

# Supplementary information

## Supplementary Notes

The time series urban impervious surface mapping results of all cities are provided.

Abbreviations and indicators meanings:

Africa-AF; Asia-AS; Europe-EU; North America-NA; Oceania-OA; South America-SA

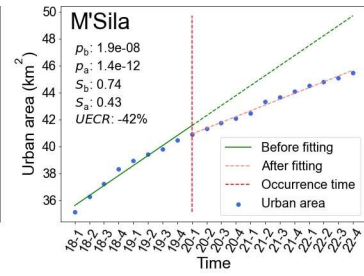
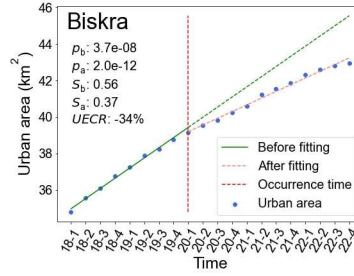
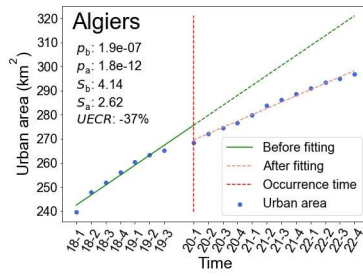
$p_b$ : The  $p$  value of the regression between urban area and time before the pandemic (2018-2019);

$p_a$ : The  $p$  value of the regression between urban area and time after the pandemic (2020-2022);

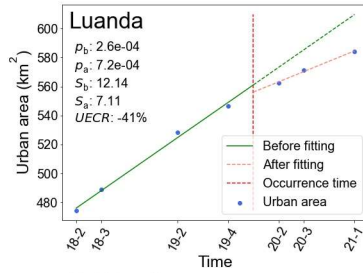
$S_b$ : The slope of the regression between urban area and time before the pandemic (2018-2019);

$S_a$ : The slope of the regression between urban area and time after the pandemic (2020-2022).

