Rotterdam rain radar to facilitate very accurate measurement of city precipitation

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The Delftse Poort in Rotterdam. Credit: Wikipedia/Michiel1972

The construction of a rain radar has started on the roof of the Nationale Nederlanden building in Rotterdam. This will yield a very accurate picture of precipitation patterns in the city and thus help prevent flooding and water damage. The project is being supported financially by the City of Rotterdam, the Province of Zuid-Holland and the European Union.

Precipitation in the city

The rain radar, which is currently being built in Rotterdam, specialises in measuring local precipitation. The radar will make it possible to measure precipitation patterns in the city much more accurately and, as such, facilitate improvements in the quality and efficiency of the city's water management. Possible applications for the data include the intelligent control of pumping stations, the use of water storage (such as the water squares) and local weather reports. Noordwijk-based SSBV Aerospace & Technology Group is supplying the rain radar, which is expected to be completed and used for the first time in November 2013.

As high as possible

For the best possible observations and registration, the rain radar must be placed as high as possible and will therefore be located on top of the Nationale Nederlanden office building at the Delftse Poort twin-tower skyscraper complex. The owner of the Delftse Poort building is providing the location on the roof of the office building on Weena at no cost. And the tenant, Nationale Nederlanden, will be providing the electricity needed to power the radar, also free of charge.

RainGain

The Rotterdam rain radar forms part of the wide-ranging European RainGain project, in which four universities – Imperial College London, École des Ponts ParisTech, KU Leuven and TU Delft – are working together with other parties for four years on implementation of a new type of rain radar. A subsidy of 3.6 million euros is available for the entire European project, which is being financed via the INTERREG IVB North-West Europe Programme.

Extreme showers

Leading the RainGain project is researcher Dr Marie-claire ten Veldhuis from TU Delft: 'The rain radar helps water managers better understand the past (how much rain has fallen) and better predict the future (how much rain will fall and where). The purpose of this project is to obtain detailed data on peak precipitations and flooding on an urban scale. Information on this scale has been lacking up to now. These measurements will improve the accuracy and effectiveness of water system models; for example, for the purpose of establishing what action should be taken in the event of extreme rainfall. The city will then be able to prepare more effectively for the unexpected effects of climate change; both the daily and the hourly rainfall are increasing and this will help us better control these heavy showers.'

Detailed level

Rain radars are the only measuring instruments that can provide precipitation measurements on the necessary time and space scales that are required for this purpose. Only recently has this technology been developed to the detailed level needed for urban areas.

European cooperation

Recent developments in radar technology have made different types of urban applications possible. The most effective application depends on the radar technology and the urban area in which the rain radar is installed. Ten Veldhuis stressed the importance of European cooperation. 'That's why we are pleased that Paris will soon have a radar too and that other types of radar technology are being tested in London and Leuven, because this means that we will have an effective means of comparing the precipitation measurement in these cities.'

Provided by Delft University of Technology