APMEN VCWG INTRODUCTORY GIS ONLINE TRAINING COURSE 2022

Asia Pacific Malaria Elimination Network, Vector Control Working Group

Online Course on GIS in Malaria Vector Surveillance

1-5 August 2022

Training report

Contents

Introduction

Vector surveillance is critically important to guide vector control interventions and includes many activities such as adult and larval mosquito collections, mosquito identification, and others. In this course we focus on Geographic Information Systems (GIS) that enable mapping, stratification and visualization of key data that assist in planning of vector control interventions. GIS also provides better decision making and improved communication between field officer, district health office and the Ministry of Health as it has more tailored geographically information for the users.

Organisation and hosting

The course is organized by the APMEN Vector Control Working Group (VCWG) and Faculty of Tropical Medicine, Mahidol University, supported by the USA Centres for Disease Control & Prevention (CDC).

Targeted audience

The course is part of a broader portfolio of courses provided by APMEN, which collectively aim to build capacity of field-entomologists, vector control specialists, and vector control researchers within National Malaria Control Programs and Partner Institutions.

Method and language

This course was provided on a virtual platform, using English as the medium of instruction.

Curriculum

The 2022 curriculum (Annex 3) was designed to address the needs as expressed by the prospective participants and adapted for an online training.

Course documentation

Recording of the sessions are accessible here.

Facilitators

Resource person	Role	Affiliation
Dr Chawarat Rotejanaprasert	Main instructor	Mahidol University
Patiwat Sa-angchai	Co-instructor	Mahidol University
Prakit Kitsupee	IT focal person	Mahidol University
Shobiechah A Wulandhari	Organiser	Malaria Consortium/APMEN VCWG
Dr Phone Si Hein	Organiser	APLMA/APMEN

Summary of course participants

31 nominees were selected from 111 registrants (acceptance rate was 28%)

61% of participants are male, 39% female

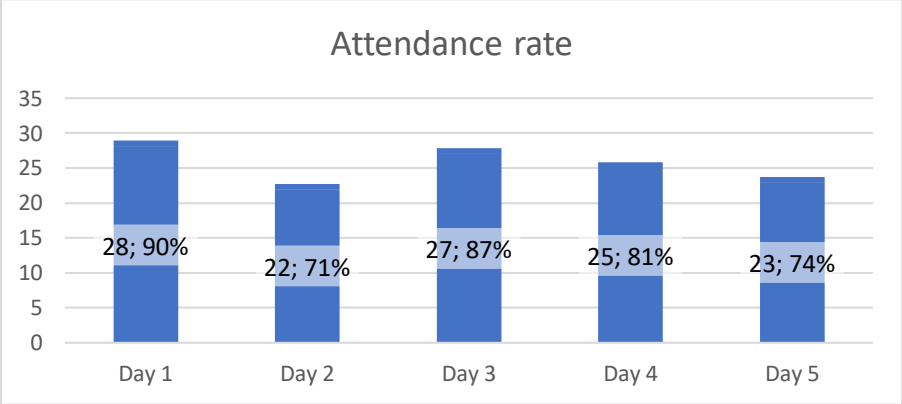
Participants represented 15 countries throughout the Asia Pacific region

48% of participants are at field-implementation level

Participants' characteristics

- Attendance rate

  A total of 111 people registered for the GIS course, from which 31 were selected to join the course. The bar graph illustrates daily attendance rate, and the highest attendance rate was in Day 1. 28 participants out of 31 nominees (90%) attended Day 1 and the lowest attendance rate was Day 2 (71%).