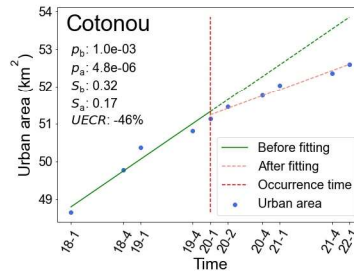
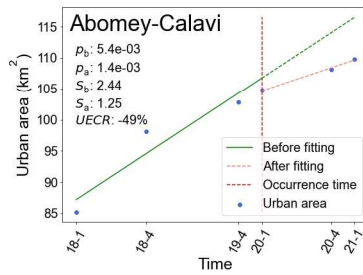
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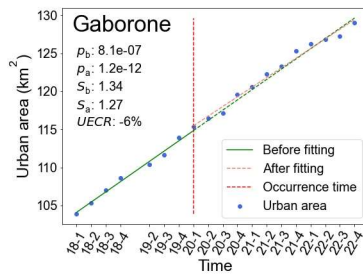
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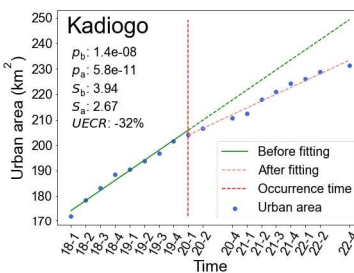
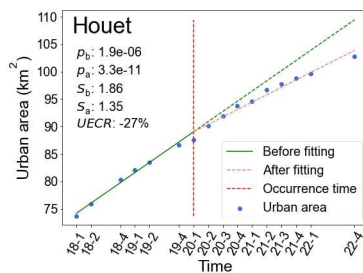
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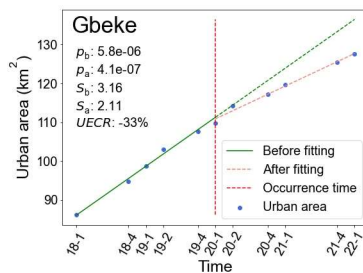
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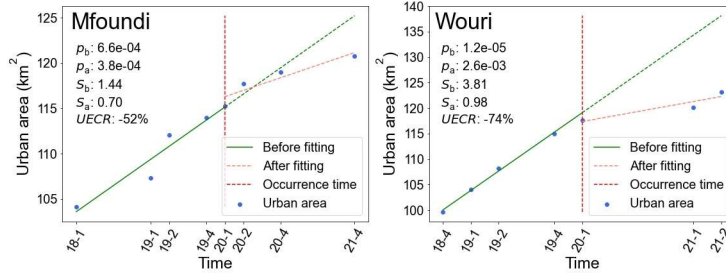
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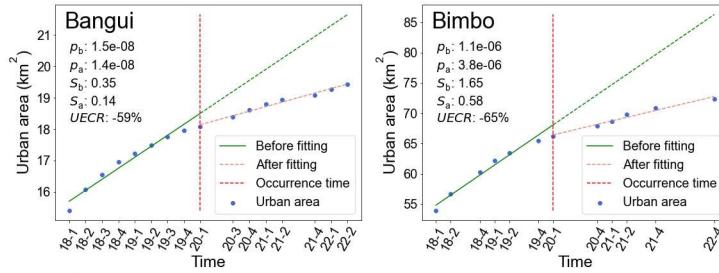
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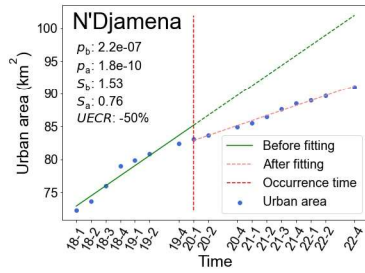
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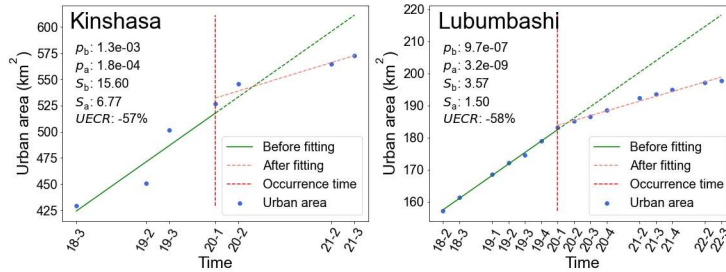
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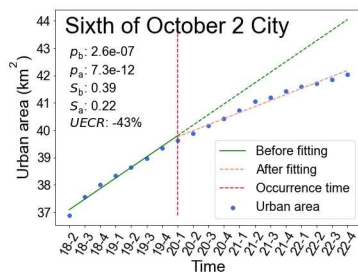
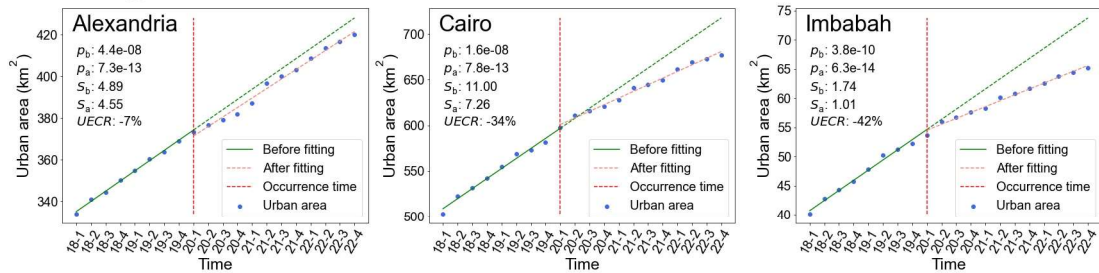
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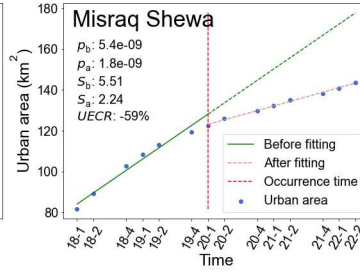
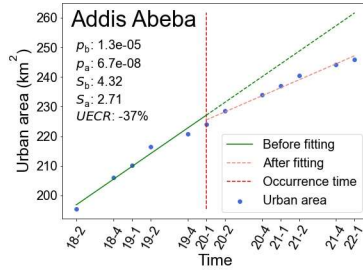
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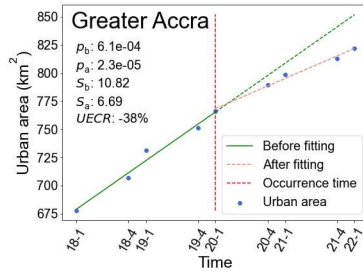
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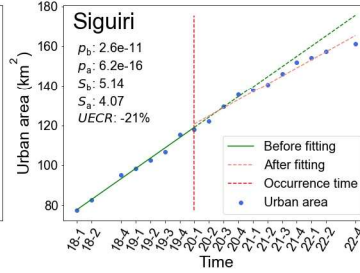
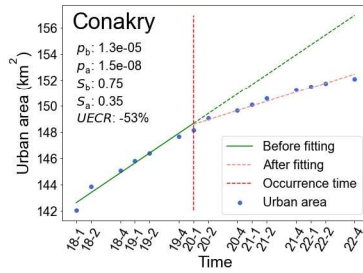
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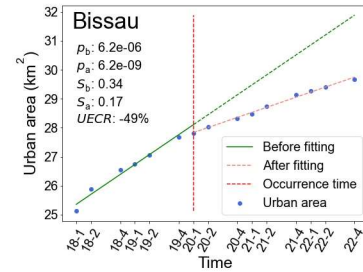
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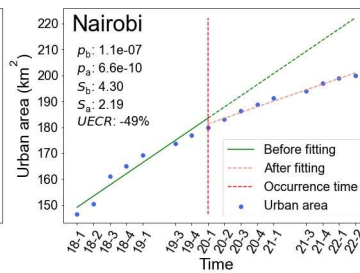
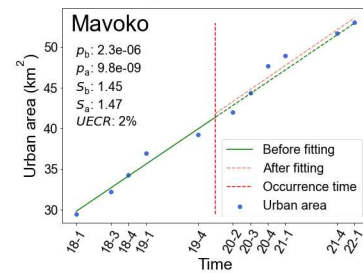
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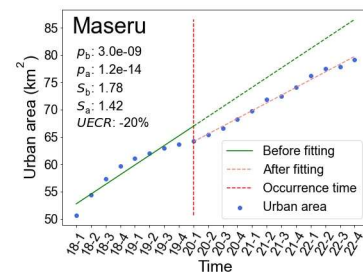
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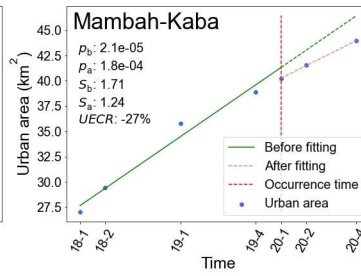
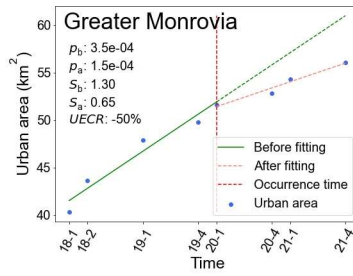
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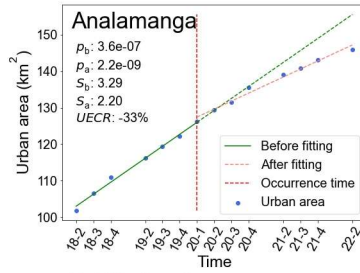
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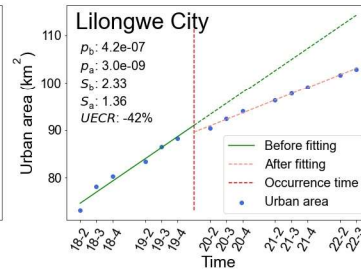
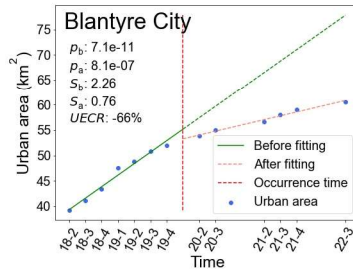
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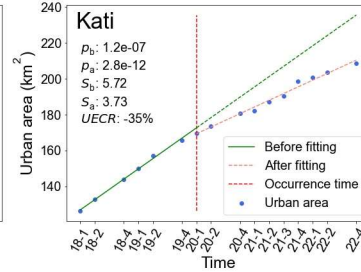
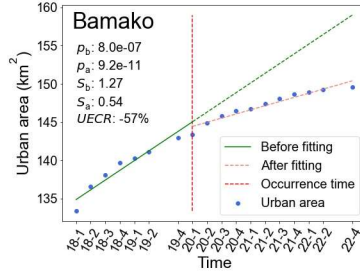
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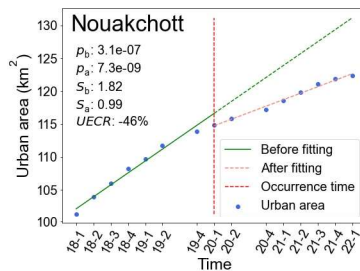
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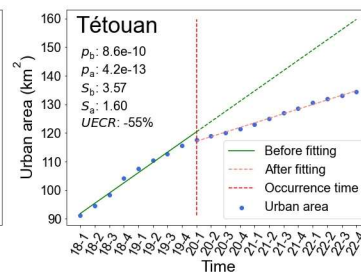
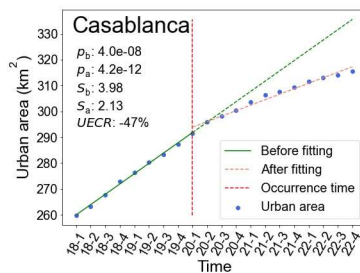
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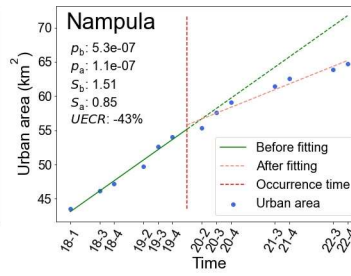
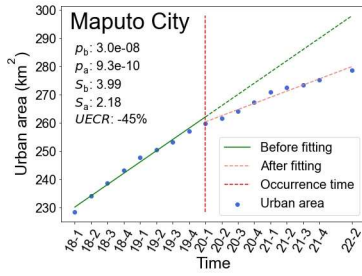
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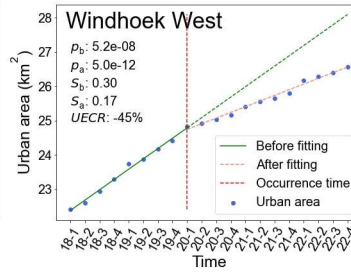
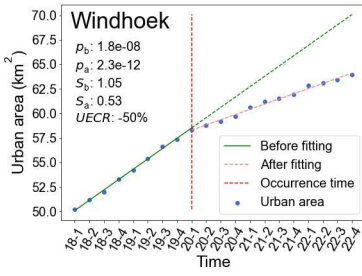
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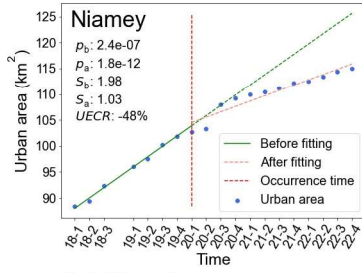
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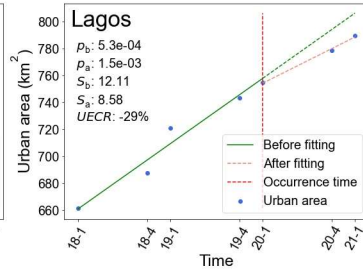
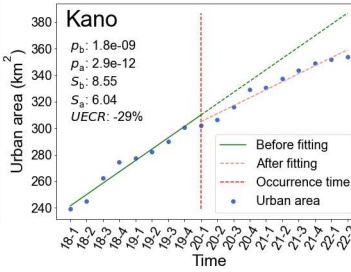
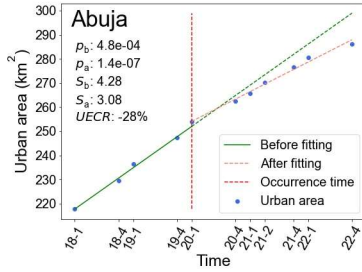
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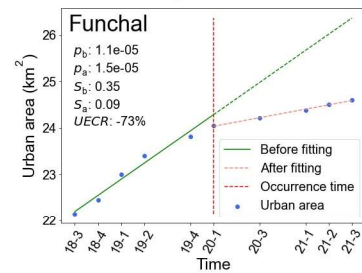
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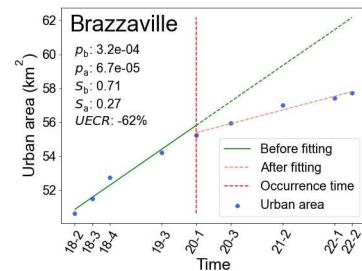
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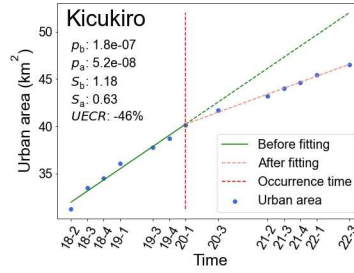
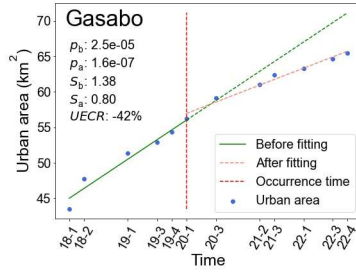
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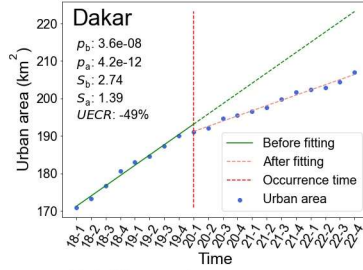
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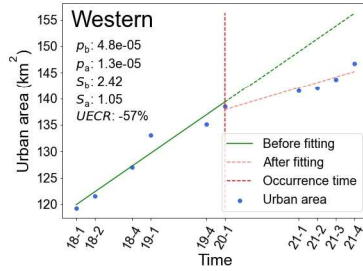
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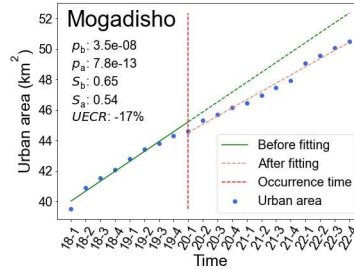
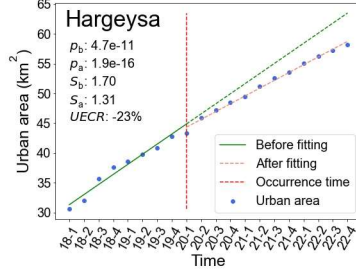
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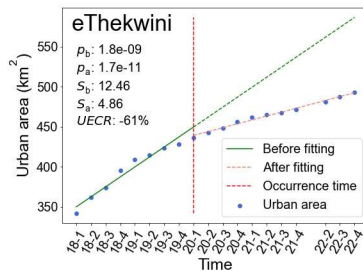
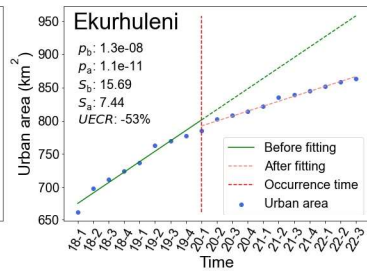
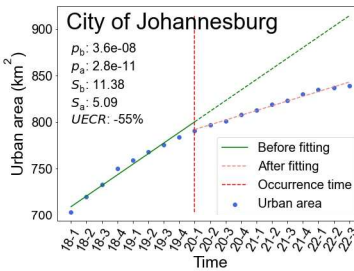
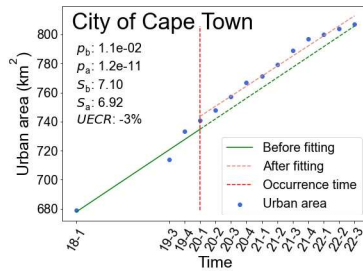
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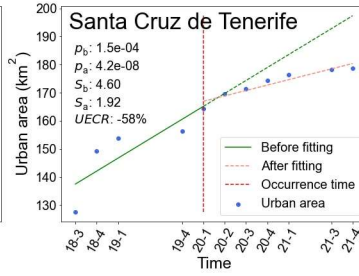
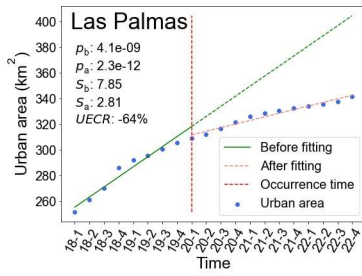
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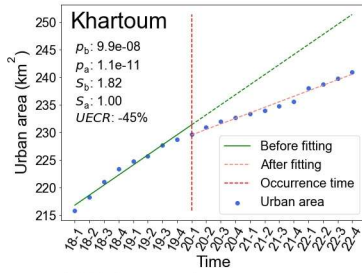
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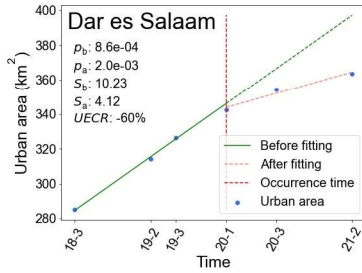
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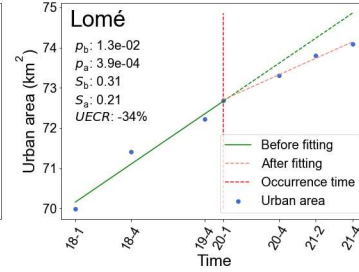
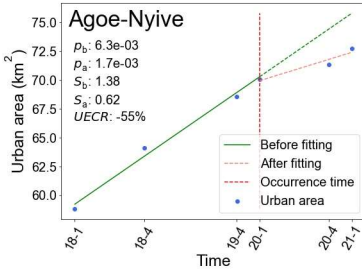
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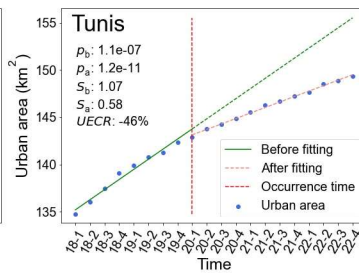
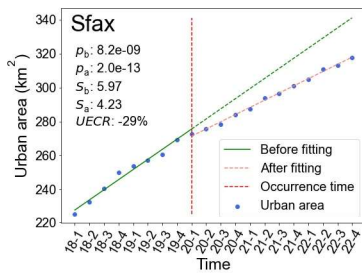
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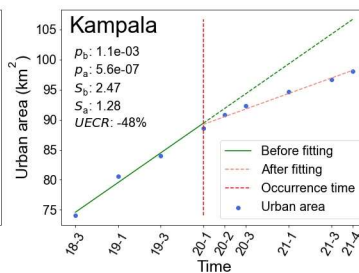
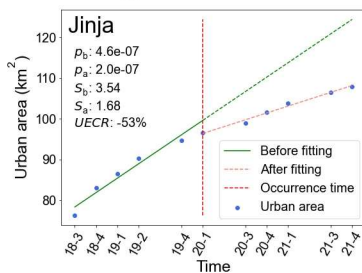
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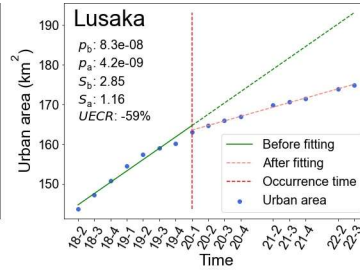
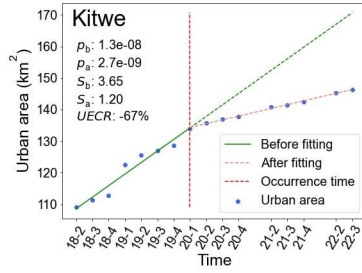
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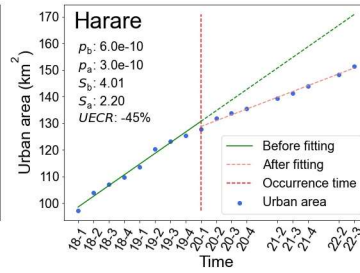
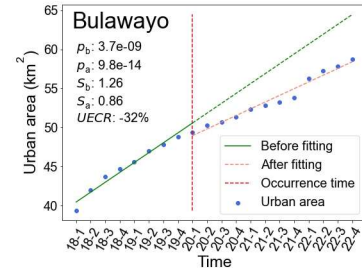
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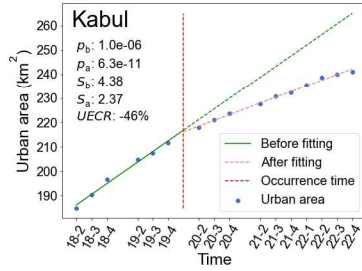
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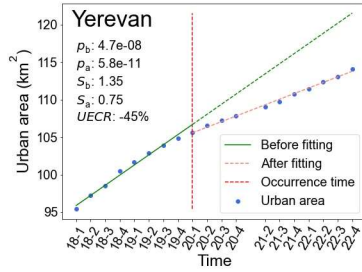
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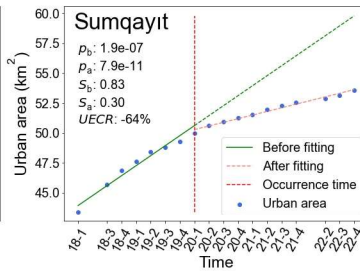
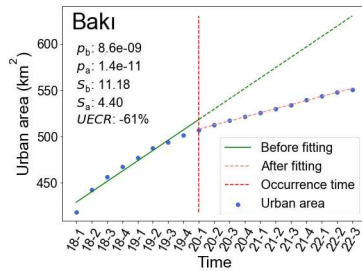
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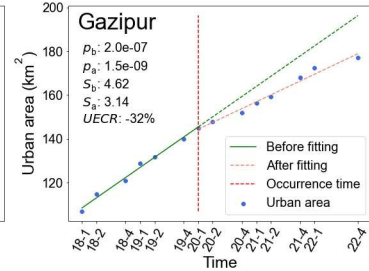
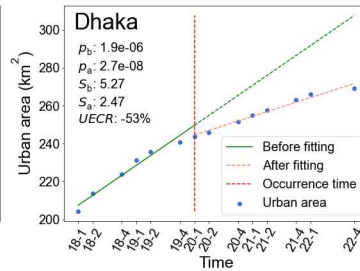
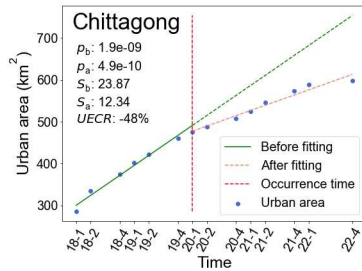
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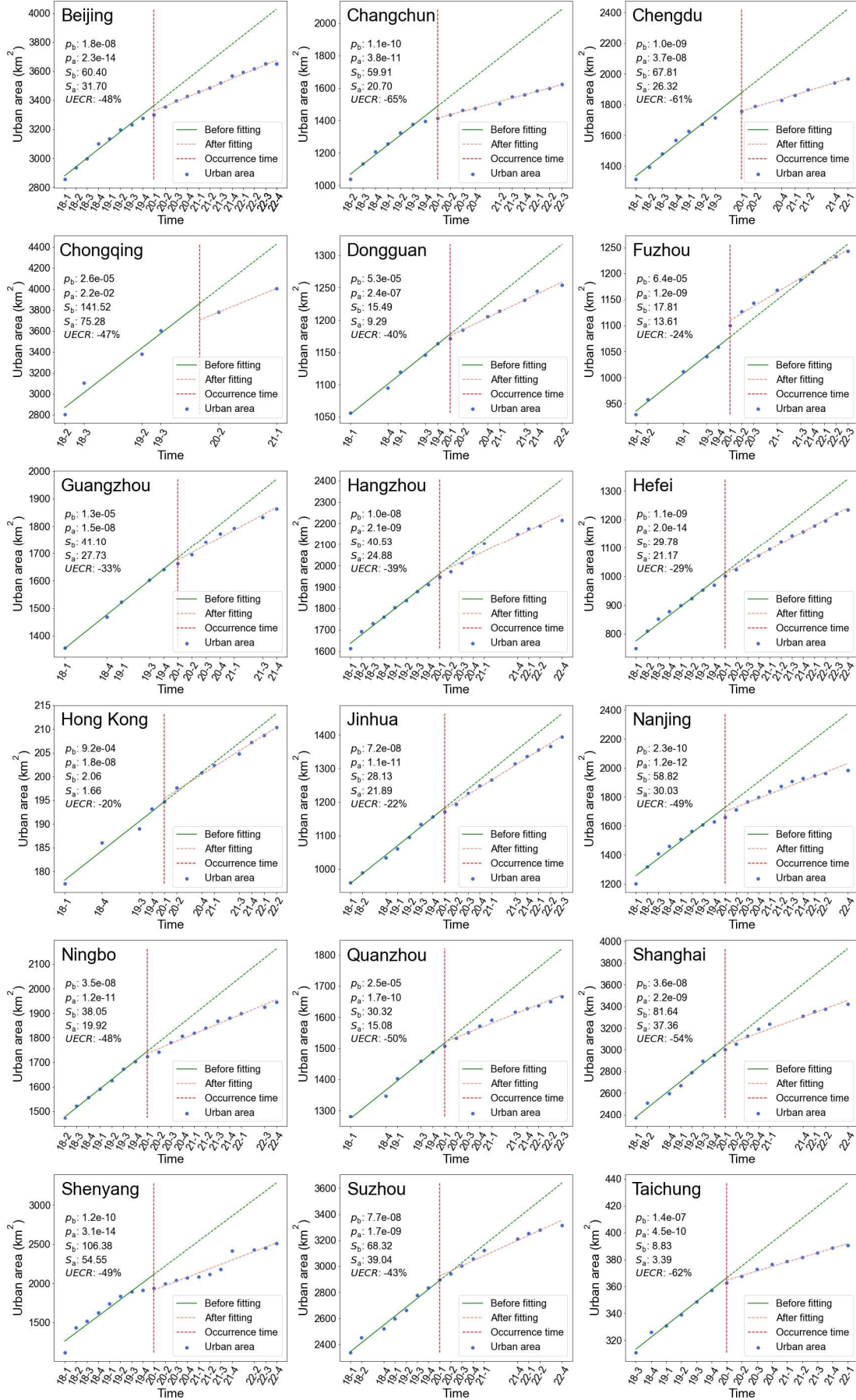
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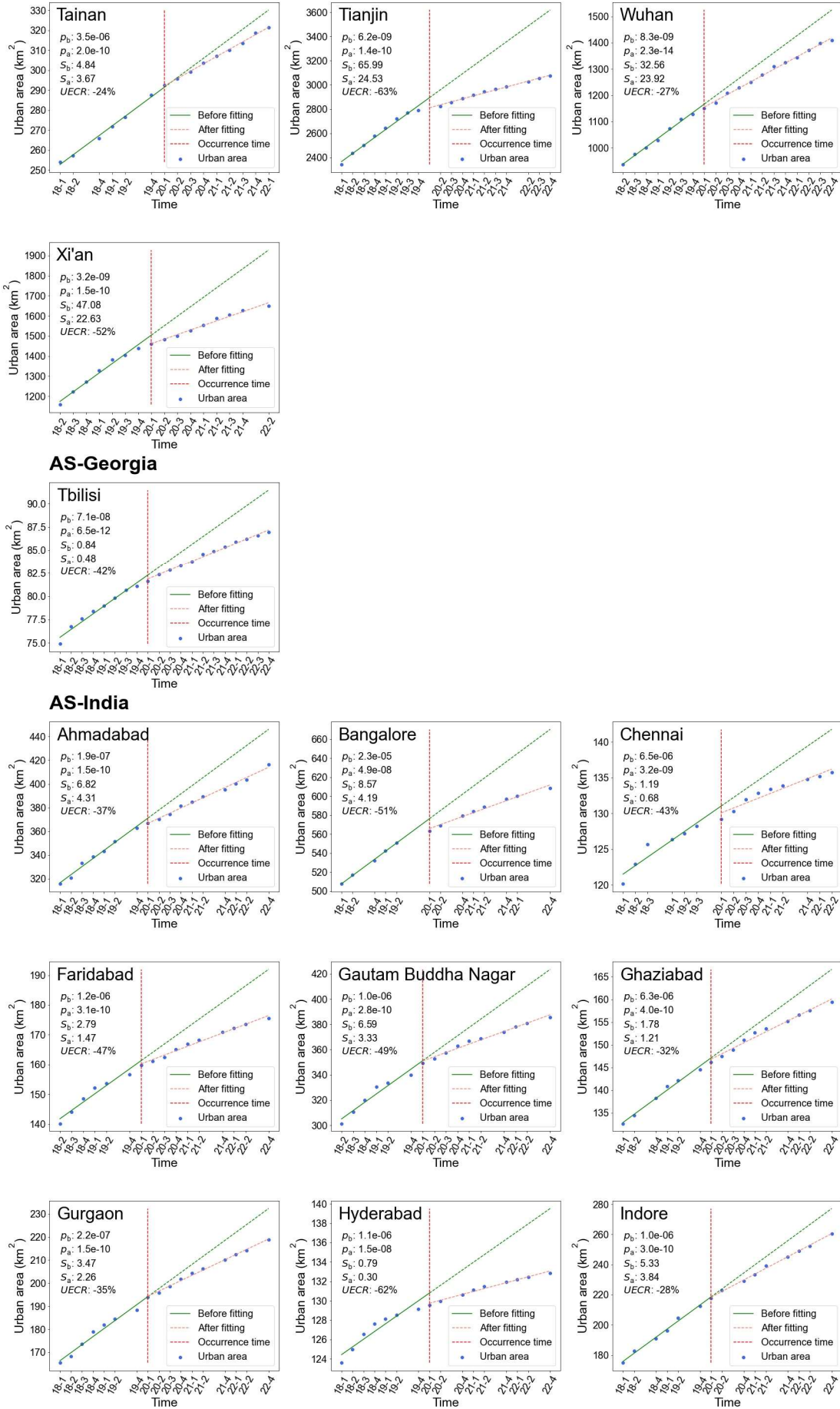


