

Data assimilation for epidemiology

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Data assimilation describes methods which can be used to combine information from dynamical systems with measurement data in order to obtain an improved estimate of the state of the system at a given time. For example, data assimilation algorithms are crucial to obtain initial conditions for weather forecasts, by updating previous forecasts with new weather observations. The Malaria Atlas Project (MAP) combine statistical and mathematical methods in geospatial analyses of malaria epidemiology in order to improve mapping of malaria outbreaks and predict transmission risk under climate change.

In this project we will investigate data assimilation for spatial disease modelling applications. This combines the expertise of the two supervisors, and is expected to be the start of an ongoing research collaboration. Given the wide scope for different directions, there is an opportunity for the student to shape the project according to their interests. As part of the project the student will have access to some models and data from MAP.

Requirements: Introductory linear algebra and statistics. Coding experience in Python or R.

Information: Contact Jemima Tabcart at j.m.tabcart@tue.nl for further information – this is an evolving project and the description will be updated to reflect this.