

The soil erosion problem due to the surface runoff has been identified in Washpool Aldinga basin. To study the soil erosion, the HEC-HMS model was applied for simulating the soil erosion and sediment yield, and precipitation – runoff process in the sub-basin scale. The aim of this project is to develop the application process of HEC-HMS to the erosion for a basin of area 47.9 km<sup>2</sup> located in Washpool Aldinga SA, to understand the parameters required to the erosion and sediment model in HEC-HMS, and to calculate the sediment load and sediment concentration of the selected basin.

To estimate the sediment yield from the HEC-HMS model a precipitation-runoff model is require. Therefore, before the simulation of erosion model a hydrological model was created. Data required from the field to simulate HEC-HMS model was used from the published recourses due to the lack of time and resources. To simulate the precipitation-runoff model, SCS unit hydrograph was used as transform method, and SCS Curve Number method was used as a loss method based on Hydrologic Soil Group (HSG). From the simulation of the precipitation-runoff model, the peak discharge 3.4 m<sup>3</sup>/s was obtained. To simulate the erosion and sediment model in HEC-HMS, the Modified Universal Soil Loss Equation (MUSLE) was selected based on land cover, 94.6% of the study area is impervious. The total sediment load from HEC-HMS for nine hours of rainfall was 11.8 tonne and the total sediment concentration was 1.92 gm/l.

An example case study with this result can illustrate the application process of HEC-HMS to the soil erosion and sediment yield due to precipitation. Also, this study provides guide to use HEC-HMS for the estimation of sediment deposition and concentration at the outlet of the catchment.