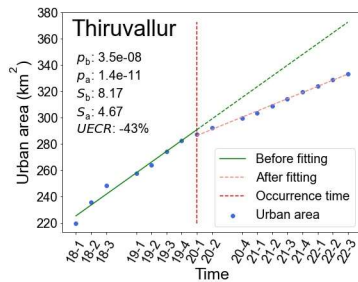
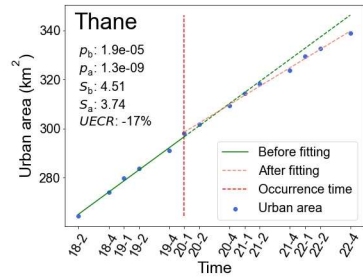
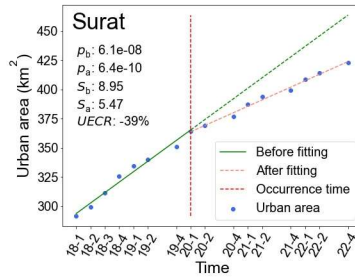
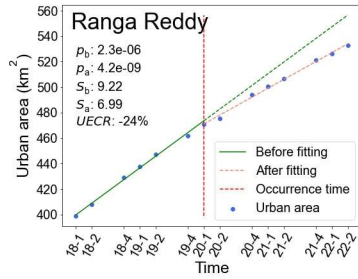
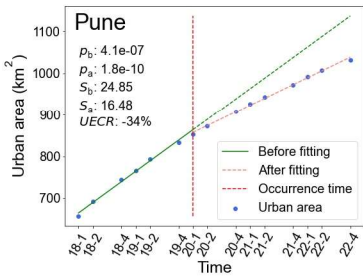
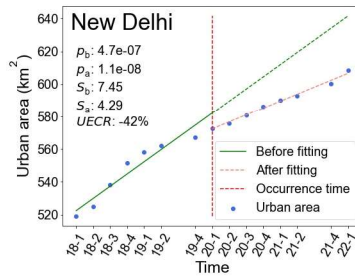
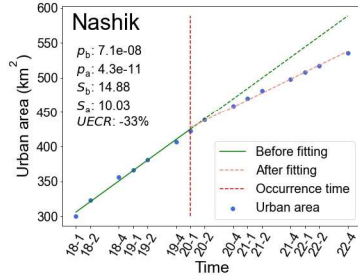
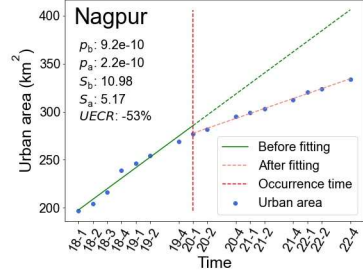
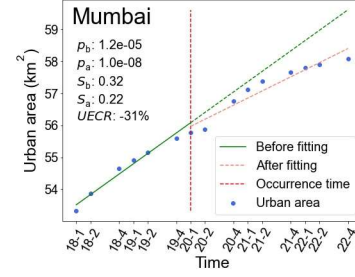
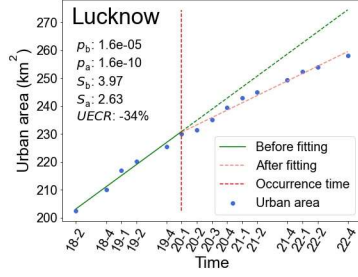
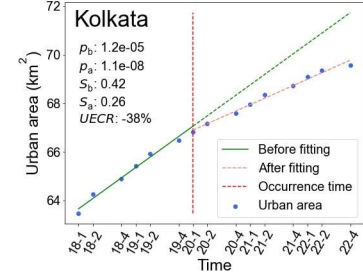
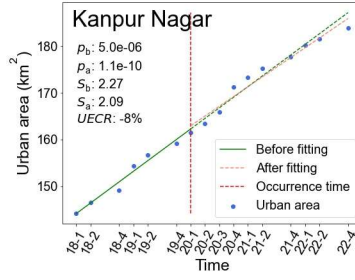
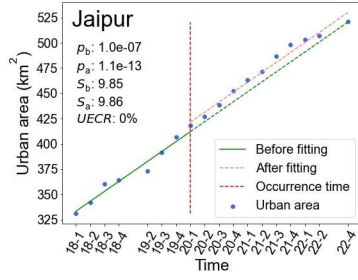
## AS-Bangladesh



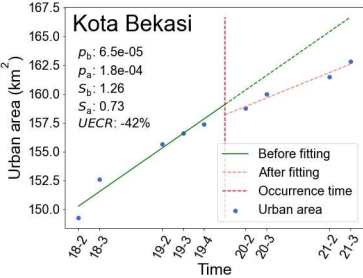
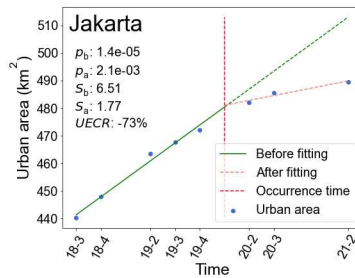
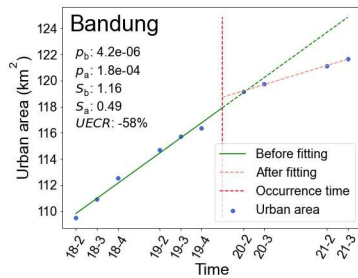
## AS-China

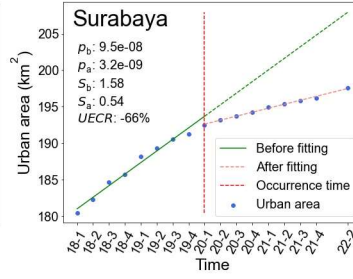
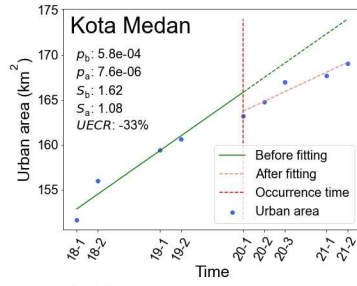




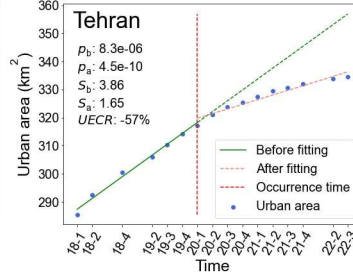
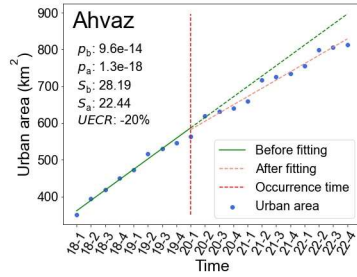


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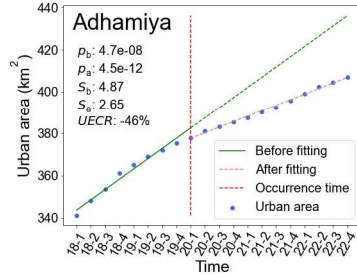




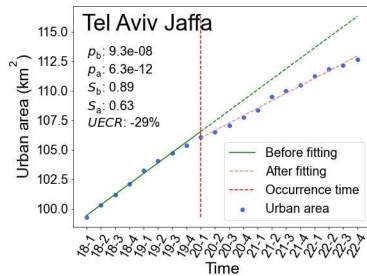
## AS-Iran



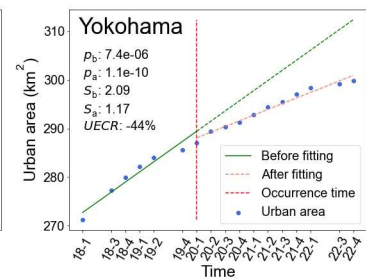
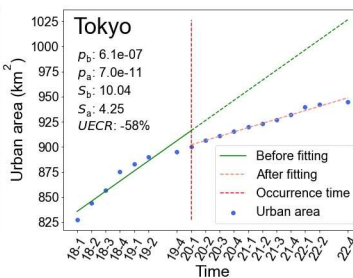
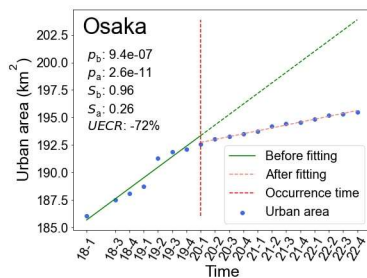
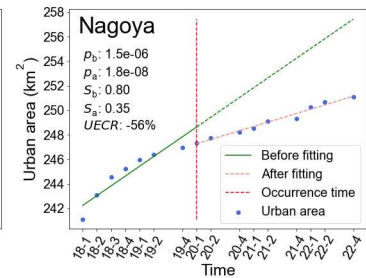
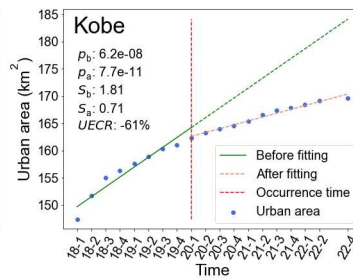
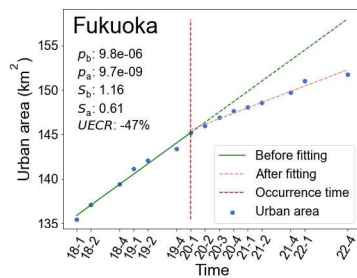
## AS-Iraq

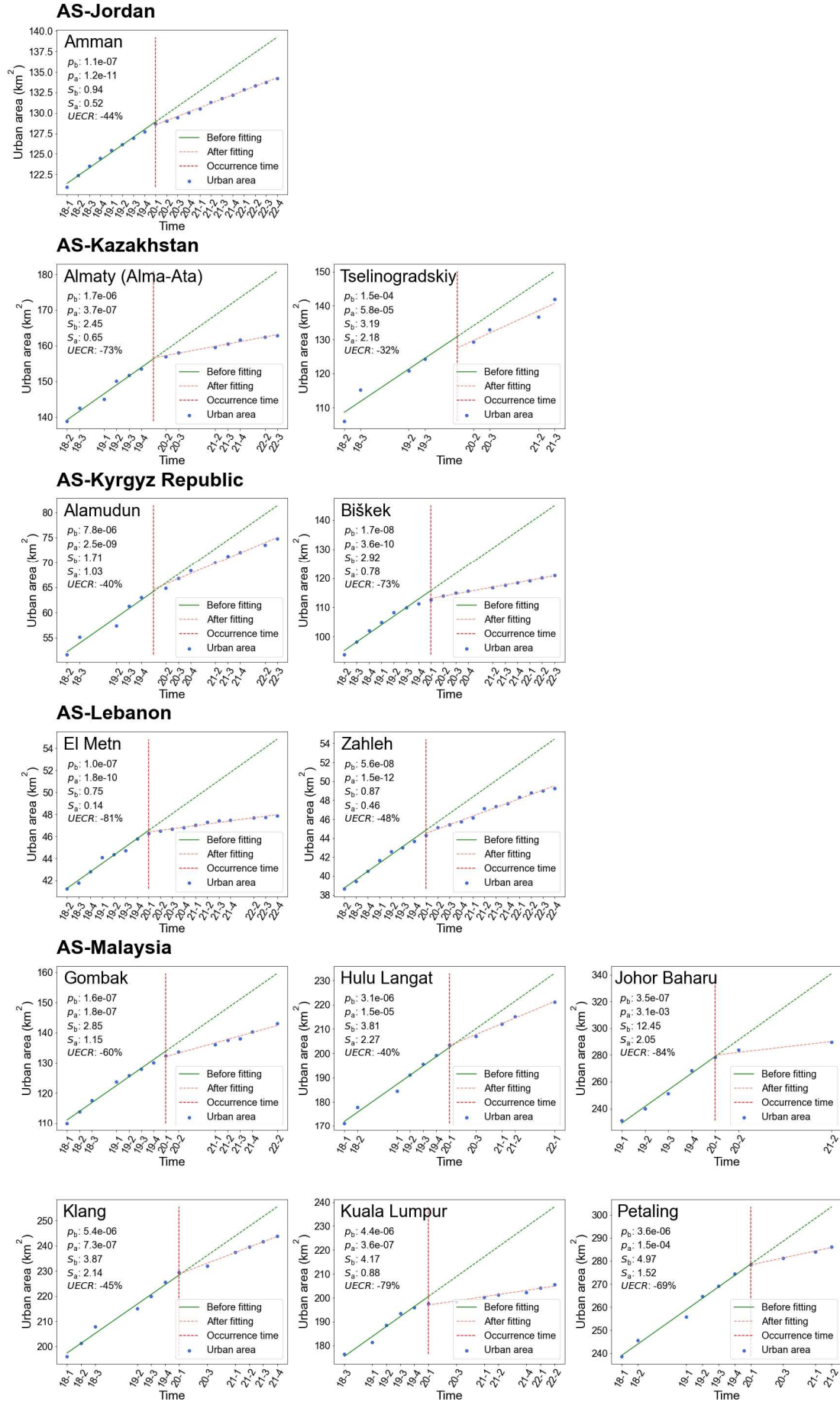


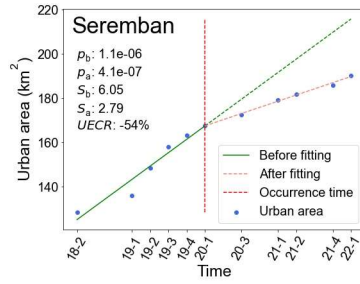
## AS-Israel



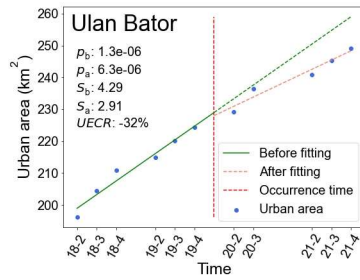
## AS-Japan



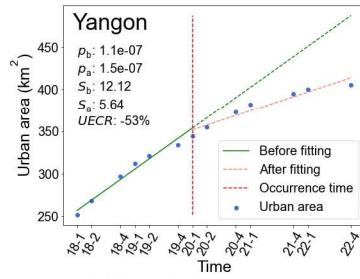




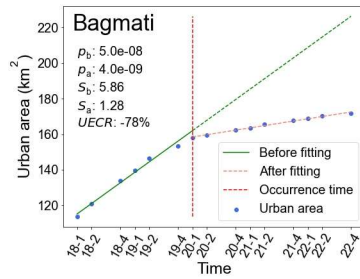
## AS-Mongolia



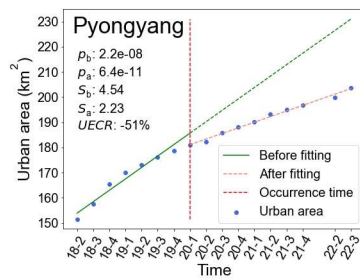
## AS-Myanmar



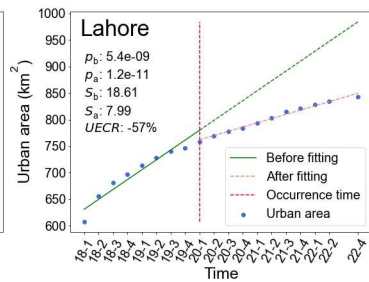
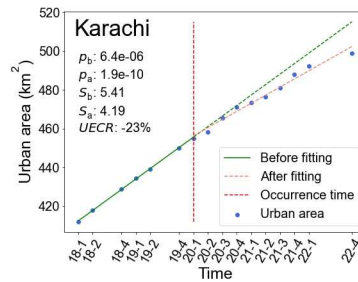
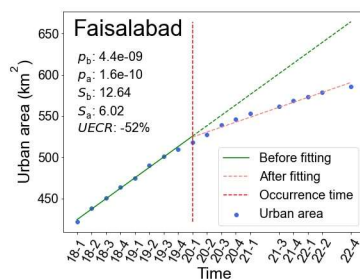
## AS-Nepal



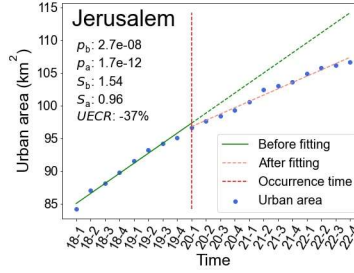
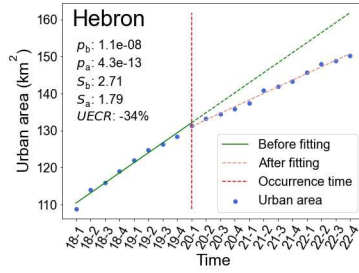
## AS-North Korea



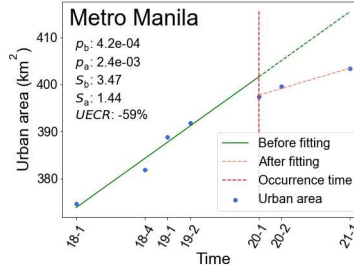
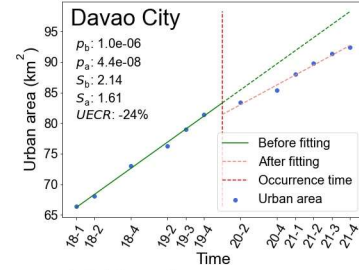
## AS-Pakistan



