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Runoff generation in SE Spain

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The overall objective of this research is to develop a model for prediction of runoff in medium-scale semi-arid catchments in SE Spain. The Nogalte catchment (150 km^2) has been instrumented since 1997, with 7 rain gauges and crest stage gauges. At-a-point runoff models are being calibrated by infiltration measurements which are combined with measured rainfall to provide estimates of runoff generation across the area. The approach is to use the concept of HYSS, which are defined as areas with similar 1-D (vertical) partitioning of net rainfall between infiltration and overland flow. HYSS are therefore defined principally in terms of soil and land use characteristics within an area based on measurements of infiltration capacity, since infiltration excess is thought to be the dominant mechanism for overland flow in semi-arid areas. Within each HYSS, there should then be a consistent relationship between rainfall and local runoff generation. HYSS are being mapped from field measurements of soils, land use, micro and macro-topography and infiltration rates; combined with analysis of existing photographic + multi-spectral airborne Remote Sensed (RS) images of the catchments and DEMs. Field measurements will be used to calibrate up-scaling of a site model that can be interpolated with RS + GIS to the catchments scale, and calibrated against field survey. Forecasts and measurements in the catchment are also being compared with a contrasting catchment, the Rambla Torrealvilla.