

Review of re-revised manuscript by Churakova et al. "Siberian tree-ring and stable isotope proxies as indicators of temperature and moisture changes after major stratospheric volcanic eruptions" for Climate of the Past

1. The new SEA fig. 3 means we can at last begin to see the behaviour of the five tree-ring parameters after eruptions. A minor comment on its interpretation: L369 "The behavior of isotope chronologies is rather more complex, with a distinct decrease in $\delta^{13}C$ at the high-latitude sites (YAK, TAY), whereas $\delta^{18}O$ series are impacted mainly at the high-latitude YAK and high-altitude ALT sites." The largest decrease in $d^{18}O$ (in terms of z-score) is in eruption+2years at the high-altitude site (ALT). So why do you highlight the high-latitude sites and not this one?
2. L459 "1816 was cold only in YAK (based on the CWT chronology), but not at the other sites". This is in agreement with Fig. 5 but is not agreement with Fig. 2 or Fig. S1 (see page 14 of the supplement), nor are Figs. 2 and S1 in agreement with each other! I already highlighted the disagreements between Fig. 2 and Fig. S1 for YAK in 1816 in my previous review (see my previous comment on L347-348) and yet the authors just responded "We carefully checked and corrected figures accordingly" and added in the comment above about 1816 YAK CWT indicating cold.

Here is the YAK panel from Fig. 2:

And the YAK 1816 panel from Fig. S1:

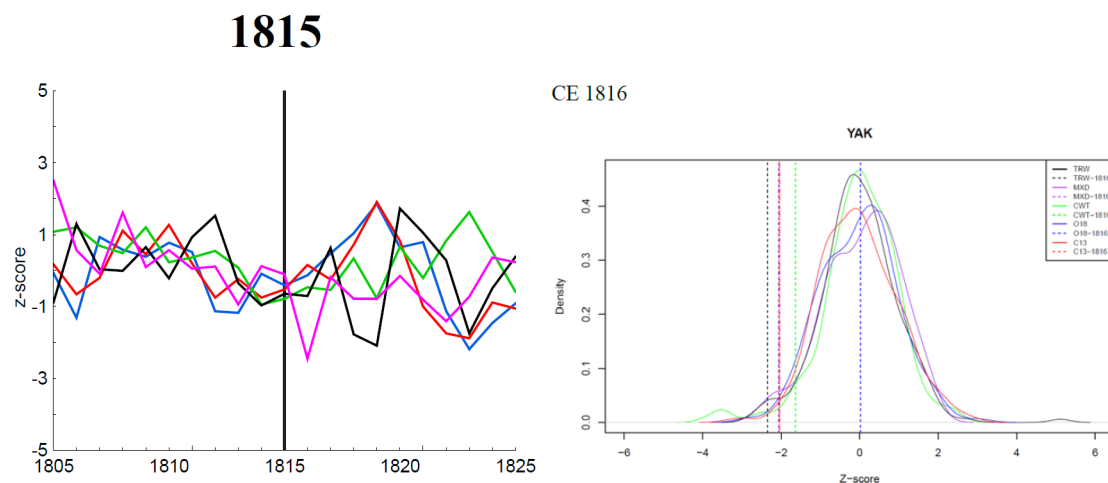


Fig. S1 shows YAK anomalies around -2 (z-score) in 1816 (vertical dashed lines) for four out of the five parameters (TRW, MXD, C13 and CWT), only O18 (vertical dashed blue line is at zero). This is not compatible with Fig. 2 in the main text which shows only notably negative values in 1816 for YAK are for MXD (pink/purple) and the TRW (black), C13 (red) and CWT (green) do not show z-scores near -2. Which is correct, Fig. 2 or Fig. S1? And why does Fig. 5 show only notable cooling for YAK CWT in 1816 when Fig. 2 shows YAK CWT is not anomalous in 1816 (see above)?

3. There appear to be other inconsistencies between Figs. 2, 5 and S1. Take ALT 1816 for instance. Fig. 2 shows no notable excursions for any parameter in 1816 at ALT (all lie between +/-1 for the z-scores). Fig. 5 shows notable $d^{13}C$ anomaly (orange rhomb and orange circle, indicating dry (high summer VPD or low July precip). Fig. S1 (p. 14 of supplement) shows $d^{13}C$ anomaly in 1816 (vertical dashed red line) is almost exactly zero! So why does Fig. 5 indicate notably dry?
4. Since there have been similar inconsistencies between text and figures, or between figs. 2, 5 and S1, in previous versions of the manuscript that have not been corrected, I now have less

faith in the accuracy of what is presented and I can only encourage the authors to print out large versions of these three figures and their text and go through them site-by-site, eruption-by-eruption and parameter-by-parameter and check/correct everything. Either that or explain what the vertical dashed lines in Fig. S1 mean because the caption says they represent the anomalies in the depicted years, but they are clearly different to the anomaly timeseries in Fig. 2 for the same years.

5. In fact, I've just found another inconsistency. TAY 1817 MXD is -2.5 in Fig. S1, about -0.5 in Fig. 2 and white (indicating not notable) in Fig. 5. So is Fig. S1 wrong in this instance?
6. L461-2: You added this text in the latest version: "CE 1993 was an extremely cold year for ALT based on CWT and $\delta^{18}O$, while also sunny, which is confirmed by local weather station data". Really? Fig. 2 for ALT shows 1993 as having CWT (green) about +1.5, and the other parameters between -1 and -1.5. So how can you conclude that high CWT implies extremely cold when CWT is positively correlated with summer temperatures (Fig. 4)?