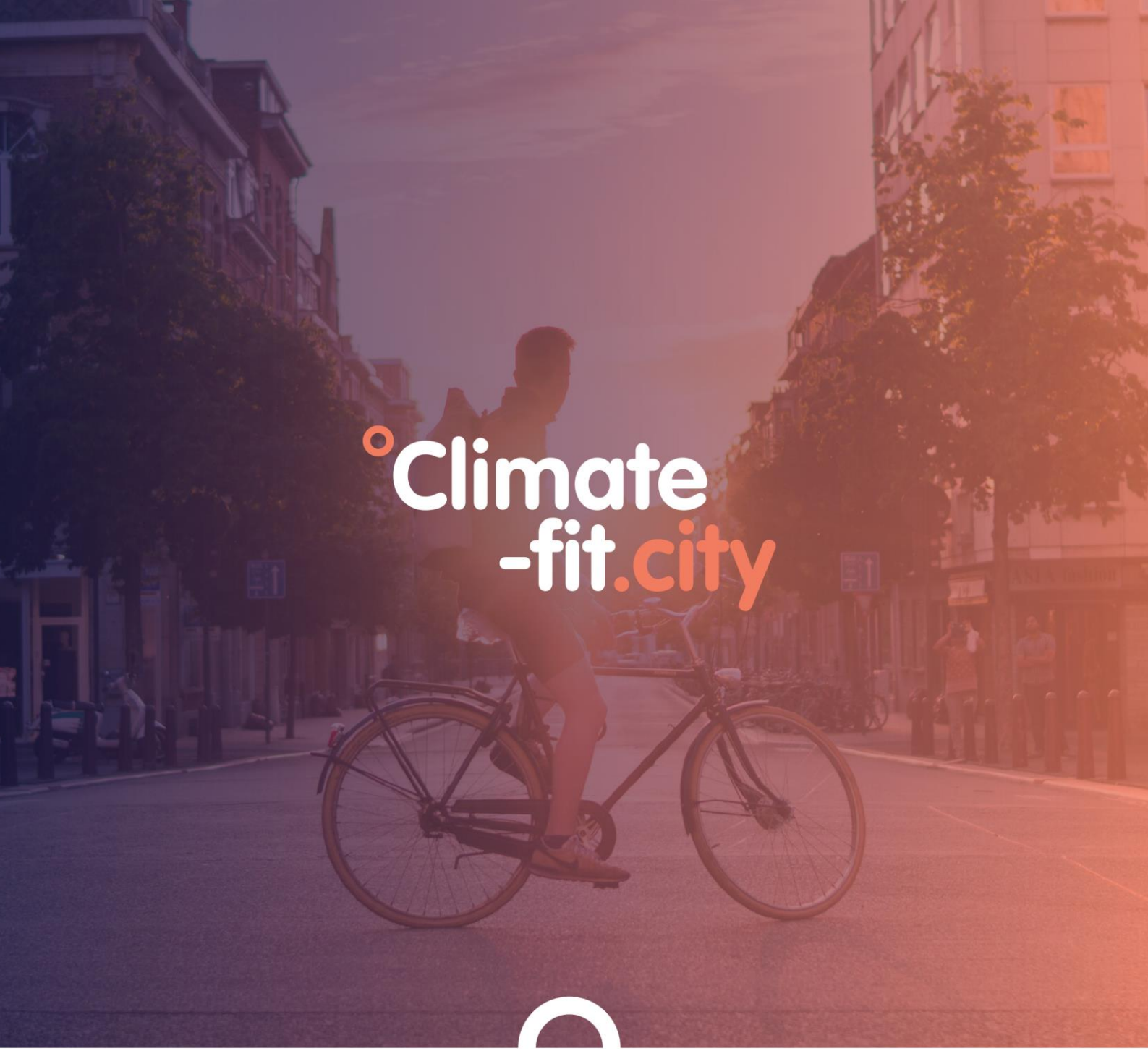

D5.3

Urban climate data for replication cases

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Deliverable 5.2	Urban climate data for demonstration cases
Related Work Package:	WP5
Deliverable lead:	VITO
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Grant Agreement Number:	n° 730004
Instrument:	HORIZON 2020
Start date of the project:	01 June 2017
Duration of the project:	30 months
Website:	www.climate-fit.city
Abstract	In the second stage of the PUCS/Climate-fit.city project, climate service providers are involved in the co-design of six additional sectoral cases of the urban climate services Climate & Health, Building Energy, Emergency Planning, Urban Planning, Active Mobility, and Cultural Heritage. Based on build-up knowledge during the demonstration cases (see Deliverable 5.1 and 5.2), the climate data providers also created tailor-made urban climate data for these replication cases. The present deliverable gives an overview of the urban climate data that were produced and delivered to the service providers for the replication cases.

