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## **Global Geomorphic Survey of Large Modern Fans: Distribution and Exploration Implications**

Large modern fluvial fans (LMFF) are cones of sediment formed by single dominant rivers, displaying low declivities and apexes tied to mountain fronts or low scarps. Studies of these mesoscale continental sedimentary systems are surprisingly few, mainly because their size means that they are not readily visible on the ground or from low-altitude photographs. Interpretation of astronaut photographs, supported by 1:1,000,000 maps, have so far revealed 96 large fans (radii arbitrarily defined as >100km) indicating that these features are a significant component of the global landscape. They are found on all continents (excluding Antarctica). South America has the largest number (many contiguous) and North America the smallest. Most radii (90%) lie between 100 and 300 km. Areas range between ~7000 and 210,000 km<sup>2</sup>. Fifty-eight percent lie in foreland and peripheral basins; 39% lie in cratonic settings, with large areas of contiguous LMFF in Australia and Africa. The remaining 3% occur in rifts and interorogenic settings.

Understanding the distribution of large modern fans helps direct exploration for such features in past landscapes. LMFF provide templates for detailing the architecture of paleo-fluvial reservoir systems deposited during the early stages (sag phase) of basin evolution. For example, the early Paleozoic oil and gas reservoirs of North Africa accumulated in settings analogous to the modern foreland basins of Central Asia and India. The study of LMFF also assists heavy mineral exploration, for example in understanding the dispersal of gold from a primary source.