

Fiumi effimeri: Geomorfologia, sedimentologia e processi di trasporto solido

[Seminario](#)

Data: Thursday, 31 March, 2011 - 15:00

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Abstract:

L'invito è come sempre rivolto a chiunque avesse il piacere di partecipare ed in particolare agli studenti che debbano cumulare i crediti seminariali.

Drylands cover about one third of the land area of the Earth and roughly one fifth of the world's people live in these drylands (UNEP, 1992).

Their landforms are sculptured by ephemeral rivers that are generated by erratic, infrequent rainfalls of short duration but with high intensity or are concentrated in a short rainy season. River flow is therefore intermittent and flashy and the streambed is dry for the largest part of the year. In the last decades these rivers have attracted the attention of geomorphologists and sedimentologists for the flash flood hazards connected with their impulsive nature and for providing a modern equivalent of depositional characteristics and diagnostic tools to interpret old arid river deposits as potential reservoirs in oil and gas fields exploration.

Dryland rivers characteristics are different from those of temperate and humid environments counterparts. The main sedimentological criteria to identify ephemeral stream deposits are the predominance of horizontal strata and the lack of well defined channels, high channel width to depth ratio and downstream channel narrowing, but there are other sediment features, such as the subtle stratification, the predominance of horizontal lamination, the lack of scour and fill sequence, the occurrence of crescent scours that are typical of sand-bed ephemeral streams, at least in terms of associations of facies and their abundance with respect to other sedimentary structures. By contrast, very poor information is available on coarse-grained, cobble to boulder bed ephemeral streams.

In dry areas, hydraulic data sets are scanty for the objective difficulties of the field measurements and even basic equations to predict flow characteristics, bedforms geometry or particle entrainment thresholds have been seldom tested on dryland rivers. The streambed of many ephemeral streams has been described by several authors as very wide, flat and commonly devoid of any fine-grained bedform but plane bed. Traction carpet or hyperconcentrated flows are considered peculiar to ephemeral streams and their implication for the arrangement and internal organisation of the divisions within the horizontal beds making up the study rivers deposits is investigated, though transition or upper flow regime can play some role as predicted by flume experiments.

The streambed morphology of coarse-grained ephemeral streams is similar to that of braided rivers in more humid environments as it consists of longitudinal and lateral bars and anabranching of shallow channels. The bars have a more or less elongated, rhomboidal shape, but they commonly have sharp margins and do not show any feature associated with depositional processes such as accretionary fronts, foresets and a fine tail. Bars and channel deposits are hardly discernable and have common features such as subtle bedding, lack of erosive surfaces, are very coarse grained, well imbricated, massive with poorly defined inner divisions. Riffles are shorter, thicker and steeper than those of perennial gravel-bed rivers. The general morphology and sedimentology of both the bars and the channels is interpreted as resulting from the emplacement of 1.0-1.5 m thick cobble to boulder, bedload sheets during high flows and subsequent dissection by the receding flood flows.

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