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Malaria risk mapping in cross-border area between French Guiana and Brazil

Supporting malaria elimination plans

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Background

- Brazil and French Guiana reaffirmed the **objective of malaria elimination** (new elimination plan in Brazil, planning elimination of *P. falciparum* and *P. vivax* up to 2030 and 2035, respectively MOH, 2022)
- Modelling/learning **approaches based on past reported cases** are promising (Schincariol et al., 2020)
- In cross-border areas, the **high spatial resolution and dynamic risk mapping based (notably) on remote sensing data would help targeting control and elimination actions** in space and time independently of the international limits
- Risk mapping and knowledge formalization are used in Public Health

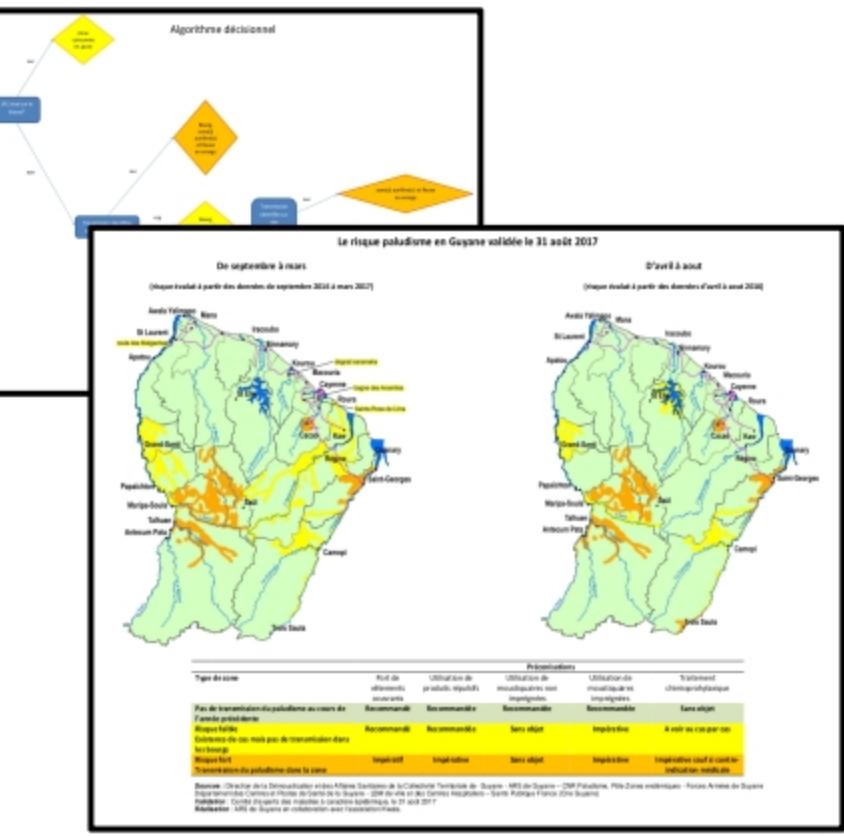


- "Cross-border malaria [is] a major obstacle for malaria elimination"** Wangdi et al., 2015

- Pre-elimination phase means **very few cases** and potentially high impacts of control actions (**non-stationarity**) making such approaches inoperative

