Evaluation of a Multi-stage Solar-powered Desalination System

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Purpose of Study

This study will build upon and refine a low-cost temperature desalination process that has been developed under previous WRRI funding and in collaboration with Cascade Ecosolutions, Inc. The study will attempt to reduce the energy requirements per kg of freshwater and to increase the throughput per unit area of solar collection area. These goals will be achieved by incorporating a three-stage operation (as opposed to the single-stage in the pilot scale system).

Study Underway

A pilot model currently produces 5L per day of fresh water using only solar energy. This design will be improved upon using leftover heat energy from a typical home air-conditioning unit. The model will be refined using a three-stage system, and the effectiveness of this modification will be evaluated.

Benefits

Along with previous research efforts and collaboration between NMSU and Cascade EcoSolutions, this project will accelerate the deployment of this sustainable technology to full scale use.

Akash Mummaneni is from India and received an undergraduate degree in chemical engineering from Jawaharlal Nehru Technological University, Hyderabad, India. He is working on a master's degree in environmental engineering at NMSU. Akash did an internship working with the design of heat exchangers and condensers. He is applying that experience to his current work on multi-stage desalination processes in an effort to improve the efficiency of the process.