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Obuasi Limited

Locating the Cases: A Community GIS-Based Malaria Information Surveillance System (MISS)

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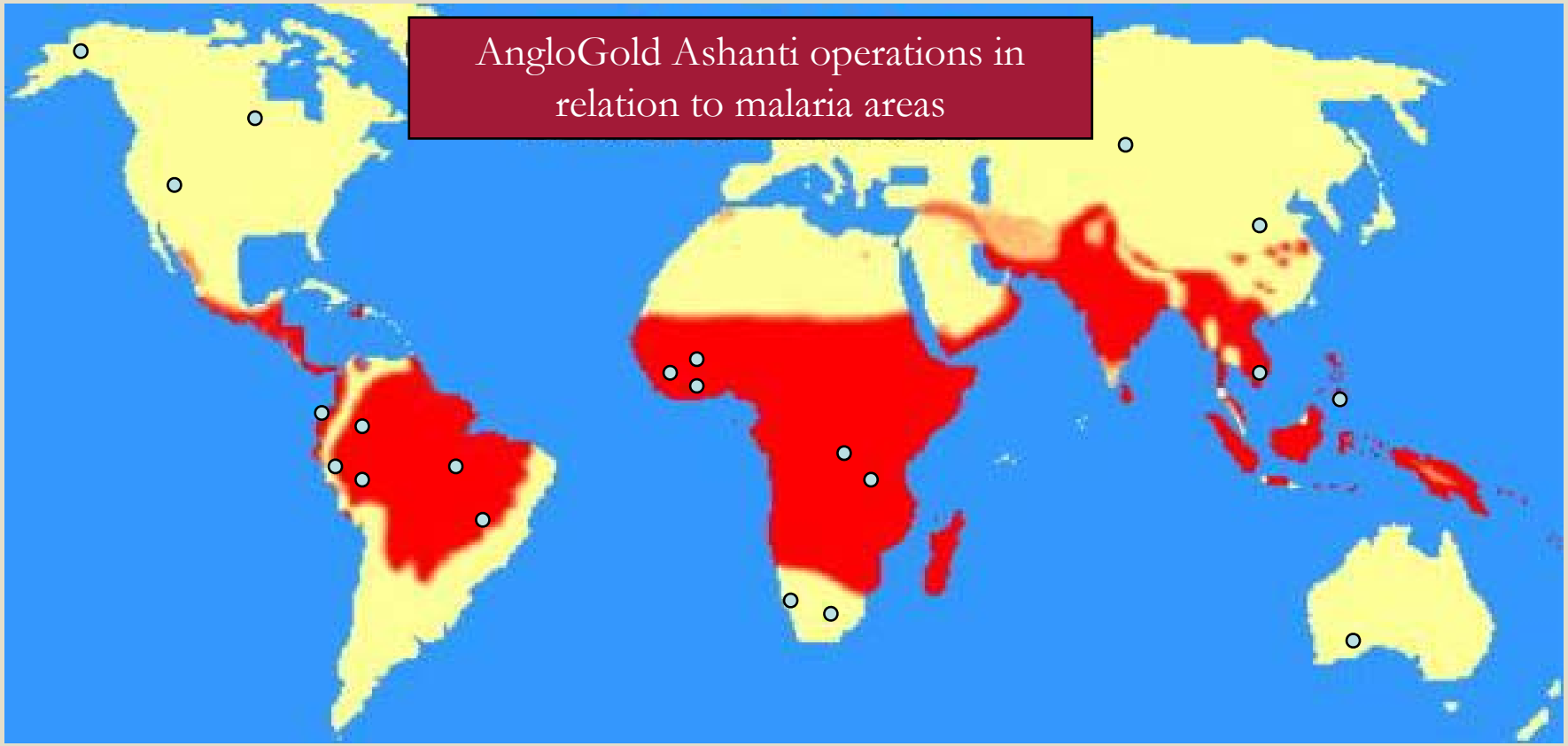
About Us

