Corrigendum to Proc. IAHS, 370, 21–27, 2015
proc-iahs.net/370/21/2015/
doi:10.5194/piahs-370-21-2015-corrigendum




# Corrigendum to "Influence of urban land cover changes and climate change for the exposure of European cities to flooding during high-intensity precipitation" published in Proc. IAHS, 370, 21–27, 2015

**P. Skougaard Kaspersen[1], N. Høegh Ravn[2], K. Arnbjerg-Nielsen[3], H. Madsen[4], and M. Drews[1]**

[1]Climate Change and Sustainable Development group, Department of Management Engineering, Technical University of Denmark, Frederiksborgvej 399, building 110, 4000 Roskilde, Denmark
[2]LNH Water, Skelbækgade 38 3th, 1717 Copenhagen V, Denmark
[3]Department of Environmental Engineering, Technical University of Denmark, Miljøvej, Building 114, 2800 Kgs. Lyngby, Denmark
[4]DHI, Agern Allé 5, 2970 Hoersholm, Denmark

*Correspondence to:* P. Skougaard Kaspersen (pskk@dtu.dk)

Published: 10 May 2017

Unfortunately, we have found errors in some of the data on which Figs. 3 and 4 are based. The following figures replace Figs. 3 and 4 in the published version. This also means that the text in Sect. 3.2 – exposure to flooding due to land cover changes and climate is replaced by the following text.

New text – changes are highlighted in bold:

### 3.2 Exposure to flooding due to land cover changes and climate

Figures 3 and 4 compiles the results of 30 simulations of urban flooding in Odense, varying the land cover (1984 vs. 2014), the climatic conditions (present day conditions, RCP4.5 and RCP8.5 climate change scenarios) and the severity of the event (from RP5 to RP100) as outlined above. In general we see that results for the RCP8.5 climate change scenario for 2071–2100 using the estimate of urban land cover from 2014 clearly stands out (Fig. 3). Whereas the total area flooded in most cases scale approximately linearly with the severity of the extreme precipitation event, in this case the scaling exhibits more of an exponential behaviour. We also find that the effect of increases to IS in terms of the total area flooded increases with the intensity of extreme precipitation and therefore also with the degree of climate change. In the case of Odense the impact of the observed change in urban land cover from 1984–2014 roughly compares to the impacts of climate change under the RCP4.5 scenario. Our results indicate that a change in absolute imperviousness of 19 % (32 → 51 %) during 1984–2014 has increased the overall flood extent during extreme precipitation by between **19 and 70 %** under current climatic conditions (Fig. 4). If a similar change in imperviousness took place under climate change conditions as expected in the RCP8.5 scenario this would result in an increase in overall flood extent of **7–32 %**. Conversely, in a RCP8.5 scenario the exposure to flooding increases by **166–308 %** and **203–423 %**, respectively, under current (2014) and historical (1984) levels of imperviousness. The combined effect of both land cover changes and climate changes increases the urban flood vulnerability by as much as **234–589 %** (moving from lowest to highest line in Fig. 3). From the perspective of climate change adaptation this clearly demonstrates quantitatively the effect of pervious surfaces as measures for reducing flood exposure. Conceptually, if measures where implemented reducing overall imperviousness by 19 % (same as the increase in the period 1984–2014) flood exposure would decrease by **16–41 %** under current climate and by **10–36 %** (RCP4.5) and **7–25 %** (RCP8.5) under future climatic conditions.

