Published on 24 June 2024: see here.

Using Google Scholar and ISI Web of Science, we searched the literature for studies of tree growth, especially via diameter or ring width, by elevation or latitude. Of 20 papers (Babst *et al.*, 2013; Bhuta *et al.*, 2009; Cavin & Jump, 2017; Cook & Cole, 1991; Cook *et al.*, 1998; Coomes & Allen, 2007; de Sauvage *et al.*, 2022; Gantois, 2022; Gillman *et al.*, 2015; Hikosaka *et al.*, 2021; Huang *et al.*, 2010; King *et al.*, 2013; Klesse *et al.*, 2020; Liang *et al.*, 2019; Martin-Benito & Pederson, 2015; Oleksyn *et al.*, 1998; Rapp *et al.*, 2012; Wang *et al.*, 2017; Zhou *et al.*, 2022; Zhu *et al.*, 2018) we found for these relationships, six included clear raw tree data in either scatterplots or tables that we scraped: Oleksyn *et al.* (1998); Huang *et al.* (2010); Cavin & Jump (2017); Wang *et al.* (2017); Zhu *et al.* (2018); Zhou *et al.* (2022).

We could not scrape data from 14 papers for the following reasons:

1. Absence of observational tree growth raw data: Some studies only presented the correlation or the data was modeled.
2. Measures other variables: Some studies examined leaf area index and forest NPP.
3. Standardization of tree growth with other variables: Papers did not present the raw data (e.g., papers presented the data calculated with other variables).
4. Presence of overlapping data points: Data points in the plots presented were not visually identifiable for accurate data scraping.
5. Line graphs: No discrete data points for image processing.
6. Geographical scale: The locations of data collection spread across large longitudinal or latitudinal gradient.

We scraped tree growth data from the selected studies using the Fiji image processing package with the Figure Calibration plugin. We calibrated x and y axes using the Figure Calibration plugin, followed by measuring growth values at different elevation using the measure function in Fiji. Of the six remaining papers, we show results for three, excluding Huang *et al.* (2010) because it included only results for trends by latitude (and most other studies included only trends by elevation), and Cavin & Jump (2017); Zhu *et al.* (2018) because the elevation co-varied with latitude.

Thus, we show data from: Oleksyn *et al.* (1998), which measured 54 populations of *Picea abies* along 8 altitudinal transects in Southern Poland, we present the mean DBH (cm yr^{-1}) of values collected from each population (although 54 populations were monitored, only 42 data points were clearly visible in Figure 2 in the paper); Wang *et al.* (2017), which collected tree cores (37-100 years) collected from 4 different sites across an elevation gradient in the Luyashan Mountains in North China, we present the median of tree ring width values from the collected cores (147 tree cores collected from 73 trees); and Zhou *et al.* (2022), who collected tree ring width data (cores of 60-80 years) of *Pinus yunnar* from 6 altitudinal transects in Yunnan, China; we present the median of tree ring width of each transect.

References

Babst, F., Poulter, B., Trouet, V., Tan, K., Neuwirth, B., Wilson, R., Carrer, M., Grabner, M., Tegel, W., Levanic, T. *et al.* (2013) Site-and species-specific responses of forest growth to climate across the e uropean continent. *Global Ecology and Biogeography* **22**, 706–717.

Bhuta, A.A., Kennedy, L.M. & Pederson, N. (2009) Climate-radial growth relationships of northern latitudinal range margin longleaf pine (pinus palustris p. mill.) in the atlantic coastal plain of southeastern virginia. *Tree-Ring Research* **65**, 105–115.

Cavin, L. & Jump, A.S. (2017) Highest drought sensitivity and lowest resistance to growth suppression are found in the range core of the tree fagus sylvatica l. not the equatorial range edge. *Global change biology* **23**, 362–379.

Cook, E.R. & Cole, J. (1991) On predicting the response of forests in eastern north america to future climatic change. *Climatic Change* **19**, 271–282.

Cook, E.R., Nance, W.L., Krusic, P.J. & Grissom, J. (1998) Modeling the differential sensitivity of loblolly pine to climatic change using tree rings. *The productivity and sustainability of southern forest ecosystems in a changing environment*, pp. 717–739, Springer.

