Table SM1. Sedimentologic attributes of lithofacies identified in the studied successions. Turbidite divisions are from Bouma (1962) and Lowe (1982).

Lithology	Description	Interpretation	Occurrence	Depositional element
Clast-supported conglomerates	Poorly sorted, clast-supported, granule- to cobble-size, medium- to thick-bedded conglomerates in a coarse sandy matrix variably interbedded with a significantly minor proportion of thin lenticular sandstone beds and pebbly mudstones. Clasts are well-rounded and extrabasinal. Internally, beds are mostly massive or with subordinate inverse grading (R3). The prevalent bedding is tabular, lenticular or, to a lesser extent, cross-stratified (both R1 and lateral accretion of channel margins). Extensive channelling and scouring have produced complex cross-cutting relationships and intense amalgamation of conglomerate beds. .	The diverse range of sedimentary structures and grading characteristics suggests that most of the clasts were supported by the combined effects of fluid turbulence and dispersive pressure. Deposition occurred by rapid sedimentation beneath channelized, gravelly, high-concentration turbidity currents. Sets of large-scale, cross-stratified conglomerate beds indicate significant bed-load transport of gravel- and cobble-forming bars in the channels and were deposited by largely bypassing turbulent flows.	MA-1, MA-2, MA-3, MA-4, MA-5, MA-5, MA-8, MA-9, MA-13, CST-3, CST-4, CST-5, O-1, O-2, O-4, O-5, CM-1, CM2, CM-3, CM-4, CM-5, CM-6, CM-7.	**Conglomerate-dominated channel-complex:** The poorly sorted but clast-supported texture of the conglomerates, their high degree of channeling, the multiple truncation surfaces, the variability and noticeable dispersion in the prevailing palaeocurrent directions, all point to suggest that this lithofacies relates to a very active, deep-marine braid plain system characterized by a dense network of shifting, multiple-thread, relatively short-lived channels within a submarine channel belt.
Thin- to thick-bedded sandstones	This lithofacies forms composite sandstone-rich sedimentary bodies. Within these bodies, overall bedding architecture and lateral bed continuity is controlled by the presence of high-relief, closely spaced, incisional surfaces that are channel-form in cross-sectional shape. The deepest parts of individual surfaces is characterised by lenses of clast-supported, massive or cross-bedded extrabasinal conglomerates (R1). Directly overlying the basal conglomerates are tabular, thin- to thick-bedded, structureless sandstones (S3) that, in some cases, pass up into plane-laminated sandstones (Tb). Toward the channel margin, sandstone beds either thin and onlap the bounding surface or thin rapidly laterally into thin-bedded sandstones and mudstones that form inclined bedsets draping the basal surface of erosion.	The basal conglomerates are bypass lags built out of extrabasinal clasts left behind by through-going, high-density gravity flows. Sandstones beds record suspension deposition from collapsing, turbulent, sediment-laden flows followed by traction sedimentation towards the end of the flow events.	CST-1, CST-2.	**Sandstone-dominated channel complex:** Based on the complex internal organization, each of these sandstone bodies consists of the remnants of a series of erosive-based, laterally stacked turbidite channel fills (i.e., they are sand-prone channel complexes). This type of sedimentary architecture records multiple episodes of channel incision, bypass, and filling that, in turn, can be interpreted as the product of repeated cycles of increasing than decreasing flow energy.
Medium- to thick-bedded amalgamated sandstones	This lithofacies consists of medium- to coarse-grained sandstones, and subsidiary pebbly sandstones, mudstone-clast breccia, and lenses of pebble and cobble conglomerate. Sandstone beds are medium- to thick-bedded and display abundant basal scours and amalgamation surfaces. Mudstone drapes between sandstone beds are rare to absent. Internally, sandstone sedimentation units are typically ungraded or crudely normally graded and structureless, preserving only dewatering structures (S3). Some beds show faint to well-developed parallel lamination near the top (S3Tb). Lateral continuity of beds is highly variable and controlled by the presence of erosional cuts that are typically associated with lenticular, clast-supported gravel lags and mud-clast breccias. The bedding architecture between succeeding erosional surfaces displays an overall thinning-upward trend.	