

Vector Hazard Report: Malaria in Haiti

Part 1: Climate, Demographics and Disease Risk Maps



Information gathered from products of
The Walter Reed Biosystematics Unit (WRBU)

[VectorMap](#)
[Systematic Catalogue of the Culicidae](#)

All material in this brief is provided for your information only and may not be construed as medical advice or instruction. No action or inaction should be taken based solely on the contents of this information; instead, readers should consult appropriate health professionals on any matter relating to their health and well-being.

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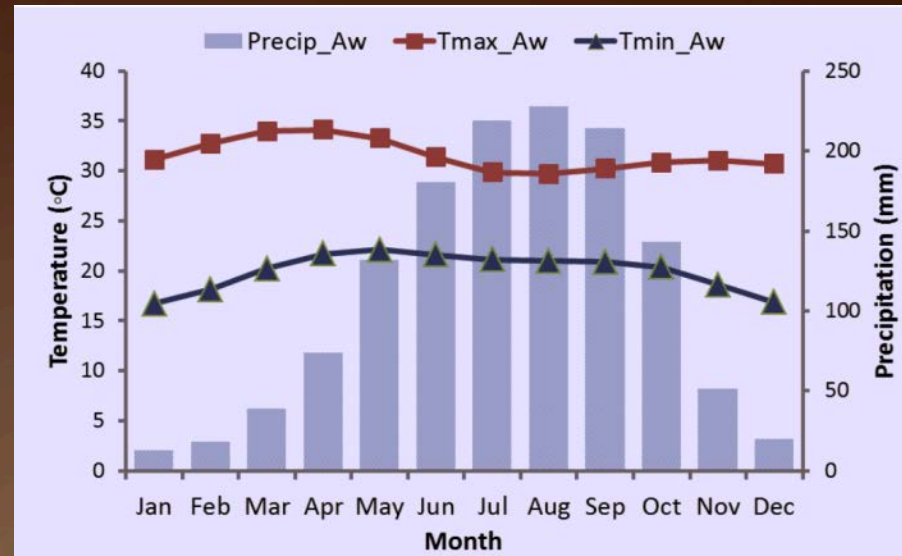
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Climate Zones: Haiti

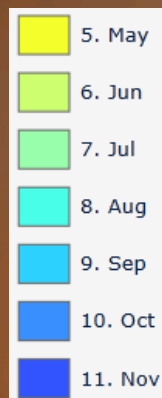
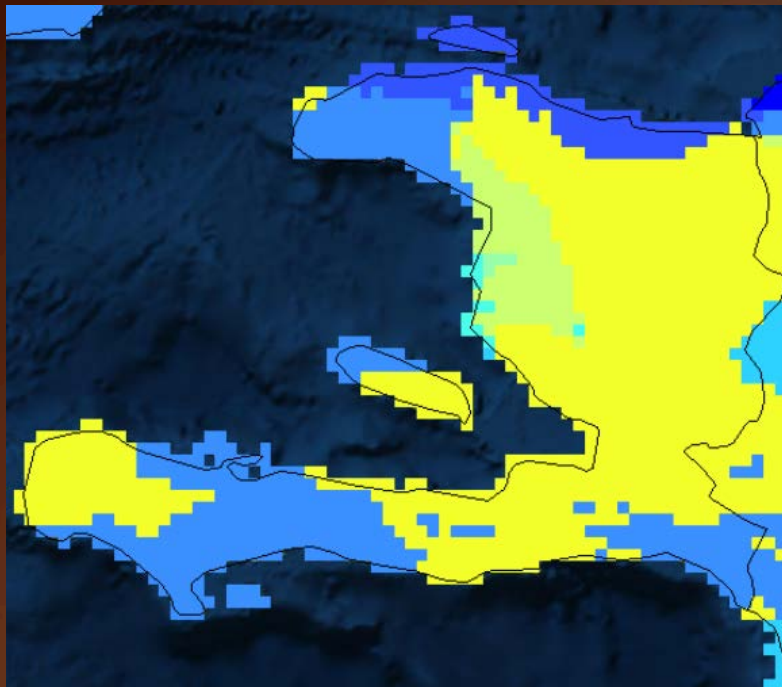
Average monthly temperature and precipitation is presented below according to the Köppen-Geiger Climate classification.



