Chapter 7 Piedmont (Zone 3) (p. 246-264).

I. Introduction

A. Piedmont: favorable site for sediment accumulation from adjacent source area.

1. alluvial fans: characteristic dep. feature
   a. bajada = coalesce fan apron

2. Controls on fans
   a. zone 1 character
      (1) geology
      (2) geomorph.
      (3) hydrology
   b. Prerequisites
      (1) large sed. supply
      (2) lowland trap

II. Fan Morphology

A. Types

1. dry or mudflow fans = ephemeral streams, arid
   a. fed by mudflow/debris flows

2. wet fans = perennial streams

B. Dry (Alluvial) Fans

1. Bull 1968 perspective
   a. undissected fan surface, with deposition in head area
   b. dissected fan, with deposition at toe of fan
      (1) why? the diff.?, why entrenchment?
         (a) climate and tectonism
         (b) normal geomorph. processes as sed. supply decreases

2. Modern Fan studies
   a. small-scale features (avg. 1-5 mi radii)
   b. fan size related to drainage area (Bull)
   c. lithology/geology of source will affect fan morphology
      (1) resistance vs. sediment production
   d. fan slope inverse to drainage area

3. Case studies of fans
   a. examples of fan relations from several areas
      (1) some trenched, some not
b. Bull study of fan-slope segmentation
   (1) overall concave up profile,
   (a) but some segmented

C. Wet (fluvial) fans

1. case eg. Kosi River fan, India
   a. Himalya source area, hunge fan
   b. wet fan of very much larger mag. than arid fans
   c. rapidly shifting, avulsing, dynamic channel
      (1) fan-lobe shifting

2. Sedimentology
   a. general lack of exposure except at surface and in gullies
      (1) most fan sedimentology from ancient examples

III. Experimental Study of Alluvial Fans

A. general

1. fans very easy to simulate, done in 70's at CSU
   a. simulated mudflow fans and humid fans
   b. ppt/discharge held constant

2. fan morphologies were reproduced through time on the sediment table
   a. fan head very dynamic with alternating incision and backfilling

B. Wet-fan sedimentology experiment

1. grain size increased down fan, in proximal part of fan
   a. remobilizing coarse seds. to midfan position

2. suspended seds. were not deposited on the fan, but washed through experimental system