Singapore-Delft Water Alliance

Presents

Inspiration = Rainfall & Evaporation

by

Dr Rob UITTENBOGAARD

Date: **Wednesday , 18th August 2010**
Time: **3.00 to 4.00 pm**
Venue: **E1-08-25 SDWA Conference Room**
National University of Singapore

Abstract

The Straits Times produces many articles on the consequences of rain fall and evaporation in Singapore: floods and the creation of potable water. Other articles deal with energy consumption in urban environment: air-conditioning of houses and offices in Singapore.

Can we integrate these aspects into saving potable water, energy, and controlling floods? The answer of this presentation is: “Yes, we can (after some research by NUS)”.

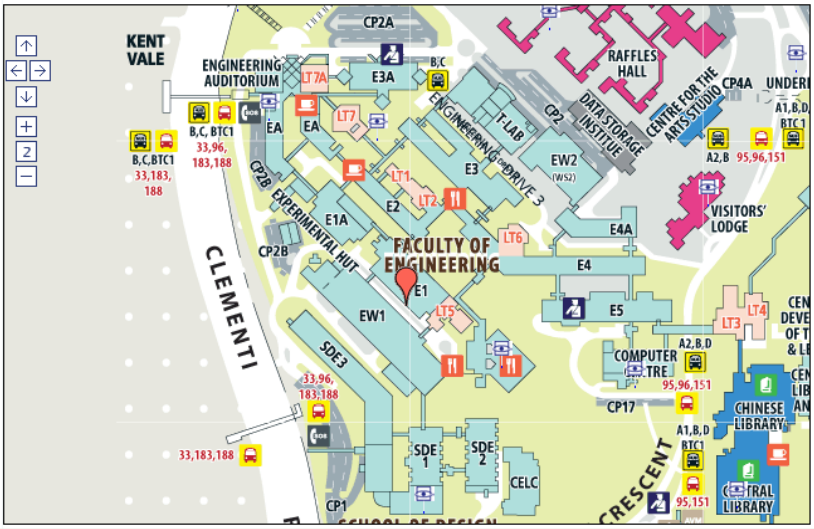
To that purpose I will present, in simple terms, the large heat-storage capacity of water, the energy needed for evaporating water and the *psychrometric chart* for processing humid air. I will show that evaporation is the dominant heat loss of a water reservoir competing solar-radiation input. What the consequences are if evaporation is blocked by surface films or conversely when surface films are removed. How Iranians in the desert cool their specially designed houses using a *qanat* (acquifer). How you can store the most water vapour in air and consequently cool water to the dew-point temperature of the outside air by using the *Maisotsenko cycle*.

Finally, adding up all of the above: my conceptual design of an apartment building in Singapore that saves energy, contributes to flood retention, and contains grey water saving potable water.

About the speaker

On leave, Dr. Rob Uittenbogaard is hosted by NUS Civ. Eng. Dept. from July 1st till Sept. 1st and Nov. 1st to Dec. 31st . Rob is senior specialist in environmental hydrodynamics at Deltares Software Centre, Deltares, The Netherlands.

Map



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