References

\*indicate references from PIs Previous Support

\*Erb, M. P., McKay, N. P., Steiger, N., Dee, S., Hancock, C., Ivanovic, R. F., Gregoire, L. J., and Valdes, P. (2022): Reconstructing Holocene temperatures in time and space using paleoclimate data assimilation. Clim. Past., 18, 2599-2629, doi:10.5194/cp-18-2599-2022.

\*Hancock, C. L., McKay, N. P., Erb, M. P., Kaufman, D. S., Routson, C. R., Ivanovic, R. F., Gregoire, L. J., and Valdes, P. (2023): Global synthesis of regional Holocene hydroclimate variability using proxy and model data. Paleoceanography and Paleoclimatology, 38, e2022PA004597, https://doi.org/10.1029/2022PA004597.

\*Kaufman, D., et al., (2020a): A global database of Holocene paleotemperature records. Sci. Data, 7, 34 pp, doi:10.1038/s41597-020-0445-3.

\*Kaufman, D., McKay, N., Routson, C., Erb, M., Datwyler, C., Sommer, P. S., Heiri, O., and Davis, B., (2020b): Holocene global mean surface temperature, a multi-method reconstruction approach. Sci. Data, 7, 13 pp, doi:10.1038/s41597-020-0530-7.

Barnard, P. L., Short, A. D., Harley, M. D., Splinter, K. D., Vitousek, S., Turner, I. L., ... & Heathfield, D. K. (2015). Coastal vulnerability across the Pacific dominated by El Nino/Southern oscillation. *Nature Geoscience*, *8*(10), 801-807.

Biondi, F., & Waikul, K. (2004). DENDROCLIM2002: A C++ program for statistical calibration of climate signals in tree-ring chronologies. *Computers & geosciences*, *30*(3), 303-311.

Black, B. A., Andersson, C., Butler, P. G., Carroll, M. L., DeLong, K. L., Reynolds, D. J., ... & Witbaard, R. (2019). The revolution of crossdating in marine palaeoecology and palaeoclimatology. *Biology Letters*, *15*(1), 20180665.

Black, B. A., Copenheaver, C. A., Frank, D. C., Stuckey, M. J., & Kormanyos, R. E. (2009). Multi-proxy reconstructions of northeastern Pacific sea surface temperature data from trees and Pacific geoduck. *Palaeogeography, Palaeoclimatology, Palaeoecology*, *278*(1-4), 40-47.

Bowen, M., Markham, J., Sutton, P., Zhang, X., Wu, Q., Shears, N. T., & Fernandez, D. (2017). Interannual variability of sea surface temperature in the southwest Pacific and the role of ocean dynamics. *Journal of Climate*, *30*(18), 7481-7492.

Breen, P. A., Gabriel, C., & Tyson, T. (1991). Preliminary estimates of age, mortality, growth, and reproduction in the hiatellid clam Panopea zelandica in New Zealand. *New Zealand Journal of Marine and Freshwater Research*, *25*(3), 231-237.

Buckley, B. M., Ummenhofer, C. C., D’Arrigo, R. D., Hansen, K. G., Truong, L. H., Le, C. N., & Stahle, D. K. (2019). Interdecadal Pacific Oscillation reconstructed from trans-Pacific tree rings: 1350–2004 CE. *Climate Dynamics*, *53*, 3181-3196.

Bunn, A. G. (2008). A dendrochronology program library in R (dplR). *Dendrochronologia*, *26*(2), 115-124.

Butler, P. G., Richardson, C. A., Scourse, J. D., Wanamaker Jr, A. D., Shammon, T. M., & Bennell, J. D. (2010). Marine climate in the Irish Sea: analysis of a 489-year marine master chronology derived from growth increments in the shell of the clam Arctica islandica. *Quaternary Science Reviews*, *29*(13-14), 1614-1632.

Butler, P. G., Wanamaker Jr, A. D., Scourse, J. D., Richardson, C. A., & Reynolds, D. J. (2013). Variability of marine climate on the North Icelandic Shelf in a 1357-year proxy archive based on growth increments in the bivalve Arctica islandica. *Palaeogeography, Palaeoclimatology, Palaeoecology*, *373*, 141-151.

Cashin, P., Mohaddes, K., & Raissi, M. (2017). Fair weather or foul? The macroeconomic effects of El Niño. *Journal of International Economics*, *106*, 37-54.

Cassou, C., Kushnir, Y., Hawkins, E., Pirani, A., Kucharski, F., Kang, I. S., & Caltabiano, N. (2018). Decadal climate variability and predictability: Challenges and opportunities. *Bulletin of the American Meteorological Society*, *99*(3), 479-490.