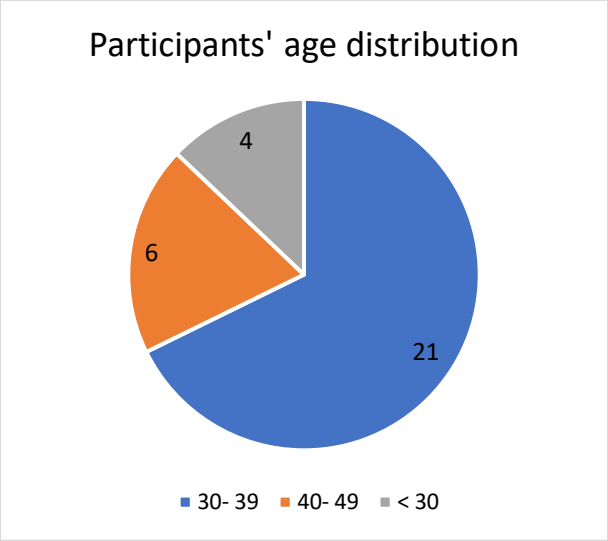


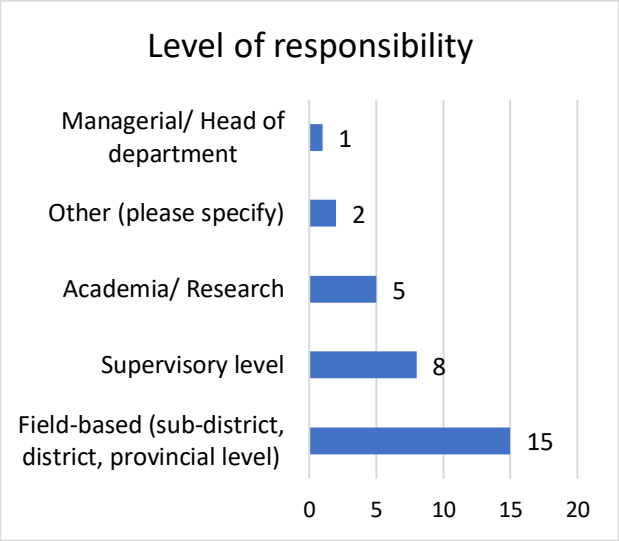
- Gender

  Among the GIS Course participants, there were 12 female persons, and 19 male persons, representing a ratio of 3:5 for female to male participants. This is a better male to female ratio compared to the previous course in 2021.

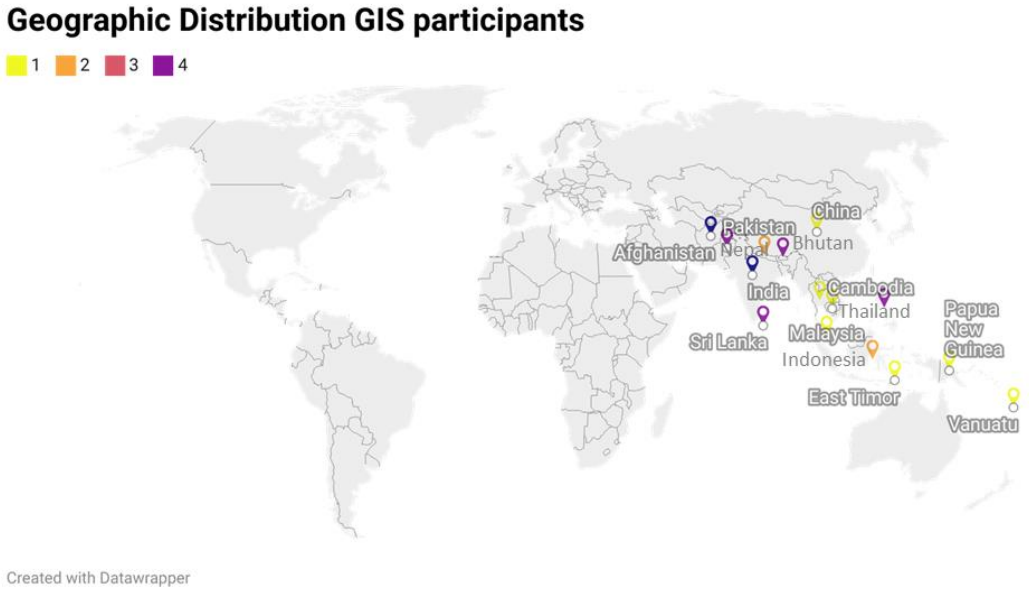
- Age group and level of responsibility

  Most participants fell in the age group 30-39 (68%), who were considered as young entomologists/vector control staff and mostly deployed as field-based staff (n=15, 48%) although with some at supervisory level (n=8, 25%). Field-based and supervisory level are the prime target groups for APMEN to receive GIS training. The intent is to achieve improved entomological surveillance mapping to produce more tailored and evidence-based information for vector control decision-making.



