



Winter atmospheric teleconnections during the past centuries as derived from a global data set of coral records

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We investigate the relationship between dominant modes of interannual and decadal variability observed in a data set of worldwide distributed coral-based proxy records of climate variability and global sea surface temperature (SST), sea level pressure (SLP), land temperature (T) and land precipitation (PP). We used 18 published, seasonally resolved coral records covering the past few centuries. The spatial patterns of SST, SLP, T and PP associated with the dominant mode of interannual variability in the coral records resemble those typical for the El Nino-Southern Oscillation (ENSO) phenomenon. We also show that the coral records capture the decadal variability of the ENSO atmospheric teleconnections during the instrumental period. At decadal timescales the spatial patterns of SST, SLP, T and PP associated with the leading mode of variability in the coral records resemble those typical for the Pacific Decadal Oscillation (PDO). The time coefficients of the leading mode of coral variability show significant variance at periods of about 80, 25 and 12 years. The enhanced variability at these timescales may be interpreted as the signatures of the dominant modes of observed decadal climate variability in the coral data set.