Chiswell, S., & Grant, B. (2018). New Zealand coastal sea surface temperature. *NIWA report prepared for the NZ Ministry for the Environment*.

Clem, K. R., Fogt, R. L., Turner, J., Lintner, B. R., Marshall, G. J., Miller, J. R., & Renwick, J. A. (2020). Record warming at the South Pole during the past three decades. *Nature Climate Change*, *10*(8), 762-770.

Coan, E. V., P. V. Scott, and F. R. Bernard (2000), Bivalve Seashells of Western North America, Santa Barbara Museum of Natural History, Santa Barbara

Cook, E. R., & Kairiukstis, L. A. (Eds.). (1990). *Methods of dendrochronology: applications in the environmental sciences*. Springer Science & Business Media.

Cook, E. R., Seager, R., Cane, M. A., & Stahle, D. W. (2007). North American drought: Reconstructions, causes, and consequences. *Earth-Science Reviews*, *81*(1-2), 93-134.

Dai, A. (2013). The influence of the inter-decadal Pacific oscillation on US precipitation during 1923–2010. *Climate dynamics*, *41*(3-4), 633-646.

Dai, A. (2013): The influence of the inter-decadal Pacific oscillation on US precipitation during 1923-2010. Clim. Dyn., 41, 633-646, doi:10.1007/s00382-012-1446.5.

Dai, A., Fyfe, J. C., Xie, S. P., & Dai, X. (2015). Decadal modulation of global surface temperature by internal climate variability. *Nature Climate Change*, *5*(6), 555-559.

de Lange, W. P. (2001). Interdecadal Pacific Oscillation (IPO): a mechanism for forcing decadal scale coastal change on the northeast coast of New Zealand?. *Journal of Coastal Research*, 657-664.

Deser, C., Alexander, M. A., Xie, S. P., & Phillips, A. S. (2010). Sea surface temperature variability: Patterns and mechanisms. *Annual review of marine science*, *2*, 115-143.

Di Lorenzo, E. N. S. O., Liguori, G., Schneider, N., Furtado, J. C., Anderson, B. T., & Alexander, M. A. (2015). ENSO and meridional modes: A null hypothesis for Pacific climate variability. *Geophysical Research Letters*, *42*(21), 9440-9448.

Dong, B., & Dai, A. (2015). The influence of the interdecadal Pacific oscillation on temperature and precipitation over the globe. *Climate Dynamics*, *45*, 2667-2681.

Douglass, A. E. (1941). Crossdating in dendrochronology. Journal of Forestry, 39(10), 825-831.

Edge, D. C., Reynolds, D. J., Wanamaker, A. D., Griffin, D., Bureau, D., Outridge, C., ... & Black, B. A. (2021). A multicentennial proxy record of Northeast Pacific sea surface temperatures from the annual growth increments of Panopea generosa. *Paleoceanography and Paleoclimatology*, *36*(9), e2021PA004291.

Edge, D. C., Wanamaker, A. D., Staisch, L. M., Reynolds, D. J., Holmes, K. L., & Black, B. A. (2023). A modern multicentennial record of radiocarbon variability from an exactly dated bivalve chronology at the Tree Nob site (Alaska coastal current). *Radiocarbon*, *65*(1), 81-96.

England, M. H., McGregor, S., Spence, P., Meehl, G. A., Timmermann, A., Cai, W., ... & Santoso, A. (2014). Recent intensification of wind-driven circulation in the Pacific and the ongoing warming hiatus. *Nature climate change*, *4*(3), 222-227.

Eyring, V., Bony, S., Meehl, G. A., Senior, C. A., Stevens, B., Stouffer, R. J., and Taylor, K. E. (2016): Overview of the Coupled Model Intercomparison Project Phase 6 (CMIP6) experimental design and organization. Geosci. Model Dev., 9, 1937-1958, doi:10.5194/gmd-9-1937-2016.

Folland, C. K., & Parker, D. E. (1995). Correction of instrumental biases in historical sea surface temperature data. *Quarterly Journal of the Royal Meteorological Society*, *121*(522), 319-367.

Fritts, H. C. (1976). Tree rings and climate Academic Press. *New York*.

Goodkin, N. F., Samanta, D., Bolton, A., Ong, M. R., Hoang, P. K., Vo, S. T., ... & Hughen, K. A. (2021). Natural and Anthropogenic Forcing of Multi‐Decadal to Centennial Scale Variability of Sea Surface Temperature in the South China Sea. *Paleoceanography and Paleoclimatology*, *36*(10), e2021PA004233.

