Response to anonymous referee #2 for manuscript Osborn & Jones, ESSDD

Tim Osborn and Phil Jones **18 December 2013**

We thank the referee for his/her careful assessment of our manuscript, and we are pleased that it is considered to be a significant contribution. We respond below to the referee's "minor comments":

(1) The numbers we state are indeed the page numbers in the original articles where this information can be found, as we explain on p. 600, lines 1-5 of our submitted manuscript.

(2) Our terminology had meant to indicate that it was a half-index lower or higher than the centre of a box, and hence represented the edge of the box. However, both referees raised concerns, so we will change our terminology so that we only use integer index values and instead we will denote the edges of the grid boxes by the centre plus or minus half the grid-box size, as referee #2 has suggested. The new terminology, in the revised manuscript, should be less confusing, e.g. the western edge of grid box *i* is $x_i - \Delta x/2$.

(3) Both grid-box means are from the earlier version of the dataset. We will clarify the text so that this will be stated in the new version of the manuscript.

(4) How far is the "neighbour station"? There is no fixed criterion. The neighbours were compared for similarity before being used and therefore the separation distance considered to be appropriate varies from case to case.

(5) We will add information that the black line is a 20-year smoother to every balloon containing the annual images. The smoothing is obtained using a Gaussian-weighted filter. The first and last 5 years are removed (truncated) from the filtered series because these will be more uncertain due to filter end effects.

(6) "Blue" is missing from the caption of figure 1. We will correct this, thank you.