

Dengue vector surveillance and innovative strategies for vector control in Laos.

Entomology WP, ECOMORE<sub>2</sub>

Sebastien Marcombe



ECOMORE II



WP LAOS

# Process of initiation of the Entomological WP, Vientiane, Laos

- Objectives

- Entomological **surveillance** to define **dynamics** of *Aedes* vectors and Identify **active zones of transmission**
- Evaluate **innovative strategies** of vector control (In2Care traps)
- Measure and Map **insecticide resistance** levels of the *Aedes* populations in Vientiane

- Involvement of Authorities

- Presentation of the project to representatives of DCDC, MoH, and Vientiane Districts

- Relevance at the National level

- In concordance with the new **National Strategic Plan against Dengue** in Laos

- Experts who have participated in the design of the study

S. Marcombe, M Drandadam (IPL), M. Choisy (IRD, Vietnam), O. Telle (CNRS, India)

# Specific Objective 1: Dynamics of vectors and surveillance in Dengue hotspots

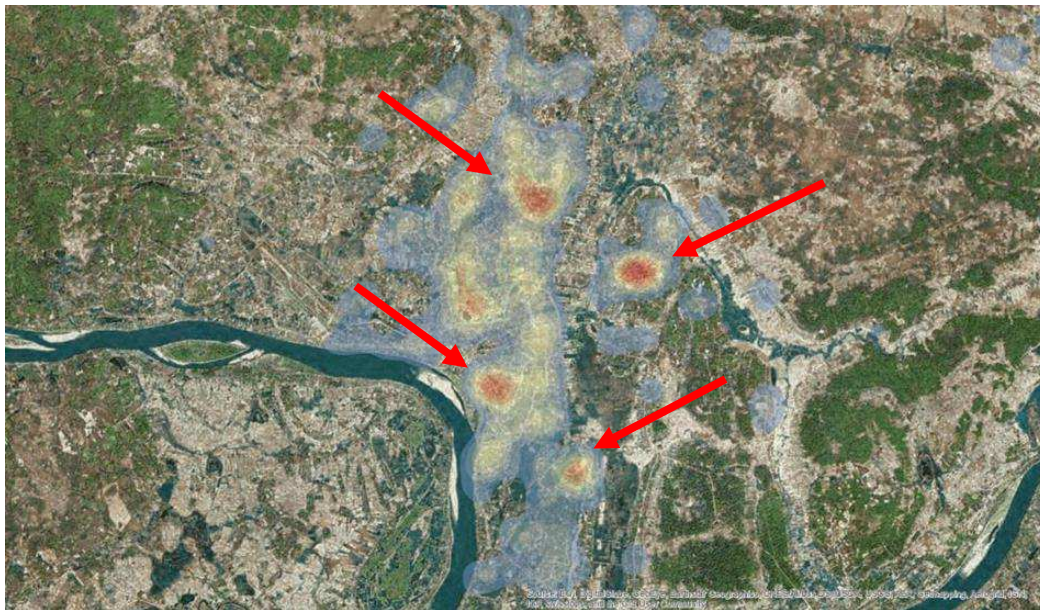
- 4 villages selected in Vientiane capital
- 2 BG sentinel traps and 2 oviposition traps / village
- **Mosquito abundance** (every week annually)
- **Arbovirus infestation rates** in vectors



