

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

Jeff P. Crabaugh, University of Wyoming, Laramie, WY

Facies Architecture and Shoreline Trajectory in the Sandstone Tongues of the Lower Iles Formation, Mesaverde Group (Campanian), Northwest Colorado

The Mesaverde Group in the Sand Wash Basin of northwest Colorado displays several distinct relationships between marine sandstone-tongue architecture and shoreline trajectory. The third-order, regressive limb (~ 1.5 m.y. in duration) of the lower Iles Formation is composed of a number of fourth-order marine sandstone tongues (0.1 to 0.3 m.y. in duration). The basinward-directed length of fourth-order tongues in the Sand Wash Basin range between 4km and 67km. Features that occur preferentially in long sandstone-tongues (i.e., >30km) include complex thickness changes in a basinward direction, segments with sharp bases, and widespread erosion surfaces. Long sandstone tongues are most common within time intervals of low-angle shoreline trajectory at the third-order scale. Conversely, short tongues (i.e., <15km), characterized by gradationally based, upward-coarsening shorezone sandbodies, are most prevalent near transgressive-regressive turnarounds of third-order scale, or within other intervals of rising or relatively high-angle, shoreline trajectory. Unequivocal discrimination between incised-valley fills and 'normal' distributary channels is often not possible based on evidence observed at individual outcrops of the lower Iles Formation. However, segments of shoreface sandstone tongues that correlate to updip incised-valley fills should be thinner than segments of the same shoreface tongue deposited under conditions of rising shoreline trajectory. As a result, the spatial relationship between paleotopographic lows incised into fourth-order marine sandstone tongues and the location of downdip thinning within associated shoreface sandstone-bodies may provide additional evidence useful in identifying incised-valley fills.