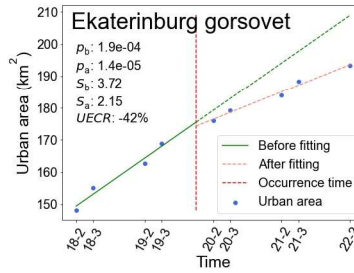
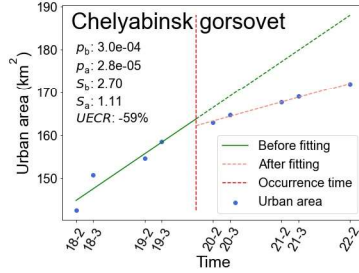
## AS-Palestine



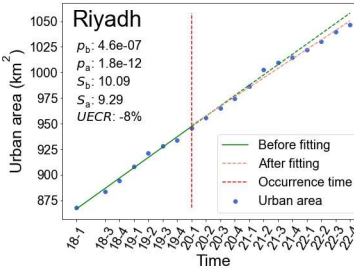
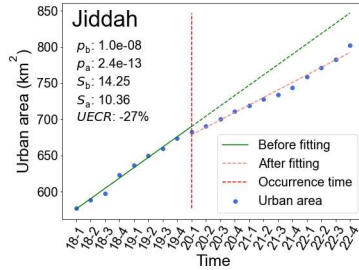
## AS-Philippines



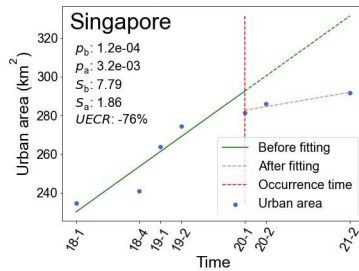
## AS-Russia



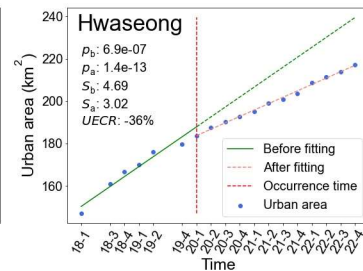
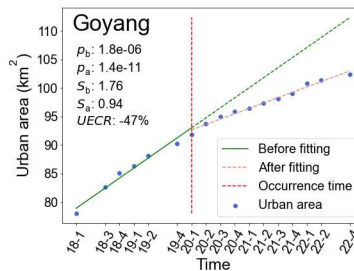
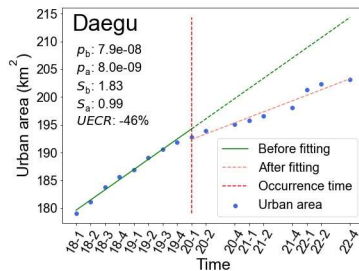
## AS-Saudi Arabia

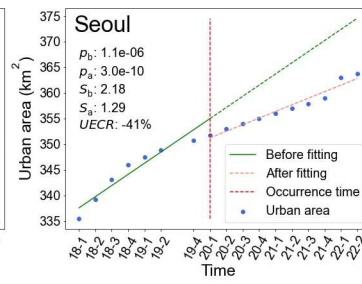
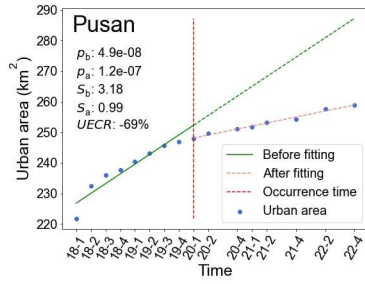


## AS-Singapore

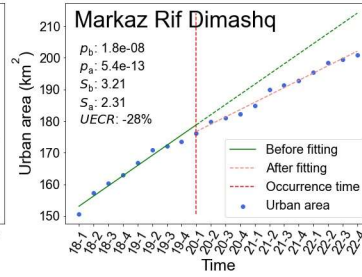
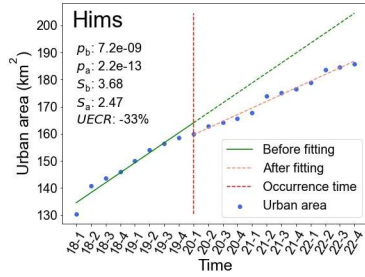


## AS-South Korea

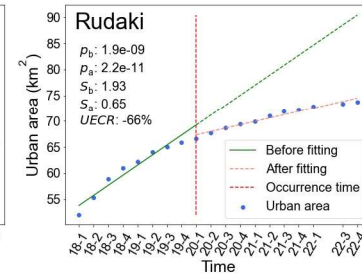
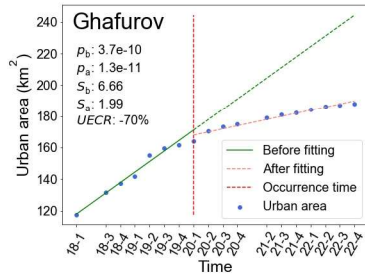




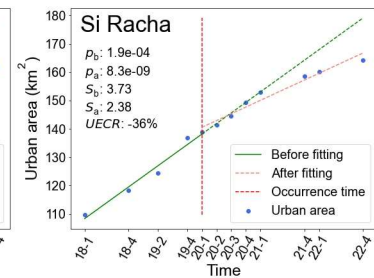
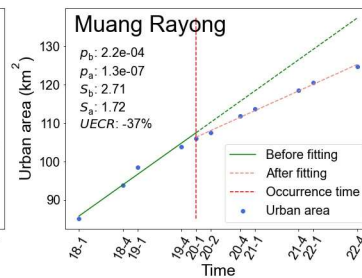
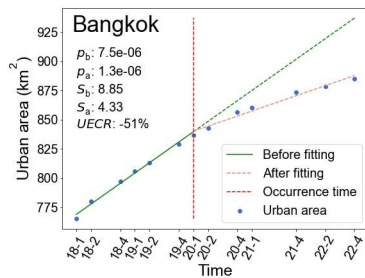
## AS-Syria



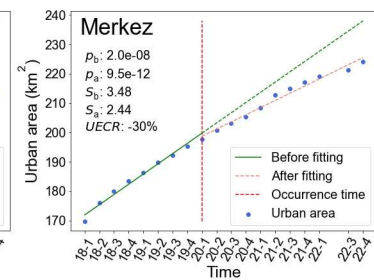
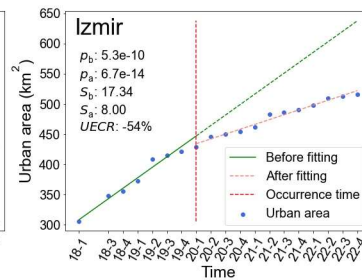
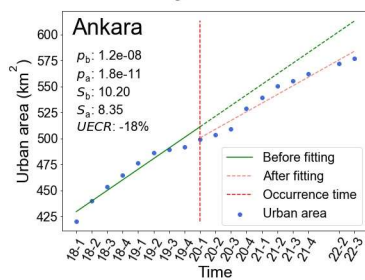
## AS-Tajikistan



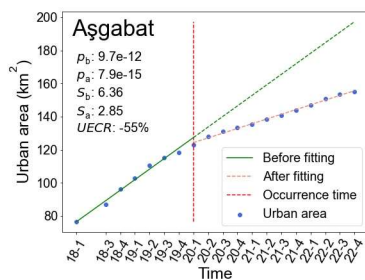
## AS-Thailand



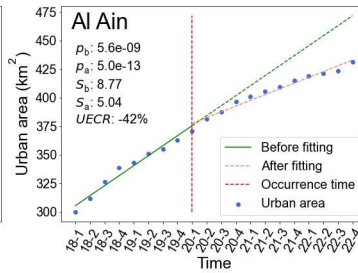
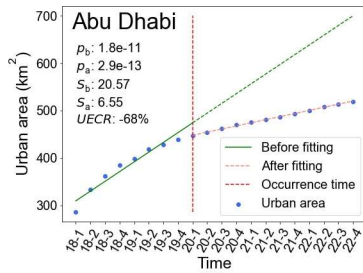
## AS-Turkey



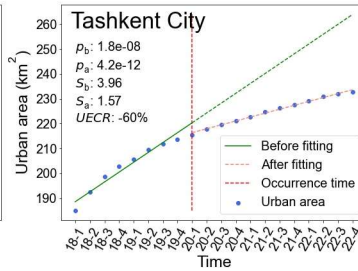
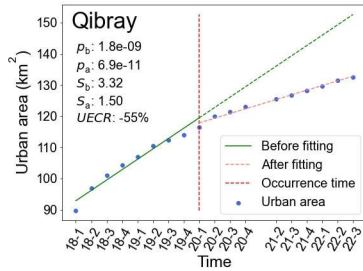
## AS-Turkmenistan



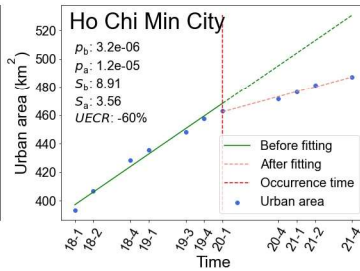
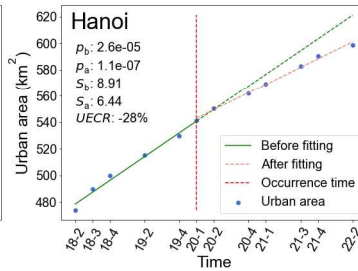
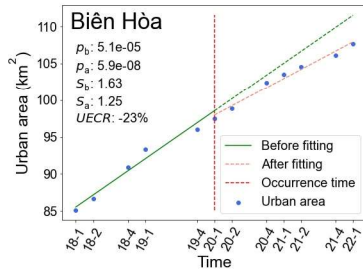
## AS-United Arab Emirates



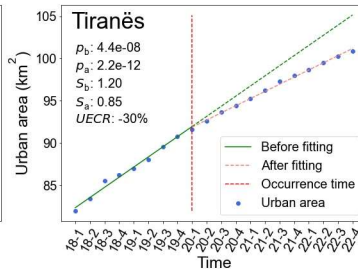
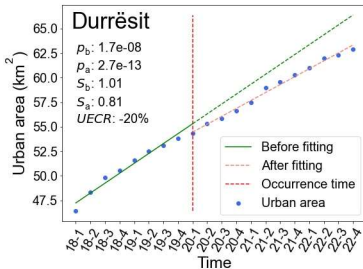
## AS-Uzbekistan



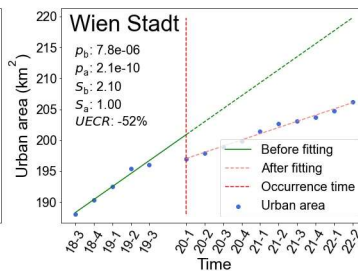
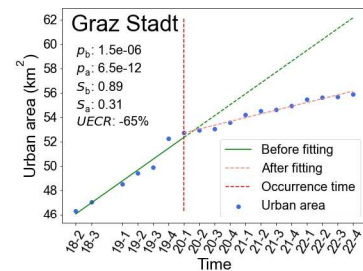
## AS-Vietnam



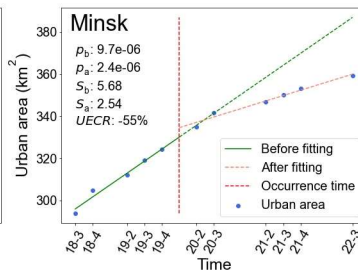
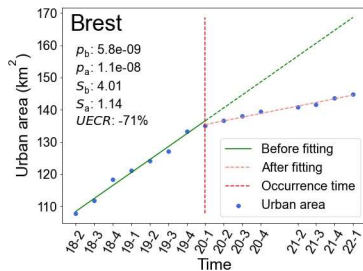
## EU-Albania



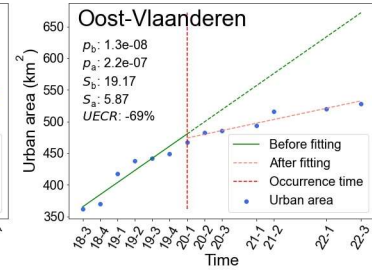
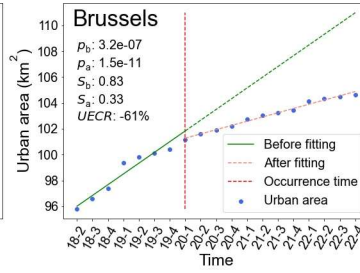
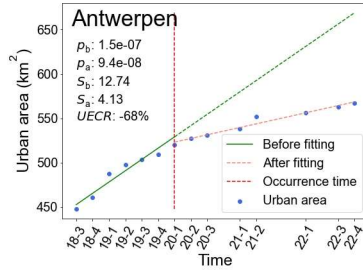
## EU-Austria



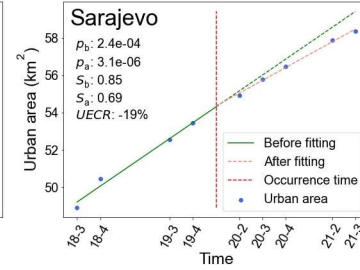
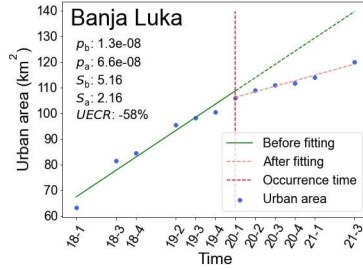
## EU-Belarus



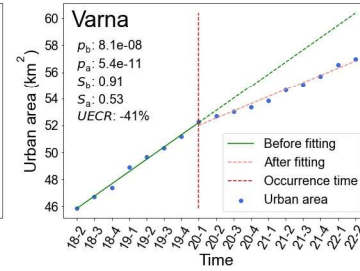
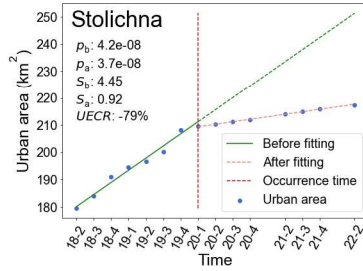
## EU-Belgium



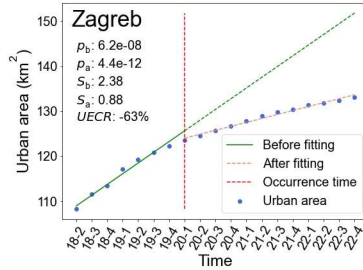
## EU-Bosnia and Herzegovina



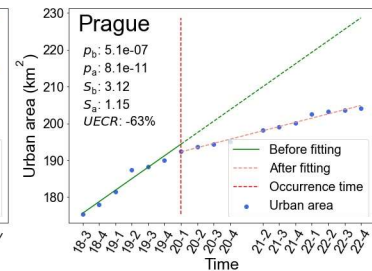
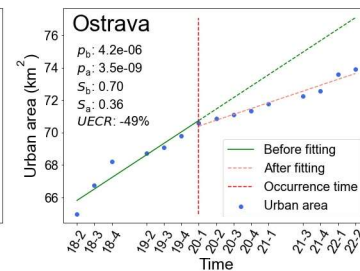
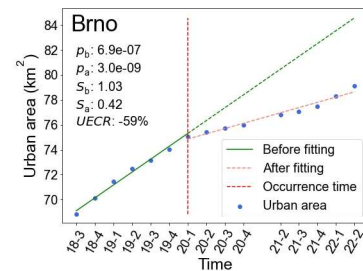
## EU-Bulgaria



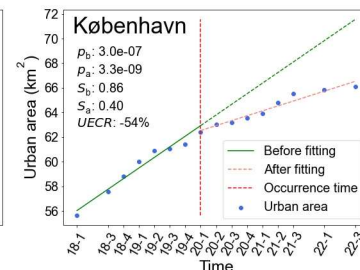
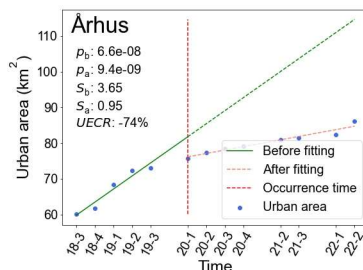
## EU-Croatia



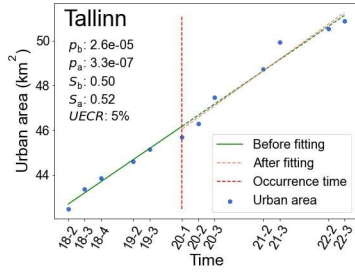
## EU-The Czech Republic



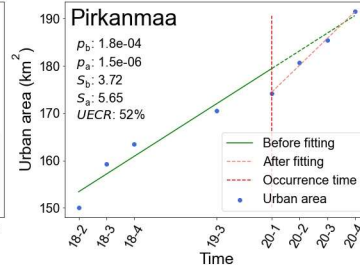
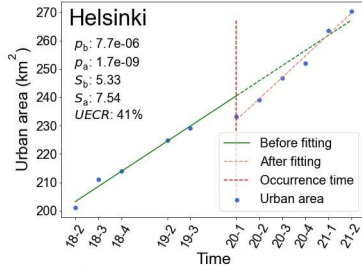
## EU-Denmark