AngloGold Ashanti



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Introduction

- *Background*

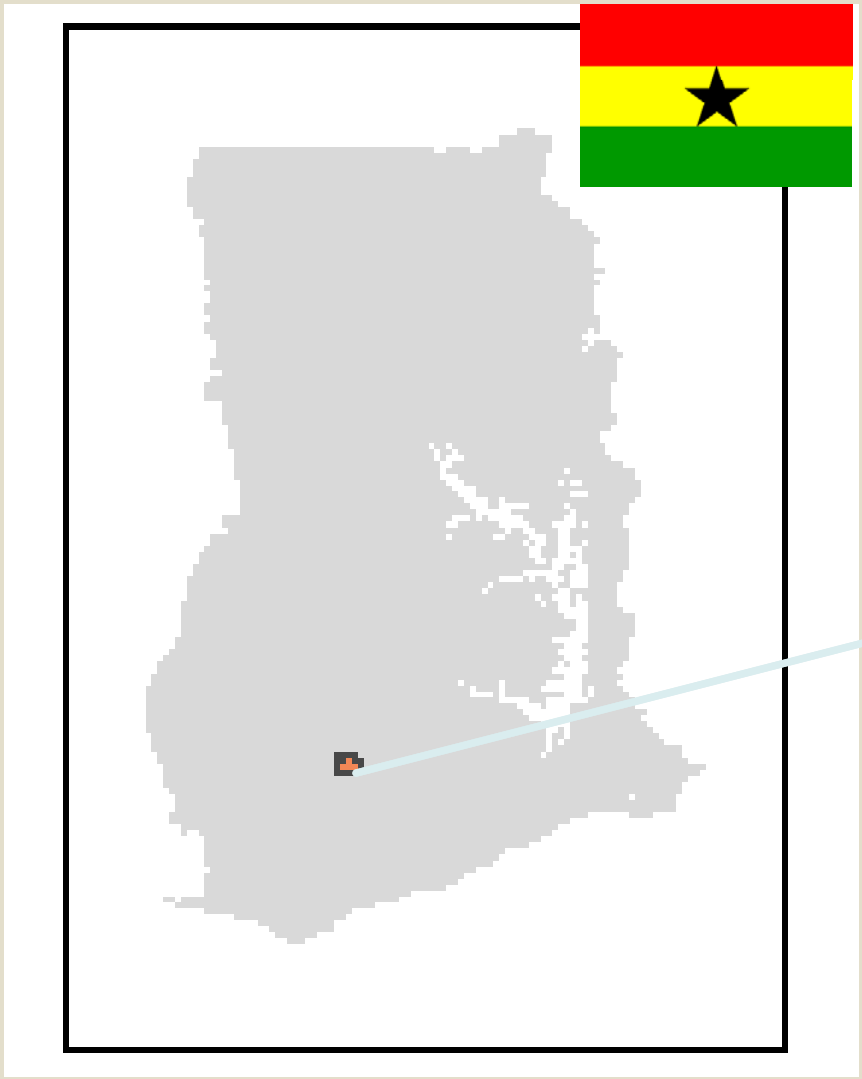
  Malaria remains an important public health issue in Obuasi with a parasitaemia prevalence of 68% in the human populace, hence the need to effectively reduce the burden of the disease.

  In 2007, Obuasi municipality recorded 69,083 at all health facilities; an average of 5,757/month

  Obuasi malaria control programme is based on an integrated approach comprising of IRS, ITN distribution, recurrent anti-larval control at all breeding sites and malaria treatment through passive case detection

Where are WE?

Ghana



Obuasi Municipality

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Problem Statement

- Once health care is assessed in our domain, we were not able to locate and keep accurate count of the malaria cases.

- Monitoring and targeting of resources to reduce the malaria burden and disparities was a snag

Justification

- To accurately locate the malaria cases at the household level for efficient planning, implementation and evaluation of malaria control measures within the Obuasi municipality

