Comps question from MPO 542

a. Statistical significance is often expressed as a "p value", whjch is a probability (a number between 0 and 1). Translate the statement "the correlation has a p value of 0.05" into a statement about the future and a null hypothesis. Explain what the p value means, in other words.

b. The significance of a correlation depends on how large the correlation coefficient is, as well as how many 'independent samples' went into it. For a time series, this number of samples is sometimes called the "effective degrees of freedom." Explain some ways to see or think about or estimate the number of degrees of freedom in a time series.

c. Below is a blue time series, repeated in each panel along with two different red series. Each pair has the same correlation coefficient, as shown in the captions. Based on the considerations from parts a. and b., discuss which correlation is more significant, and why.