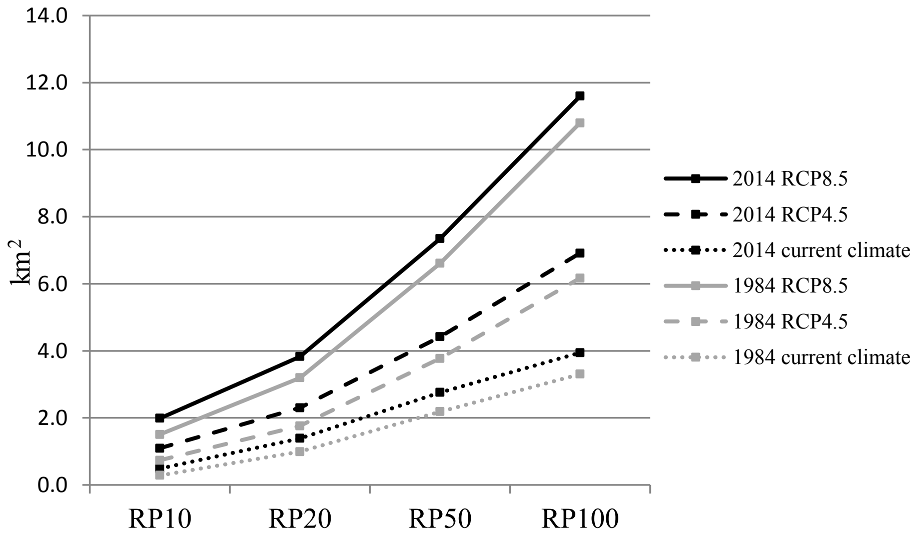


**Figure 3.** Total area flooded by > 10 cm of surface water during high-intensity precipitation events for present (2014) and historical (1984) land cover conditions and for current climate and RCP8.5, 1984 = imperviousness of 32 %, 2014 = imperviousness of 51 %.

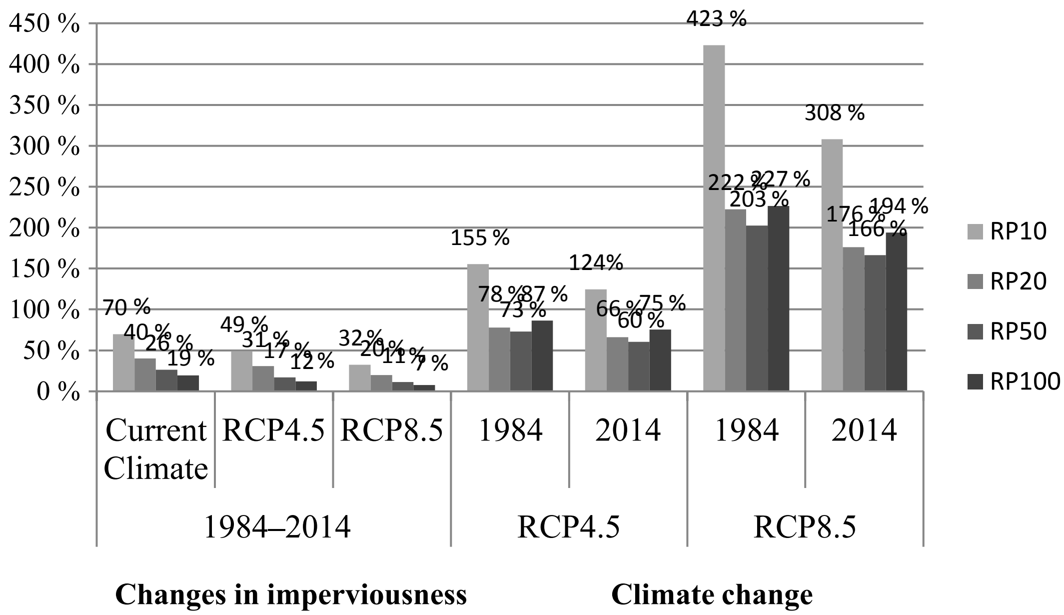


**Figure 4.** Effect of changes in imperviousness during 1984–2014 (32 → 51 %) for current climate and in a RCP4.5 and RCP8.5 world, and impacts of climate change (RCP4.5, RCP8.5) for urban land cover as in 1984 (32 % IS) and 2014 (51 % IS) for total area flooded with > 10 cm of surface water during high-intensity precipitation.