks at a time (figure 1). Greenland-based blocks also move warm, subtropical Atlantic air over the ice sheet. These processes affect local surface energy balance and snowmelt processes.

How do these processes work? It differs for individual blocks. Why are each of these blocks different? Let's find out.

Jamie L. Ward  
PhD Candidate,  
University of Michigan

