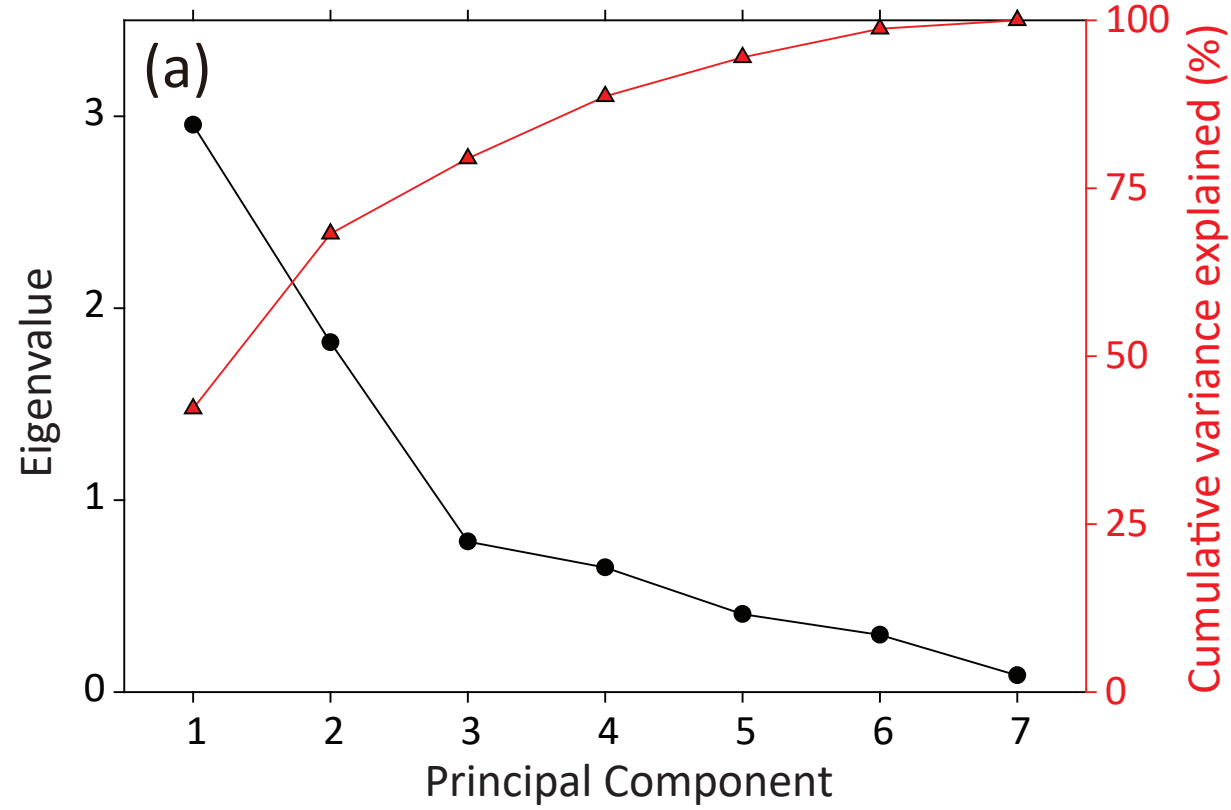