Gribben, P. E., & Creese, R. G. (2005). Age, growth, and mortality of the New Zealand geoduck clam, Panopea zelandica (Bivalvia: Hiatellidae) in two North Island populations. *Bulletin of Marine Science*, *77*(1), 119-136.

Gribben, P. E., & Heasman, K. G. (2015). Developing fisheries and aquaculture industries for Panopea zelandica in New Zealand. *Journal of Shellfish Research*, *34*(1), 5-10.

Grigg, R. W. (1982). Darwin Point: a threshold for atoll formation. *Coral reefs*, *1*, 29-34.

Guan, B., & Nigam, S. (2008). Pacific sea surface temperatures in the twentieth century: An evolution-centric analysis of variability and trend. *Journal of Climate*, *21*(12), 2790-2809.

Henley, B. J., & King, A. D. (2017). Trajectories toward the 1.5 C Paris target: modulation by the Interdecadal Pacific Oscillation. *Geophysical Research Letters*, *44*(9), 4256-4262.

Henley, B. J., Gergis, J., Karoly, D. J., Power, S., Kennedy, J., & Folland, C. K. (2015). A tripole index for the interdecadal Pacific oscillation. *Climate dynamics*, *45*, 3077-3090.

Henley, B. J., Meehl, G., Power, S. B., Folland, C. K., King, A. D., Brown, J. N., Karoly, D. J., Delage, F., Gallant, A. J. E., Freund, M., and Neukom, R. (2017): Spatial and temporal agreement in climate model simulations of the Interdecadal Pacific Oscillation. Environ. Res. Lett., 12, 11 pp., https://doi.org/10.1088/1748-9326/aa5cc8.

Hersbach, H., et al., (2020): The ERA5 global reanalysis. Q. J. R. Meteorol. Soc., 146, 1999-2049, doi:10.1002/qj.3803.

Kosaka, Y., and S.-P. Xie (2013), Recent global-warming hiatus tied to equatorial Pacific surface cooling, Nature, 501, 403–407, doi:10.1038/nature12534.

Kushnir, Y., Scaife, A. A., Arritt, R., Balsamo, G., Boer, G., Doblas-Reyes, F., ... & Wu, B. (2019). Towards operational predictions of the near-term climate. *Nature Climate Change*, *9*(2), 94-101.

Langenbrunner, B., and Neelin, J. D. (2013): Analyzing ENSO teleconnections in CMIP models and a measure of model fidelity in simulating precipitation. J. Climate, 26, 4431-4446, doi:10.1175/JCLI-D-12-00542.1.

Larsson, L. A. (2003). CooRecorder: image co-ordinate recording program.

Lavin, C. P., Gordo-Vilaseca, C., Stephenson, F., Shi, Z., & Costello, M. J. (2022). Warmer temperature decreases the maximum length of six species of marine fishes, crustacean, and squid in New Zealand. *Environmental Biology of Fishes*, *105*(10), 1431-1446.

Li, Q., & England, M. H. (2020). Tropical Indo‐Pacific teleconnections to Southern Ocean mixed layer variability. *Geophysical Research Letters*, *47*(15), e2020GL088466.

Linsley, B. K., Zhang, P., Kaplan, A., Howe, S. S., & Wellington, G. M. (2008). Interdecadal‐decadal climate variability from multicoral oxygen isotope records in the South Pacific Convergence Zone region since 1650 AD. *Paleoceanography*, *23*(2).

Lower‐Spies, E. E., Whitney, N. M., Wanamaker, A. D., Griffin, S. M., Introne, D. S., & Kreutz, K. J. (2020). A 250‐year, decadally resolved, radiocarbon time history in the Gulf of Maine reveals a hydrographic regime shift at the end of the little ice age. *Journal of Geophysical Research: Oceans*, *125*(9), e2020JC016579.

Macias-Fauria, M., Grinsted, A., Helama, S., & Holopainen, J. (2012). Persistence matters: Estimation of the statistical significance of paleoclimatic reconstruction statistics from autocorrelated time series. *Dendrochronologia*, *30*(2), 179-187.

Mantua, N. J., Hare, S. R., Zhang, Y., Wallace, J. M., & Francis, R. C. (1997). A Pacific interdecadal climate oscillation with impacts on salmon production. *Bulletin of the american Meteorological Society*, *78*(6), 1069-1080.

Meehl, G. A., & Hu, A. (2006). Megadroughts in the Indian monsoon region and southwest North America and a mechanism for associated multidecadal Pacific sea surface temperature anomalies. *Journal of Climate*, *19*(9), 1605-1623.

Meehl, G. A., A. Hu, B. D. Santer, and S.-P. Xie (2016a), Contribution of the Interdecadal Pacific Oscillation to twentieth-century global surface temperature trends, Nat. Clim. Change, 1, 13–16.

