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A Standardized Database of Marine Isotope Stage 5a and 5c Paleo-Shoreline Indicators

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Reconstructions of global mean sea level (GMSL) through interstadials such as Marine Isotope Stages (MIS) 5a and 5c provide important constraints on the rates of growth and collapse of major ice sheets during warm periods analogous to future climate projections. These reconstructions rely upon precisely dated geomorphic and sedimentological indicators for past sea level whose present elevations are complicated by tectonics and glacial isostatic adjustment (GIA). Compilations of MIS 5a and 5c paleo-sea level indicators that covering a wide geographic range can be used to minimize misfit with glacial isostatic adjustment models and thereby quantify and refine the convolved contribution of GMSL to the present elevation of paleo-shoreline indicators. Here we present a global compilation of previously published Marine Isotope Stages 5a and 5c local sea level indicators from 39 sites covering three main regions: the Pacific coast of North America, the Atlantic coast of North America and the Caribbean, and far field. We describe the standardized entry of these data into the World Atlas of Last Interglacial Shorelines (WALIS) database. Each entry within the MIS 5a and 5c WALIS database reproduces from the primary literature the indicator elevation, indicative meaning, and geochronology, along with a comprehensive overview of the literature for each site. While MIS 5a and 5c indicators sites are geographically widespread, these data are also patchy and preferentially represent the North American continent and the Caribbean and, hence, regions intermediate and far afield of the contemporaneous ice sheets. While this dataset will support future refinements to MIS 5a and 5c GMSL reconstructions arising from GIA modeling, it also motivates further data collection.