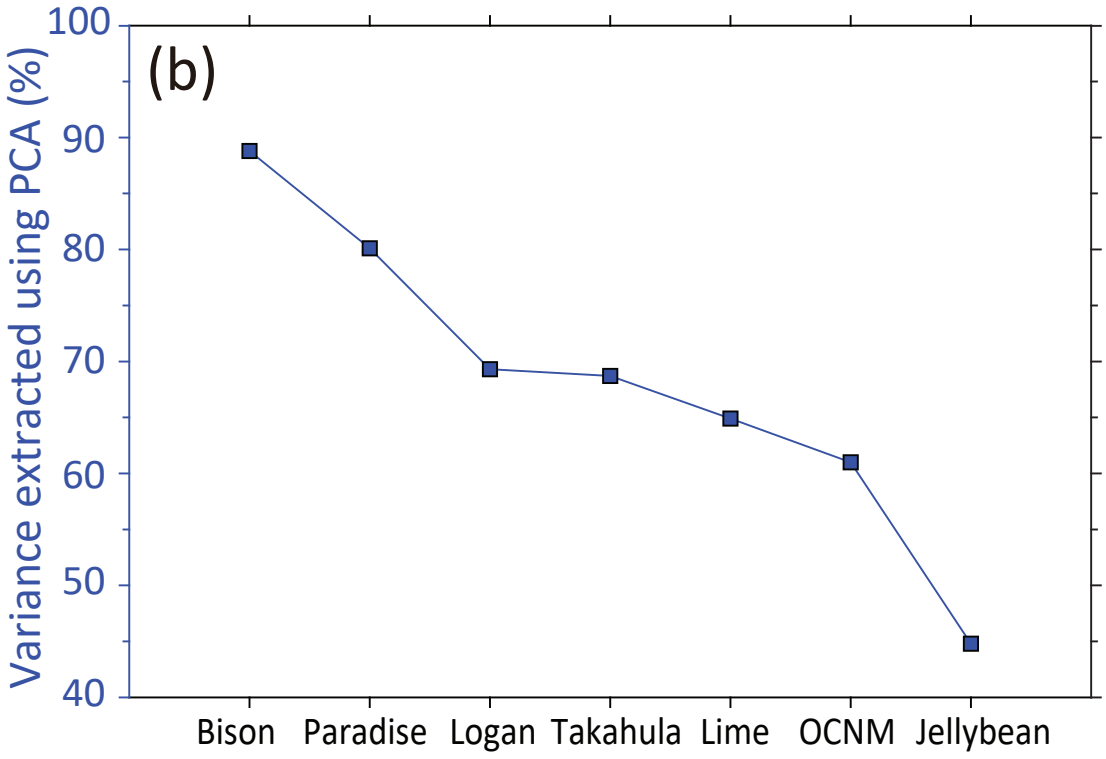
Supplementary Information