Meehl, G. A., Hu, A., & Tebaldi, C. (2010). Decadal prediction in the Pacific region. *Journal of Climate*, *23*(11), 2959-2973.

Meehl, G. A., Hu, A., Arblaster, J. M., Fasullo, J., & Trenberth, K. E. (2013). Externally forced and internally generated decadal climate variability associated with the Interdecadal Pacific Oscillation. *Journal of Climate*, *26*(18), 7298-7310.

Ministry for Primary Industries. (2022). Fisheries Assessment Plenary May 2022: Stock Assessments and Stock Status.

Mohino, E., Janicot, S., & Bader, J. (2011). Sahel rainfall and decadal to multi-decadal sea surface temperature variability. *Climate dynamics*, *37*, 419-440.

Mullan AB, Stuart SJ, Hadfield MG, Smith MJ. 2010. Report on the Review of NIWA's 'Seven-Station' Temperature Series. NIWA Information Series No. 78, ISSN 1174-264X, 175p., <http://www.niwa.co.nz/ourscience/climate/information-andresources/nz-temp-record/seven-stationseries-temperature-data>).

Neuheimer, A. B., Thresher, R. E., Lyle, J. M., & Semmens, J. M. (2011). Tolerance limit for fish growth exceeded by warming waters. *Nature Climate Change*, *1*(2), 110-113.

Newman, M., Alexander, M. A., Ault, T. R., Cobb, K. M., Deser, C., Di Lorenzo, E., ... & Smith, C. A. (2016). The Pacific decadal oscillation, revisited. *Journal of Climate*, *29*(12), 4399-4427.

Nidheesh, A. G., Lengaigne, M., Vialard, J., Izumo, T., Unnikrishnan, A. S., Cassou, C. (2017): Influence of ENSO on the Pacific decadal oscillation in CMIP models. J. Climate, 49, 3309-3326, doi:10.1007/s00382-016-3514-8.

Nidheesh, A. G., Lengaigne, M., Vialard, J., Izumo, T., Unnikrishnan, A. S., & Cassou, C. (2017). Influence of ENSO on the Pacific decadal oscillation in CMIP models. *Climate Dynamics*, *49*, 3309-3326.

O’Neill, B. C., Kriegler, E., Ebi, K. L., Kemp-Benedict, E., Riahi, K., Rothman, D. S., van Ruijven, B. J., van Vuuren, D. P., Birkmann, J., Kok, K., Levy, M., and Solecki, W. (2017): The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century. Global Environmental Change, 42, 169-180, http://dx.doi.org/10.1016/j.gloenvcha.2015.01.004.

Otto-Bliesner, B. L., Brady, E. C., Fasullo, J., Jahn, A., Landrum, L., Stevenson, S., Rosenbloom, N., Mai, A., and Strand, G. (2016): Climate variability and change since 850 CE: An ensemble approach with the Community Earth System Model. B. Am. Meteorol. Soc., 97, 735-754, https://doi.org/10.1175/BAMS-D-14-00233.1.

PAGES 2k Consortium. (2013). Continental-scale temperature variability during the past two millennia. *Nature geoscience* 6, no. 5: 339-346.

PAGES2k Consortium. (2017). A global multiproxy database for temperature reconstructions of the Common Era. *Scientific data*, *4*.

Palmer, J. G., Cook, E. R., Turney, C. S., Allen, K., Fenwick, P., Cook, B. I., ... & Baker, P. (2015). Drought variability in the eastern Australia and New Zealand summer drought atlas (ANZDA, CE 1500–2012) modulated by the Interdecadal Pacific Oscillation. *Environmental Research Letters*, *10*(12), 124002.

Parker, D. E., Folland, C. K., & Jackson, M. (1995). Marine surface temperature: observed variations and data requirements. *Climatic change*, *31*(2-4), 559-600.

Planton, Y. Y., Guilyardi, E., Wittenberg, A. T., Lee, J., Gleckler, P. J., Bayr, T., McGregor, S., McPhaden, M. J., Power, S., Roehrig, R., Vialard, J., and Voldoire, A. (2021): Evaluating climate models with the CLIVAR 2020 ENSO metrics package. B. Am. Meteorol. Soc., 102, E193-E217, https://doi.org/10.1175/BAMS-D-19-0337.1.

Porter, S. E., Mosley-Thompson, E., Thompson, L. G., & Wilson, A. B. (2021). Reconstructing an interdecadal Pacific oscillation index from a Pacific basin–wide collection of ice core records. *Journal of Climate*, *34*(10), 3839-3852.