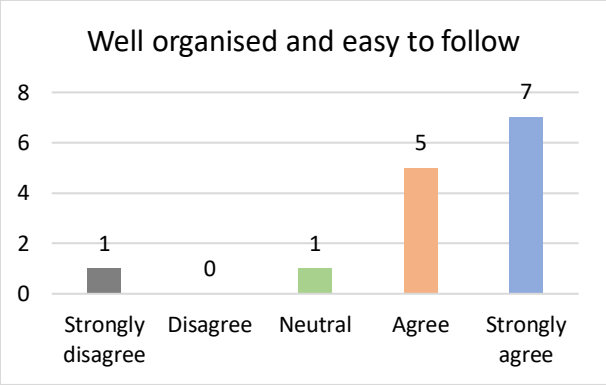


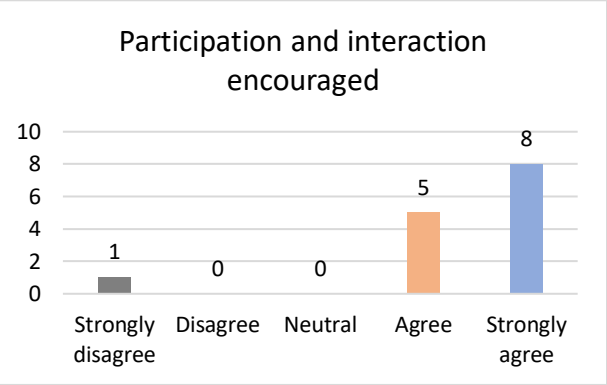
Participants' geographic distribution



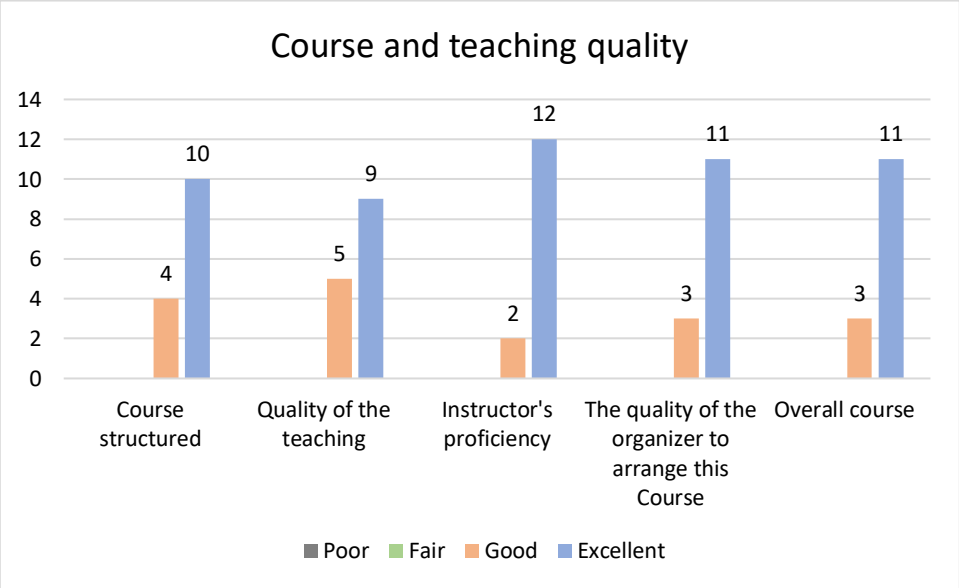
Participant's feedback

- Response rate
  Among 31 participants, 14 people (45%) responded to the feedback survey and gave their opinion on the quality of instructor performance, presentations, and overall course.
- Course Content and Participation
  Majority of participants (n=12, 86%) agreed that GIS Course was well organised and easy to follow, and interaction was well encouraged (n=13, 93%).





- Teaching quality
  In terms of course and teaching quality, the majority of participants agreed that the overall course was “Excellent”. Most of them also indicated that the instructor has “Excellent” proficiency, and the teaching quality was also “Excellent”.



Annexes

Annex 1: Agenda

Date	Time	Activities/Sessions
Aug 1, 2022	09.00-12.00 (live)	- Workshop format and overview - Introduction to GIS and spatial epidemiology - Tutorial module 1 overview - Break - Install QGIS and have QGIS running on your machine to be ready to start the tutorial module 1 - Fundamentals of GIS, data types, map projection, spatial file types
	13.00-16.00 (self-practicing)	- Self-practicing tutorial 1: Introduction to Quantum GIS (QGIS) and GIS interface
Aug 2, 2022	09.00-12.00 (live)	- Continue on tutorial module 1 - Familiarize with QGIS interface - Create maps and manipulate data layers - Break - Tutorial 2 overview - Demonstration of basic operating and tabulating in QGIS - Convert Excel spreadsheets in compatible formats for QGIS - Import and join tables, create spatial joins and summarize attribute data - Manage data in the attribute table, including removing and adding new fields
	13.00-16.00 (self-practicing)	- Self-practicing tutorial 2: Managing data tables and creating spatial data sets using QGIS
Aug 3, 2022	09.00-12.00 (live)	- Continue on tutorial module 2 - Demonstration of Building GIS map layouts - Import and join tables, create spatial joins and summarize attribute data - Manage data in the attribute table, including removing and adding new fields - Break - Tutorial module 3 overview - Demonstration of Building GIS map layouts - Create a new map composition with the Print composer - Learn basic features in a map composition - Export map layouts to different image formats
	13.00-16.00 (self-practicing)	- Self-practicing tutorial 3: Building GIS map layouts

Aug 4, 2022	09.00-12.00 (live)	- Tutorial module 4 overview - Demonstration of GIS geoprocessing - Apply geoprocessing tools to vector layers for extracting data using the intersection function - Break - Demonstration of GIS geoprocessing (cont.) - Conduct basic queries and use map composer to include a map inset to show the extent of the study area
	13.00-16.00 (self-practicing)	- Self-practicing tutorial 4: GIS geoprocessing
Aug 5, 2022	09.00-12.00 (live)	- Data Collection, Exporting Data, and Mapping - Demonstrate steps in processing and exporting collected data - Course wrap up

Annex 2: Instructor's biography

Chawarat Rotejanaprasert, PhD

Assistant Professor of Biostatistics, Faculty of Tropical Medicine, Mahidol University.

