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## **Simplicity and complexity trade-offs in modelling urban-atmosphere**

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Over the last 40 years enormous progress has been made in modelling urban surface to atmosphere exchanges with huge advances in the understanding of the weather and climate of cities. This has been stimulated by greatly increased attention on urban areas as places where people live and sites of some of the most extreme modifications of the environment; by improved instrumentation and measurement campaigns which have enhanced our understanding of key processes and their controls; enhanced conceptual and theoretical frameworks to make sense of what we measure and to underpin numerical models; and computer power which has allowed us to analyse and visualise high resolution data and to model at higher spatial and temporal resolutions. As we move from forecasting to delivering services to a broad array of end-users and communities, the level of detail needed (about the urban surface and the urban atmosphere), both spatially (across and between cities) and temporally (from events to long term simulations) also has increased and has refocused attention on how best to capture the details of the dynamics of urban environments and the inherent trade-offs between complexity and simplicity of approaches. In this talk, I will address some of these changes, highlighting the challenges we are trying to address today.