Aleutian Low variability for the last 7500 years and its relation to the westerly Jet

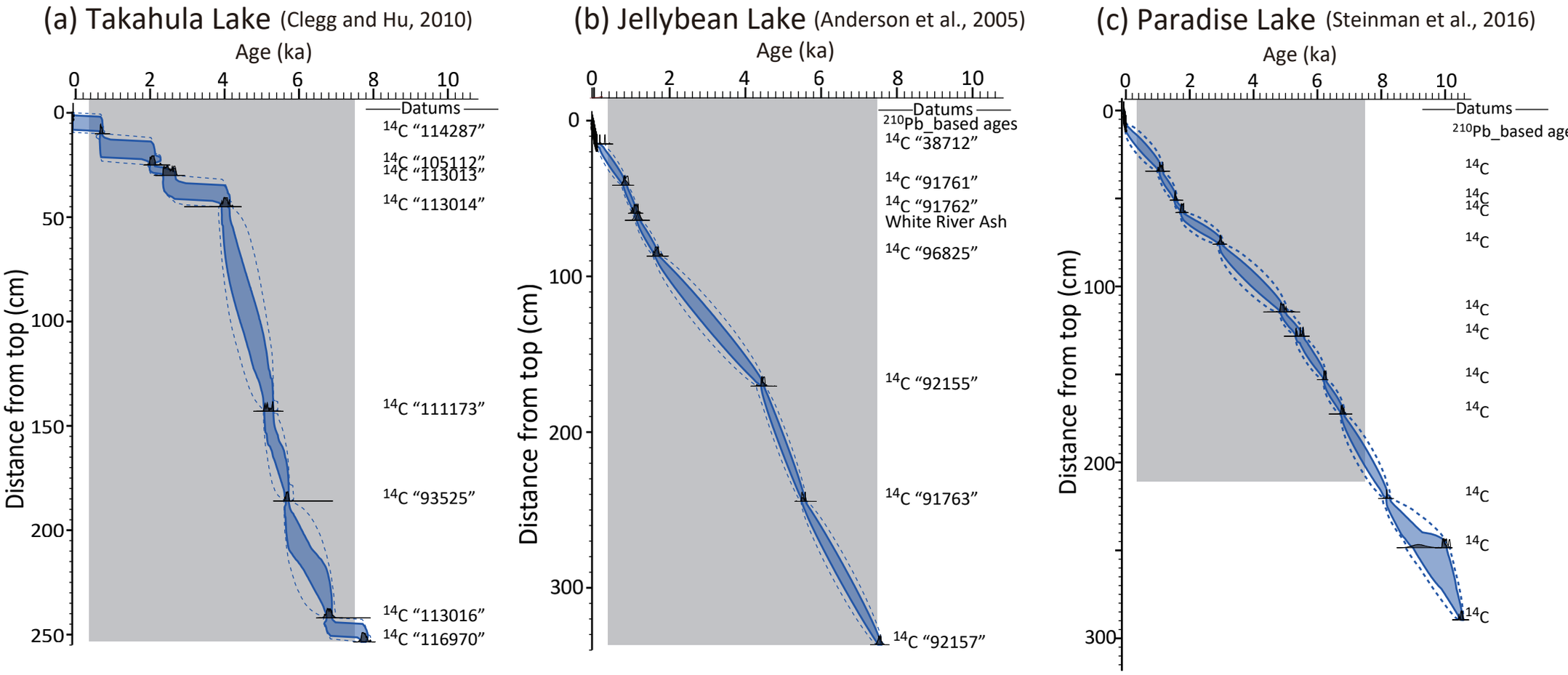
Kana Nagashima, Jason Addison, Tomohisa Irino, Takayuki Omori, Kei Yoshimura, Naomi Harada





