

Tree rings and volcanic cooling

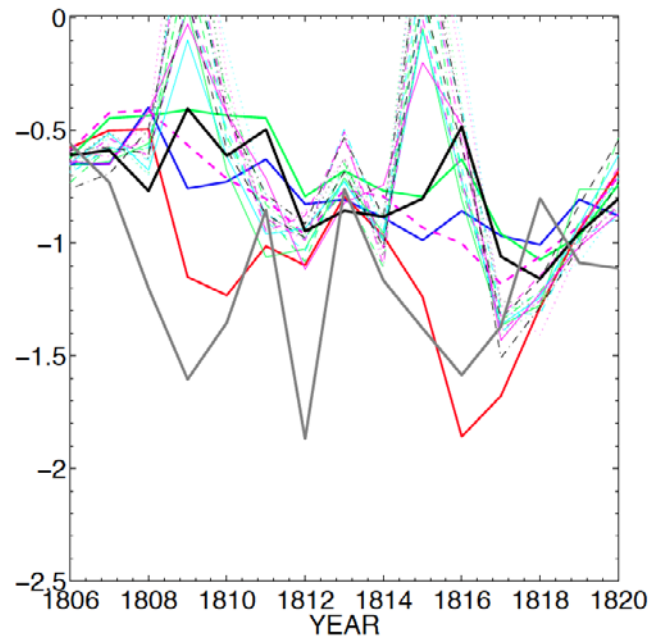
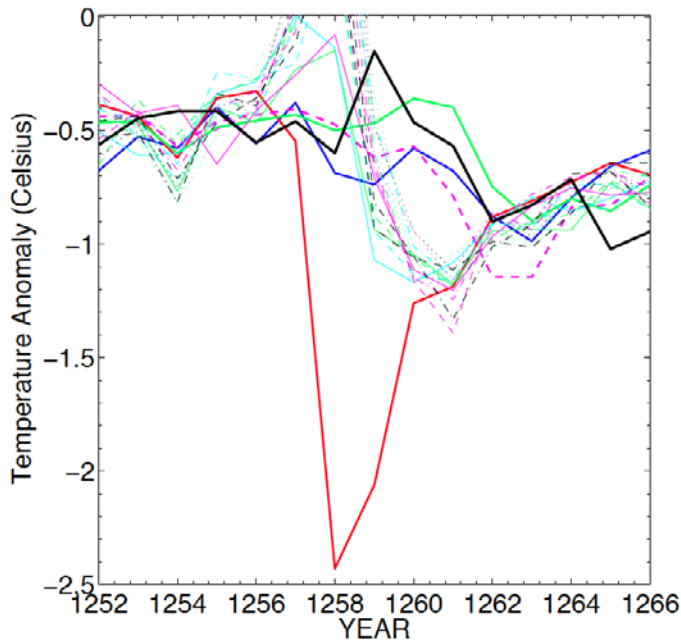
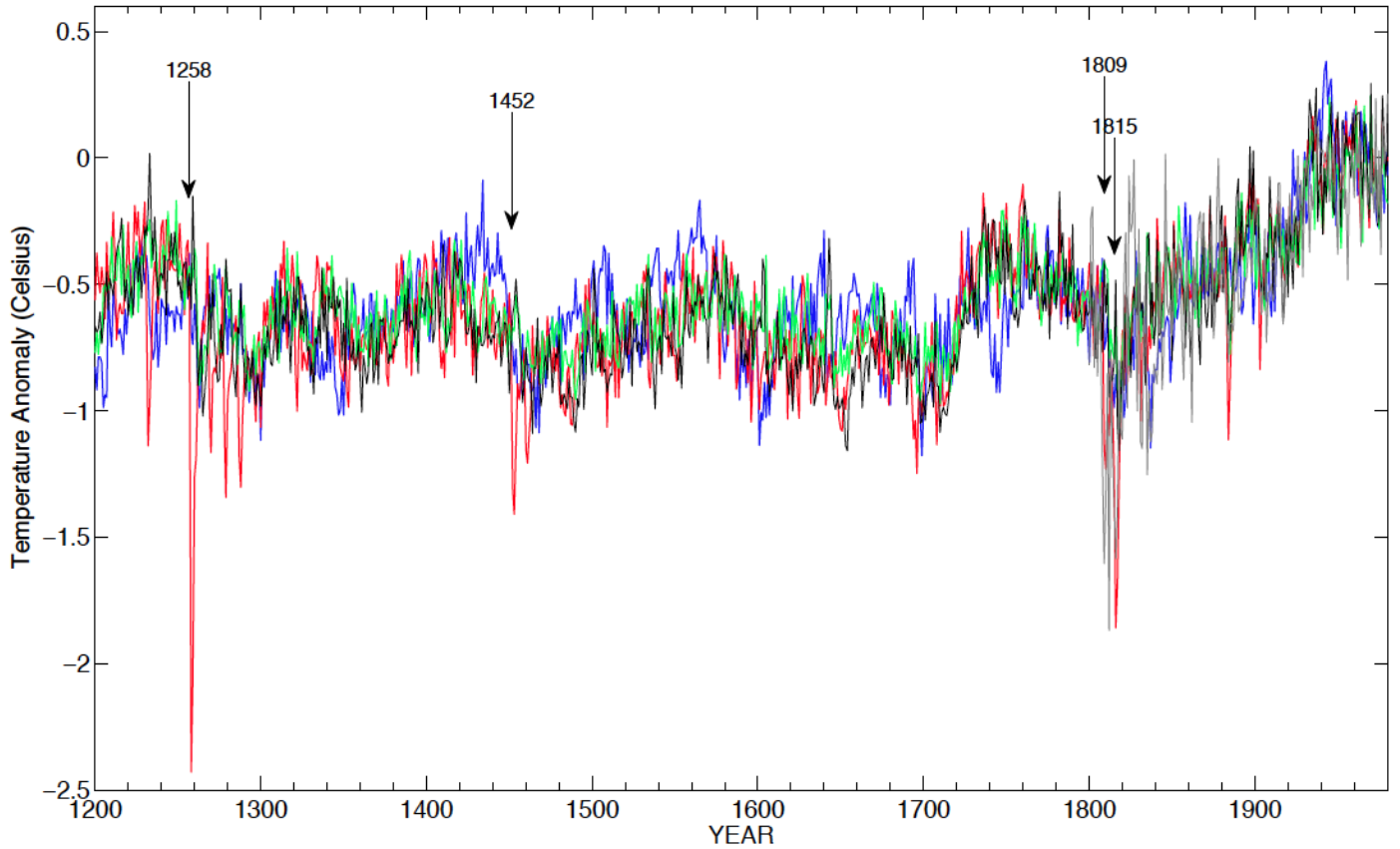


Figure 1. Comparison of simulated and observed tree-ring reconstructions of NH mean temperature.

Conventions are as in Figure 2d of MFR12. Shown are GCM simulation (red), compared with MFR12 GCM-simulated (green) and D06 actual (blue) tree-ring reconstructions. Shown also is GCM-simulated tree-ring series (black) based on simpler tree-growth model formulation used in this comment (with $T_{min}=10^{\circ}\text{C}$ and 26 day threshold for undetectable growth ring), and instrumental global land temperature record back to AD 1800 from “Berkeley Earth Surface Temperature” project (gray). Insets: Expanded views of the response to the AD 1258/1259 and AD 1809+1815 eruptions. Shown also is MFR12 result when the volcanic diffuse-light impact is ignored (dashed magenta) and results using the simpler growth model formulation of this comment for various choices of T_{min} (thin curves: dotted= 7°C , dot-dashed = 8°C , dashed= 9°C , and solid= 10°C), for different thresholds for defining undetectable annual growth ring (green=7 day; cyan=14 day; magenta=21 day, black=26 day). Centering of all series is based on a 1961-1990 modern base period.