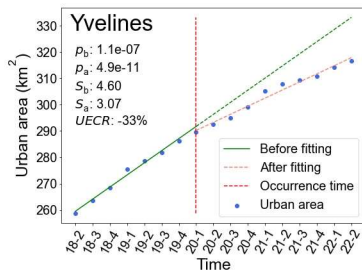
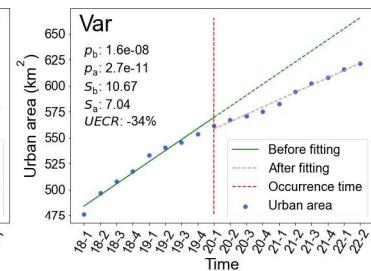
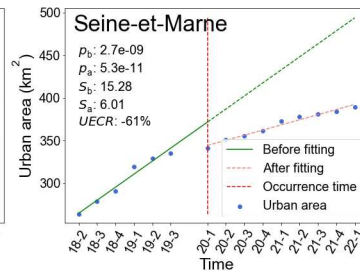
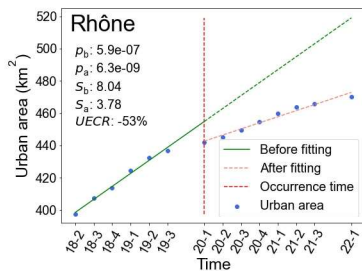
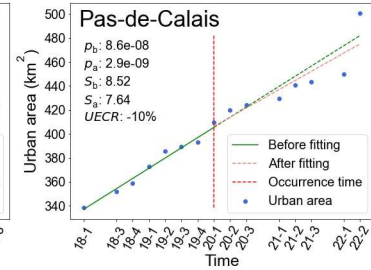
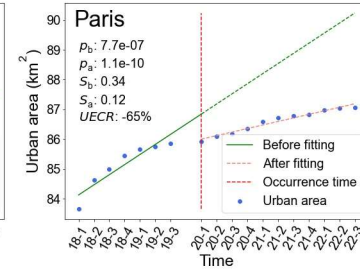
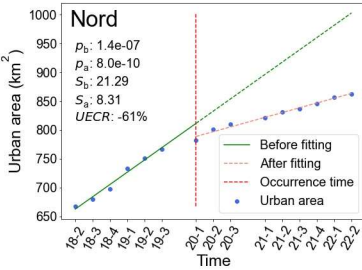
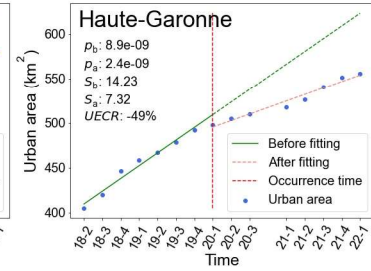
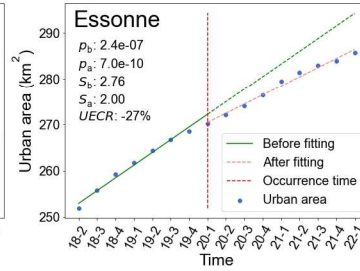
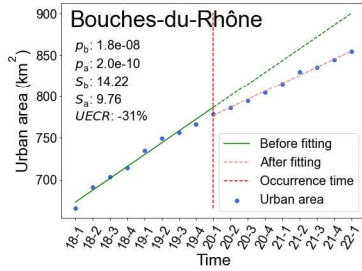
## EU-Estonia



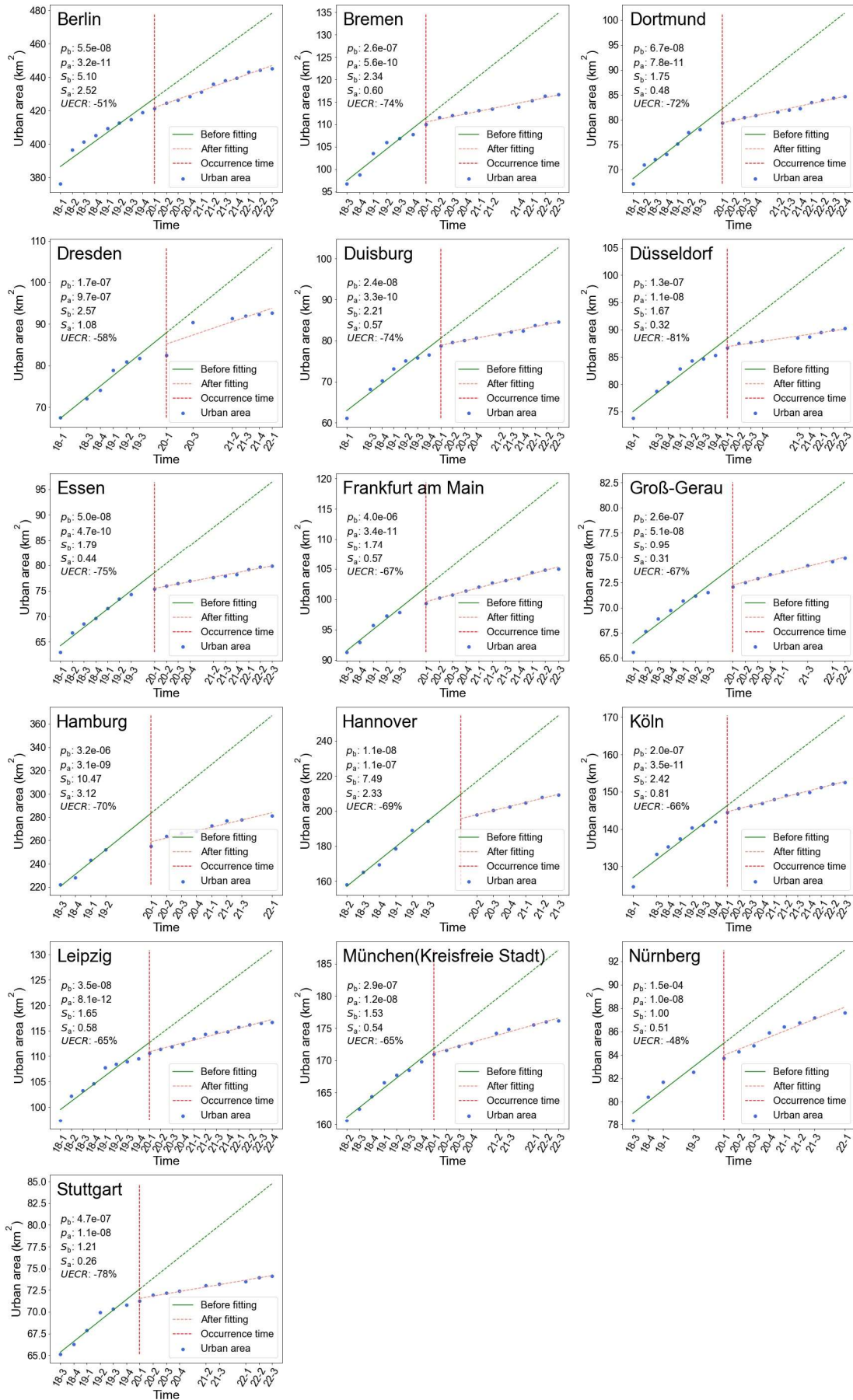
## EU-Finland



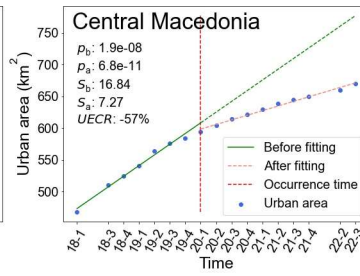
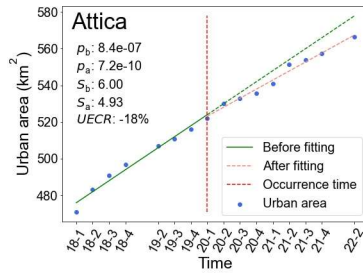
## EU-France



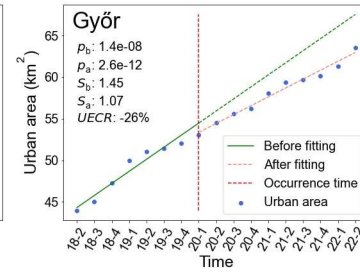
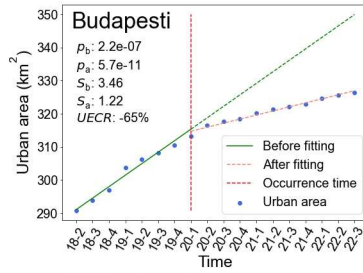
## EU-Germany



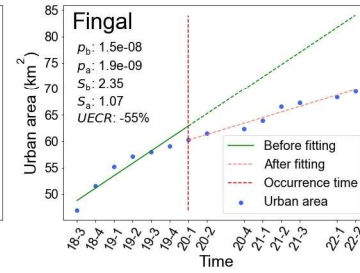
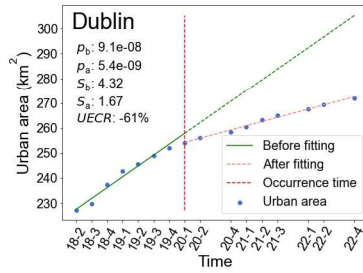
## EU-Greece



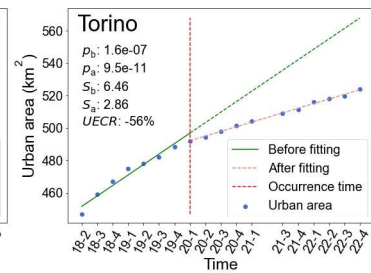
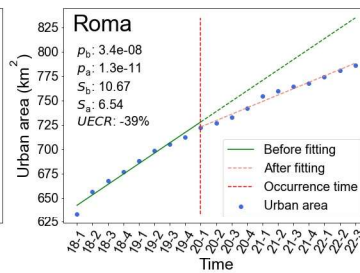
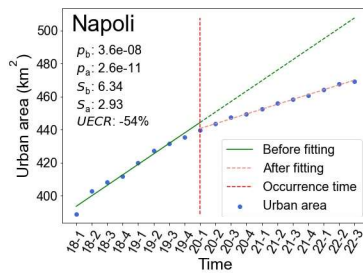
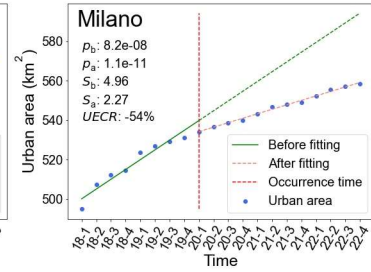
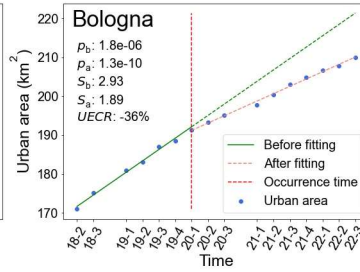
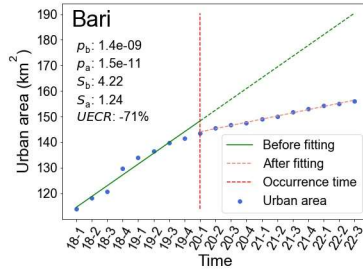
## EU-Hungary



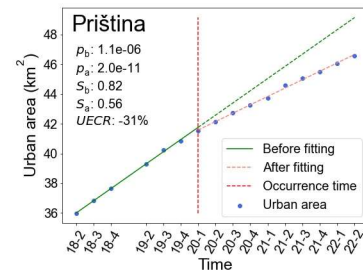
## EU-Ireland



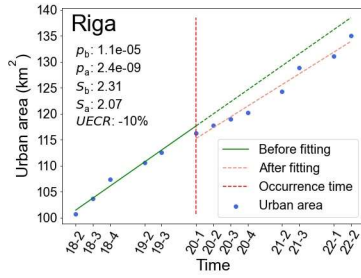
## EU-Italy



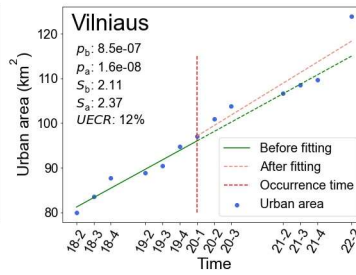
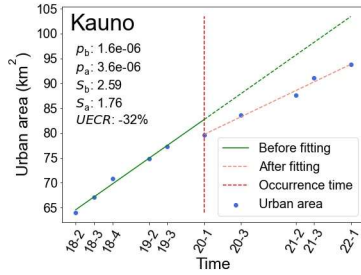
## EU-Kosovo



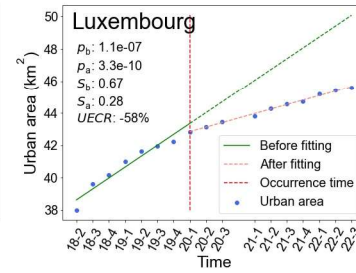
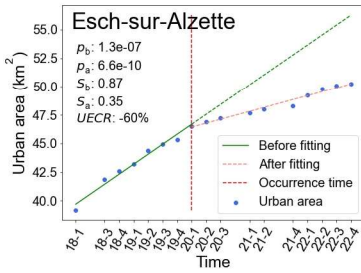
## EU-Latvia



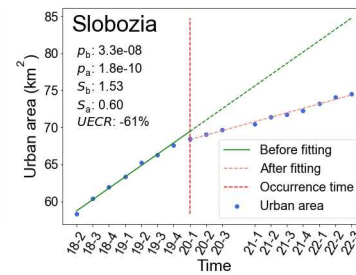
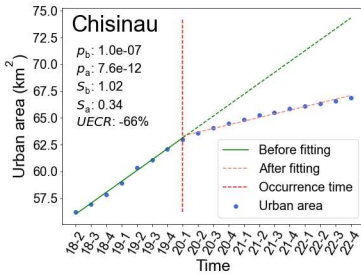
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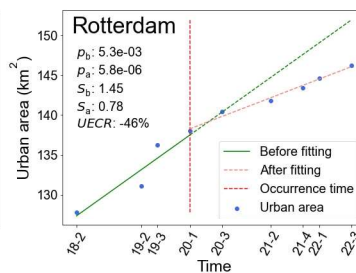
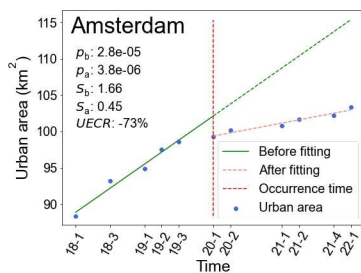
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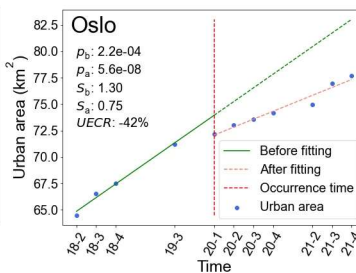
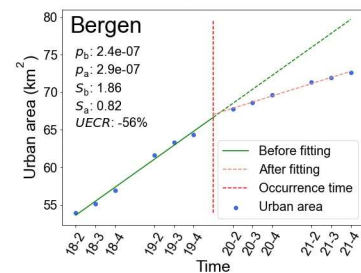
## EU-Moldova



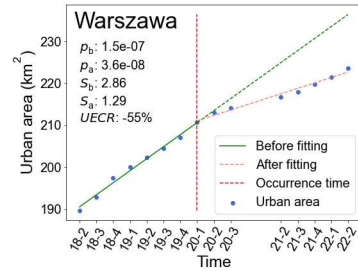
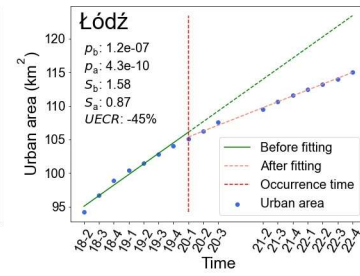
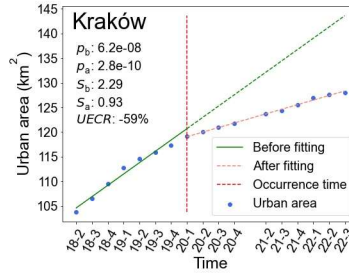
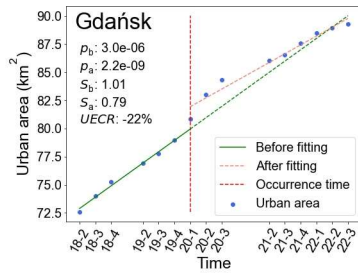
## EU-Netherlands



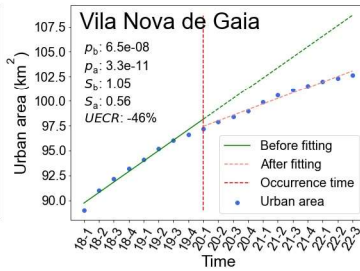
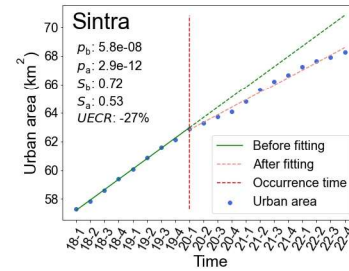
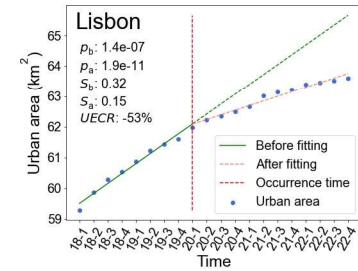
## EU-Norway