Zone: N_Aw

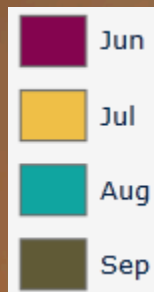
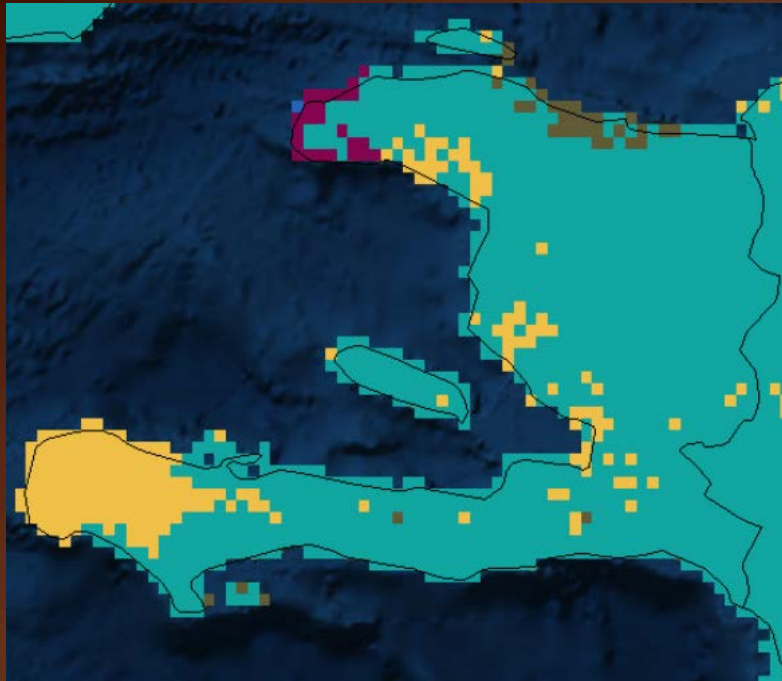


Climate of Haiti: Month of Maximum Precipitation



Month of maximum precipitation
compiled from the 50 year average
of the WorldClim dataset.

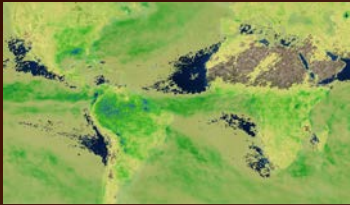
Climate of Haiti: Month of Maximum Temperature



Month of maximum temperature
compiled from the 50 year average
of the WorldClim dataset.

Monthly Climate Maps

[Click here](#) to view the maps described below



Rainfall

This map shows the accumulated rainfall for the past month. Updated monthly.
-NASA Earth Observations



Consistent Above and Below Average Precipitation

Areas with consistent above average monthly rainfall over the past 3 months may indicate increased mosquito breeding sites which may lead to increased mosquito-borne disease transmission. Areas with consistent below average rainfall may also indicate increased water storage or ponding which can provide additional habitat for mosquito species that lay eggs in human containers, protected micro environments, or long lasting pools. Updated monthly. -NASA Earth Observations.



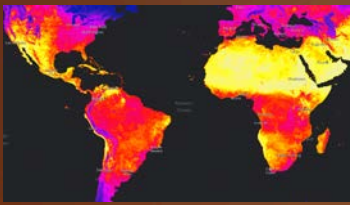
Drought Breaking Rain

Areas receiving above average rainfall for the past month and below average rainfall for the previous 12 months. Drought breaking rain may indicate recent suitable conditions for vectors and diseases in a stressed environment or human population. Updated monthly. -WorldClim, Giovanni online data system NASA GES DISC, Tropical Rainfall Measuring Mission (TRMM).



