

*New vector control approaches of the
insecticide resistant Anopheles
arabiensis malaria mosquito in
Southwest Ethiopia*

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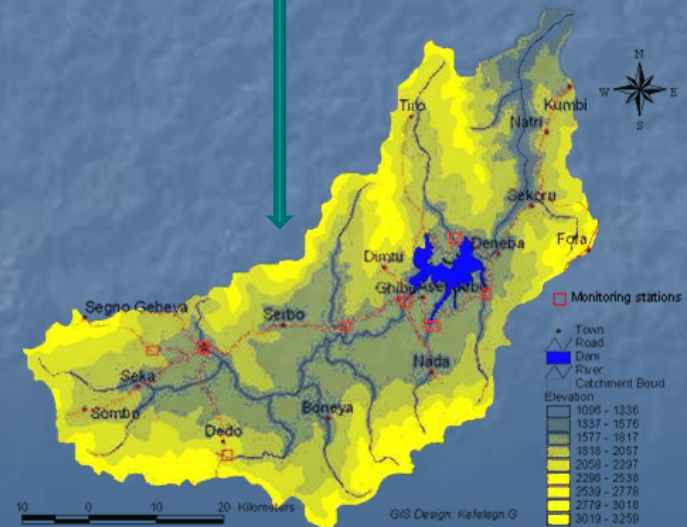
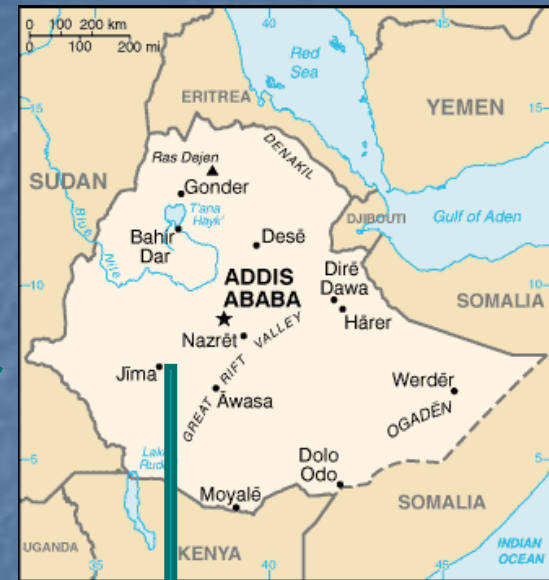


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Impact of the Gilgel Gibe dam, Ethiopia, on malaria incidence



The Gilgel Gibe region



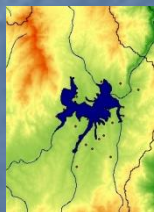
The Gilgel Gibe dam: green energy comes at a price!



General objective: investigate the influence of the **dam** on the **ecology**, distribution and resistance of anopheline mosquitoes in relation tot malaria incidence.



The Gilgel Gibe dam/malaria Phase I



Spatial modeling of malaria incidence

Yehenew Getachew (JU)

Luc Duchateau (UGent)



Malaria and the Anopheles vector

Delenesaw Yewhalaw (JU)

Niko Speybroeck (UCL, ITG)



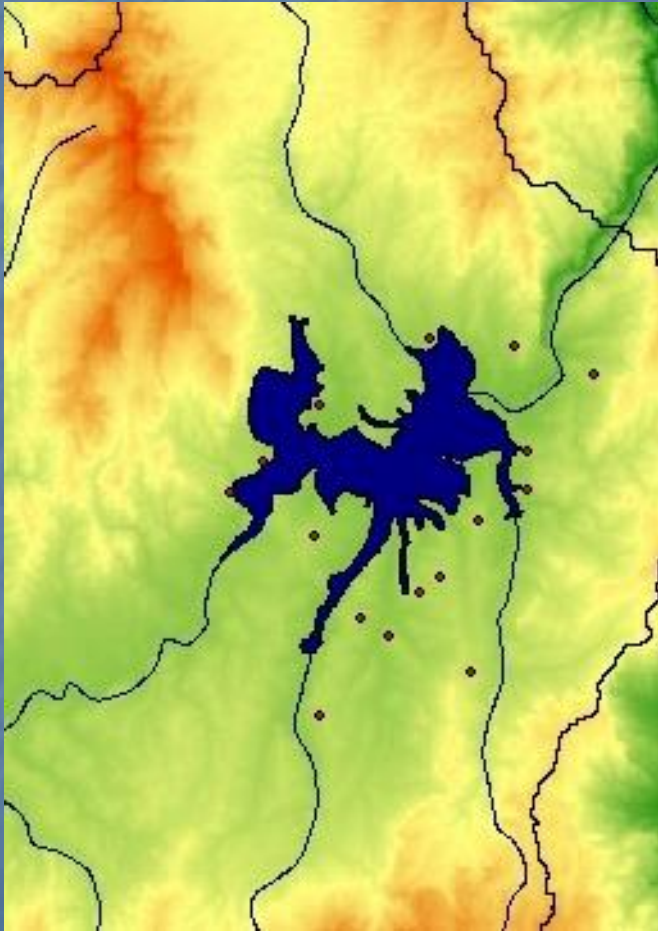
Malaria drug quality

Sultan Suleman (JU)