- To be able to estimate the magnitude of the problem at the smallest unit

MISS Goal

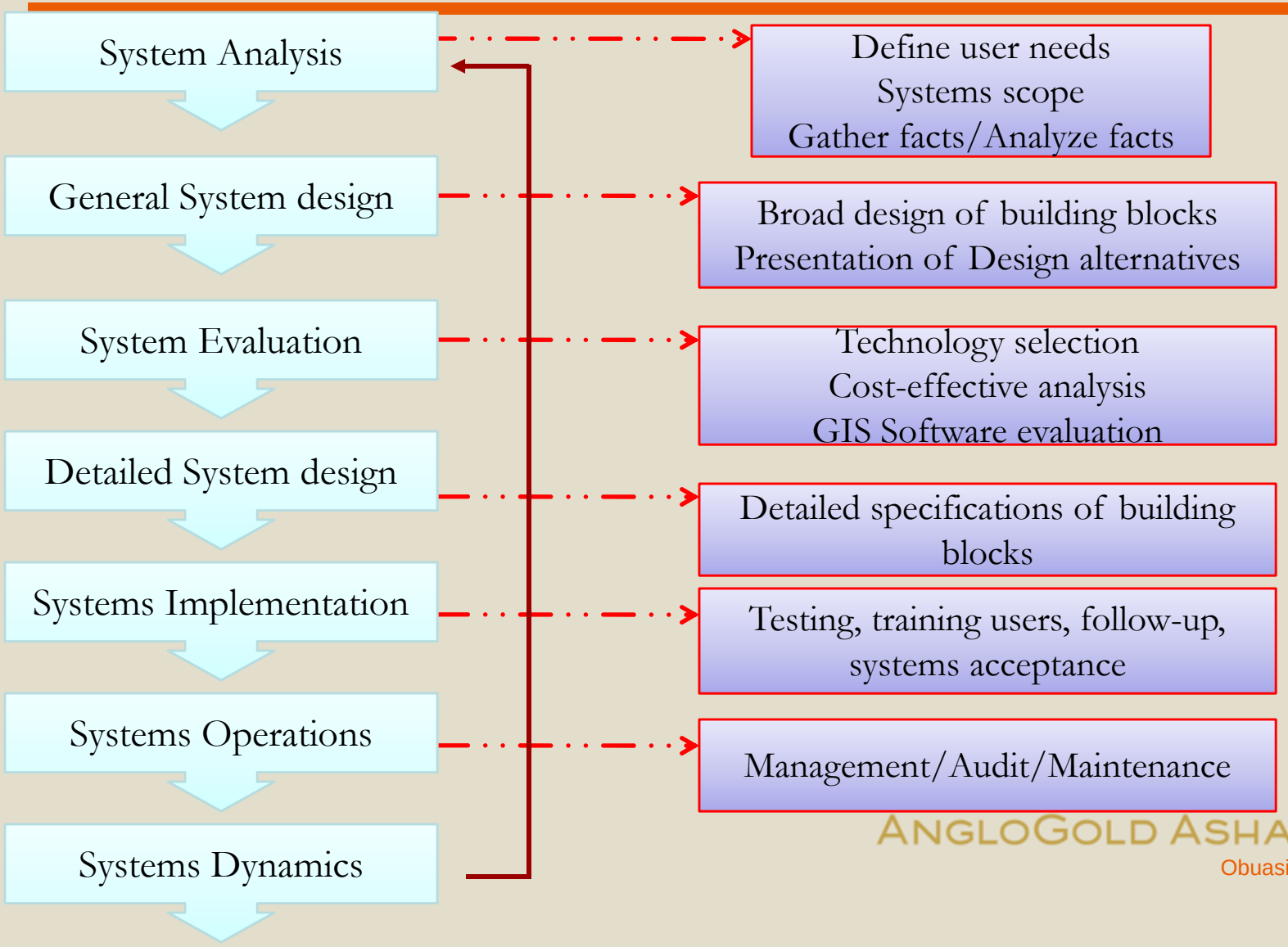
To improve, harmonize and consolidate malaria surveillance and statistical reporting of malaria cases in the Obuasi Municipality at the household level to reduce malaria morbidity and mortality

MISS Objectives

- To ensure effective disease surveillance and monitoring

- To detect outbreaks timely and respond to it

MISS Development



MISS Development

- Each division and block of the Obuasi town has been digitized and assigned a code in conformity with municipal administrative coding.

- Division and Block attribute information includes; division number, block area/number, population, number of houses in each block, breeding sources such as water collection points, and malaria profile

Inclusion criteria for cases

- The reporting is done solely for positive malaria cases within our facilities irrespective of the geographical location of the patient within the municipality.

Attribute data for Reporting System

- Based on the data requirements on the malaria notification forms
  - Residential location (e.g. community)
  - Basic demographic information
  - date test done,
  - date treatment started,
  - type of infections,
  - treatments prescribed
- The reporting forms are entered into the disease-based reporting system and edited for accuracy and validity

GIS Datasets

- Digitized base map of Obuasi Municipality;
- Aerial photograph covering the extent of Obuasi
- Enumeration areas (i.e. Divisions, Blocks)
- Incorporated and unincorporated locations (as of 2007);
- Water points
- Municipal planning zones.

MISS Integration

- The disease-based reporting system is the backbone for the MISS and was developed to provide attribute data on patients for the GIS system.

- In other to exploit the GIS functionalities, the disease-based reporting system data is linked to the GIS database file containing the base maps for analysis or exported to a third party software for onward detail spatial analysis at the community or household level.

MISS functionalities

Information Retrieval

- Since the attribute information is attached to municipal division and block, a click of the mouse on the respective geographic unit retrieves the information attached

Search capabilities

- Patient information can be promptly searched for in the disease-based reporting system to be reviewed on a case-by-case basis to determine the need for action on individual cases

Overlaying Attributes

- Different data layers such as water facilities and wells, metrological data, larval ponds can be integrated in the GIS system and mapped with the malaria status of patients.

