

12 2**DRAINAGE PATTERN AND FACIES CHARACTERISTICS OF A GIANT
SUBMARINE CHANNEL IN THE CRETACEOUS CERRO TORRO FORMATION,
SOUTHERN CHILE**

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The Lago Sofia conglomerate lenses in the Cretaceous Cerro Toro Formation, southern Chile, are deposits of one of the largest ancient submarine channels developed along an elongate foredeep basin. The channel deposits, hundreds of meters thick and kilometers wide, are exposed along a >120 km long outcrop belt, providing an unusual opportunity to study microscopic to macroscopic characteristics of submarine channels. The conglomerate bodies in the northern study area are isolated with much intervening fine-grained facies, and have smaller vertical and lateral dimensions. On the other hand, conglomerate bodies in the southern study area are vertically stacked and interconnected, and have larger dimensions. These features and paleocurrent data suggest that the channels in the northern area were tributaries that were developed closer to the basin margin and subject to frequent avulsions, whereas the large channel in the southern area was a trunk channel confined along the axis of the foredeep trough. The Lago Sofia submarine channel is therefore interpreted to have had a centripetally converging drainage system, contrary to centrifugally diverging submarine fan channels but similar to the drainage patterns developed along elongate trench basins. The tributaries are mostly filled by mass-flow deposits (massive to variably graded conglomerates), probably affected by channel bank failures or basin-marginal slope-instability processes, whereas the trunk channel contains abundant stratified and cross-stratified conglomerates suggestive of prolonged tractive processes. This difference resulted distinct sets of lithofacies and architectural element compositions between the tributaries and the trunk channel.