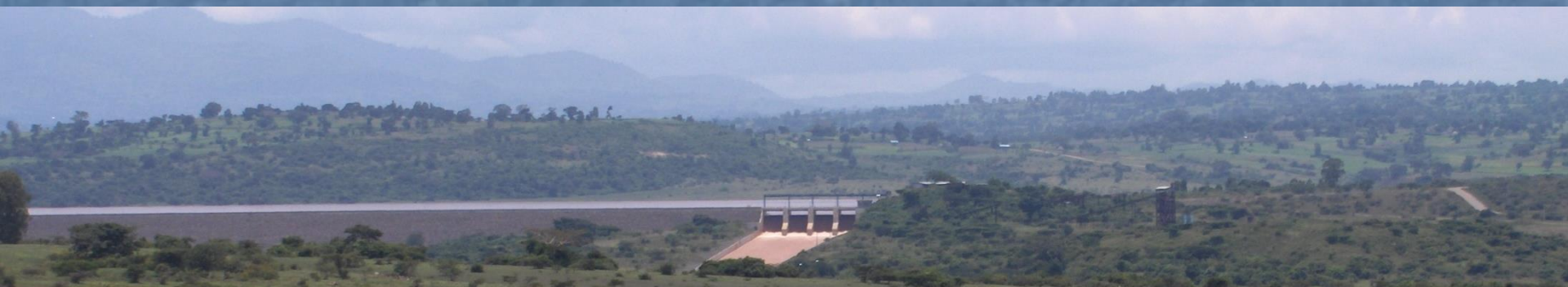
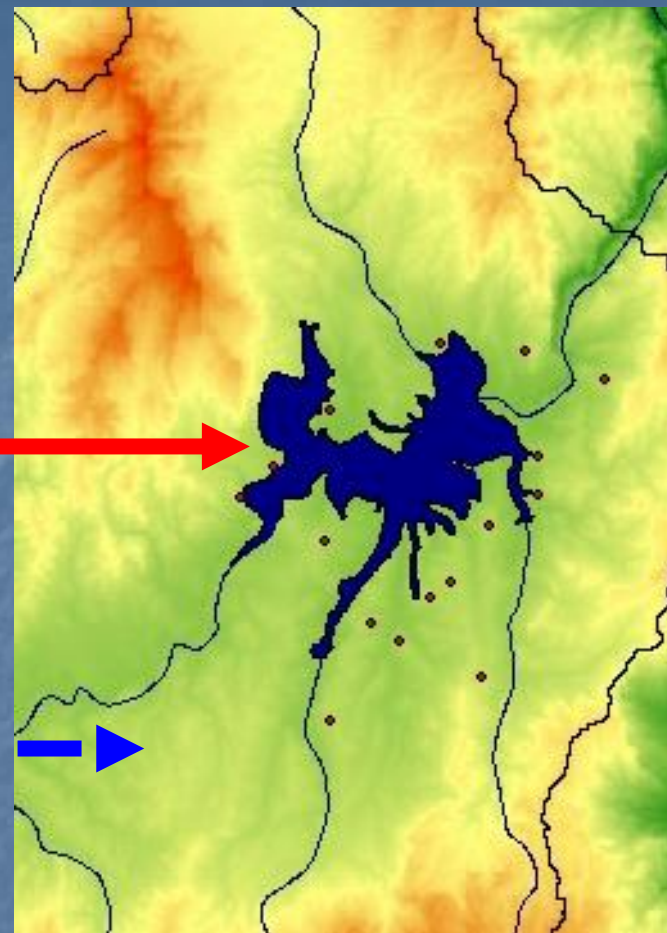
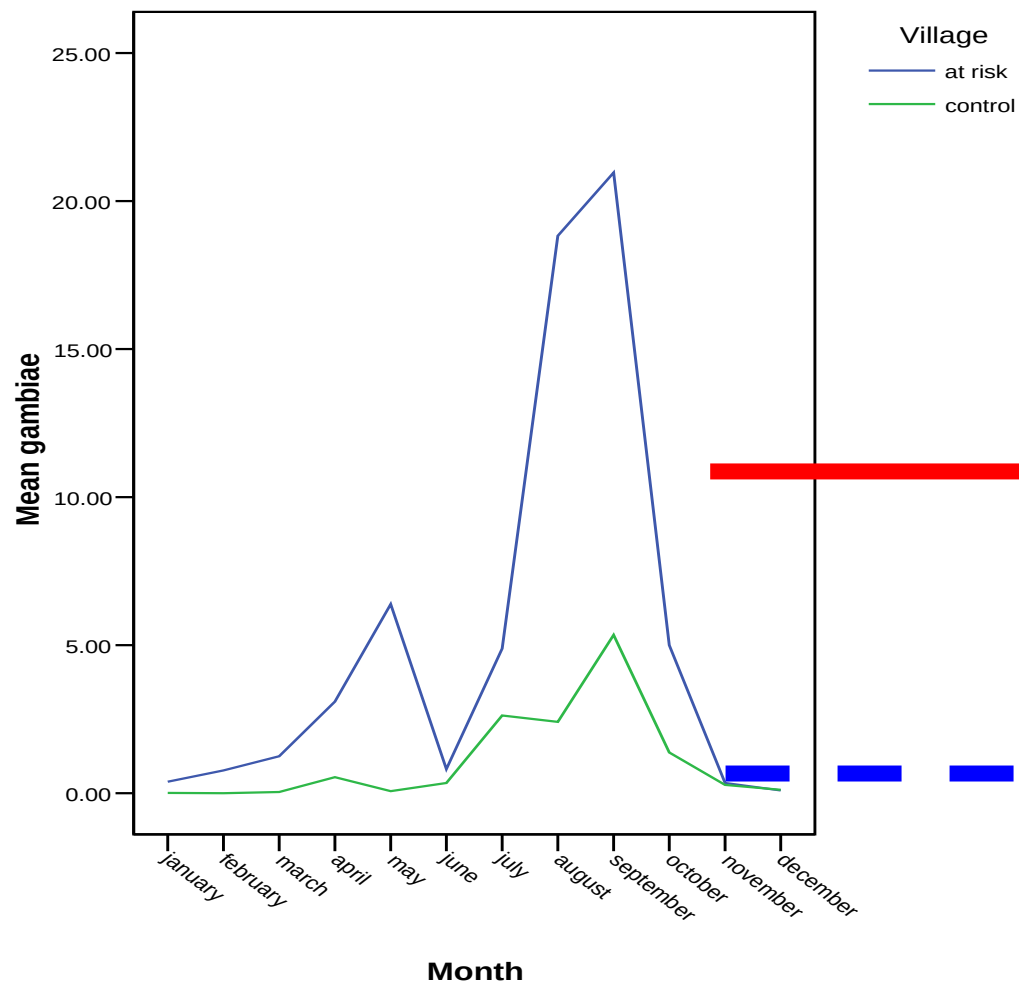
Bart De Spiegeleer (UGent)



