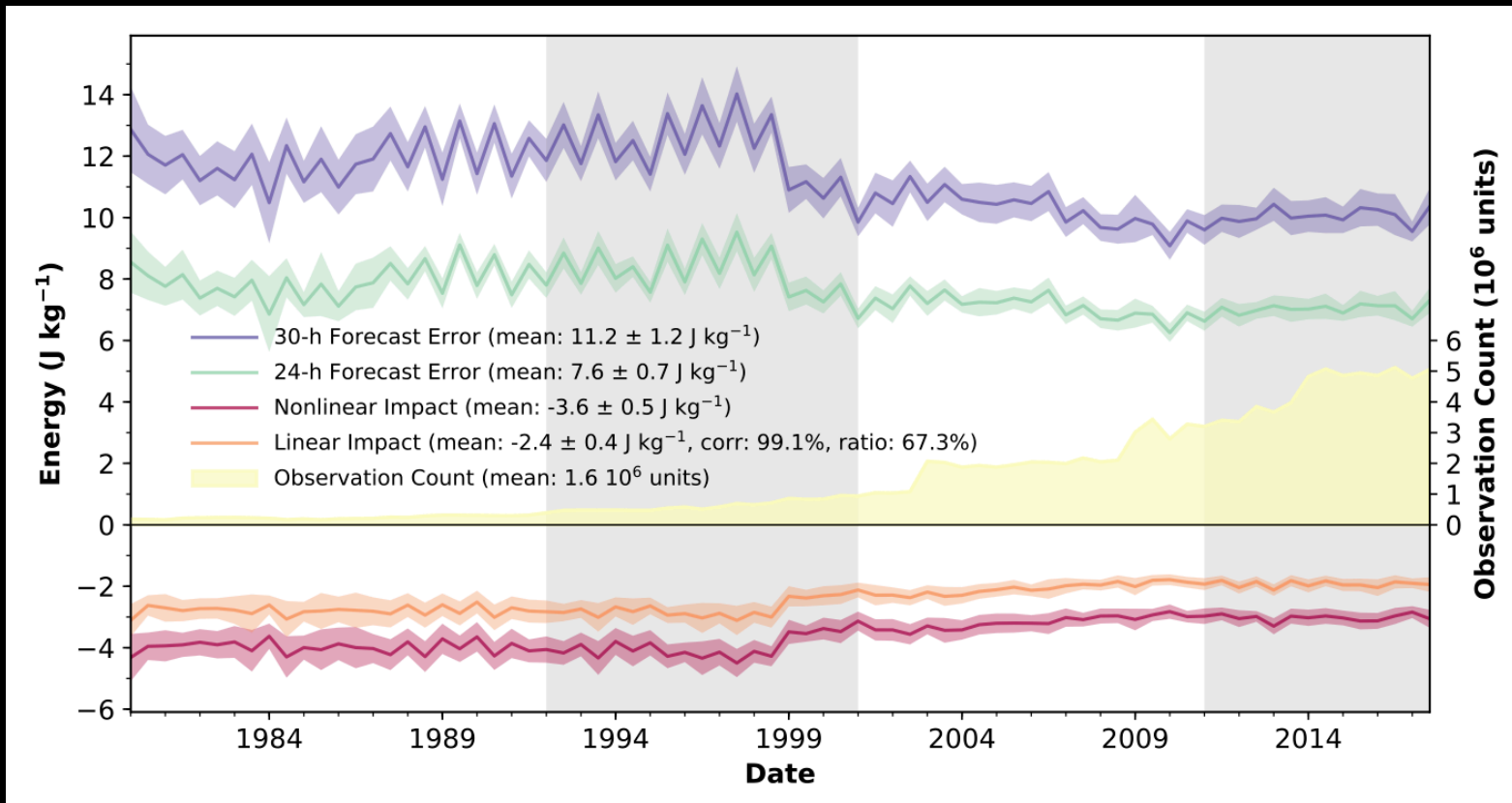# Assessing the Impact of Nearly 40 Years of Observations on Short-range MERRA-2 Forecasts

Time series of 30- (purple) and 24-h (green) forecast errors, nonlinear (red) and linear (orange) impact estimates and the count of used observations (yellow shade, right axis). Lines represent monthly mean values with +/- 1 standard deviation from the mean in shading for 0000 UTC analyses during months of January and July. The vertical shaded and non-shaded areas represent the four streams of MERRA-2. Numerical values in the legend represent mean +/-1 standard deviation in addition to the Pearson's correlation between linear and nonlinear impacts and its ratio. (The units of energy are J kg $^{-1}$1 and the scale factor for observation count is 10^6.)