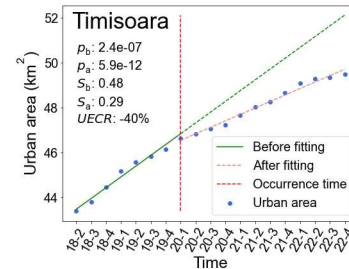
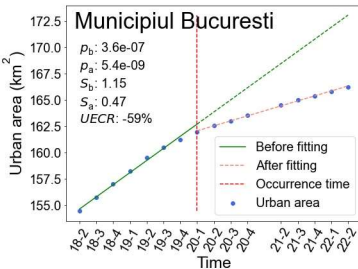
## EU-Poland



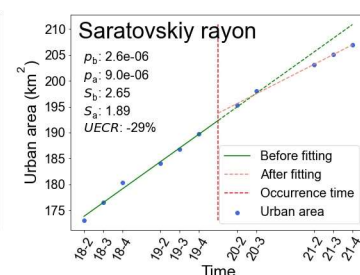
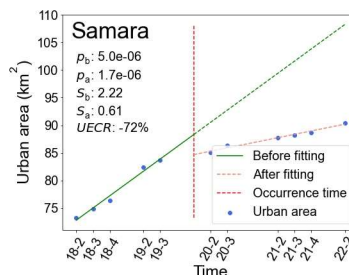
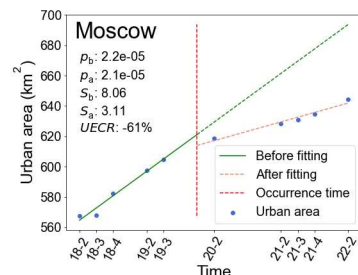
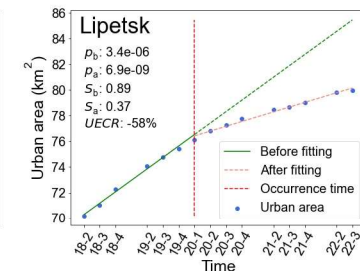
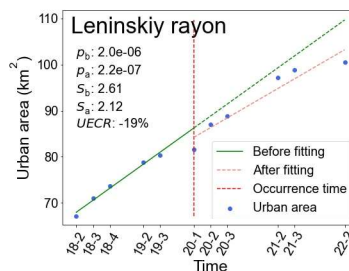
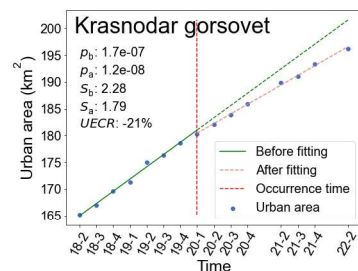
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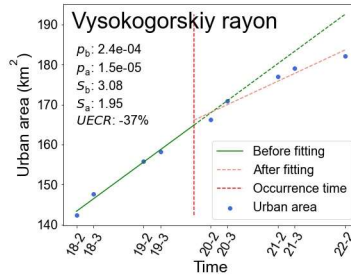
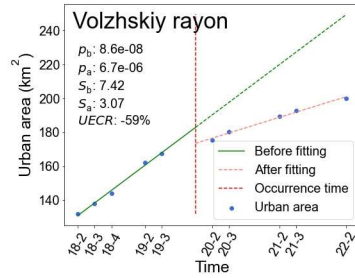
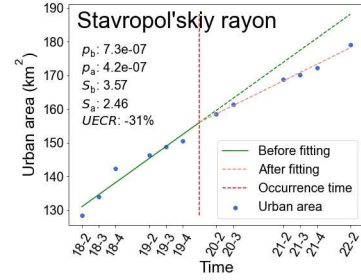
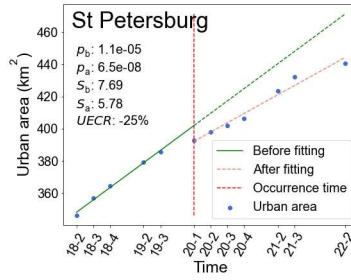
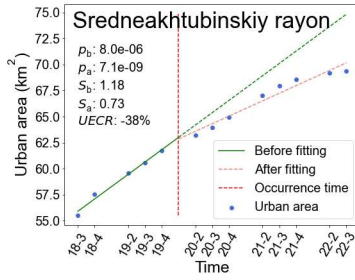


## EU-Romania

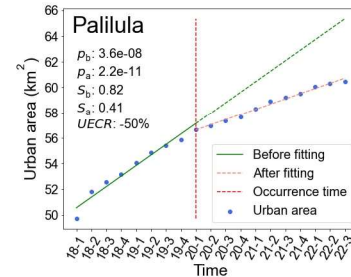
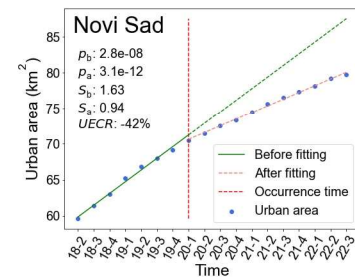


## EU-Russia

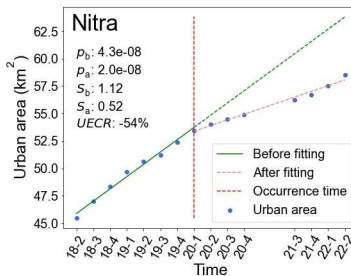
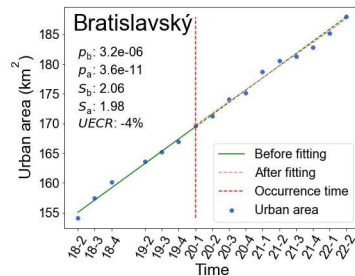




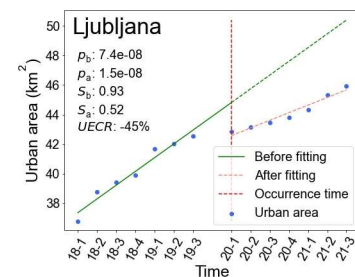
## EU-Serbia



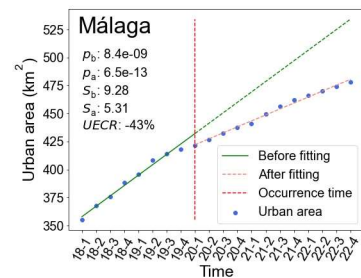
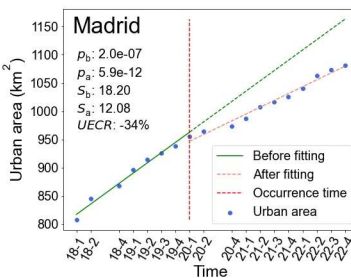
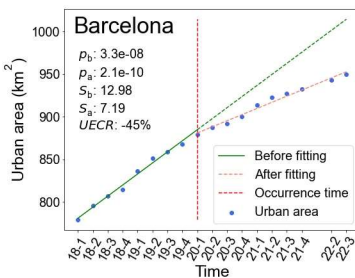
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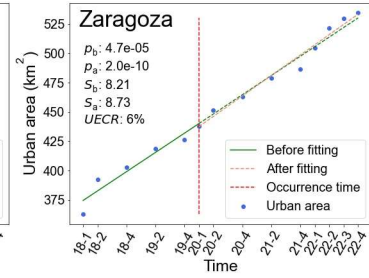
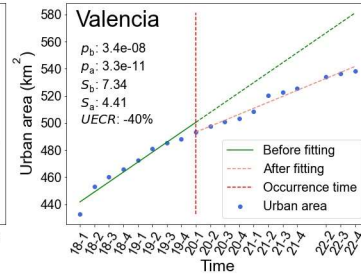
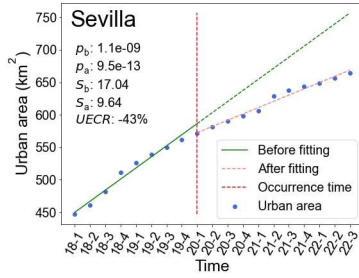


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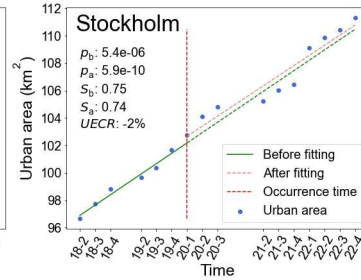
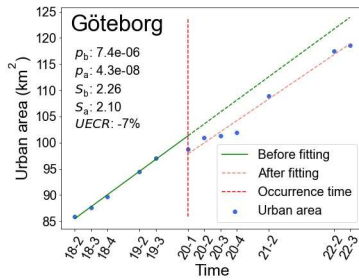


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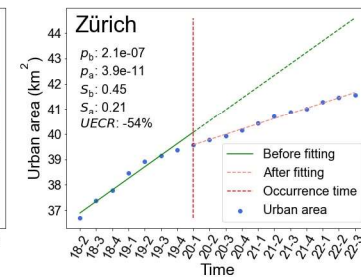
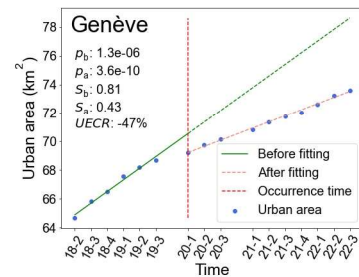




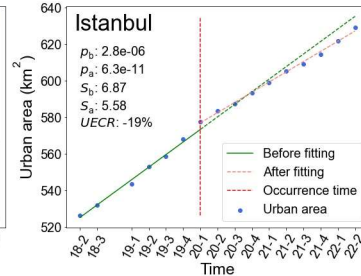
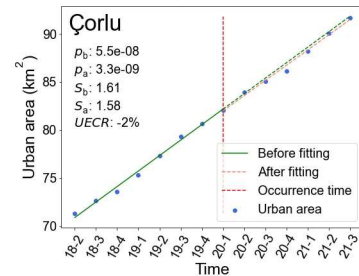
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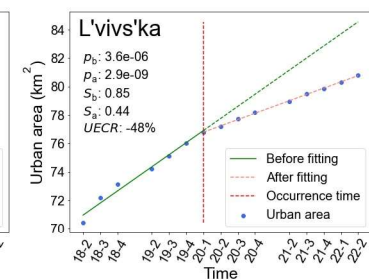
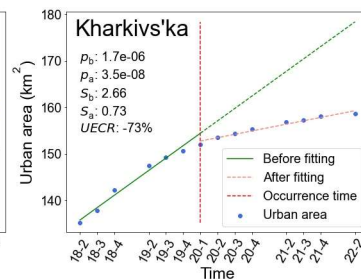
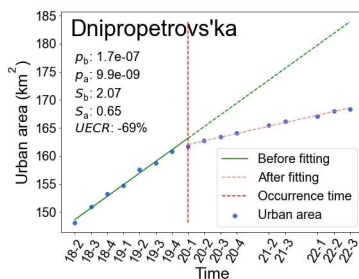
## EU-Switzerland



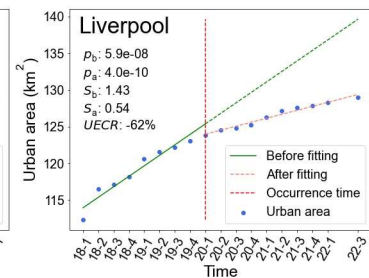
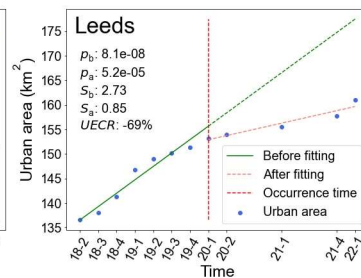
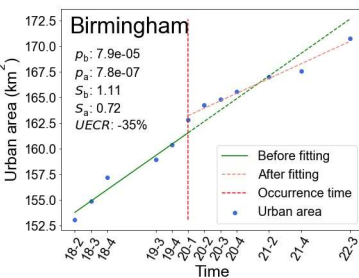
## EU-Turkey

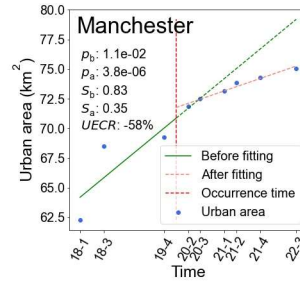
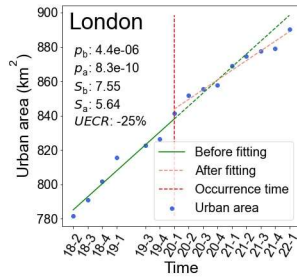


## EU-Ukraine

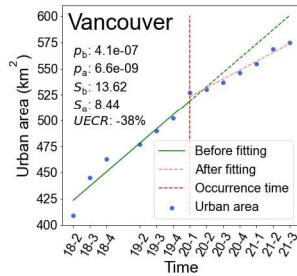
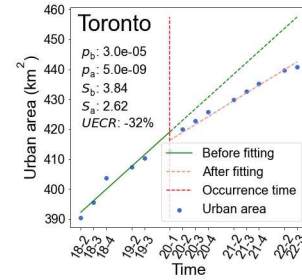
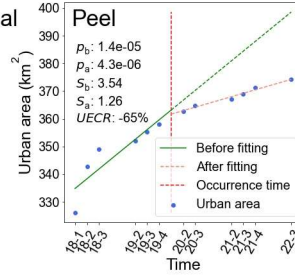
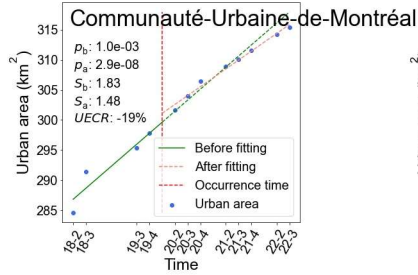


## EU-United Kingdom

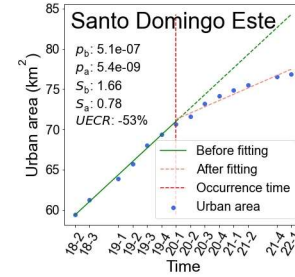
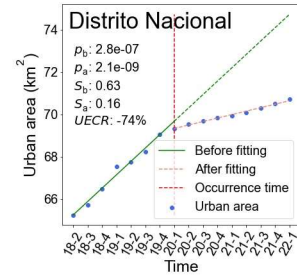




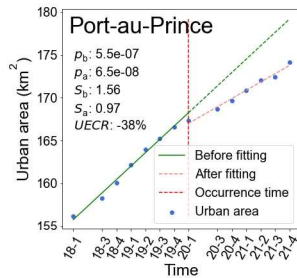
## NA-Canada



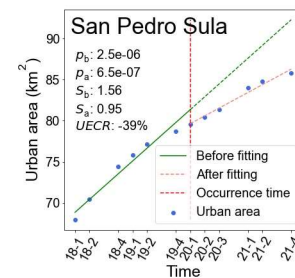
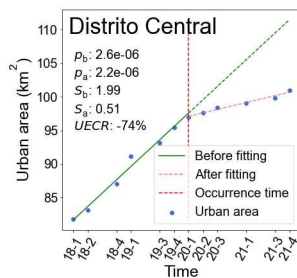
## NA-Dominican Republic



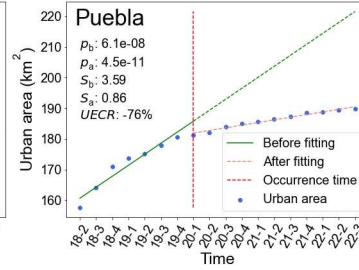
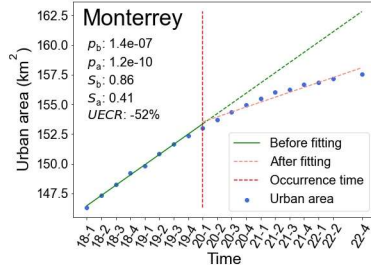
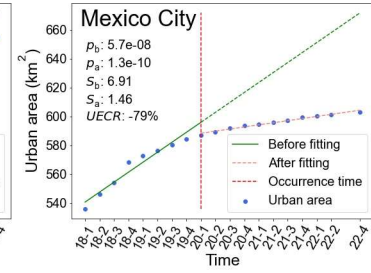
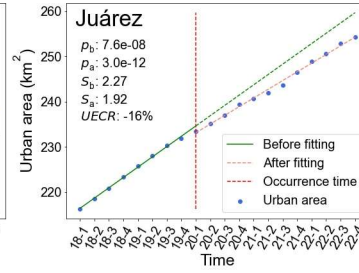
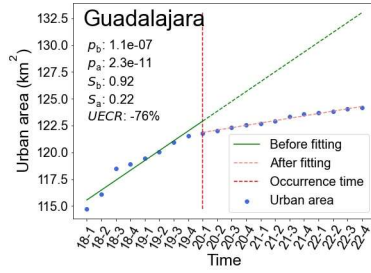
## NA-Haiti



