Faculté de l'Environnement Architectural, Naturel et Construit (ENAC)
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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

ENAC-SIE, Master Project	Start:	Feb 2019
30 ECTS credits	End:	Jul 2019

Title

Identification and modeling of the link between water turbidity and the epidemiology of diarrheal diseases in Burkina Faso

Supervisors

Dr. Javier Perez-Saez, Prof. Andrea Rinaldo

Objective

Investigate the link between the turbidity of water bodies and the epidemiology of diarrhea in Burkina Faso using statistical analysis and mathematical models.

Abstract

Diarrhea is one of the leading causes of child under 5 years mortality, causing 700'000 deaths per year worldwide. In the Burkina Faso it represents a major public health issue where it is among the leading causes of child mortality, causing 11'000 deaths per year. Diarrhea can be caused by a number of waterborne pathogens which can survive in water bodies in which rural communities undergo many livelihood-sustaining activities. Turbidity is known to favor the survival and growth of diarrhea causing-pathogens like viruses and bacteria, whoever its role in diarrhea epidemiology in different climates and transmission settings is poorly understood. In this work the aim is to combine remote sensing estimates of turbidity in water bodies (lakes and reservoirs) with national-scale epidemiological data in Burkina Faso using mathematical models to understand the link between hydrology, water turbidity and disease transmission.

Task description

- Statistical analysis of epidemiological and turbidity data from remote sensing
- Integration of extracted information into a mathematical model of diarrhea transmission applied to different climatic zones

Required skills

- Statistical data analysis skills with R/Matlab/Python
- Solid notions in probabilities/statistics

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