



Non-cohesive fine grained turbidity current flow processes: insights from Late Holocene sandy-silt and silty-sand turbidites

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Silt-rich turbidites are commonly interpreted as distal deposits associated with interlaminated clay and silt deposition of turbidity current tails and overspilling flows. Here multibeam bathymetric and shallow sediment core data from the intraslope Secretary, Looking Glass and George basins, offshore Fiordland, New Zealand are used to describe a suite of Late Holocene proximal sandy-silt and silty-sand turbidites that contain negligible clay and a wide variety of vertical grading patterns. The silt-sand sediment mixtures and diversity of preserved vertical grading patterns imply a range of non-cohesive turbidity current flow processes, and a wide variety of flow concentrations. For example, inversely graded turbidites are interpreted to preserve evidence of deposition of traction carpets from high concentration silt-sand flows. The very fine and fine sand modal grain sizes of sandy-silt and silty-sand turbidites are significantly coarser than classical abyssal plain silt turbidites and generally coarser than overbank silt turbidites. While the low percentage of clays within sandy-silt and silty-sand turbidites represents a fundamental difference between these and other silt and mud turbidites we suggest these beds represent a previously poorly described suite of proximal deposits.