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## How persistent are Atlantic/European sector weather regimes?

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Weather regimes in winter mean sea level pressure (MSLP) fields are investigated by dividing the phase space into discrete cells based on empirical orthogonal function (EOF) principal components. This technique is also applied to the well-known Lorenz system, which clearly exhibits two regimes, for comparison. While the analysis identifies the two regimes of the Lorenz attractor, evidence for comparable regimes in the MSLP data is much weaker.

Weather regimes produced by k-means clustering might be expected to be clearly linked to slower moving regions of phase space, but this is shown not to be the case. The region of phase space associated with the negative phase of the North Atlantic Oscillation (NAO) shows a hint of regime-like behaviour, but only weakly.

Nevertheless, the analysis does reveal some structure to the time evolution of the atmospheric circulation - transitions between neighbouring pairs of cells show a preferred direction of evolution in many cases.