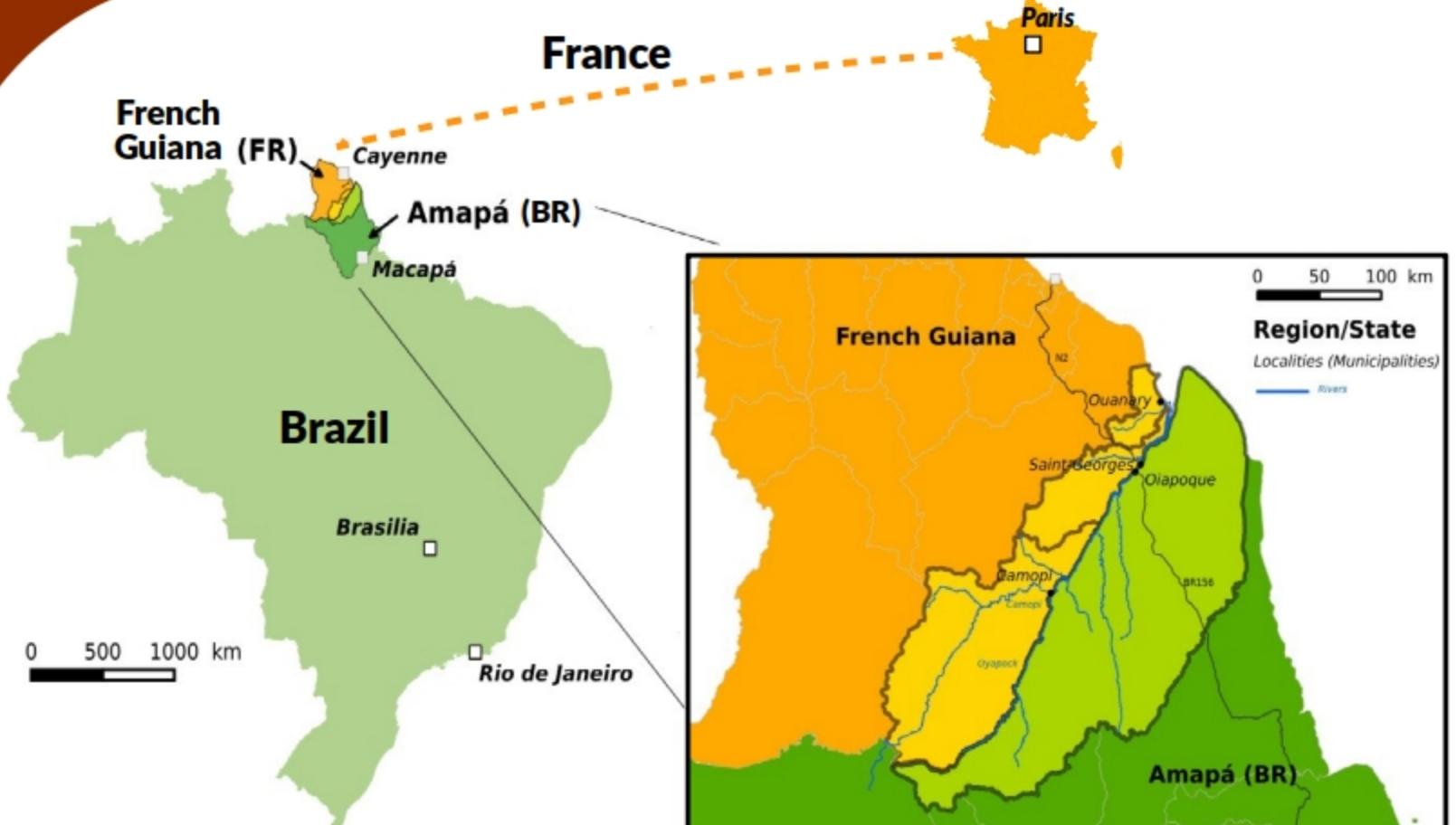
- Remotely sensed risk mapping is **not/rarely used in Public Health practice**

- knowledge and processing chains **should be formalized and standardized**, and **use of qualified data and indicators should be enhanced**, to ensure greater objectivity and reproducibility



ARS-Guyane, Kwata, 2017

Study Region



Objectives

Mapping of malaria risks for an actual use in public health and based on remotely sensed (RS) data, for supporting:

- Targetting of control/elimination actions
- Prevention/revision of malaria reintroduction

(NB: the idea is to support, in partnership! not substitute to current Public health approach!)

