



OHSEA trainings on Mapping and spatial analyses in Phnom Penh, Cambodia



Overview

- **Objective:** Develop the use of geospatial technologies and methodologies for One Health studies
- **Needs identified:**
 - => Build capacity for specific needs in remote sensing (satellite image analysis)
 - => Train on using R software for mapping and spatial analyses
- **Organized by:**
 - GeoHealth Team (IRD - Espace-Dev, IPC), in collaboration with Florian Girond (ETI CDC-IPC)
 - Khmer Earth Observation Laboratory (KHEOBS) at Institute of Technology of Cambodia (ITC)
- **Opportunity of a co-funding**, in the frame of the Dissemination activities of the EASIMES (Environment Analysis and Surveillance to Improve Malaria Elimination Strategy) project funded by the Global Fund
 - => Possibility to increase the number of regional participants and trainers



Program

Jun

Jul

Aug

Sept

Oct

Nov

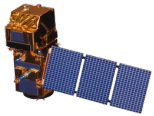
Dec



22nd – 24th June 2022

Training on Earth

observation for hydrology
and land cover mapping



28th Nov – 2nd Dec 2022 :

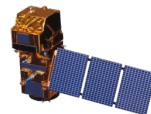
Training on Geospatial analyses
for One Health studies

5th Dec 2022 :

Symposium on Geospatial analyses
for One Health studies

7th - 9th Dec 2022

Training on the monitoring of
environmental dynamics by
remote sensing





Remote sensing trainings

- **22nd – 24th June 2022: Training on Earth observation for hydrology and land cover mapping**
 - 3 days of theoretical courses and practical work
 - Use of Sentinel-1 images (RADAR), SNAP and QGIS
 - 24 participants in Cambodia (ITC, IPC, IRD, Royal University of Agriculture, National Univ. of Battambang)
 - Cofunding: French Embassy Cambodia + Espace-Dev

- **7th - 9th Dec 2022: Training on the monitoring of environmental dynamics by remote sensing**
 - 3 days of theoretical courses and practical work
 - Use of Sentinel-2 images (optical), Sen2Chain & Sen2extract and eCognition
 - 26 participants from 6 countries, including 5 Southeast Asian countries
 - Cofunding: EASIMES (Global Fund)





Training on Mapping and spatial analyses in R for One Health studies

GeoOneHealth 2022 South-East Asia



Training: Mapping and spatial analyses in R
for One Health studies

28th November to 2nd December 2022

Frangipani Hotel
Phnom Penh

Symposium: Geospatial approaches in
One Health studies

5th December 2022

Himawari Hotel,
Phnom Penh



Registration will be open
until 21st October 2022

<http://training.geohealthresearch.org/>



Espace DEV
OBSERVATION SPATIALE, MODELES
& SCIENCES HUMAINES



SMRU.
Shoklo Malaria Research Unit

- 47 registrations of interest
 - ⇒ selection of 15 participants
 - ⇒ to represent different countries and institutions
 - ⇒ Based on motivation and level in data analysis
- 8 participants proposed linked to malaria programs



Training on Mapping and spatial analyses in R for One Health studies

23 Participants (10 Females, 13 Males), 7 countries, 14 institutions:

- **8 participants from Cambodia:**
 - National Institute of Public Health (NIPH)
 - Institut Pasteur du Cambodge (IPC)
 - University of Health Sciences
- **1 from Indonesia:** National Research and Innovation Agency of Indonesia (BRIN)
- **3 from Laos:**
 - Center for Malariaology, Parasitology and Entomology (CMPE),
 - National University of Laos (NUoL)
- **3 from Myanmar:**
 - Save the Children International,
 - Myanmar Health Assistant Association (MHAA)
- **3 from Thailand:**
 - Ministry of Public Health,
 - Mahidol University
- **4 from Vietnam:**
 - National Institute of Hygiene and Epidemiology (NIHE),
 - National Institute of Malariaology, Parasitology and Entomology (NIMPE)
 - Pasteur Institute in Ho Chi Minh city
- **1 from France:** IRD- Espace-Dev

