

## Annual report 2022 for Flagship Pilot Study URB-RCC

### **Status and progress during the year including scientific highlights, end to end perspective and participants engaged in the project**

- Starting date of FPS 01 May 2021.

#### Phase 1 of FPS URB-RCC milestones:

1). Paris was selected as the “CORE” city for the coordinated experiment within the FPS URB-RCC. An extensive selection procedure was developed, with co-developed selection criteria and a survey among the FPS partners to select the coordinated “CORE” city. This is subject to the necessary number of teams within the FPS to enable coordinated ensemble simulations. Additionally to Paris, the different groups intend to simulate their “local” city/cities across different continents. We have developed the concept of the Global Satellite Cities, which enable some groups not having resources to participate in the coordinated experiment for the selected city, to contribute with their local simulations of their city of interest, following a similar set-up/protocol (Phase 1C).

2). Protocol for coordinated experiments is close to being finalized (Phase 1C), after extensive consultation and discussions among the Protocol WG, as well as all FPS partners.

3). Two working groups started to conduct data analysis of available datasets, respectively for CORDEX-CORE (global cities focus) and CPRCM data (Europe cities focus). Data analysis and related paper writing continues into 2023. The WG results support preliminary answers to science questions of FPS (Phase 1B).

#### Phase 2 of FPS URB-RCC :

4). Test experiments are due to start in the first months of 2023.

#### Participants:

Currently ~30 institutions involved (2/3 European), and 80 individuals signed up for the activity.

The FPS remains open for additional partners (particularly outside of EU-domain). Suggestions/support by CORDEX-SAT would be welcomed.

Due to the Russia-Ukraine Conflict, we had to disengage the partners affiliated to institutes in Russia.

#### Funding (beyond national):

- Connection to HorizonEU project I4C (Started Nov. 2022)
- Connection to HorizonEU project FOCl (started Oct. 2022)
- Marie-Curie Postdoctoral Fellowship granted in line with FPS (starting date: June 2023)

## Summary of each workshop/activity held during the year

Title, date, short description, location, website, links	Responsible person/-s	Funder
<p>2<sup>nd</sup> FPS meeting 2nd FPS URB-RCC meeting 13 &amp; 14 January 2022, virtual</p> <p><i>The second FPS URB-RCC meeting brought together the project partners to discuss the first draft of the coordinated experiment protocol, and the city selection criteria for the coordinated experiment. Furthermore, various science topics relevant to the main aims of the FPS were discussed that will be analysed based on existing data in the coming period.</i></p>	Tomas Halenka Gaby Langendijk	none
<p>3<sup>rd</sup> FPS meeting FPS URB-RCC meeting 24 &amp; 25 November 2022, virtual</p> <p><i>The third FPS URB-RCC meeting brought together the project partners to discuss the progress of the WGs working on analysing existing datasets, and to finalise the coordinated experiment protocol.</i></p>	Tomas Halenka Gaby Langendijk	None
<p>Protocol WG meetings (~4x) <i>Drafting the protocol for coordinated simulations.</i></p>	Eleni Katragkou, Bert v. Schaeybroeck, Mat Lipson, Miguel Nogueira, Pedro Soares, Aude Lemonsu, Tomas Halenka, Gaby Langendijk	None
<p>WGs on analyzing existing datasets meetings (~10x)</p> <ul style="list-style-type: none"> <li>• CORDEX-CORE WG</li> <li>• CPRCM WG</li> </ul>	Gaby Langendijk Sophie Bastin	None

## Publications

The FPS project started in May 2021 and publications are in preparation. Therefore, we gathered a short list of activity relevant papers of partners' teams from the last year. These publications did not originate directly from the FPS.

Title, journal and link to publication	Author/-s	Date
<p>A global map of local climate zones to support earth system modelling and urban-scale environmental science. Earth System Science Data, 14(8), 3835-3873. <a href="https://doi.org/10.5194/essd-14-3835-2022">https://doi.org/10.5194/essd-14-3835-2022</a></p>	Demuzere, M., Kittner, J., Martilli, A., Mills, G., Moede, C., Stewart, I. D., ... & Bechtel, B.	2022
<p>What added value of CNRM-AROME convection-permitting regional climate model compared to CNRM-ALADIN regional climate model for urban climate studies? Evaluation over Paris area (France). <a href="https://doi.org/10.21203/rs.3.rs-1638408/v1">https://doi.org/10.21203/rs.3.rs-1638408/v1</a></p>	Lemonsu, A., Caillaud, C., Alias, A., Riette, S., Seity, Y., Le Roy, B., ... & Lucas-Picher, P.	2022
<p>Influence of global warming and urbanization on regional climate of Megacity: A case study of Chengdu, China. Urban Climate, 44, 101227 <a href="https://doi.org/10.1016/j.uclim.2022.101227">https://doi.org/10.1016/j.uclim.2022.101227</a>.</p>	Yuan Jiacan, Q. Lin, S. Chen, H. Zhao, X. Xie, Z. Cai, J. Zhang, T. Cheng, M. Hua, R. Zhang	2022
<p>Parameter sensitivity analysis and optimization of the Single-Layer Urban Canopy Model in the Megacity of Shanghai. Advances in Meteorology, 2022: 1-15. <a href="https://doi.org/10.1155/2022/7351150">https://doi.org/10.1155/2022/7351150</a></p>	Ao, X., and N. Zhang	2022

Impact of Interaction between Metropolitan Area and Shallow Lake on Daily Extreme Precipitation over Eastern China, Atmosphere, 2022, 13, 306. DOI: 10.3390/atmos13020306	Li Zhe, and Yanhong Gao	2022
Impact of urbanization on gas-phase pollutant concentrations: a regional-scale, model-based analysis of the contributing factors, Atmos. Chem. Phys., 22, 12647–12674, <a href="https://doi.org/10.5194/acp-22-12647-2022">https://doi.org/10.5194/acp-22-12647-2022</a>	Huszar, P., Karlický, J., Bartík, L., Liaskoni, M., Prieto Perez, A. P., and Šindelářová, K.	2022

### Planned activities for next year

- 1). [Cont.] Data analysis of available datasets by the two WGS (incl. papers development) (Phase 1B).
- 2). Protocol finalisation (Phase 1C).
- 3). Start test experiments for coordinated CORE city Paris (Phase 2).
- 3). 4th FPS meeting (Sept/Oct) – probably virtual or conjunction with CORDEX-ICRC 2023.

### Additional relevant information

- Website FPS: [https://ms.hereon.de/cordex\\_fps\\_urban/](https://ms.hereon.de/cordex_fps_urban/)
- Logo FPS:



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The report is due the 15<sup>th</sup> of January each year and should be sent to [ipoc@cordex.org](mailto:ipoc@cordex.org).