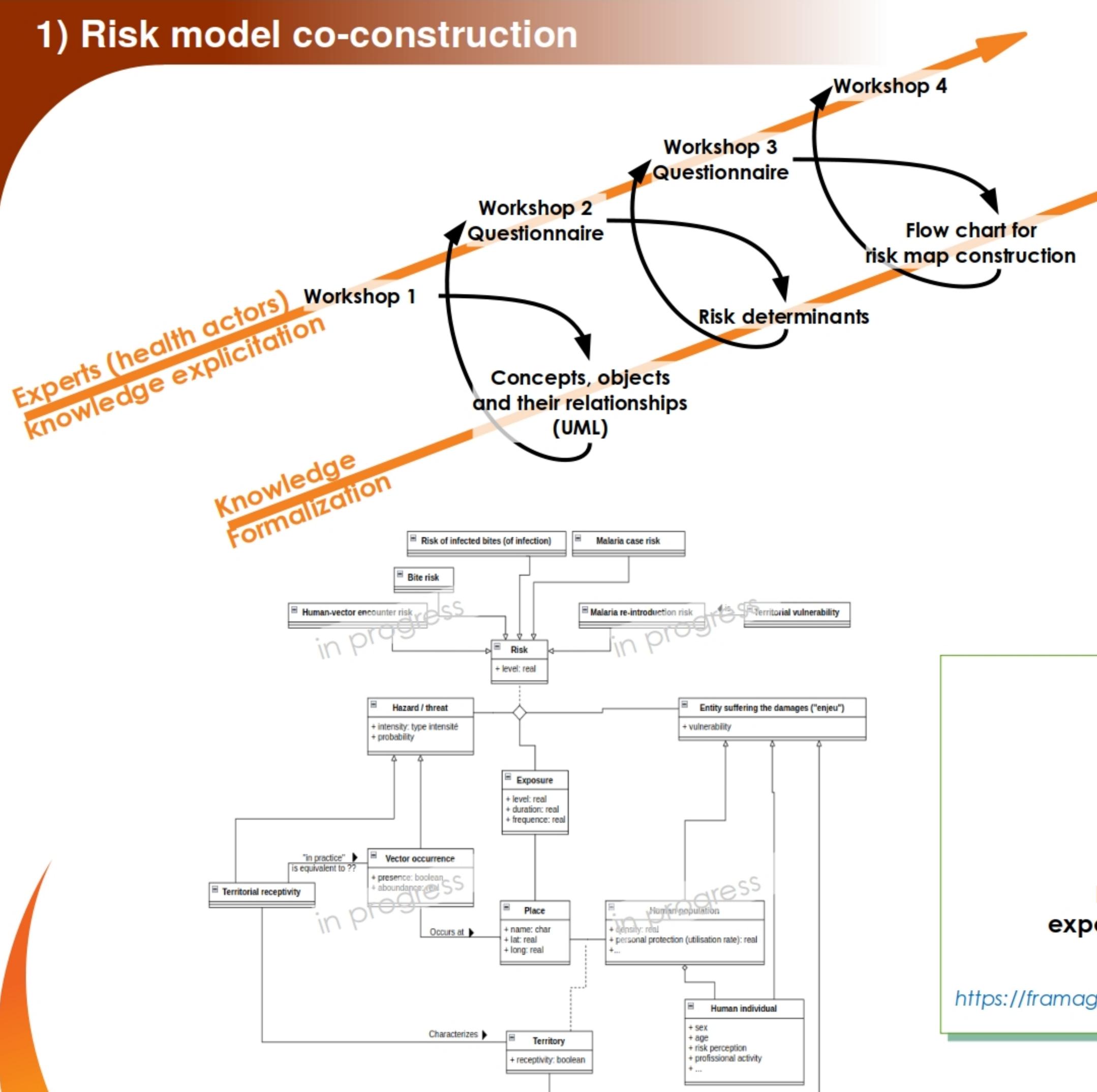
Method

1) Elaboration of conceptual models of risks

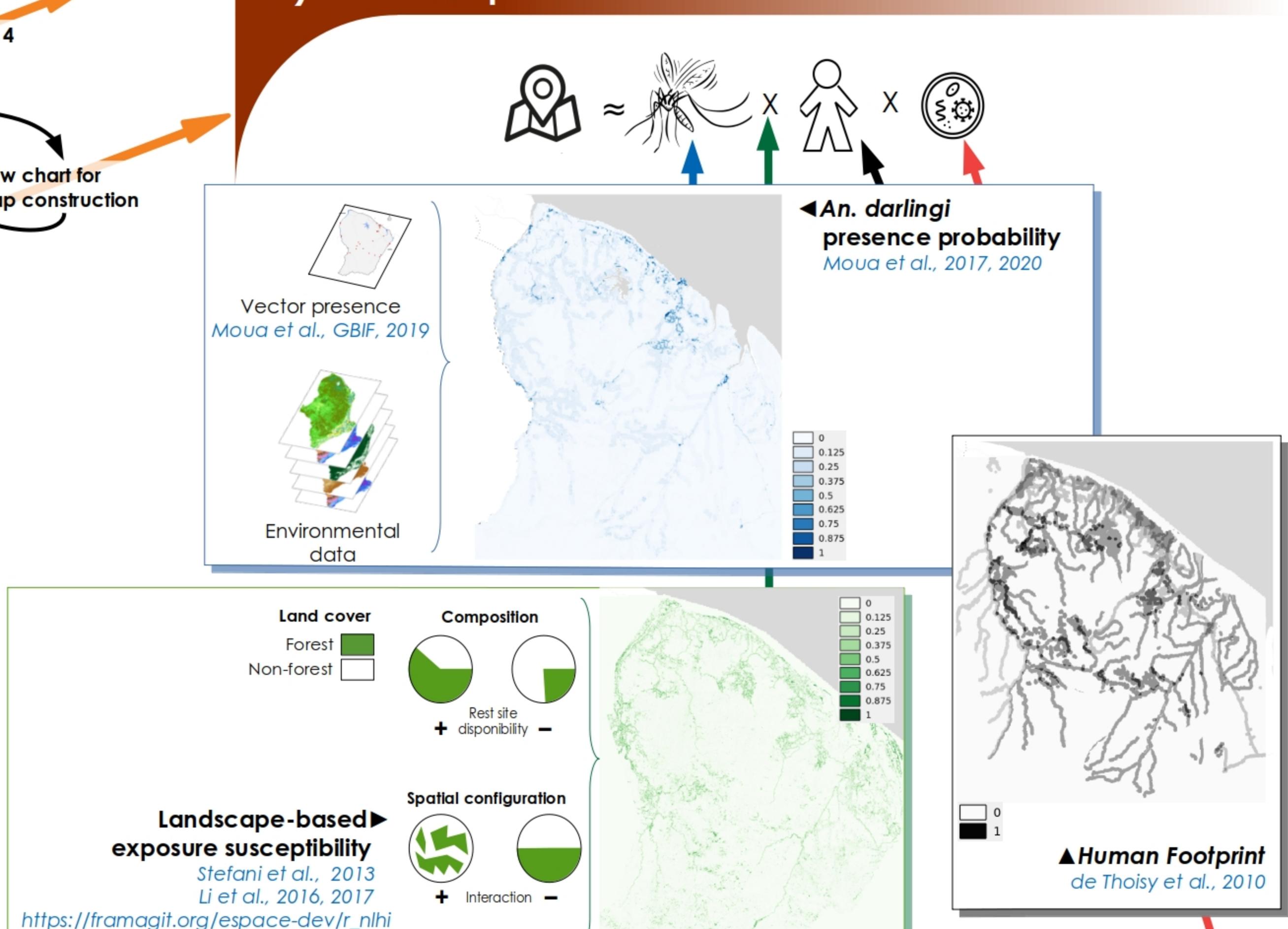
- Co-constructed by 1) researchers in RS and data/model sciences **and 2) public health actors**
- Adopting international standards (WHO recommendations on risk stratification: vocabulary; strata definition)

2) Implementation of the models based on objective, qualified and up to date data and indicators