Senior Biostatistician, Epidemiology Department, Mahidol-Oxford Tropical Research Unit (MORU).

Chawarat Rotejanaprasert received his Ph.D. in Biostatistics from the Medical University of South Carolina with a focus on spatial epidemiology. He is an Assistant Professor of Biostatistics at the Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University. He also works as Senior Biostatistician at the Epidemiology Department, Mahidol-Oxford Tropical Medicine Research Unit under the Enhanced Modelling for NMCP Decision-making to Accelerate Malaria Elimination (ENDGAME) project, funded by the Bill and Melinda Gates Foundation. His research interests include statistical modeling and development in spatiotemporal epidemiology especially in surveillance systems and effects of climate on infectious diseases.

Annex 3: Outline of the course

TRAINING OBJECTIVES

Module 1: Introductory concepts of GIS

- Lesson 1.1: Introduction to GIS

  Objective 1.1.1: Understand the general concept of GIS, data types, map projection, spatial file types

- Lesson 1.2: Introduction to Quantum GIS (QGIS) and GIS interface

  Objective 1.2.1: Install QGIS and have QGIS running on their machine to be ready to start the tutorials

  Objective 1.2.2: Create a base map and customize using QGIS

Module 2: GIS operation

- Lesson 2.1: Managing data tables and creating spatial data sets using QGIS

  Objective 2.1.1: Convert Excel spreadsheets in compatible formats for QGIS.

  Objective 2.1.2: Import and join tables, create spatial joins and summarize attribute data.

  Objective 2.1.3: Manage data in the attribute table, including removing and adding new fields.

Module 3: Building GIS map layouts

- Lesson 3.1: Creating your map layouts using the print composer in QGIS

  Objective 3.1.1: Create a new map composition with the Print composer

  Objective 3.1.2: Learn basic features in a map composition

  Objective 3.1.3: Export map layouts to different image formats

Module 4: GIS geoprocessing

- Lesson 4.1: Basic GIS geoprocessing

  Objective 4.1.1: Apply geoprocessing tools to vector layers for extracting data using the intersection function

  Objective 4.1.2: Conduct basic queries and use map composer to include a map inset to show the extent of the study area.

Module 5: Data Collection, Exporting Data, and Mapping

- Lesson 5.1: Data Collection, Exporting Data, and Mapping

  Objective 5.1.1: Demonstrate steps in processing and exporting collected data intersection function

- Lesson 5.2: Wrap up

Annex 4: Participants list

Name	Country	Position
Abdul Ali Ahmadi	Afghanistan	Head of Entomology
Aradhana K C	Nepal	Entomologist
Ariza Minelle Aguila	Philippines	Entomologist III
Reliza Octariviani Zovancha	Indonesia	Health Epidemiologist
Dingwei Sun	China	Associate professor
Aruni Gunarathna	Sri Lanka	Entomologist
Muhammad Asif Mahmood	Pakistan	Entomologist
Dina So	Cambodia	VMW officer
Chanly Yan	Thailand	Masters student
Sayed Wasiullah Qaderi	Afghanistan	Provincial Entomology
Dr Anju Viswan	India	Former State Officer Malaria, Chhattisgarh (SSA WHO)
Iresha Weerakkodi	Sri Lanka	Entomologist
Jonard Chu	Philippines	Entomologists designate
Dr. Kaushik Sanyal	India	State Entomologist
Kirubaliny Sujeev	Sri Lanka	Entomologist
Mohamad Omer	Afghanistan	Entomology Supervisor
Muhammad Ajmal Khan	Pakistan	Medical Entomologist
Pema Tenzin	Bhutan	Medical Teachnician
Rohit Kumar Sah	Nepal	Entomologist
Roldan Bayot	Philippines	Science Research Specialist II
Sayed Shah Mahmmod	Afghanistan	Entomology Member
Semuel Sandy	Indonesia	Researcher
Tenzin Wangdi	Bhutan	Entomologist
Yeshey Dorji	Bhutan	Medical Laboratory Technician
Norlelah	Malaysia	ENTOMOLOGIST
Usha A	India	Entomologist
Lekon Tagavi	Vanuatu	National Vector Surveillance and Control Officer
Mohen Sodho	Pakistan	Medical Entomologist
Tamarah Koleala	Papua New Guinea	Deputy Laboratory Head
Chandrima Das	India	District Entomologist
Manuel Belo Sarmento	Timor-Leste	Senior Entomology Officer