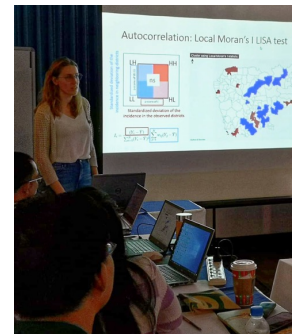


+ 6 trainers from France and Cambodia: IRD-IPC GeoHealth Team + CNRS UAR RIATE



Training on Mapping and spatial analyses in R for One Health studies

	Monday 28th November <i>Introduction to R</i>	Tuesday 29th November <i>Mapping in R</i>	Wednesday 30th November <i>Geoprocessing in OSM</i>	Thursday 1st December <i>Using OSM and raster data in R</i>	Friday 2nd December <i>Applied exercises in R</i>
8H30-10H00	Arrival of foreign participants in Phnom Penh	Lecture 1: Contribution of mapping and spatial analysis in epidemiological studies and health surveillance (Vincent Herbreteau)	Practical 4: Map layout in R (Chapter 5.2)	Focus on applications: Introduction to geostatistics (Léa Douchet)	Practical 9: Applied exercises
Coffee break		Practical 2: Make a simple map in R (Chapter 5.1)		Practical 6: Data acquisition (Chapter 2.1)	
10H30-12H00		Practical 2: Make a simple map in R (Chapter 5.1)	Practical 5: Using vector data in R (Chapter 3)	Lecture 3: Introduction to OpenStreetMap (OSM) (Lucas Longour)	Practical 9: Applied exercises
Lunch					
13H30-15H00	Workshop introduction	Lecture 2: Graphic semiology (Timothée Giraud)	Focus on applications: Do's and don'ts when mapping (Timothée Giraud)	Practical 7: Import OSM data (Chapter 2.3)	Practical 9: Applied exercises
Coffee break		Practical 3: Thematic map in R (Chapter 5.1.2 to 5.1.6)	Practical 5: Using vector data in R (Chapter 3)		
15H30-17H00	Practical 1: Introduction to R (refresher course)	Practical 3: Thematic map in R (Chapter 5.1.2 to 5.1.6)	Practical 5: Using vector data in R (Chapter 3)	Practical 8: Using raster data in R (Chapter 4)	Final discussion about future interactions among participants Awarding of certificates





Training on Mapping and spatial analyses in R for One Health studies

Tutorial were shared online as open-source: <http://rspatial4onehealth.geohealthresearch.org/>

- => can be re-used by anybody
- => can be also completed by anybody
- => will be updated by our GeoHealth team

Mapping and spatial analyses in R for One Health studies

Preface

- 1 Introduction
 - 2 Data Acquisition
 - 3 Using vector data
 - 4 Using raster data
 - 5 Mapping With R
 - 6 Basic statistics for spatial analysis
- Exercices
References

Mapping and spatial analyses in R for One Health studies

GeoHealth Training Series

Preface

IRD-IPC GeHealth Lab

IRD-IPC ព័ត៌មានភូមិសាស្ត្រ និង សុខាភិបាល

This training is designed for people interested in using R for mapping and spatial analysis for applications in the various fields related to “one health” approaches. R is an open source software widely used by the scientific community for data analysis and which is becoming an interesting choice for cartography and spatial analysis, as a Geographic Information System.

This training was first prepared to be given from 28th November to 2nd December 2022, in Phnom Penh Cambodia, by the GeoHealth team under the French National Research Institute for Sustainable Development (IRD) and the Institut Pasteur du Cambodge (IPC), in the frame of:

- the OHSEA Project (One Health in Practices in South-East Asia), funded by the FSPI (Solidarity Fund for Innovative Projects) under the French Ministry for Europe and Foreign Affairs,
- the Dissemination activities of the EASIMES (Environment Analysis and Surveillance to Improve Malaria Elimination Strategy) Project funded by the Global Fund RAIZE.

