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Intense midlatitude storms and their relationship to teleconnection patterns in the Northern Hemisphere

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We investigate the relationship between the statistics of intense midlatitude storms and large-scale patterns of variability in the Northern Hemisphere. Using a cyclone tracking algorithm and along-track diagnostics applied to reanalysis data, we identify rapidly intensifying storms and study the interannual variability in their frequency, peak intensity and typical path in both Atlantic and Pacific basins. We assess the extent to which such variability is controlled by planetary-scale modes, in particular the North Atlantic Oscillation and El Nino. We pay particular attention to the role of latent heating in cyclone intensification, addressing the question of whether increased frequency of intense storms can be related to large-scale changes in sea surface temperatures and boundary-layer humidities.