Thick-bedded, amalgamated, massive to normally-graded, sandstone beds rich in dewatering structures are commonly interpreted as the result of rapid suspension deposition by collapsing, highly sediment-charged turbulent flows. The plane-parallel lamination division at the top of some massive or normally-graded bed is regarded as to represent initial deposition from the less energetic, residual low-density current.	CST-4, CST-5.	**Sandy braid plain:** The amalgamated sandstone bodies, which are commonly found overlying channel-fill conglomerates, are interpreted to represent a late-stage channel-fill sandy braid plain deposited by sand-laden flows as the influx of coarse-grained sediments waned.
Medium- to thick-bedded sandstones	Medium- to thick-bedded, fine- to very fine-grained, massive to subtly graded sandstones (S3). Some thicker beds are accompanied by plane-parallel laminations in the uppermost parts. Individual sandstone beds are tabular and separated by thin packages of very thin-bedded siltstone and mudstone representing turbidite Td and Te divisions.	Sediments of this lithofacies are regarded to reflect rapid suspension sedimentation by collapsing, sand-rich, high-density flows. At slightly lower suspended-load sedimentation rates, settling sediment can be entrained along the bed as traction load prior to deposition, resulting in development of traction structures.	MA-10, MA-15, CST-6.	**Frontal splay:** The apparent absence of channelization, the overall tabular nature of the sandstone beds, characterized by absence of intense scouring at the base and preservation of intervening mudstone intervals, and some evidence for flow collapse and mass-dumping of the high-density loads of the flows, suggests that this lithofacies may have been deposited by rapidly expanding flows in a relatively unconfined setting, such as downstream of the mouth of a leveed channel as part of a frontal splay.
Medium- to very thin-bedded sandstones and mudstones	This lithofacies is made up of fining- and thinning-upward packages. At the base, these packages may comprise tabular, medium-bedded, normally graded sandstone beds showing a structureless division at base (Ta), planar-parallel lamination (Tb), and current ripple cross-lamination on top (Tc) intercalated with packets of thinly interbedded ripple-laminated sandstones (Tc) and massive mudstones (Te).	Deposition from unidirectional, steady, depletive, moderate- to low- concentration turbidity currents.	MA-2, MA-5, MA-6, MA-7, MA-8, MA-9, MA-10, MA-11, MA-12, MA-13, MA-14, MA-15,CST-1, CST-2, CST-4, CST-5, CST-6, O-3, CM-1, CM-2, CM-3, CM-5, CM-6.	**Levee-overbank:** This lithofacies is interpreted to represent levee-overbank deposits that were emplaced by decelerating, moderate- to low-concentration turbidity flows that spilled out of nearby channels. The channel levee interpretation is consistent with sedimentary processes dominated by traction, the occurrence of laterally adjacent channel fills, and the well-defined fining- and thinning-upward character of these sediments. Within levee-overbank settings, the finely-laminated sandstones and siltstones are interpreted to have been created by pulses in the thickness and grain size composition of the overspilling flows that, in turn, may have been generated by the presence of internal waves within the turbidity currents transiting the channels.
Pebbly mudstones and chaotic beds	Folded and distorted thin-bedded mudstones variably interbedded with a poorly sorted mixture of pebble- to cobble-size exstrabasinal clasts floating in a muddy matrix. Typically the folds are tight to isoclinal and may have upright axial planes.	Deposits from sediment slumps and cohesive debris flows.	MA-1, MA-2, MA-3, MA-4, CST-1, O-1, O-2, O-3, O-4, CM-5, CM-6, CM-7.	**Mass-transport deposits:** Similar chaotic packages are commonly referred to as mass-transport deposits or mass-transport complexes. Based on the abundance of well-rounded extrabasinal clasts, these sediments are interpreted as resulting mostly from mass wasting of the shelf-edge staging area and downslope transport, with minor contribution from local failure of steep canyon walls.

References

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