# Assessing the Influence of Urban Surface Classification on Hydrological Model Accuracy

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CONTEXT

- Classification of urban areas plays a key role in urban planning and water resource management. Rainfall–runoff behaviour depends strongly on surface type.

- Nature-based solutions (NBS) are increasingly used to mitigate stormwater runoff. One way to model their cumulative effects at the catchment scale is to model the catchment down to the level of individual land parcels, modelling each device separately

- This approach requires detailed data and high computational resources, due to the need to conceptualise the hydrological properties of each parcel, including the Surface type and runoff capacity

- To reduce these demands, parcels with similar characteristics can be aggregated into fewer classes. This spatial coarsening can simplify modelling but may reduce accuracy

Exemple of Figeac, France
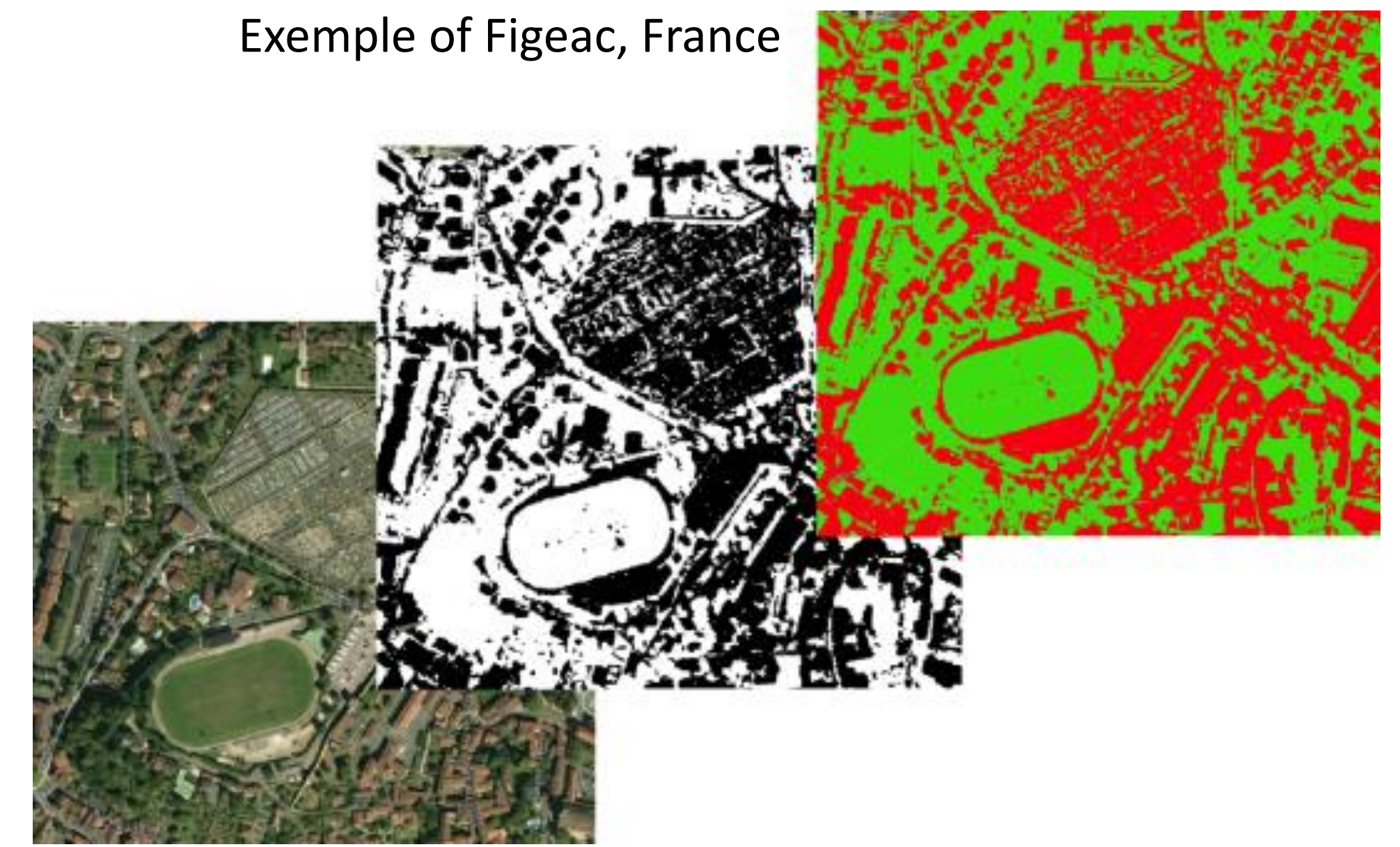
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How the number of surface classes influence the accuracy of semi-distributed hydrological models?

SCIENTIFIC OBJETIVES

- Define and classify urban surfaces using satellite imagery and/or existing datasets
- Evaluate the effect of different levels of spatial aggregation on rainfall–runoff modelling accuracy

Required profile

- General knowledge in Hydrology
- Good skills in programming and GIS
- A strong interest in urban hydology modelling

THE MISSION

- Conduct an extensive literature review on urban surfaces used in rainfall–runoff modelling at the urban catchment scale
- Classify existing urban surface types, describing their characteristics and contributions to urban runoff
- Develop a hydrological model based on the selected classification scheme
- Evaluate the impact of the chosen classification and aggregation levels by comparing model outputs with observed data

THE RESEARCH UNIT: HYDROSCIENCES MONTPELLIER

- Interdisciplinary research unit located at Hydropolys (Faculty of Pharmacy, Montpellier)
- The student will be immersed in a scientific environment focused on multidisciplinary topics and issues related to water, the environment and health
- This diversity of water-related topics will give the successful candidate a broad overview of the scope of urban hydrology, programming and modelling skills

Welcome activities will support the student' integration into HSM, including the coffee-cake on Monday mornings!