Temperature anomaly

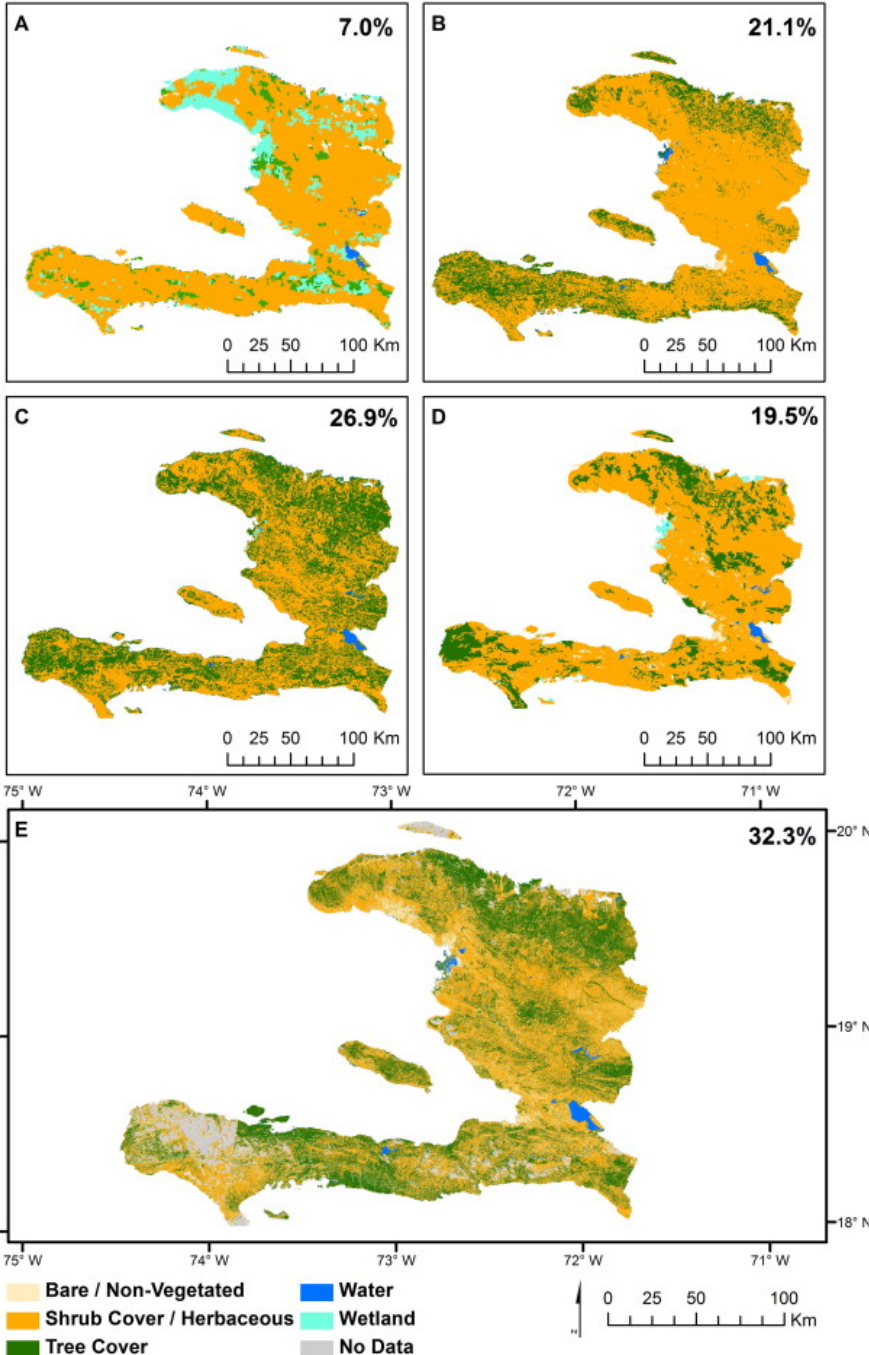
This map shows where earth's temperatures were warmer or cooler in the daytime for the past month than the average temperatures for the same month from 2001-2010. Updated monthly.
-NASA Earth Observations



Land Surface Temperature

This map shows the temperature of the earth's lands during the daytime. Updated monthly.
-NASA Earth Observations

