

**An algorithm for designing a precipitation network in the south-western region of
Saudi Arabia**

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Abstract: The planning and design of a water resources project demands accurate hydrological information. Accurate and reliable regional hydrological information not only reduces the chances of project failure but also minimizes the economic risk. Therefore, it is imperative that a hydrological network be planned and designed scientifically. The criterion for hydrological network design should be the optimum number of stations and their respective locations by which hydrological information can be maximized. In this paper, a hydrological network design method, based on Shannon's Information Measure, was applied to the existing hydrological network in hydrological Area III, located in the south-western region of the Kingdom of Saudi Arabia, to examine their suitability towards providing maximum hydrological information. The study shows that the existing seventy rainfall stations can be reduced to approximately 45 including stations at new sites.