Spatial modeling of malaria incidence



- Influence of distance to dam on malaria incidence
- Time to malaria for a specific child is clustered and censored
- Spatial models for 'survival' data with anisotropic structure



Insecticide resistance testing





Insecticide	Number tested	%knockdown after 60 minutes	% mortality
DDT 4%	100	0%	1%
Permethrin 0.75%	83	0%	18.1%
Deltamethrin 0.05%	107	71.6%	82.2%

Kdr analysis resultats

West African *kdr* mutation in 98.5% of mosquitoes

East Afrikan *kdr* mutation absent

Case: Malaria/statistics. The past.



Modeling the effect of distance from
a hydro-electric dam on malaria incidence
based on frailty and
mixed Poisson regression models

Yehenew Getachew Kifle



Insecticide Resistance in the Malaria Vector
Anopheles arabiensis (Diptera: Culicidae)
and Impact of Hydropower Dam
on Malaria in Ethiopia



Delenasaw Yewhalaw Gebre

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Zooprophylaxis – Phase II



Case: Malaria/statistics. The present.

- Research: geared towards ZOOPROPHYLAXIS

Zooprophylaxis reduces number of infectious bites



Case: Malaria/statistics. The present.

- Research: geared towards ZOOPROPHYLAXIS

Zooprophylaxis reduces number of infectious mosquitos



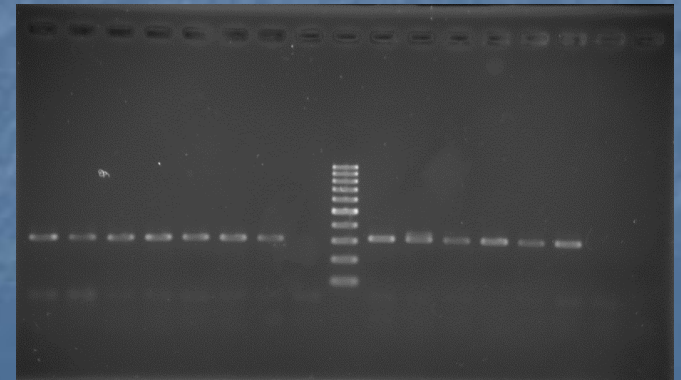
Case: Malaria/statistics. The present.