Dissemination level of the document

X	PU	Public
	PP	Restricted to other programme participants (including the Commission Services)
	RE	Restricted to a group specified by the consortium (including the European Commission Services)
	CO	Confidential, only for members of the consortium (including the European Commission Services)

Versioning and Contribution History

Version	Date	Modified by	Modification reasons
v.02			

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v.03			
v.04			
v.05			

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Table of Contents

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1. Introduction

This document is developed as part of the PUCS (Pan-European Climate Service) project, which has received funding from the European Union's Horizon 2020 Research and Innovation programme, under the Grant Agreement number 730004[1]. For marketing purposes, the project name is changed to 'Climate-fit.city' for internal useage and communication to end-users and stakeholders. The "Urban climate data for replication cases" represents **Deliverable 5.3** of Work Package 5 (WP5) – Urban climate data platform. The objective of PUCS is to establish services that translate the best available scientific urban climate data into relevant information for public and private end-users operating in cities. This will be achieved by demonstrating the benefits of urban climate information to end-users, considering the sectors of health, energy, emergency planning, urban planning, mobility, and cultural heritage.

Previous deliverables of this work package focussed on the process of data needs collection (Deliverable 5.1) and the production process of the required urban climate data (Deliverable 5.2). Since our methodology is described in detail in these Deliverables and did not change from the demonstration cases to the replication cases, it is not repeated in this Deliverable. We only give an overview on the data that has been produced and will be made available in the Urban Climate Data Platform.

[1] SC5-01-2016-2017: Exploiting the added value of climate services – a) Demonstration of climate services (2016 – Innovation Action – IA)

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2. Urban climate data for the replication services

Based on the specific data needs of the service providers for the 6 replication cases, VITO and KU Leuven have started to produce the required urban climate data. An overview of the produced and delivered data sets is given in Tables 1 and 2. Some required variables as rainfall amounts and downwelling short-wave radiation are not calculated by the UrbClim model but are directly taken from the ERA-Interim/ERA5 archives.

Table 1: Delivered historical urban climate data

Sectoral case	City	Period	Variables	Resolutions	Base data
Climate & Health	London	1988-2017	T_{mean}, T_{min}, T_{max}, Td, RH	250m / daily	ERA-Interim
	London	2007-2017	T_{mean}, T_{min}, T_{max}, Td, RH	250m / daily	ERA5
Building Energy	No new data have been produced for this replication case, which uses the data for all the other cities that have been modelled in the project.				
Emergency Planning	Bruges	2000-2017	Rainfall IDF-curves and design storms	Point data / 10 min.	Local rainfall measurements
Urban Planning	Dhaka	2009-2018	T, RH, Ws	100m / hourly	ERA-Interim
Active Mobility	Berlin	2000-2018	T, RH, Ws, Wdir, Pr, Rs, WBGT	100m / hourly	ERA5
	Bremen	2000-2018	T, RH, Ws, Wdir, Pr, Rs, WBGT	100m / hourly	ERA5
Cultural Heritage	Antwerp	2000-2017	T, RH, Ws	100m / hourly	ERA5
	Mechelen	2000-2017	T, RH, Ws	100m / hourly	ERA5

Variables: T (air temperature), Td (dew point temperature), RH (relative humidity), Ws (wind speed), Wdir (wind direction from the north), Pr (precipitation amount), Rs (downwelling short-wave radiation) and WBGT (Wet Bulb Globe Temperature).

Table 2: Delivered future urban climate data

Sectoral case	City	Horizon	Variables	RCP scenarios	Base data
Climate & Health	London	2011-2040	T_{mean}, T_{min}, T_{max}, Td, RH	RCP4.5/8.5	ERA-Interim
	London	2041-2070	T_{mean}, T_{min}, T_{max}, Td, RH	RCP4.5/8.5	ERA-Interim
	London	2071-2100	T_{mean}, T_{min}, T_{max}, Td, RH	RCP4.5/8.5	ERA-Interim
Building Energy	No new data have been produced for this replication case, which uses the data for all the other cities that have been modelled in the project.				
Emergency Planning	Bruges	2030	Rainfall IDF-curves and design storms	RCP4.5/8.5	Local rainfall measurements
	Bruges	2050	Rainfall IDF-curves and design storms	RCP4.5/8.5	Local rainfall measurements

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	Bruges	2100	Rainfall IDF-curves and design storms	RCP4.5/8.5	Local rainfall measurements
Urban Planning	No future climate data were requested for this case				
Active Mobility	Berlin	2042-2059	T, RH, Ws, WBGT	RCP4.5/8.5	ERA5
	Bremen	2042-2059	T, RH, Ws, WBGT	RCP4.5/8.5	ERA5
Cultural Heritage	Antwerp	2020, 2030, 2040, 2050	T, RH, Ws	RCP4.5/8.5	ERA5
	Mechelen	2020, 2030, 2040, 2050	T, RH, Ws	RCP4.5/8.5	ERA5

Variables: T (air temperature), Td (dew point temperature), RH (relative humidity), Ws (wind speed) and WBGT (Wet Bulb Globe Temperature).

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