

EGU2020-6218

<https://doi.org/10.5194/egusphere-egu2020-6218>

EGU General Assembly 2020

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## An annually dated Interdecadal Pacific Oscillation reconstruction spanning the last two millennia

**Tessa Vance**<sup>1</sup>, Anthony Kiem<sup>2</sup>, Jason Roberts<sup>3</sup>, Lenneke Jong<sup>3</sup>, Chris Plummer<sup>1</sup>, Mark Curran<sup>3</sup>, Andrew Moy<sup>3</sup>, and Tas van Ommen<sup>3</sup>

<sup>1</sup>Institute for Marine and Antarctic Studies, University of Tasmania, Hobart, Tasmania 7004, Australia  
([tessa.vance@utas.edu.au](mailto:tessa.vance@utas.edu.au))

<sup>2</sup>Centre for Water, Climate and Land (CWCL), Faculty of Science, University of Newcastle, Callaghan, NSW 2308, Australia

<sup>3</sup>Australian Antarctic Division, Kingston, Tasmania 7050, Australia

The Interdecadal Pacific Oscillation (IPO) is a nominally 15-30 year climate mode that has been identified through analysis of tropical and extratropical Pacific sea surface temperatures over the past 150 years. It is still unclear whether the IPO is a true oscillation or whether it is simply the low frequency response of the climate system to forcing (natural and potentially anthropogenic), principally ENSO. Regardless of this, the IPO as it is currently known has clear climate impacts, one example being hydroclimate variability in Australia. In positive phases of the IPO, drought risk is heightened due to a reduction in the likelihood of large, recharging La Nina-derived rainfall events. Conversely, in IPO negative phases, flood risk in Australia is greatly increased due to an increased likelihood of such rain events.

Previous work derived a 1000 year, accurately dated reconstruction of the IPO from multiple palaeoclimate archives from the Law Dome ice core in East Antarctica. This reconstruction provided a long-term reconstruction with which to assess the true risk of drought- and flood-prone epochs in Australia. Subsequently, an entirely independent reconstruction of the IPO was developed using SE Asian tree rings by Buckley et al. in 2019, also spanning most of the last millennium. The fidelity the two reconstructions display with respect to the instrumental IPO record and with each other suggests both are faithfully representing IPO variability. Here we present an IPO reconstruction that doubles the temporal span of existing reconstructions to cover the last 2000 years using newly analysed and dated material from the Law Dome ice core. This new, longer reconstruction identifies important features of Pacific decadal variability that have significant implications for understanding hydroclimate epochs across not only Australasia, but the Pacific region as a whole.