Ovitrap



BG trap



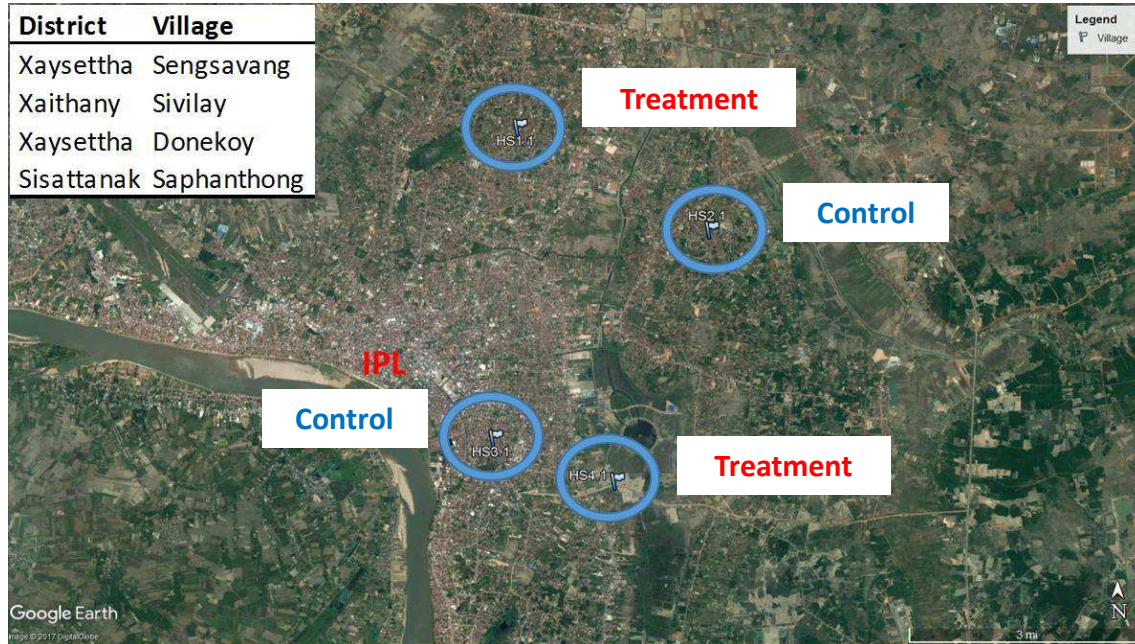
Density of dengue confirmed cases in Vientiane (2012/2016),  
Virology Department IPL.







# Specific Objective 2: Innovative vector control strategy, In2Care traps



Localization of the selected sites for In2Care traps implementation in Vientiane





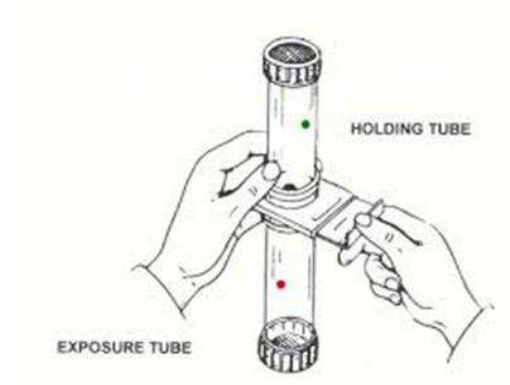
## Specific Objective 2: Innovative vector control strategy, In2Care traps

- Preliminary small scale study, IPL, **P. Thamavong**
  - Residual efficacy of the traps (water levels, insecticide efficacy during 3 months)
  - Reduction of mosquito abundance in the area



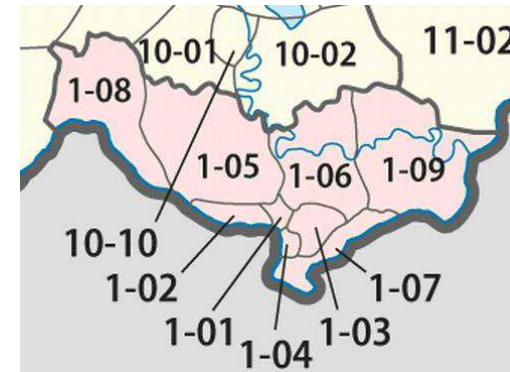
## Specific Objective 3: Insecticide resistance

- Measure the **levels of insecticide resistance** in the identified hotspot against conventional insecticides against **new insecticides**, on Larvae and Adults using WHO standard bioassays



### WHO criteria

- **Susceptible**  
[98-100% mortality]
- **Suspected resistance**  
[90-98% mortality]
- **Resistance**  
[<90% mortality]



Vientiane districts map



# Expected results

- Improvement of vector control strategy in identified/potential hotspots (2018-2019)
- Evaluation of relevance to implement a vector control strategy during the dry season (2018-2019)
- Mapping of insecticide resistance in Vientiane (recommendations on insecticide use in Vientiane, *end of 2018*)



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Ministry of Health



**National Strategic  
Plan for Dengue  
control in Laos**



# Monitoring of realization of the objectives

- Indicator
  - Improvement of vector control strategies in identified/potential hotspots
- Means of verification
  - Results of insecticide resistance tests
  - Results of vector abundance in the hotspots before, during and after intervention.

# Acknowledgements

- IPL technicians and scientists
- Thank you!

