Numerous observational and modeling studies have suggested the importance of cyclogenesis to the breakdown of the zonal flow and the maintenance of atmospheric blocks, while other studies have shown that low-frequency dynamics are sufficient to produce and maintain these patterns. Experiments with a simple model of the general circulation and empirical evidence obtained from reanalysis and cyclone tracking data are used to develop a conceptual understanding of this irregular response. The model results and observational data are consistent with the idea that the North Atlantic flow response to cyclone forcing is preconditioned by the state of the hemispheric circulation. A characteristic hemispheric flow configuration reminiscent of the shedding of a PV filament and tightening of the PV gradient is particularly responsive to cyclogenesis, with the likelihood of below 10th percentile North Atlantic zonal flow under these conditions increased by a factor of 2.37 for each cyclone event. A second characteristic pattern, reminiscent of the PV wave-breaking anticyclonic roll-up, responds oppositely to cyclogenesis, with a decrease in the likelihood of below 10th percentile zonal flow by a factor of 0.67. This perspective is connected to the decades of research on blocking and opens an opportunity for the development of medium-range forecast model post-processors that might provide probabilistic forecasts of North Atlantic flow transitions.