Thanks for the thoughtful replies. I think we broadly agree, except on point 4 and with a clarification needed on 5.

On point 4, we may agree to disagree. It is important however to keep in mind that surface fluxes and heating rates calculated from reanalysis are affected by similar systematic biases as those of the underlying model. I believe that an assessment of uncertainties is necessary for the computed entropy production rates (which obtain from differences of large terms).

Point 5: parsing: the anomalies for each event should be calculated as differences between the observations and a climatology valid for the same period of the year as that during which the event took place. I believe another reviewer also made this point?
Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-491, 2016.