

What is MAP?

Have you ever wondered how disease maps are generated? Are you a public health researcher, statistician, data analyst or an M&E program officer working with infectious disease data? Are you new to spatial data and making informative maps using up-to-date tools or wish to upskill in these areas? Then the Malaria Atlas Project (MAP) "Introduction to Spatial Analysis for Infectious Disease Data" workshop is for you!

MAP is a global and interdisciplinary research collaboration with over 15-years of experience in the development of leading-edge databases, modelling, and analytics to provide robust and actionable information to support the global fight against malaria. We are partnering with ASTMH to offer an introductory course to Spatial Analysis for Infectious Disease Data using R and QGIS. Our experienced team of geospatial modelers will take participants through the handling, managing, and understanding of spatial data, connecting data to public health information needs, best practices in GIS and an introduction to spatial analysis. This workshop will provide participants with:

- A fundamental understanding of the importance and utilization of spatial data in the public health field including identifying patterns, magnitude, and associated risk factors to guide decisions.
- Hands on learning on handling data in R using various packages (e.g., base R, tidyverse, sf, sp, rgdal, raster).
- Exercises in handling spatial data to produce disease risk maps in QGIS or R.
- An understanding of the data structures and common storage/transfer formats for spatial data.
- Hands-on modelling experience using R-INLA.

Target Audience

This workshop is for national program staff (e.g., M&E program managers, statisticians, data analyst), infectious disease researchers with interest in spatial analysis and postgraduate students (Masters, PhD or similar). Priority for this course will be given to those from and currently based in LMICs and malaria endemic countries.

Benefit from this course by:

Our goal is to empower participants with interdisciplinary skills such as data handling, analysis, and visualization for infectious disease data. This workshop will introduce participants to key contexts in spatial data analysis and participants are expected to supplement their learning with further resources and future in-person workshops hosted by MAP in malaria endemic settings. The course goals would include:

- Understand data structures and common storage and transfer formats for spatial data.
- Handling of spatial and public health data; including importing, joining, manipulating, and exporting.
- Data visualization of spatial and public health data including creating publishable maps.
- Building a geostatistical model using INLA (for advanced participants only).

Course Agenda – all times are in Pacific Time

7:30 am	Welcome breakfast and Laptop set up
7:50 am	Welcome remarks from ASTMH
8: am	Introduction to Malaria Atlas Project
8:10 am	Why are maps useful? Brief overview of spatial modelling techniques
8:30 am	Discussion of public health data that can be used in spatial models
8:50 am	Common practices for data management
9:45 am	Coffee break
10 am	Introduction to using R for data handling
11:45 am	Introduction to data visualization in R
12:30 pm	Lunch

In the afternoon the group will split into two streams:

a) GIS training

1:30 pm	Intro to spatial data
1:45 pm	Spatial data handling in QGIS
3 pm	Coffee break
3:15 pm	Intro to making maps in R
4:30 pm	Discussion time/networking

b) Geostatistical modelling

(note, we recommend participants be familiar with statistical inference to get the most out of this stream)

1:30 pm	Intro to geostatistical models
2 pm	Intro to R-INLA
3 pm	Coffee break
3:15 pm	Model fitting using R-INLA.
4.30 pm	Discussion time/networking

Faculty List

Punam Amratia
Course co-chair
Senior Research Officer
Malaria Atlas Project

Susan Rumisha
Course co-chair
Senior Research Officer
Malaria Atlas Project

Tasmin Symons
Instructor
Senior Research Officer
Malaria Atlas Project

Jailos Lubinda
Instructor
Senior Research Officer
Malaria Atlas Project

Adam Saddler
Instructor
Research Officer
Malaria Atlas Project

Annie Browne
Instructor
Senior Research Officer
Malaria Atlas Project

Katherine Battle
Instructor
Senior Research Scientist
Institute for Disease Modelling,
Bill and Melinda Gates
Foundation

Amelia Bertozzi-Villa
Instructor
Senior Research Scientist
Institute for Disease
Modelling, Bill and Melinda
Gates Foundation

Justin Millar
Instructor
Research Scientist
PATH

**Ewan
Cameron**
Director of
Malaria Risk
Stratification,
Malaria Atlas
Project and
Associate
Professor at
Curtin
University

Daniel Weiss
Director of
Global Malaria
Epidemiology,
Malaria Atlas
Project
Associate
Professor at
Curtin
University

Key contacts:

Tolu Okitika

Course coordinator
Senior Program Manager
Malaria Atlas Project
malariaatlas@telethonkids.org.au

Peter Gething

Head of the Malaria Atlas
Project
Kerry M Stokes AC Chair in Child
Health and Professor of
Epidemiology
Curtin University