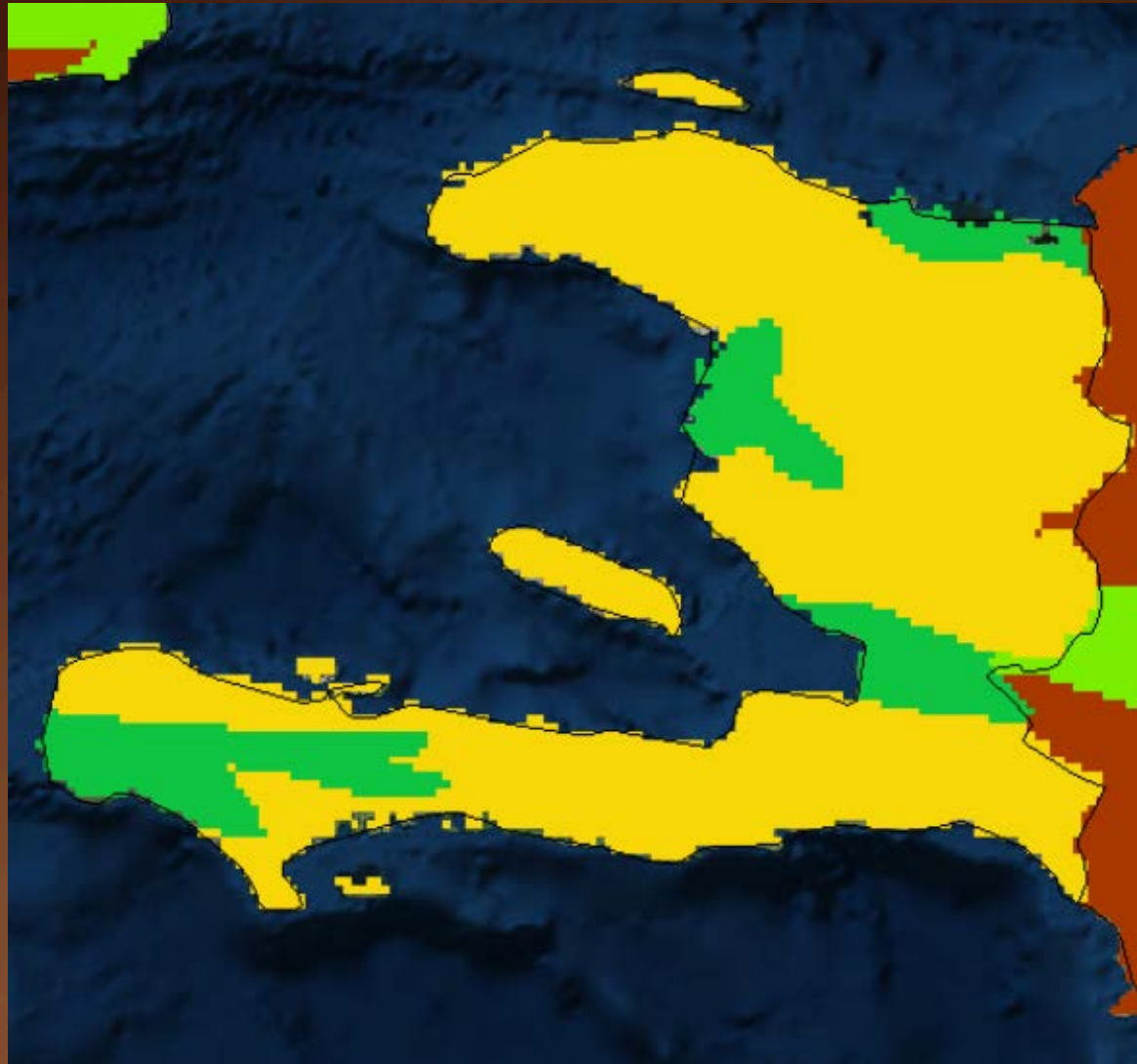
Forest Cover Estimates in Haiti



Churches, Christopher E. et al. 2014. Evaluation of forest cover estimates for Haiti using supervised classification of Landsat data. International Journal of Applied Earth Observation and Geoinformation, Volume 30, 203 - 216

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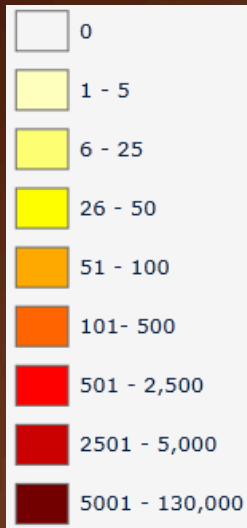
Soil Drainage



Soil Drainage (Harmonized World Soil Database 1.1; 0.02 Deg resolution)

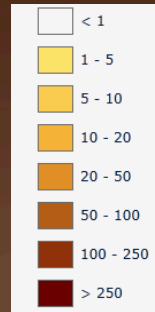
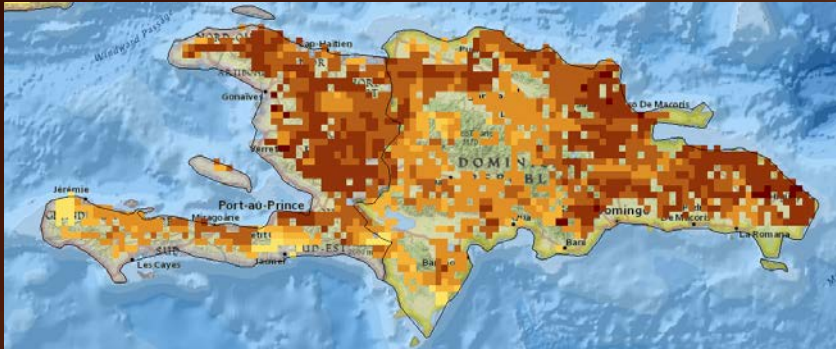
Human Density

