



Groundwater Resources Management Training in the Federated States of Micronesia



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Water shortages are a serious concern to the residents of atoll islands. Small size and isolation subject entire island populations to the stresses of drought and difficult, expensive, and sometimes untimely aid operations. Under normal conditions, water demand is met by rooftop rain catchment. Prolonged droughts, such as those associated with El Niño, however, exhaust water storage, leaving residents dependent on groundwater or imported water. Typhoons can destroy the rain catchments and coconut crops, leaving residents dependent on groundwater. However, wash-over of storm-driven surf can contaminate groundwater just when it is needed most.

The proposed project will meet the following needs of the Federated States of Micronesia, as specified during the WERI Advisory Council meetings from 2006 and 2007:

1. "Develop a water resources management scheme for low island atolls in Yap and elsewhere in FSM"
2. "Make training manuals used in various training activities available to all interested parties"
3. "Presentation of Atolls Groundwater Modeling to appropriate users through workshops in each of the states with atoll islands"

The purpose of the project is to disseminate the knowledge gained from the past year's efforts in understanding the behavior of the freshwater lens on atoll islands. This will occur through the preparation of spreadsheet model of atoll island aquifer response to recharge, the preparation of a user's manual for the spreadsheet model, the training of water resources managers on Yap, Chuuk, and Pohnpei on the manual, and the preparation and printing of an instruction pamphlet on groundwater resources and its distribution to schools located on atoll islands, and presentation of the model and user's at a scientific meeting with other professional scientists and educators working in similar areas.

The previous project has produced a simple algebraic model, based on numerical modeling results, which predicts the thickness of the freshwater lens in both steady-state and transient conditions. This model can easily be placed into a spreadsheet and made available to water resources managers in FSM. The model is also an excellent teaching tool, as it explains the relationship between the freshwater lens and the geological and climatic factors which govern its behavior and thickness. This model will aid FSM island leaders and water resource managers in establishing sustainable and practical groundwater extraction practices.