



Name	Annual floods in New England (USA) and Atlantic Canada: synoptic climatology and generating mechanisms
Description	<p>From the Abstract: New England and Atlantic Canada are characterized by mixed flood regimes that reflect different storm types, antecedent land surface conditions, and flood seasonality. Mixed flood regimes are known to complicate flood risk analyses, yet the synoptic climatology and precipitation mechanisms that generate annual floods in this region have not been described in detail. We analyzed a set of long-term annual flood records at climate-sensitive stream gauges across the region and classified the synoptic climatology of each annual flood, quantitatively describing the precipitation mechanisms, and characterize flood seasonality. We find that annual floods here are dominantly generated by Great Lakes-sourced storms and Coastal lows, known locally as 'nor'easters.' Great Lakes storms tend to be associated with lower magnitude annual floods (<75th percentile) and Coastal lows are more clearly associated with higher magnitude events (>75th percentile). Tropical cyclones account for few of all annual floods, including extreme events, despite causing some of the region's largest and most destructive floods. Late winter/early spring is when the greatest number of annual floods occur region wide, and rainfall is the dominant flood-producing mechanism. Rainfall in combination with snowmelt is also important. Both mechanisms are expected to be impacted by projected regional climate change. We find little evidence for associations between flood-producing synoptic storm types or precipitation mechanisms and large-scale atmospheric circulation indices or time periods, despite upward trends in New England annual flood magnitudes. To more completely investigate such associations, partial duration flood series that include more floods than just the largest of each year, and their associated synoptic climatologies and precipitation mechanisms, should be analyzed.</p>
Type	- DATA: In situ Observations
Sector	- Cross Disciplinary
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Region	- Regional Or State -- New England