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Inception of a global atlas of Holocene sea levels

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Determining the rates, mechanisms and geographic variability of sea-level change is a priority science question for the next decade of ocean research. To address these research priorities, the HOLocene SEA-level variability (HOLSEA) working group is developing the first standardized global synthesis of Holocene relative sea-level data to: (1) estimate the magnitudes and rates of global mean sea-level change during the Holocene; and (2) identify trends in spatial variability and decipher the processes responsible for geographic differences in relative sea-level change.

Here we present the preliminary efforts of the working group to compile the database, which includes sea-level index points and limiting data from a range of different indicators across seven continents from the Last Glacial Maximum to present. We follow a standard protocol that incorporates full consideration of vertical and temporal uncertainty for each sea-level index point, including uncertainties associated with the relationship of each indicator to past sea-level and the methods used to date each indicator. We describe the composition of the global database, identify gaps in data availability, and highlight our effort to create an online platform to access the data. These data will be made available in a special issue of Quaternary Science Reviews and archived on NOAA's National Centers for Environmental Information (NCEI) in early 2018. We also invite researchers who collect or model Holocene sea-level data to participate. Long-term, this effort will enhance predictions of 21st century sea-level rise, and provide a vital contribution to the assessment of natural hazards with respect to sea-level rise and coastal response.