- Research: geared towards ZOOPROPHYLAXIS
 - Host preference
 - Attractants and repellents
 - Insecticide resistance mechanisms
 - Vector ecology studies



Case: Malaria/statistics. The present.

- Infrastructure
 - Insectary
 - Mosquito village
 - Mol. Biol lab

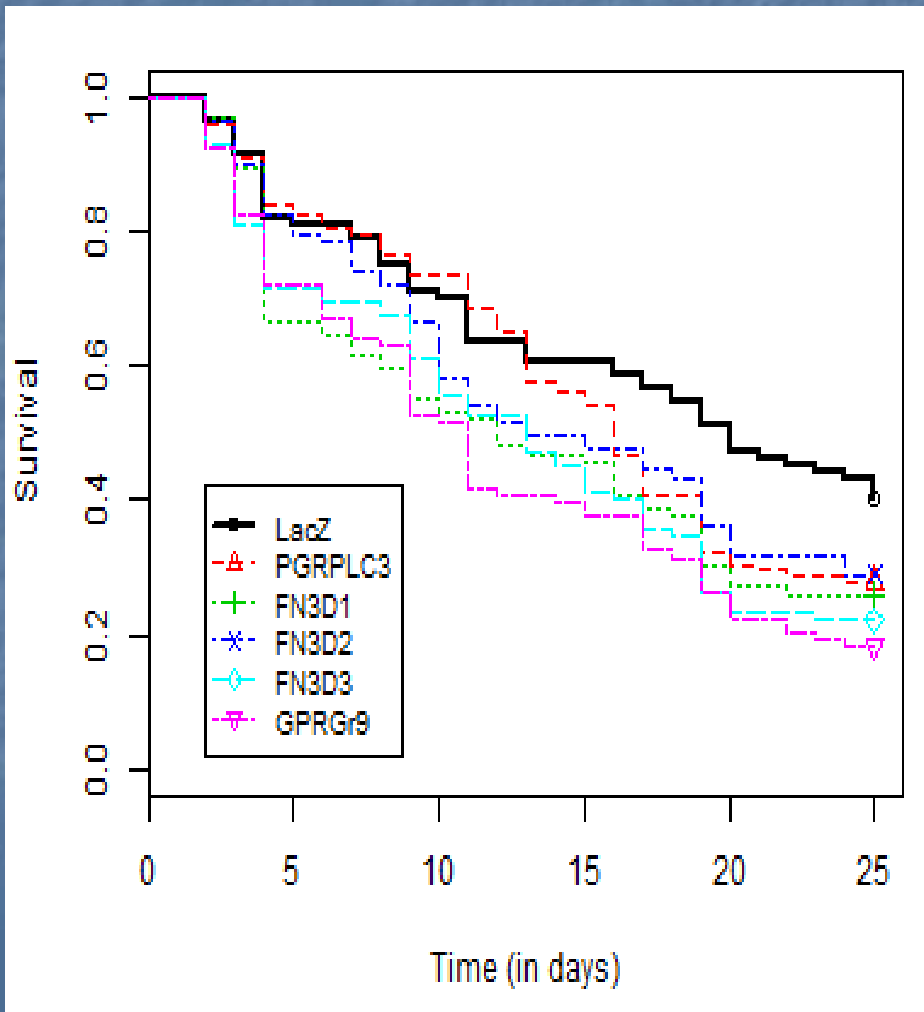


Case: Malaria/statistics. Phase III

- Vaccine development to reduce mosquito lifetime



Promising survival decrease by silencing immunity related genes



dsRNA genes	HR(95%CI; P-Value)	
	Antibiotic Untreated	Antibiotic Treated
LacZ	1.00	1.00
FN3D1	1.64 ([1.17-2.30]; P=0.004)	1.02 ([0.75-1.37]; P=0.91)
FN3D2	1.40 ([1.00-1.95]; P=0.050)	1.17 ([0.86-1.58]; P=0.32)
FN3D3	1.79 ([1.28-2.50]; P<0.001)	0.90 ([0.67-1.21]; P=0.50)
GPRGr9	2.00 ([1.45-2.76]; P<0.001)	0.90 ([0.67-1.21]; P=0.47)
PGRPLC3	1.35 ([0.97-1.87]; P=0.072)	0.89 ([0.66-1.21]; P=0.46)