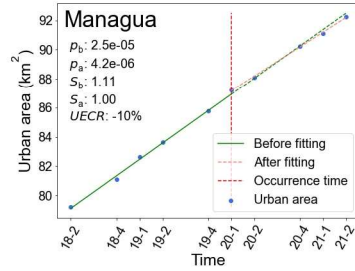
## NA-Honduras



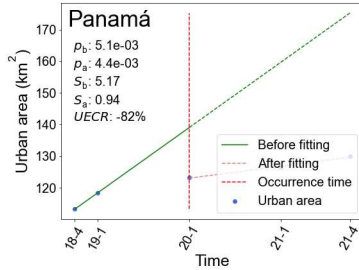
## NA-Mexico



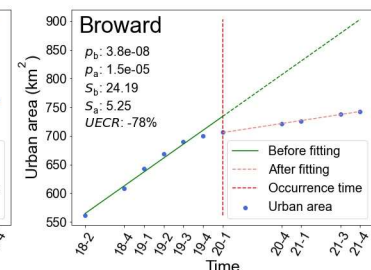
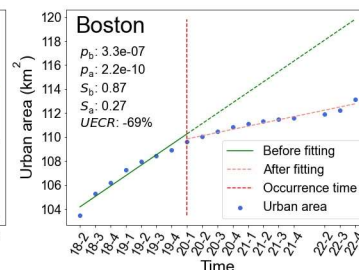
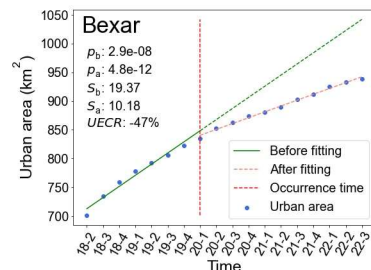
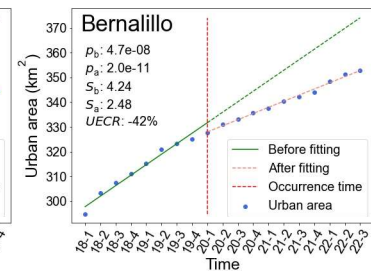
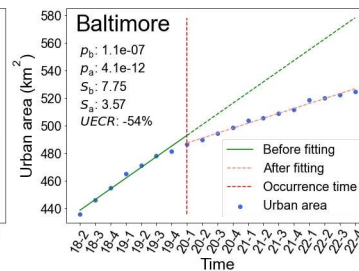
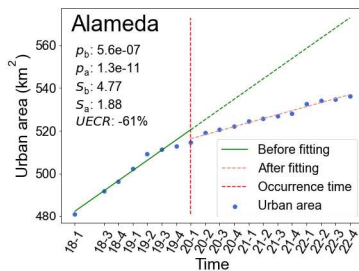
## NA-Nicaragua

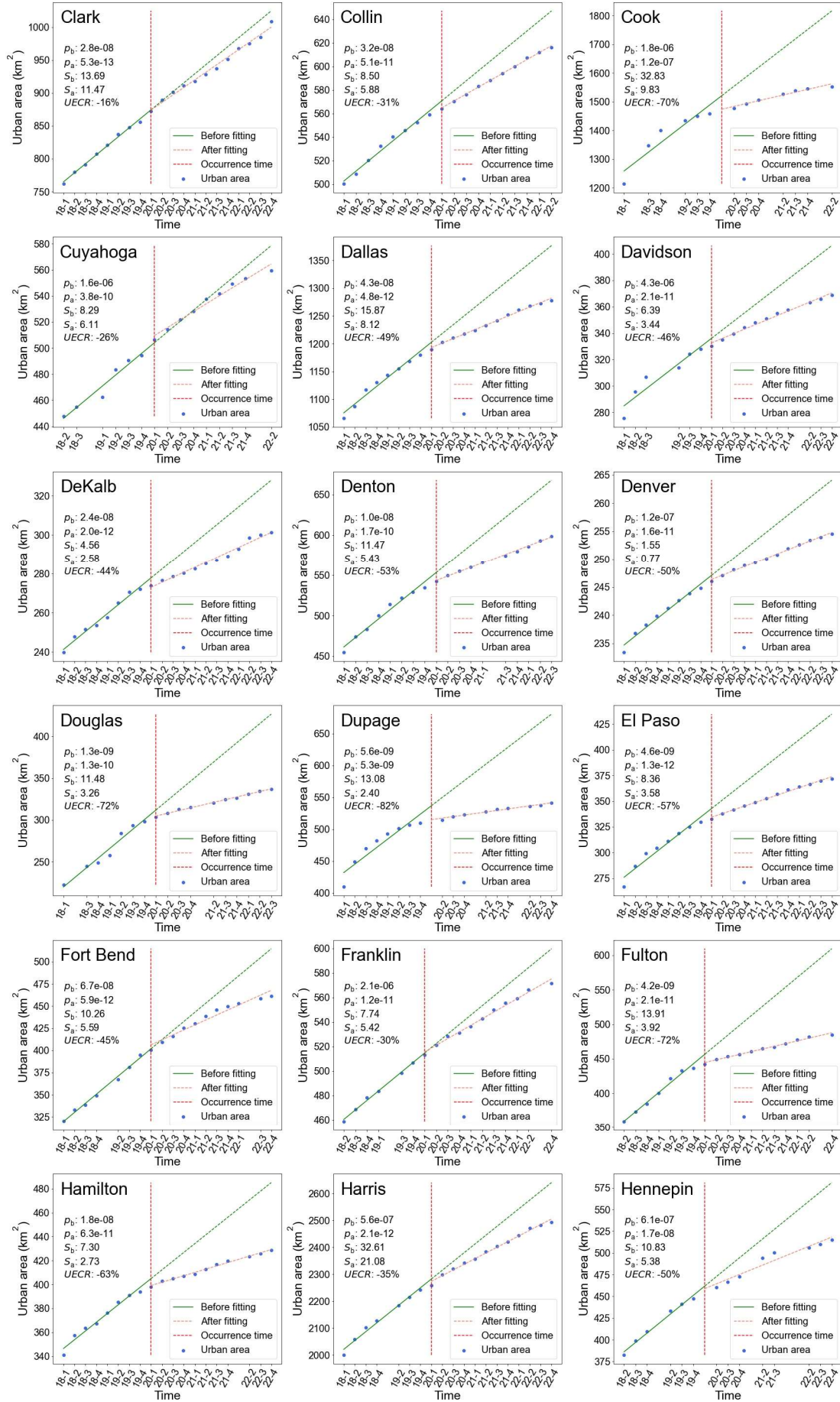


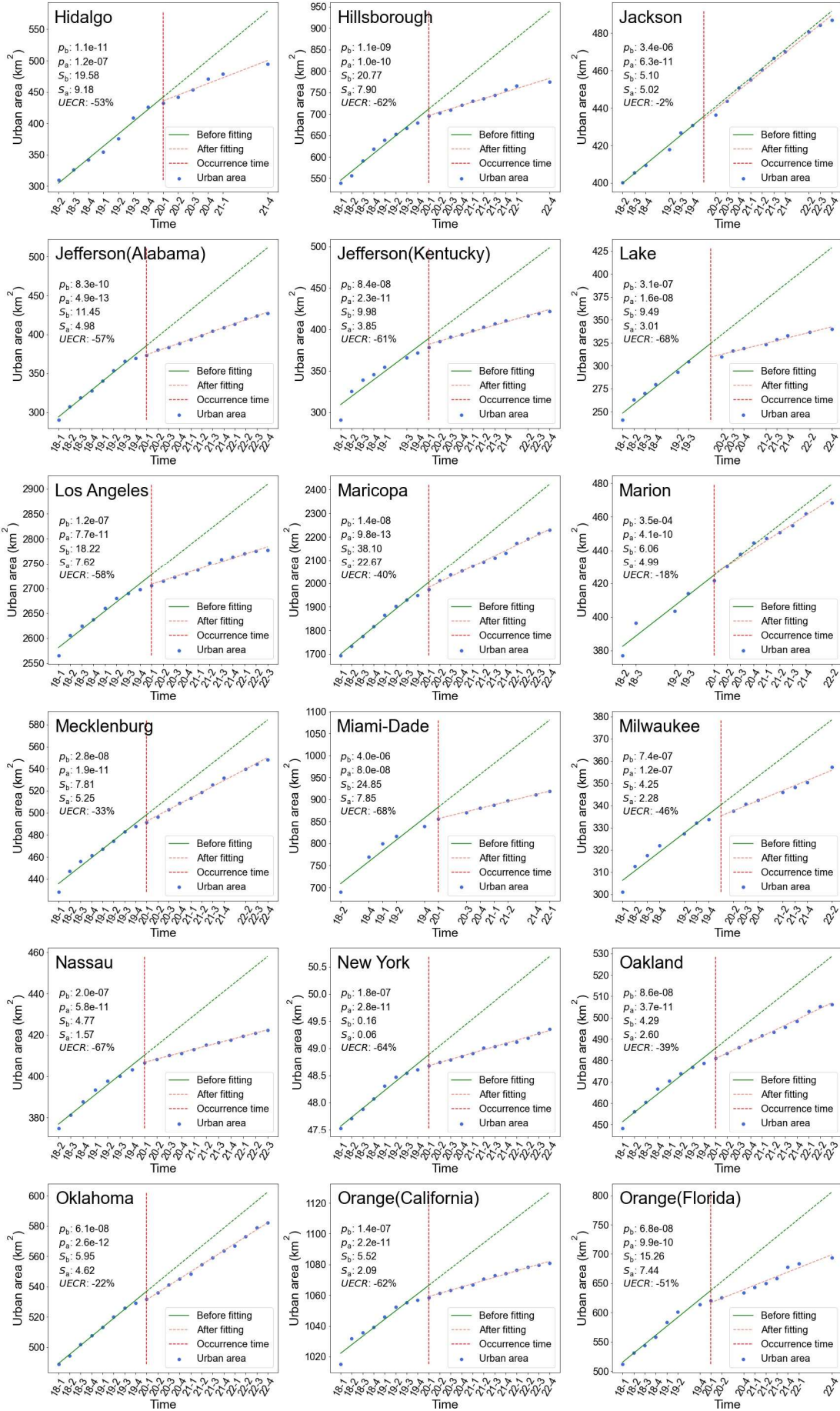
## NA-Panama

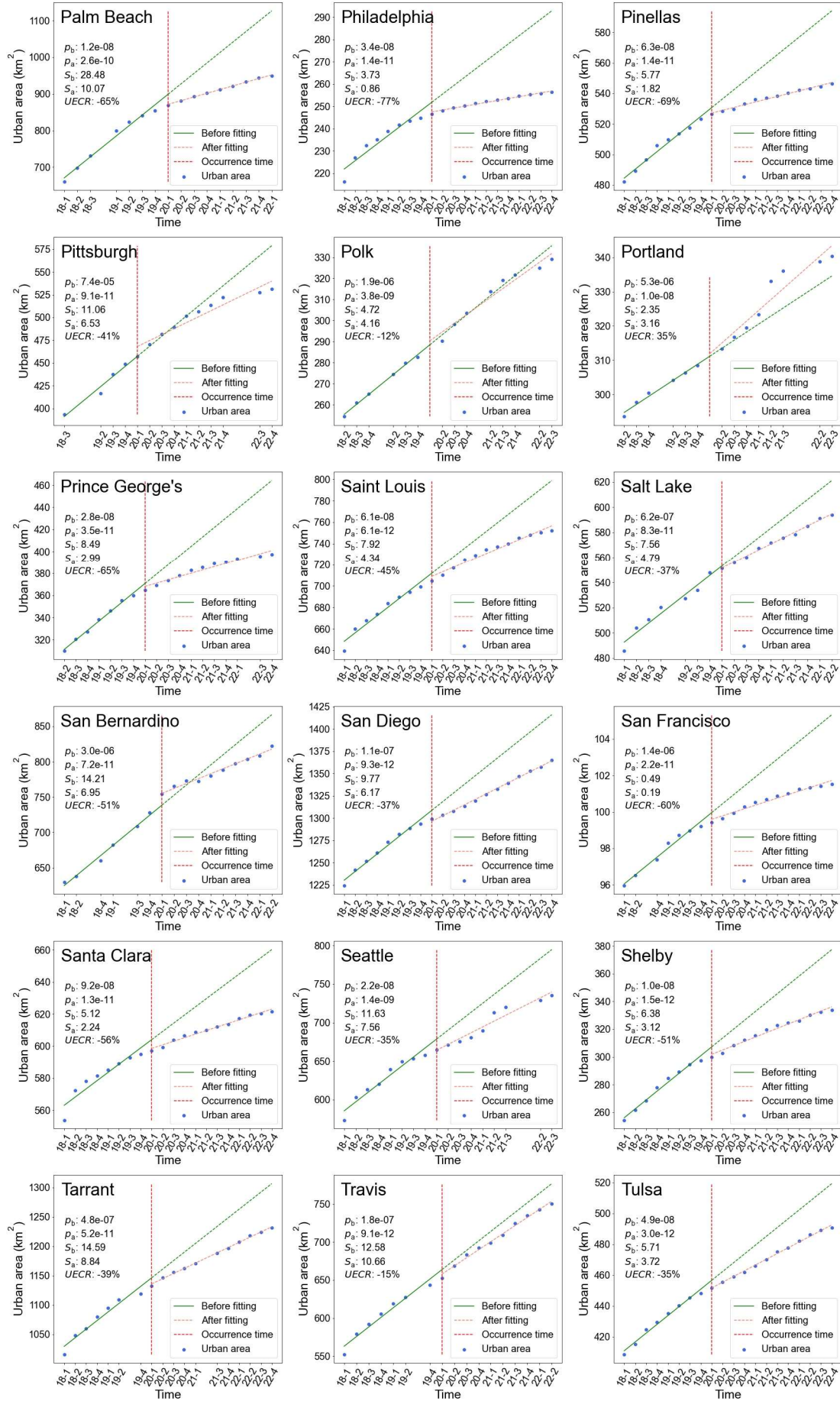


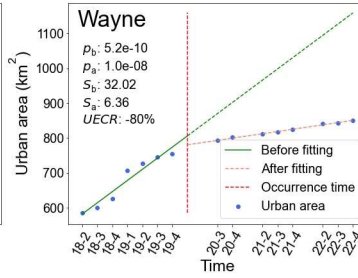
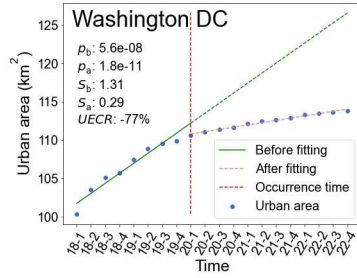
## NA-United States



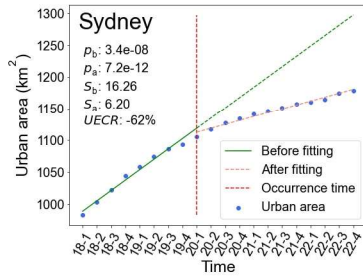
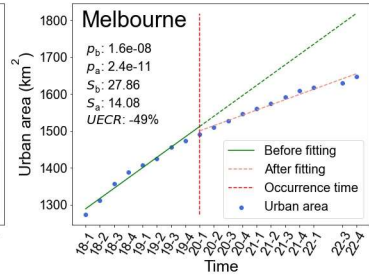
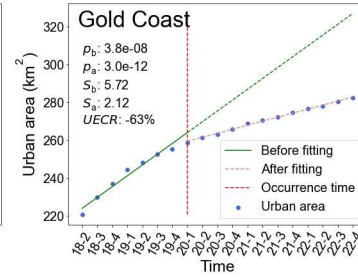
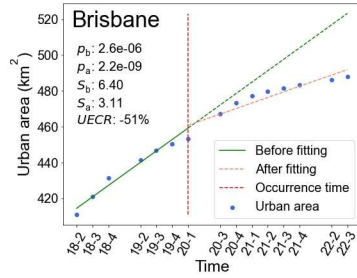




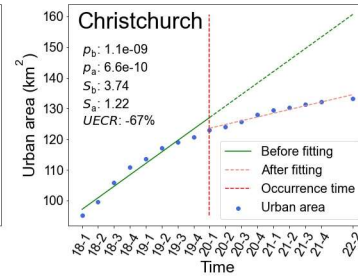
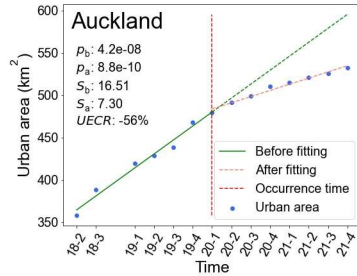




