Fluvial-aeolian interaction at paleoflood termini in Central Australia.

Mary Bourke, School of Geography and the Environment, Oxford OX1 3TB, England

Rivers in semi-arid central Australia that drain south from the MacDonnell Ranges tend to dissipate in the northwest trending longitudinal dunes of the Simpson Desert. The Todd, Finke and the Hale Rivers provide a suite of sites where the effect of flow magnitude and frequency on termini boundary dynamics can be examined. Event magnitudes range from bankfull to catastrophic floods. These Late Pleistocene and Holocene events strongly influence the interaction and assemblage of fluvial, aeolian and lacustrine landforms along the desert margin.

The high magnitude floods eroded longitudinal dunes, emplaced sandy-gravel bars and splays and formed clay pans in the truncated swales. Quiescent periods allow aeolian processes to winnow paleoflood surfaces, form climbing dunes on bedrock ridges and nourish the adjacent remnant Pleistocene dunes. Over longer time scales dunes may partially reform across the abandoned flood channel.

Paleoflood termini contain geomorphic signatures of past floods and preserve the history of boundary dynamics in a unique landform configuration. They are therefore valuable repositories of data on the timing of climatic extremes. However the record is a complex one, where the temporal and spatial variability of precipitation in addition to the inherent dynamics of the flood process need to be clearly understood.