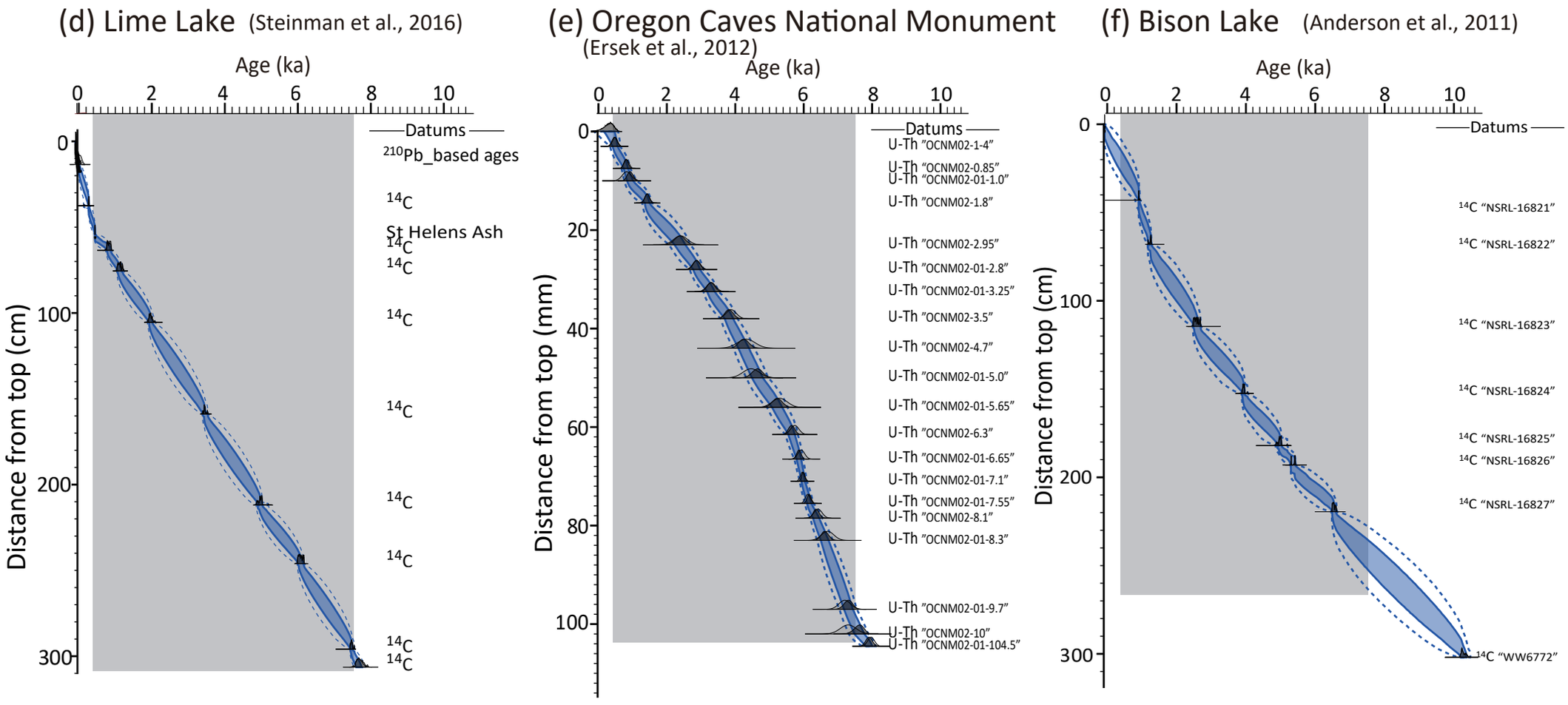
Supplementary Figure 1

PCA diagnostic plots depicting (a) scree plot showing that only PC1 and PC2 have eigenvalues that exceed 1.0, which account for 42 and 24% of the data variance respectively (cumulative 66% variance explained); and (b) extracted communality plot showing the variance explained by the PCA for each underlying data-set. For (b), the PCA was particularly well-suited to describing the data variance for Bison Lake and Paradise Lake (both >80%), as well as Mt. Logan, Takahula Lake, Lime Lake, and OCNM (values between 61-69%).