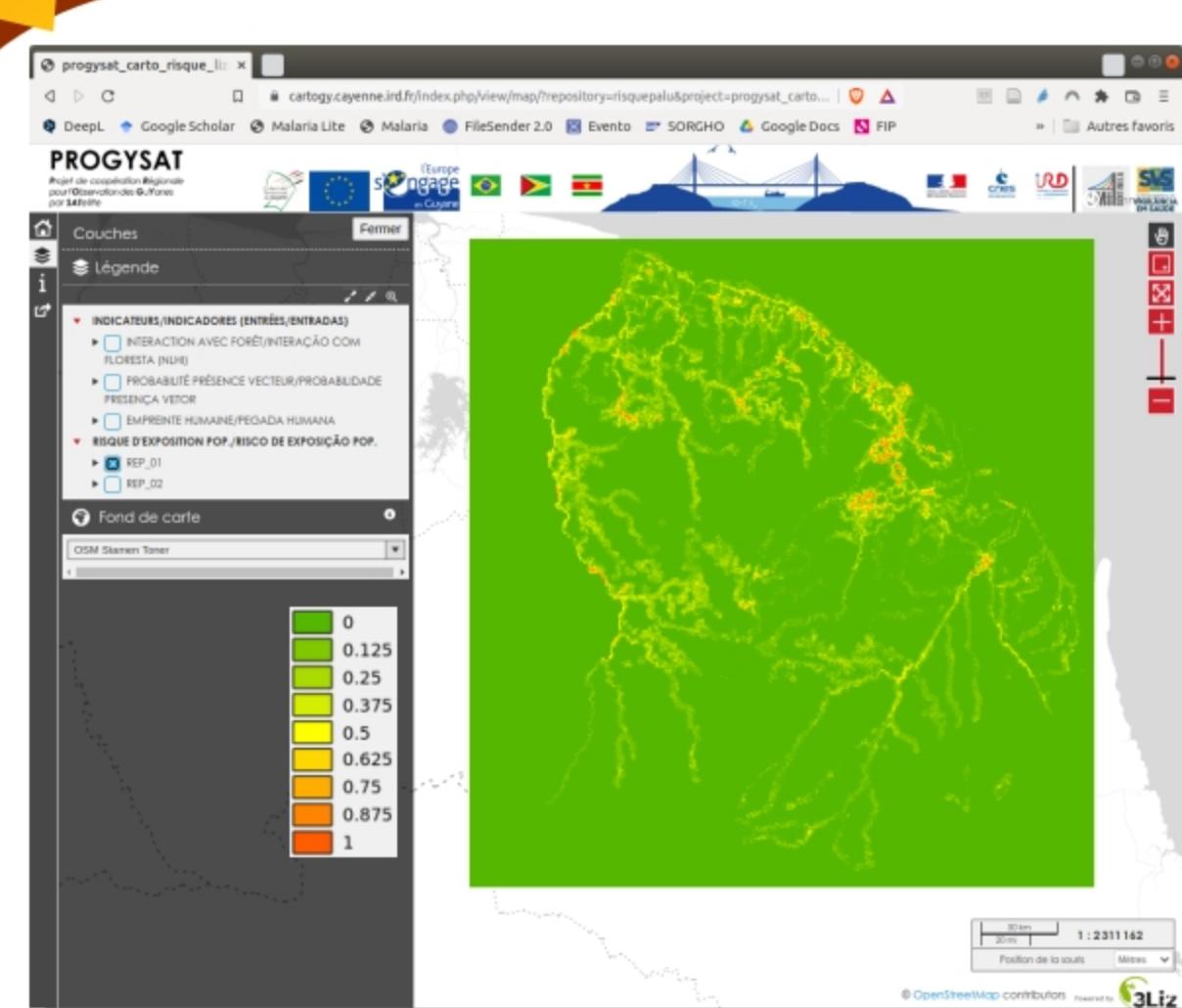
1) Risk model co-construction



2) Indicator production



Preliminary results & Perspectives



• Specification of the indicator aggregation method based on the formalized knowledge

- aggregation operator: + or x or + and x
- Indicator weights

• Result evaluation (Workshop 4; capacity of predict case occurrence, based on historical data)

• Result dissemination & promotion intended to researchers, public health actors and general public

► Risk (in population) of exposure to the main malaria vector (An. Darlingi) (Prototype/Proof of concept)

https://cartogy.cayenne.ird.fr/index.php/view/map/?repository=risquepalu&project=progsat_carto_risque_lizmap

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- LMI Sentinel

