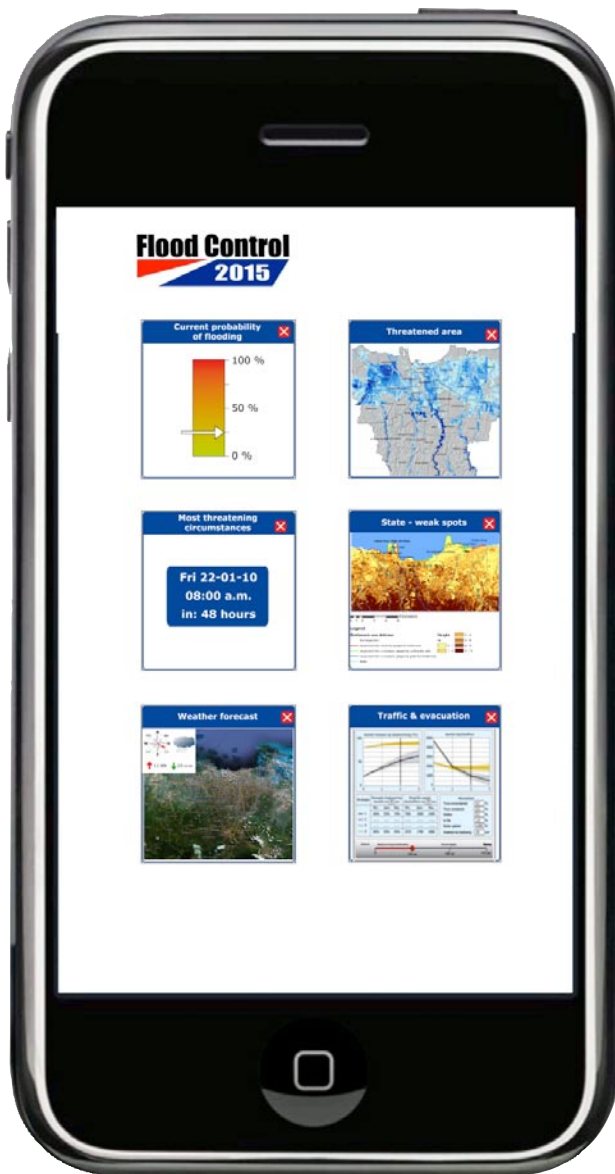


COMPUTER MODELS ARE BEING LINKED TO SOCIAL PROCESSES AND SOCIAL MEDIA

Climate management: it's a serious game



If you link up computer models, you learn how processes interrelate. That's how we can now show how physical measures and social support influence each other. Or, to go even further, how to manage disasters using Facebook.

BRAM VERMEER

Flooding app for Jakarta

Floods are practically a daily occurrence in Jakarta. There is a major disaster roughly once every five years, but the rivers that flow into the city from the Puncak burst their banks far more often than that. Heavy rainfall also regularly makes the roads impassable.

Jakarta is one of the world's biggest cities. It's a difficult place to grasp fully. For that reason,

work is now being done on a project called 'Flood Control Dashboard Jakarta'. The aim is to develop a smart phone application (app) that lets everybody see at a glance which areas are flooded and what the forecasts are. The system combines observations from measuring networks in the region. A number of significant areas on the map remain blank, though, even after these sources have been linked up. The official

The game shows how the water system and the public interact

measurement data often fail to spot local rainstorms and closed-off roads for some time. This problem is solved by linking social media with the meteorological data. One Indonesian in ten has a Facebook account. The public can report local flooding via their Facebook account, thus sharing the information directly with other users. The people themselves can indicate how deep the water is, and even post a photo. There are still a few technical hurdles, but when the system goes into operation Jakarta's residents will no longer have to depend on official warnings and decisions. They'll get their own detailed picture of the floods.

Serious game

Interactive applications simulate complex situations with many variables and complex interactions. These serious games, as they are called, have become possible thanks to the high speed of model computations, coupled with the accurate visualization of the results. This means that simulators can be built, like the ones the army and air force have been using for some time.

Waas City (Waasstad) is one of the serious games that have been developed in recent years for water management (see box). Ten players are divided into a number of groups which have to make compromises, recruit public support, and take appropriate measures. The players see immediately how their decisions work out. They see how the river changes; they

get to know how the population responds to events inside and outside the Waas region, and how the public's support for the measures develops. The river management game takes place over one century.

The social and physical developments in the region are computed in a simulation model that contains physical elements, such as climate change, river drainage, and the probability of flooding. The computer also shows the public's response to disasters and such measures as are taken (or not), as well as changes in public support.

The game and its supporting model was developed by Marjolijn Haasnoot and Astrid Offermans in collaboration with Deltares, the universities of Maastricht, Utrecht and Twente, Carthago consultancy, Pantopticon and the Royal Dutch Meteorological Institute. It is very instructive for the players to learn how their own standpoints often hold for only a short period of time. The game shows them how the water system and the public interact. It sensitizes them to the paths along which solutions might diverge, rather than focusing on some desired end result. For the scientists it is important to gain an insight into the way administrators and the public respond. This allows them to develop more realistic scenarios into which they can integrate the social and physical systems that surround a river.

One idea, for example, is that

the Demonstrator Flood Control Room, which Deltares has been developing since 2009, can also be used for serious games. This brings together in one control room all the measurements and predictions from a number of systems, which allows training to be given on high tides, floods, evacuation and crisis management. Simulators like this usually contain mainly physical scenarios, but the Waas region model shows that social processes can also be built into this sort of simulator. ■

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FC2015 Dashboard Jakarta

The 'FC2015 Dashboard Jakarta' is an initiative of HKV Consultants, Haskoning, Fugro en Deltares in association with the Indonesian Ministry of Public Works, the Province of Jakarta and the Jakarta Red Cross. The project is being conducted under the Flood Control 2015 innovation programme.

Waas City is under threat

The dikes channel the Waas River into a narrow space. The area has recently suffered two major floods, resulting in damage estimated at millions of euros. To make matters worse, the water level is often too shallow for shipping. The new administrators of the Waas region are assigned the task of improving the water management.

The Waas does not actually exist, but the situation around Waas City is very realistic. The administrators in the game are confronted with the consequences of the decisions they take.