Coomes, D.A. & Allen, R.B. (2007) Effects of size, competition and altitude on tree growth. *Journal of Ecology* **95**, 1084–1097.

de Sauvage, J.C., Vitasse, Y., Meier, M., Delzon, S. & Bigler, C. (2022) Temperature rather than individual growing period length determines radial growth of sessile oak in the pyrenees. *Agricultural and Forest Meteorology* **317**, 108885.

Gantois, J. (2022) New tree-level temperature response curves document sensitivity of tree growth to high temperatures across a us-wide climatic gradient. *Global Change Biology* **28**, 6002–6020.

Gillman, L.N., Wright, S.D., Cusens, J., McBride, P.D., Malhi, Y. & Whittaker, R.J. (2015) Latitude, productivity and species richness. *Global Ecology and Biogeography* **24**, 107–117.

Hikosaka, K., Kurokawa, H., Arai, T., Takayanagi, S., Tanaka, H.O., Nagano, S. & Nakashizuka, T. (2021) Intraspecific variations in leaf traits, productivity and resource use efficiencies in the dominant species of subalpine evergreen coniferous and deciduous broad-leaved forests along the altitudinal gradient. *Journal of Ecology* **109**, 1804–1818.

Huang, J., Tardif, J.C., Bergeron, Y., Denneler, B., Berninger, F. & Girardin, M.P. (2010) Radial growth response of four dominant boreal tree species to climate along a latitudinal gradient in the eastern canadian boreal forest. *Global Change Biology* **16**, 711–731.

King, G.M., Gugerli, F., Fonti, P. & Frank, D.C. (2013) Tree growth response along an elevational gradient: climate or genetics? *Oecologia* **173**, 1587–1600.

Klesse, S., DeRose, R.J., Babst, F., Black, B.A., Anderegg, L.D., Axelson, J., Ettinger, A., Griesbauer, H., Guiterman, C.H., Harley, G. *et al.* (2020) Continental-scale tree-ring-based projection of douglas-fir growth: Testing the limits of space-for-time substitution. *Global Change Biology* **26**, 5146–5163.

Liang, P., Wang, X., Sun, H., Fan, Y., Wu, Y., Lin, X. & Chang, J. (2019) Forest type and height are important in shaping the altitudinal change of radial growth response to climate change. *Scientific reports* **9**, 1336.

Martin-Benito, D. & Pederson, N. (2015) Convergence in drought stress, but a divergence of climatic drivers across a latitudinal gradient in a temperate broadleaf forest. *Journal of Biogeography* **42**, 925–937.

Oleksyn, J., Modrzỳnski, J., Tjoelker, M., Z· ytkowiak, R., Reich, P.B. & Karolewski, P. (1998) Growth and physiology of picea abies populations from elevational transects: common garden evidence for altitudinal ecotypes and cold adaptation. *Functional Ecology* **12**, 573–590.

Rapp, J.M., Silman, M.R., Clark, J.S., Girardin, C.A., Galiano, D. & Tito, R. (2012) Intra-and interspecific tree growth across a long altitudinal gradient in the peruvian andes. *Ecology* **93**, 2061–2072.

Wang, M., Jiang, Y., Zhang, W., Dong, M., Kang, M. & Xu, H. (2017) Climatic response of tracheid features of picea meyeri along altitude gradient of luyashan mountains of north china. *Polish Journal of Ecology* **65**, 345–358.

Zhou, Y., Yi, Y., Liu, H., Song, J., Jia, W. & Zhang, S. (2022) Altitudinal trends in climate change result in radial growth variation of pinus yunnanensis at an arid-hot valley of southwest china. *Dendrochronologia* **71**, 125914.

Zhu, L., Wang, X., Pederson, N., Chen, Z., Cooper, D.J., Zhang, Y. & Li, Z. (2018) Spatial variability in growth-climate relationships of amur cork tree (phellodendron amurense) and their connections with pdo in northeast china. *Journal of Geophysical Research: Biogeosciences* **123**, 1625–1636.