Power, S., Casey, T., Folland, C., Colman, A., & Mehta, V. (1999). Inter-decadal modulation of the impact of ENSO on Australia. *Climate dynamics*, *15*, 319-324.

Rayner, N. A. A., Parker, D. E., Horton, E. B., Folland, C. K., Alexander, L. V., Rowell, D. P., ... & Kaplan, A. (2003). Global analyses of sea surface temperature, sea ice, and night marine air temperature since the late nineteenth century. *Journal of Geophysical Research: Atmospheres*, *108*(D14).

Reynolds, D. J., Edge, D. C., & Black, B. A. (2021). RingdateR: A statistical and graphical tool for crossdating. *Dendrochronologia*, *65*, 125797.

Reynolds, D. J., Hall, I. R., Scourse, J. D., Richardson, C. A., Wanamaker, A. D., & Butler, P. G. (2017). Biological and climate controls on North Atlantic Marine carbon dynamics over the last millennium: Insights from an absolutely dated shell‐based record from the north icelandic shelf. *Global Biogeochemical Cycles*, *31*(12), 1718-1735.

Reynolds, D. J., Hall, I. R., Slater, S. M., Scourse, J. D., Halloran, P. R., & Sayer, M. D. J. (2017). Reconstructing past seasonal to multicentennial‐scale variability in the NE Atlantic Ocean using the long‐lived marine bivalve mollusk Glycymeris glycymeris. *Paleoceanography*, *32*(11), 1153-1173.

Reynolds, D. J., Scourse, J. D., Halloran, P. R., Nederbragt, A. J., Wanamaker, A. D., Butler, P. G., ... & Hall, I. R. (2016). Annually resolved North Atlantic marine climate over the last millennium. *Nature Communications*, *7*(1), 13502.

Santoso, A., Mcphaden, M. J., & Cai, W. (2017). The defining characteristics of ENSO extremes and the strong 2015/2016 El Niño. *Reviews of Geophysics*, *55*(4), 1079-1129.

Scourse, J., Richardson, C., Forsythe, G., Harris, I., Heinemeier, J., Fraser, N., ... & Jones, P. (2006). First cross-matched floating chronology from the marine fossil record: data from growth lines of the long-lived bivalve mollusc Arctica islandica. *The Holocene*, *16*(7), 967-974.

Strom, A., Francis, R. C., Mantua, N. J., Miles, E. L., & Peterson, D. L. (2004). North Pacific climate recorded in growth rings of geoduck clams: a new tool for paleoenvironmental reconstruction. *Geophysical Research Letters*, *31*(6).

Timmermann, A., An, S. I., Kug, J. S., Jin, F. F., Cai, W., Capotondi, A., ... & Zhang, X. (2018). El Niño–southern oscillation complexity. *Nature*, *559*(7715), 535-545.

Titchner, H. A., and Rayner, N. A. (2014): The Met Office Hadley Centre sea ice and sea surface temperature data set, version 2: 1. Sea ice concentrations. J. Geophys. Res. Atmos., 119, 2864-2889, doi:10.1002/2013JD020316.

Trenberth, K. E. (2015). Has there been a hiatus?. *Science*, *349*(6249), 691-692.

Trenberth, K. E., and J. T. Fasullo (2013), An apparent hiatus in global warming? Earth’s Future, 1, 19–32, doi:10.1002/2013EF000165.

Vance, T. R., Kiem, A. S., Jong, L. M., Roberts, J. L., Plummer, C. T., Moy, A. D., ... & van Ommen, T. D. (2022). Pacific decadal variability over the last 2000 years and implications for climatic risk. *Communications Earth & Environment*, *3*(1), 33.

Venables, W. N., & Ripley, B. D. (2013). *Modern applied statistics with S-PLUS*. Springer Science & Business Media.

Wanamaker Jr, A. D., Butler, P. G., Scourse, J. D., Heinemeier, J., Eiríksson, J., Knudsen, K. L., & Richardson, C. A. (2012). Surface changes in the North Atlantic meridional overturning circulation during the last millennium. *Nature Communications*, *3*(1), 899.

White, W., Slater, A., & Millar, R. (2017). Biomass Assessment of Geoduc (Panopea zelandica) From Northern Golden Bay in Fishing Management Area 7.

Woodruff, S. D., Slutz, R. J., Jenne, R. L., & Steurer, P. M. (1987). A comprehensive ocean-atmosphere data set. *Bulletin of the American meteorological society*, *68*(10), 1239-1250.

Zang, C., & Biondi, F. (2015). treeclim: an R package for the numerical calibration of proxy‐climate relationships. *Ecography*, *38*(4), 431-436.