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Sediment record of precipitation and changes in circulation in Bohol Sea area since the Last Glacial Maximum

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Deep marine sediments may provide insights of past climate and oceanographic events. Knowledge of the past events can aid in scenario setting of future climate and their oceanographic consequences. A deep sea sediment core from the western side of Bohol Sea, a marginal sea located south of the Philippines, was used to reconstruct precipitation and identify the impacts of sea level rise on the circulation of Bohol Sea. Five radiocarbon dates from bulk organic matter provide age control spanning back to the Last Glacial Maximum. Sedimentological (lithics and carbonate fractions; bulk density; sedimentation rate and mass accumulation rate) and geochemical (Ti, Al, Zr, Ti/Al and Y/Ni) data were used to reconstruct the sediment input for the area. Sediment input was decreasing from 20-15ka, followed by a relatively stable trend until ~9ka. After ~9ka sediment input increased up until the most recent years. Sedimentation trend follows the average winter (DJF) insolation curve at 10°N. This signifies that the sediment input reflects the general changes in precipitation in the area. Lithics and carbonate contents reflect a shift in sediment source that could be attributed to the change in circulation in the basin as the sea level rose to overtop the Surigao Strait located at the northeastern side of the basin. Greater westward transport of suspended material from large rivers to the east would contribute to the sedimentation in the western part of Bohol Sea.