MISS demonstration

Malaria Information Surveillance System

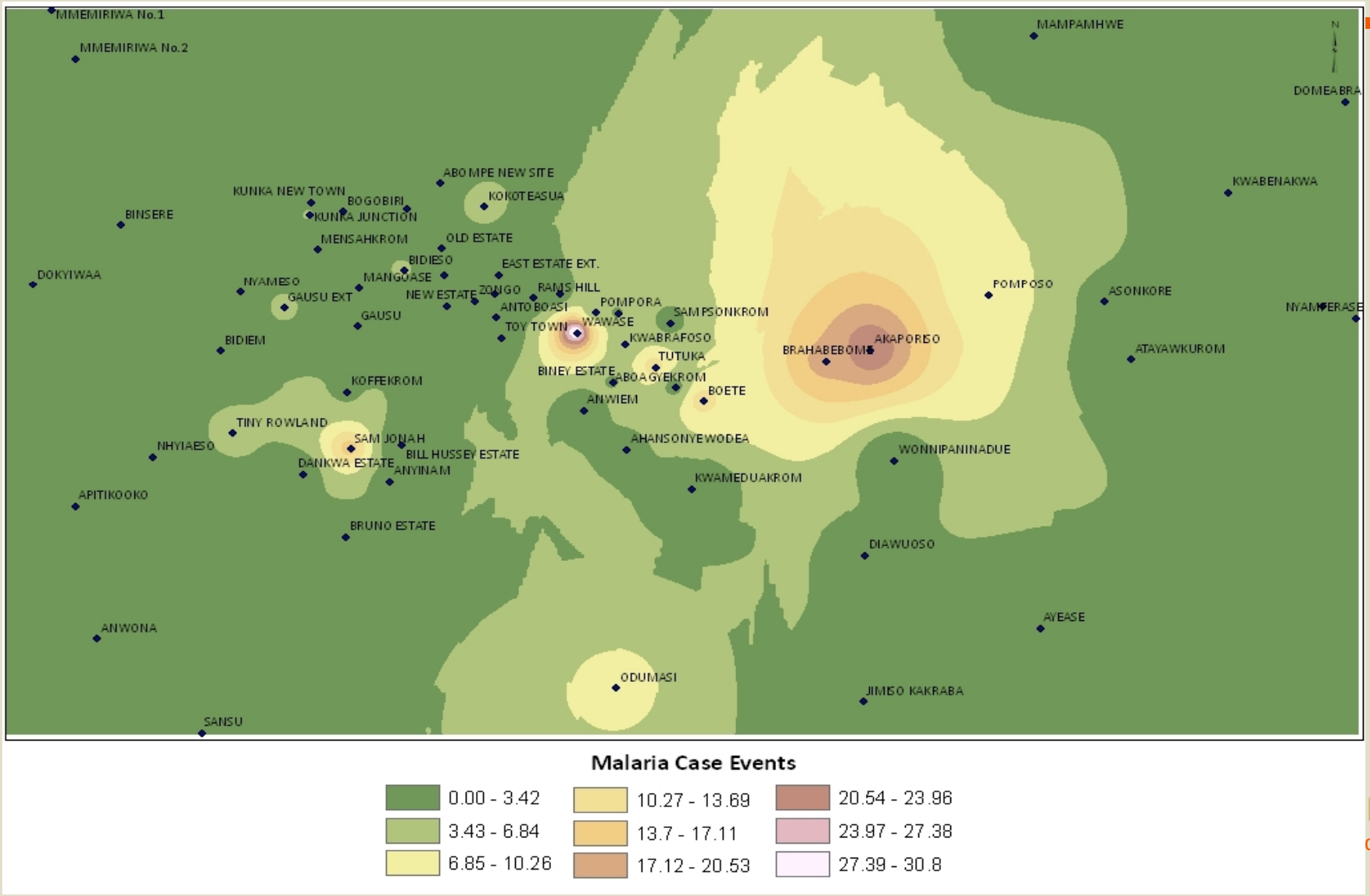
Analysis

Situation Analysis

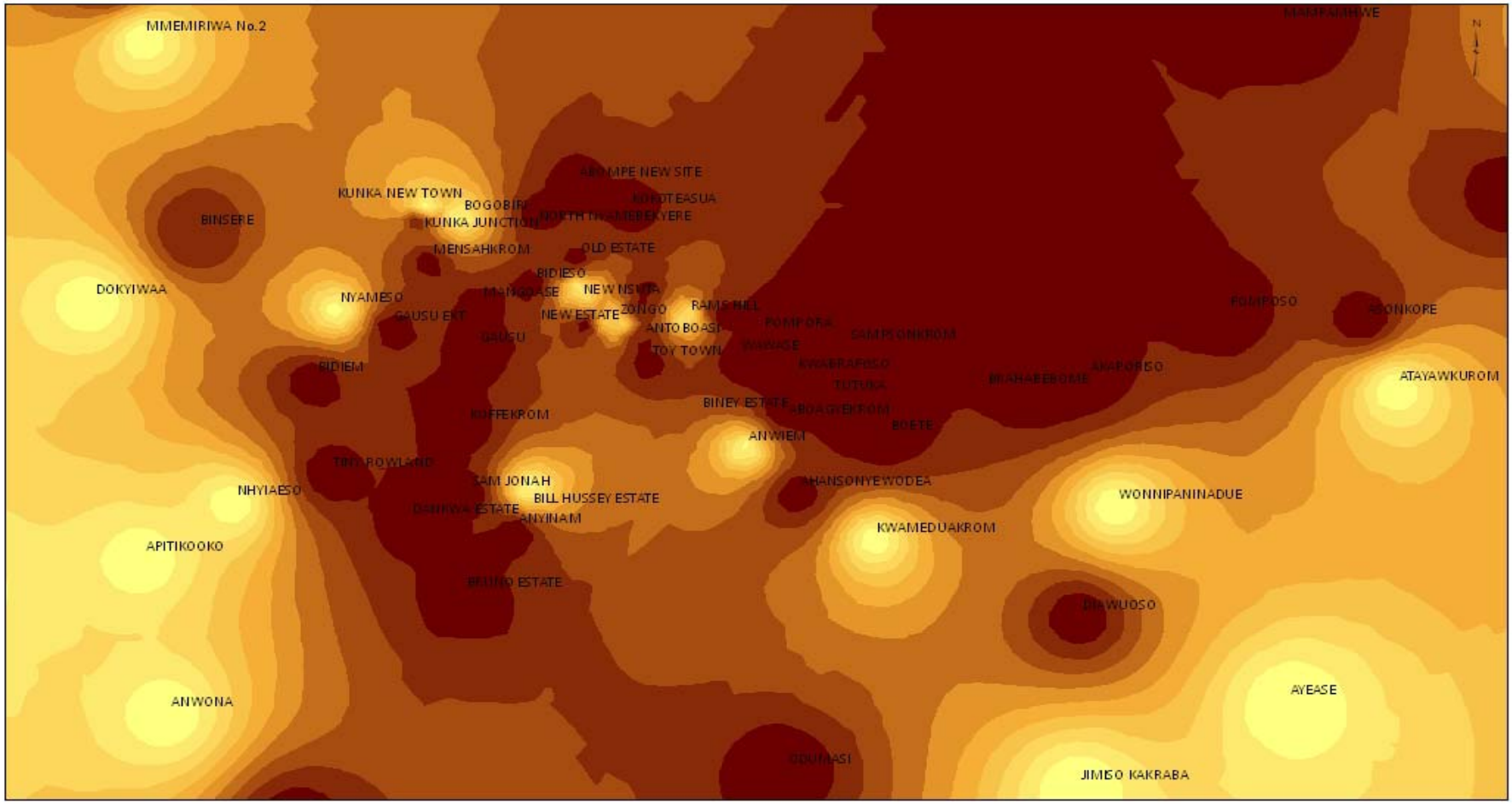
- Data obtained from the disease-based reporting system is used for the study of space and time malaria dynamics.

- One can identify the houses/areas within the divisions and blocks where malaria incidences have increased for specific control measures to be implemented

Kernel Density analysis map using malaria case events for mapping within the Municipality



Predicted surface map using IDW for malaria case events within the Municipality



Geographic Analysis

- Structures within the Municipal area are mapped by means of building numbers and house number fields extracted from patient records and encoded within the database.

- Geographic locations of unidentified house numbers are determined by the use of Garmin GPS 76C (accuracy < 5meters).

Conclusion

- The integration of MISS; a disease-based reporting system at the community level provides the opportunity to rapidly recognize and localize the occurrence of malaria case events and unusual disease patterns within the Obuasi Municipality.

- Ultimately, patterns of spread can be readily appreciated, and predictive models can be generated to facilitate prompt intervention.

"Controlling malaria is our passion; saving lives is the ultimate goal"

Thank you

Acknowledgements

- Sincere gratitude to all staff at the various health facilities in Obuasi, who are making it possible to keep this vision moving.
- Staff of Malaria Control Centre, Obuasi
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Questions & Comments