320 years of modern sea surface pH and SST variability in the South Pacific from coral proxy records

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Ma ine calcif ing gani m a e nde h ea f m gl bal clima e change, i.e. cean acidifica i n (OA) and a ming ea face em e a e (SST) ha e l f m inc ea ing an h genic CO_2 emi i n . I i h im an be e nde and h ma ine ec em and eef-b ilding c al ha e e nded clima e change ela i e hi ical H and SST a iabili . T c n ain he na al a iabili f H and ide ba eline ec n c i n and an ifica i n f OA, e mea ed $\delta^{11}B$ c m i i n in an ann all banded m de n ma i e c al, *Diploastrea heliopora*, f m Ne Caled nia in he h e e n Pacific. Thi c al di la nin e ed g h be een 1690-2012 CE c e ing hi ical e i d f m he e mina i n f he Ma nde Minim m (ca. 1690-1715 CE) h gh he beginning f he Ind ial Re l i n (ca. 1760-1830 CE) and in he m de n e a (1900 CE e en). The m iking fea e f m H ec n c i n i he e idence f OA (dec ea e in ea face H) ba ed n he de le ing $\delta^{11}B$ a i in he m ecen i n f he ec d. The di inc end f dec ea ing $\delta^{13}C$ a i in hi c al d c men and c nfi m he ceanic S e Effec d e inc ea e in an h genic a m he ic CO_2 c ncen a i n. Thi m de n dec ea e in ec n c ed H i c nc en he ignifican a ming end f a lea l C a e ealed b c al-ba ed SST ie (i.e., S /Ca and $\delta^{18}O$). The in e ann al and l nge - e m decadal in e decadal a iabili f ec d indica e a c led an i- ha e ela i n hi be een H and SST eflec ing imila clima ic d i e ela ed he El Ni /S he n O cilla i n (ENSO) and Pacific Decadal O cilla i n. O e l he en ial f hi c al gen a an a chi e d gl bal clima e change he e he l e f e enc a iabili f S h Pacific H and SST a e ngl m d la ed b ENSO and a e c he en i h ec d ac he g ea e Pacific ba in.