

Historic water management of the river basin of the Baaksche beek and the adaptations to the water system as a result of change in land use

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ABSTRACT

In the Netherlands climate change will result in increasing amounts of precipitation and this is expected to give increasing peak flow flood waves in the Dutch large rivers. In future measures should be taken for adaptation of the water system, to prevent for catastrophes in dense populated areas and in areas with intensive agricultural activities. In the past adaptations of the water system were necessary to make agricultural use and change of land use possible. By studying the reaction of the water system on these adaptations, we can acquire knowledge to solve future problems.

For this study a drainage basin in the relatively high and sandy part of the Netherlands was selected. First information was gathered about the hydrological properties and about hydrological data, such as surface water levels and discharges. Several sources were investigated, such as old maps, reports on hydrological measurements and historic descriptions. From these sources a basin was selected in the eastern part of the Netherlands, the Baaksche beek basin. The chosen period investigated was the period 1850-2000, because relatively much historic data could be gathered for this period. The whole basin is situated within the Dutch border, and the basin was in 1850 in a fairly natural state, with large areas of woods and moorland.

It was found that great changes took place on the water system between the period 1850 and 2000. A great deal of natural depressions in the landscape were connected with a water course, this meant that the possibilities to store water in natural depressions decreased as well. This property can be described as a hydrologic sponge; it acts as a hydrologic sponge by storing flood water temporarily on the soil surface in depressions and releasing it slowly later on. The smaller water courses inundated frequently to the adjacent areas. These inundations are very rare nowadays, about once every 100 years. In the past these inundations were annually returning phenomena. Recovery of the hydrologic sponge property can be used as a strategy against the negative effects of climate change on the peak flow flood waves.