

Deriving optimal information from inadequate data collection networks for water allocation in Ghana

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Abstract While Africa uses only about 4% of its renewable freshwater resources, water is becoming one of the most critical natural resources issues. The continent is one of the two regions in the world facing water shortages. Although it has abundant freshwater resources, there are great disparities in water availability and use within and between African countries because the water resources are very unevenly distributed. Most areas on the continent receive either too much rain or too little. Most failures in water projects in Africa are not only due to improper technological application, but also to lack of the knowledge and skills that must accompany the selection and use of a given technology. Water resources technologies are more process-oriented than product-related since their application is not only to develop and manage water projects but also to improve the general perception of the dynamic interaction between the elements of the water cycle, human society and natural ecosystems. Another problem, not secondary is the problem of data collection, archiving and retrieval which until a few years ago was still done manually. The use of hydrological data in the design and operation of various categories of water resource projects generates both economic and social benefits, but when the information content is low, can lead to negative results and impacts. It has been estimated that at least 25 to 50 years of hydrometric data are desirable to give adequate design parameters for water resources projects for practical purposes but at a higher cost. More hydrological knowledge and information are therefore needed for optimal design conditions. The Water Resources Commission is presently carrying out a comprehensive water allocation scheme which calls for an up-to-date hydrological information system, taking into consideration missing data and insufficiencies in the areal coverage of data collection networks and also sources of indigenous knowledge.

Key words hydrological data; method; model; stations; insufficiencies; data collection; Ghana