Conception: It was first designed from the courses “[Géomatique avec R](#)” and “[Cartographie avec R](#)” by Timothée Giraud and Hugues Pecout. It was then translated and its examples were adapted for Cambodia and health applications.

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[Preface](#)



GeoOneHealth2022 symposium, on 5th December 2022

- 59 participants
- 8 countries, including 6 Southeast Asian countries
- 15 oral presentations organized in 4 sessions

- **Symposium website:**
 - Registration
 - Shared presentations
 - Shared pictures

GeoOneHealth 2022
South-East Asia
Symposium on Geospatial Approaches in One Health Studies
5 December 2022, Phnom Penh, Cambodia

IRD Institut de Recherche pour le Développement
Institut Pasteur du Cambodge
SMRU Shoklo Malaria Research Unit

Home Organizers Program Registration Practical information Map MY SPACE

The **GeoOneHealth 2022 Symposium** will gather researchers, teachers, students, epidemiologists, data managers to exchange on the use of mapping and geospatial analysis for applications in the various fields related to "one health" approaches. It aims to highlight the activities carried out in this field in Southeast Asia and create a network of participants to develop future synergies. Represented countries include: Cambodia, Indonesia, Lao-PDR, Myanmar, Thailand, Vietnam.

It is organized by the French National Research Institute for Sustainable Development (IRD), the Institut Pasteur du Cambodge (IPC) and the Shoklo Malaria Research Unit in Thailand, in the frame of:

- the OHSEA Project (One Health in Practices in South-East Asia), funded by the FSPI (Solidarity Fund for Innovative Projects) under the French Ministry for Europe and Foreign Affairs,
- the Dissemination activities of the EASIMES (Environment Analysis and Surveillance to Improve Malaria Elimination Strategy) Project funded by the Global Fund RAIZE.

The GeoOneHealth 2022 symposium will be held on Monday 5th December 2022, at the **Himawari Hotel**, on the banks of the Mekong River, in Phnom Penh, Cambodia.

Contact: geoonehealth2022@sciencesconf.org

<https://geoonehealth2022.sciencesconf.org/>



- As expected, **a high demand for practical training for mapping with R:**

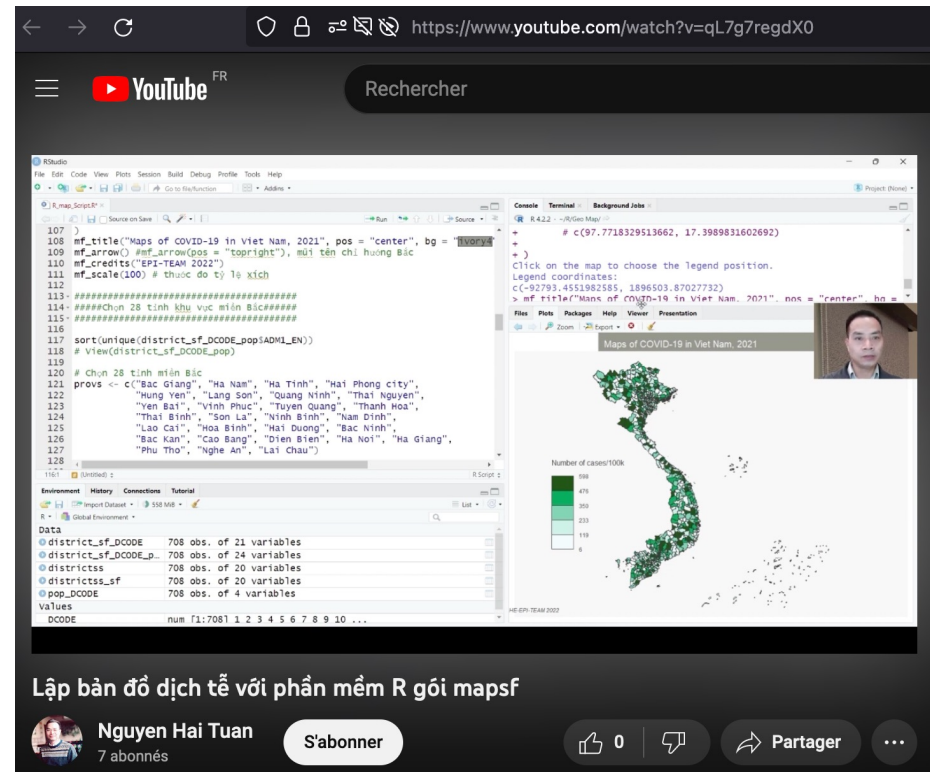
- ⇒ the selection allowed us to ensure the required level of the participants and their motivation
- ⇒ importance of having a sufficient number of supervisors in view of the technical nature of the training and the large number of participants