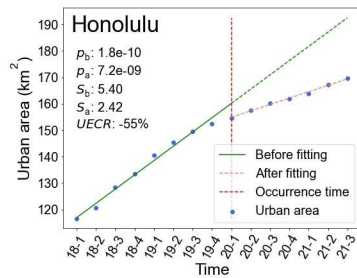
## OA-Australia



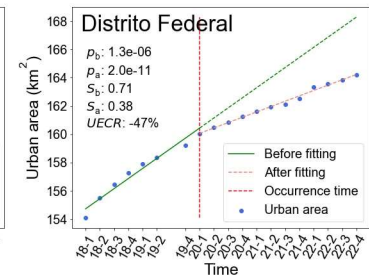
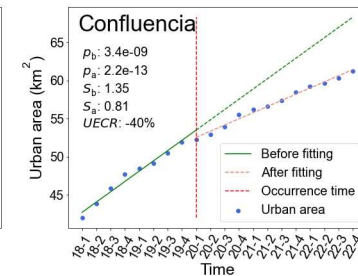
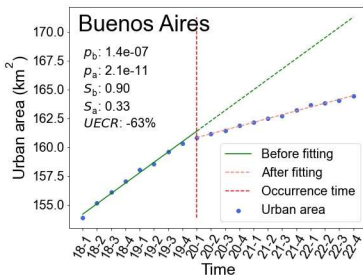
## OA-New Zealand

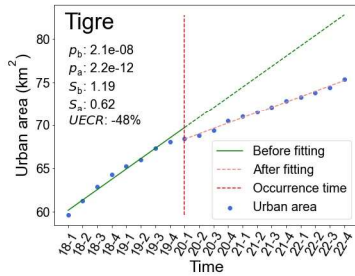
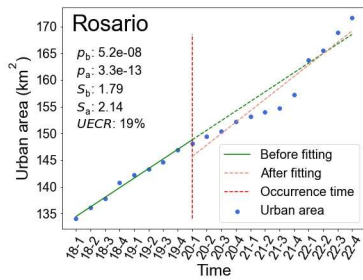
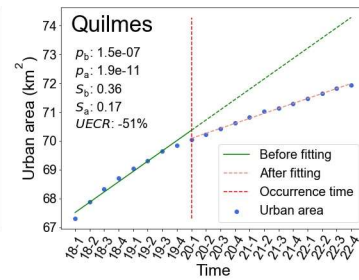
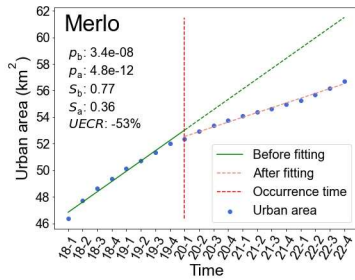
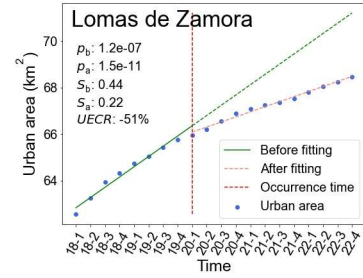
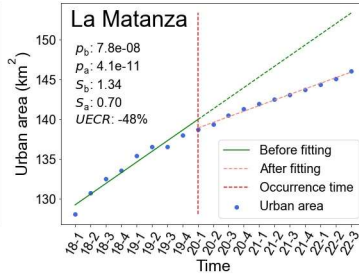
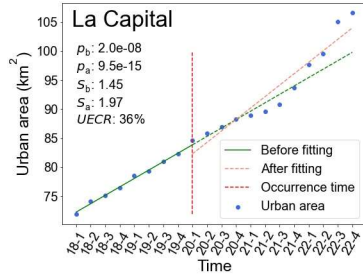


## OA-United States

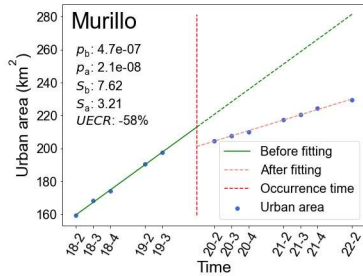
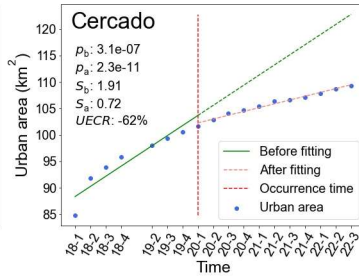
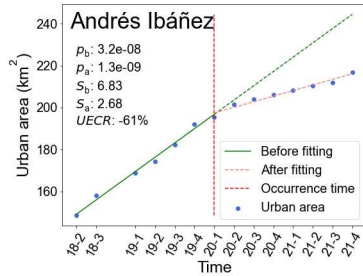


## SA-Argentina

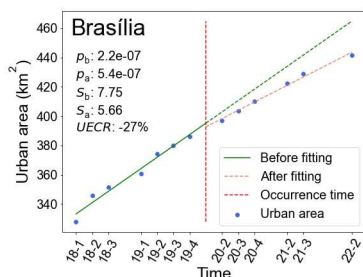
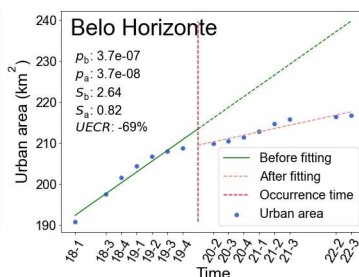
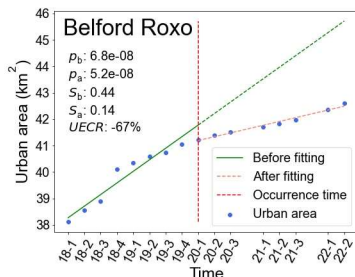
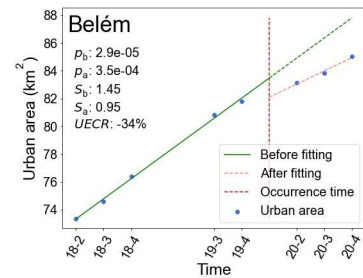
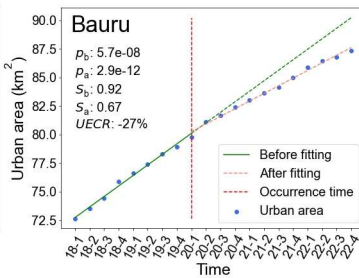
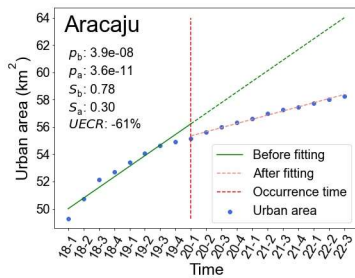


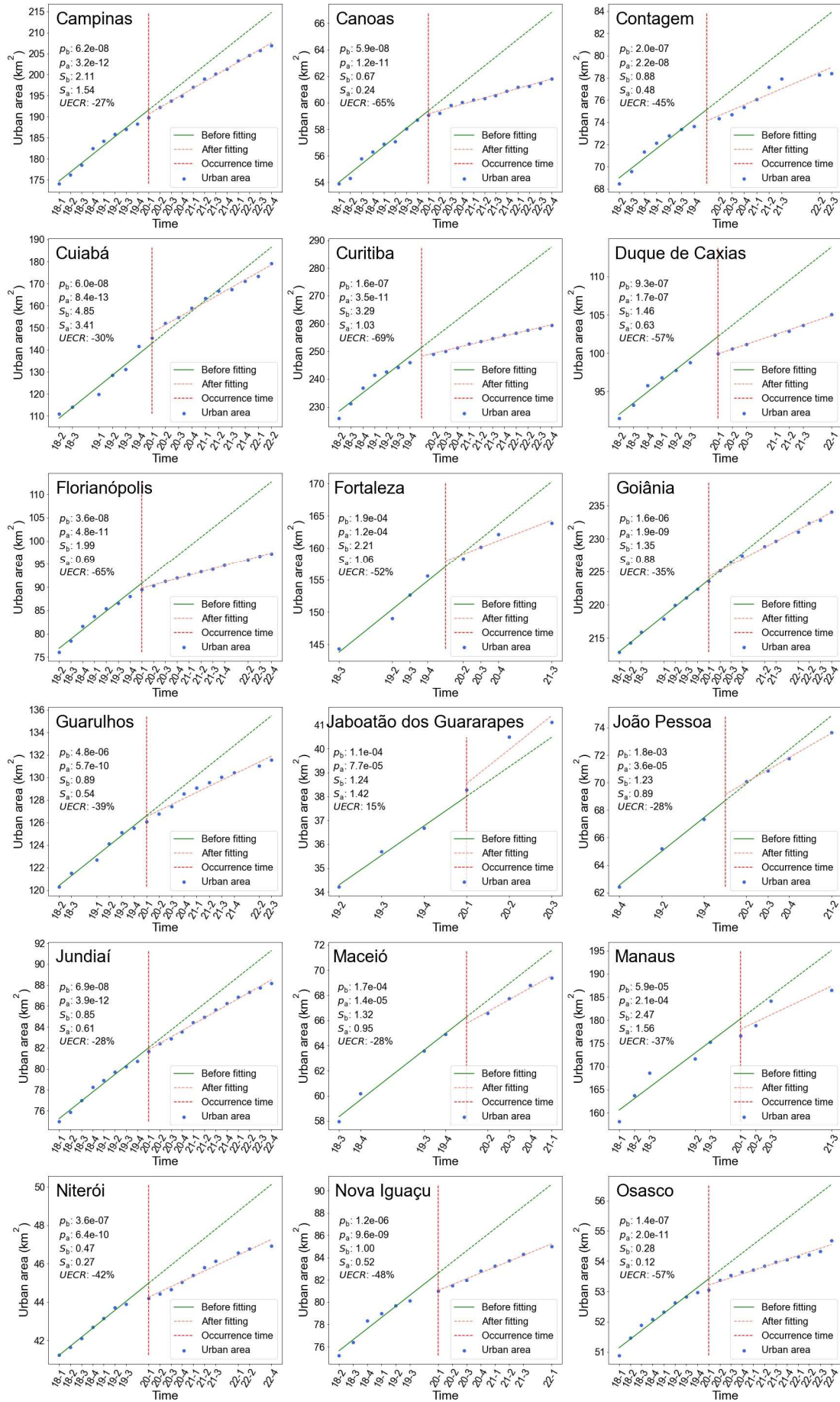


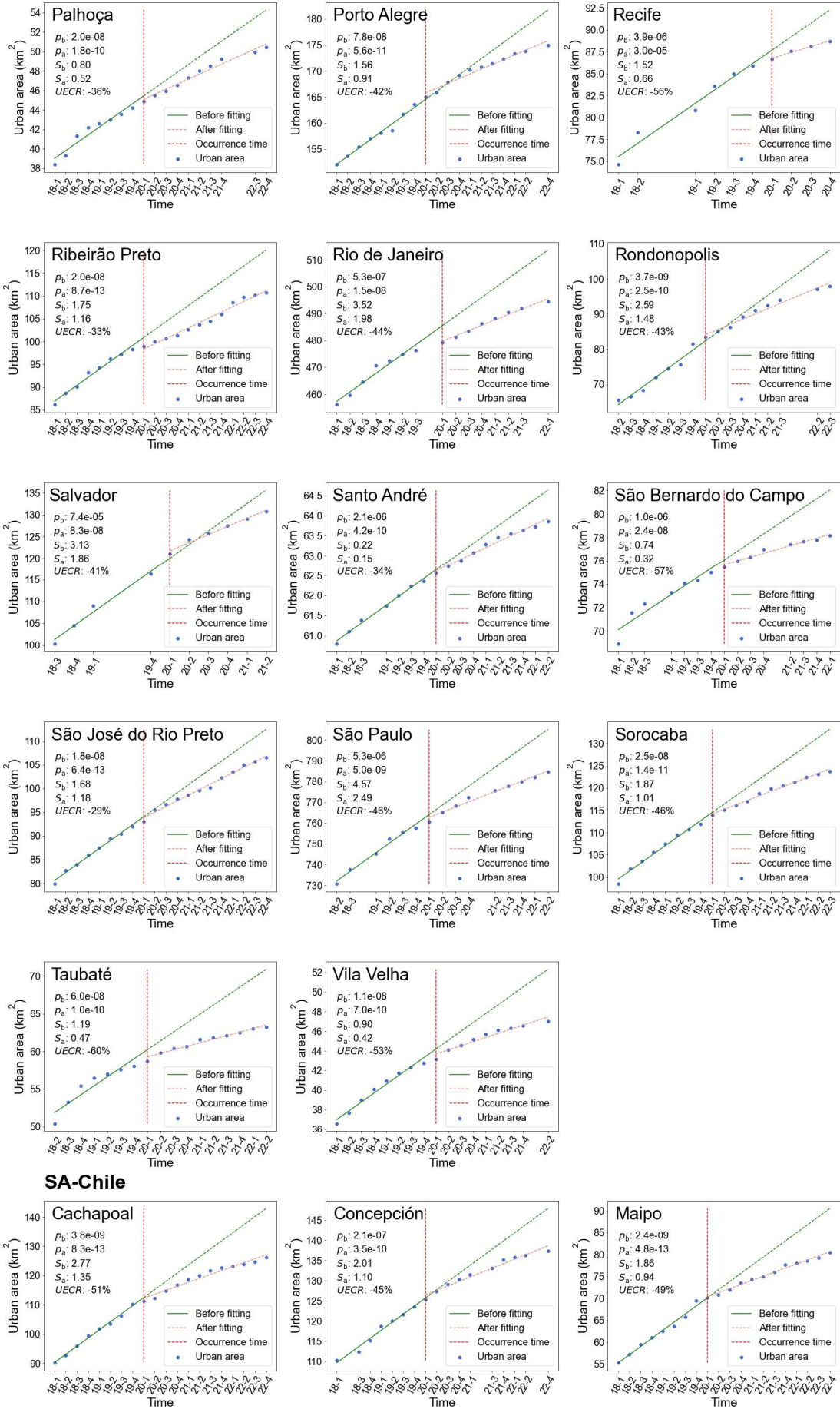
## SA-Bolivia

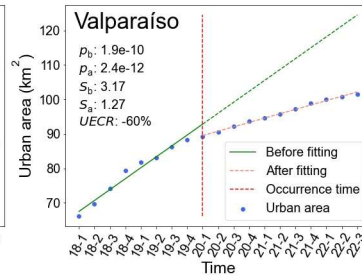
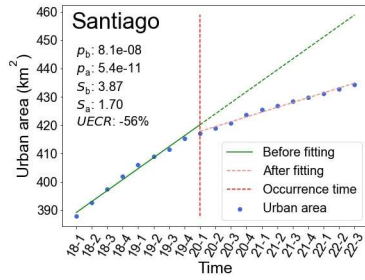


## SA-Brazil

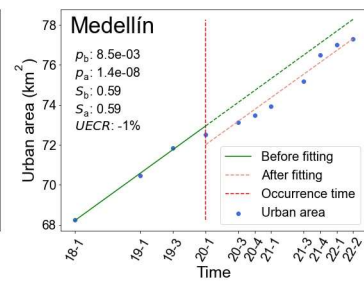
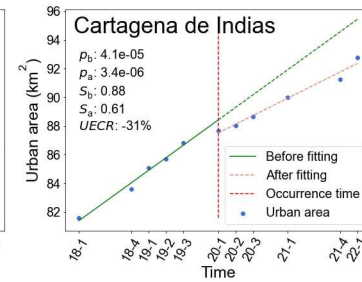
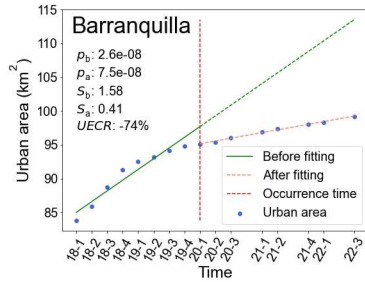




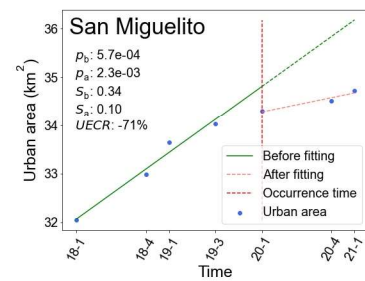




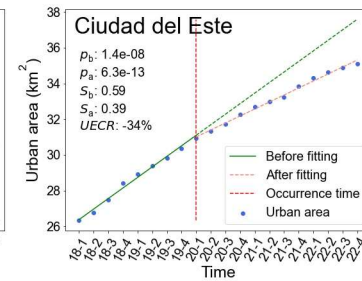
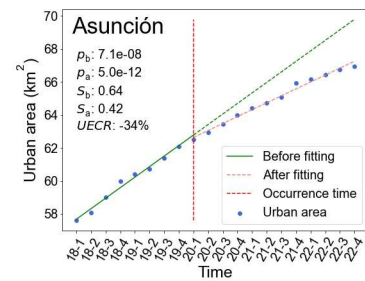
### SA-Colombia



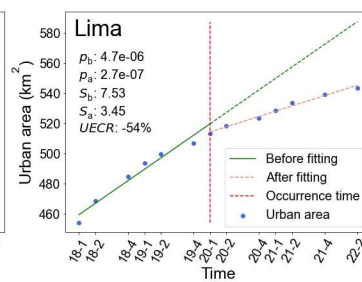
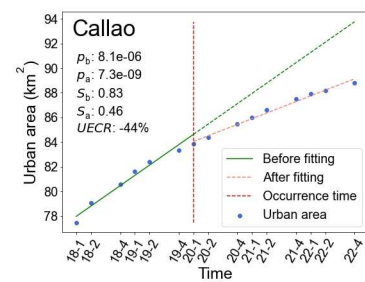
### SA-Panama



### SA-Paraguay



### SA-Peru



### SA-Uruguay