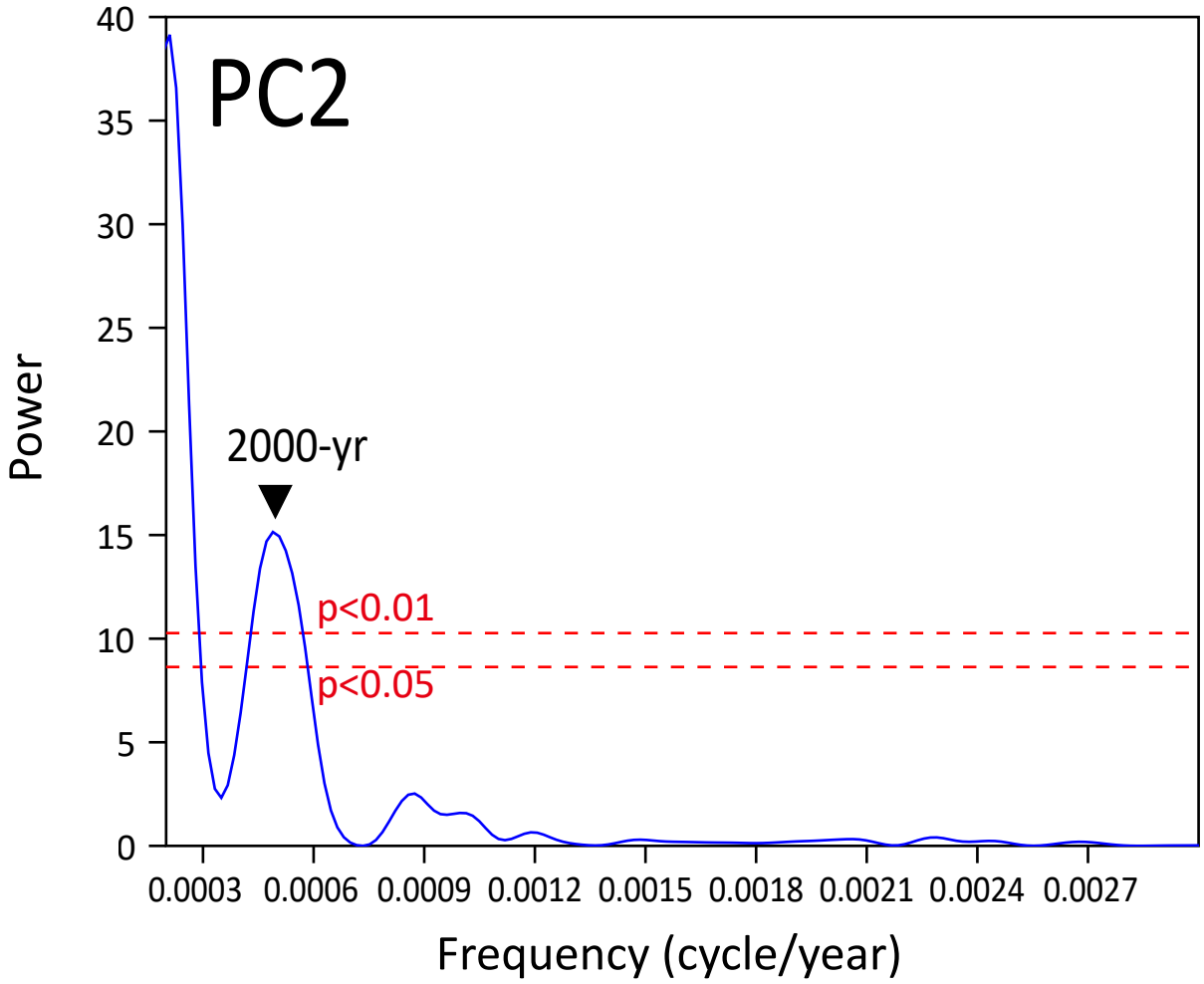


Supplementary Figure 2

Age uncertainties estimated by Bayesian age-depth models using OxCal software (Bronk Ramsey, 2009; https://c14.arch.ox.ac.uk/oxcal.html). The datums reported in each original reference, such as ^{14}C, ^{210}Pb, volcanic events, and U-Th ages were used for Bayesian age-depth models. Shaded blue areas and dotted blue lines indicate the modeled error envelope at 1σ and 2σ level, respectively. The gray areas cover the period during 7.5–0.4 ka.



Supplementary Figure 2 continued



Supplementary Figure 3

The Lomb periodogram (Press et al., 1992) of PC2 for seven $\delta^{18}O$ records from western North America. The 0.01 and 0.05 significance levels (”white noise lines”) are shown as red dashed lines.

Supplementary References

Anderson, L., 2011. Holocene record of precipitation seasonality from lake calcite $\delta^{18}O$ in the central Rocky Mountains, United States. Geology 39 (3), 211–214.

Anderson, L., Abbott, M.B., Finney, B.P., Burns, S.J., 2005. Regional atmospheric circulation change in the North Pacific during the Holocene inferred from lacustrine carbonate oxygen isotopes, Yukon Territory, Canada. Quaternary Research 64, 21–35.

Clegg, B.F., Hu, F.S., 2010. An oxygen-isotope record of Holocene climate change in the south-central Brooks range, Alaska. Quaternary Science Reviews 29, 928–939.

Ersek, V., Clark, P.U., Mix, A.C., Cheng, H., Edwards, L., 2012. Holocene winter climate variability in mid-latitude western North America. Nature Communications 3:1219, doi:10.1038/ncomms2222.

Press, W.H., Teukolsky, S.A., Vetterling, W.T., Flannery, B.P., 1992. Numerical Recipes in C. Cambridge University Press.

Steinman, B.A., Pompeani, D.P., Abbott, M.B., Ortiz, J.D., Stansell, N.D., Finkenbinder, M.S., Mihindukulasooriya, L.N., Hillman, A.L., 2016. Oxygen isotope records of Holocene climate variability in the Pacific Northwest. Quaternary Science Reviews 142, 40–60.