- Importance of sharing as open-source:**

- ⇒ One participant, Dr Nguyen Hai Tuan from NIHE, reinterpreted the training for Vietnam and shares a video record.

- What's next?**

- ⇒ Desire to maintain exchanges, further develop learnings, maintain a SEA technical network related to spatial analyses for health



The screenshot shows a YouTube video player with the URL <https://www.youtube.com/watch?v=qL7g7regdX0>. The video content displays an RStudio interface with the following R code:

```
107 )
108 mf_title("Maps of COVID-19 in Viet Nam, 2021", pos = "center", bg = "#000000")
109 mf_arrow() #mf_arrow(pos = "topright"), mũi tên chỉ hướng Bắc
110 mf_credits("EPI-TEAM 2022")
111 mf_scale(100) # thuộc do tỷ lệ xích
112
113 #####
114 #####Chun 28 tinh khu vuc mien Bac#####
115 #####
116
117 sort(unique(district_sf_DCODE_popIADH3_EN))
118 # View(district_sf_DCODE_pop)
119
120 # Chun 28 tinh mien Bac
121 provs <- c("Bac Giang", "Ha Nam", "Ha Tinh", "Hai Phong city",
122 "Hung Yen", "Lang Son", "Quang Ninh", "Thai Nguyen",
123 "Yen Bai", "Vinh Phuc", "Tuyen Quang", "Thanh Hoa",
124 "Thai Binh", "Son La", "Ninh Binh", "Nam Dinh",
125 "Lao Cai", "Hoa Binh", "Hai Duong", "Bac Ninh",
126 "Bac Kan", "Cao Bang", "Dien Bien", "Ha Noi", "Ha Giang",
127 "Phu Tho", "Nghe An", "Lai Chau")
128
129
130
```

The RStudio interface also shows a console with the following output:

```
R 4.2.1 - v8/Dev Map
# c(97.7718329513662, 17.3989831602692)
Click on the map to choose the legend position.
Legend coordinates:
c(-92793, 4551982585, 1896503.87027732)
> mf_title("Maps of COVID-19 in Viet Nam, 2021", pos = "center", bg = "#000000")
```

The video also shows a map of Vietnam with COVID-19 cases, titled "Maps of COVID-19 in Viet Nam, 2021". The map displays the number of cases per 100k, with a legend ranging from 0 to 476. The video is by Nguyen Hai Tuan, with 7 subscribers and 0 likes.

Lập bản đồ dịch tễ với phần mềm R gói mapsf

Nguyen Hai Tuan
7 abonnés

S'abonner

0 likes

Partager



Acknowledgements

- **OHSEA project coordinators**
- **Funders:**
 - FSPI (Solidarity Fund for Innovative Projects) under the French Ministry for Europe and Foreign Affairs,
 - Global Fund
 - French Embassy in Cambodia
- **IRD Representative offices for organizing regional missions**