LandScan 2011

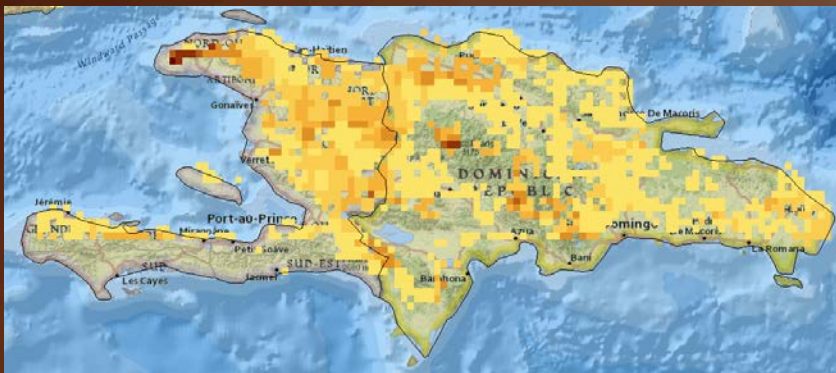


People/1 sq Km. This product was made utilizing the LandScan (2011)TM High Resolution global Population Data Set copyrighted by UT-Battelle, LLC, operator of Oak Ridge National Laboratory

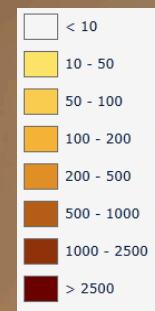
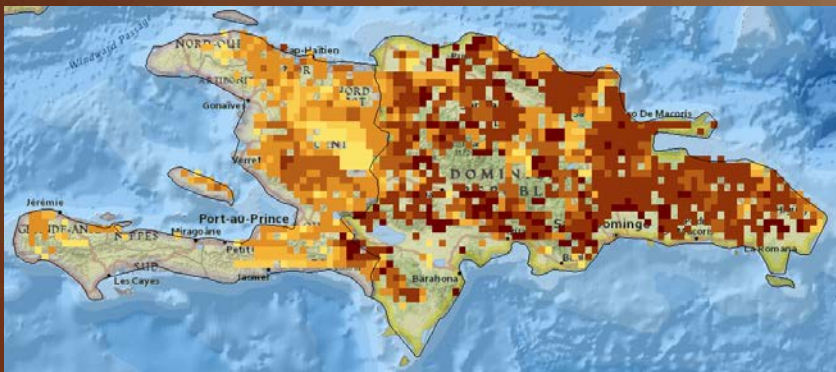
Host Densities, Food and Agriculture Organization of the United Nations, 2005



Cows per sq. km

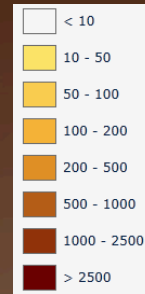


Sheep per sq. km

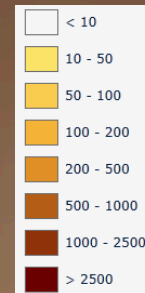
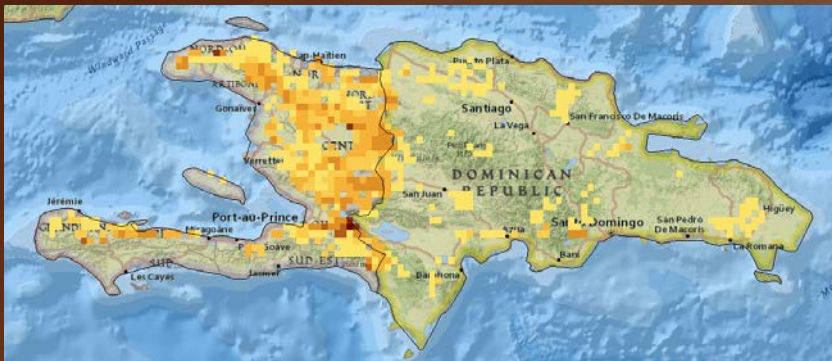


Poultry per sq. km

Host Densities, Food and Agriculture Organization of the United Nations, 2005



Pigs per sq. km



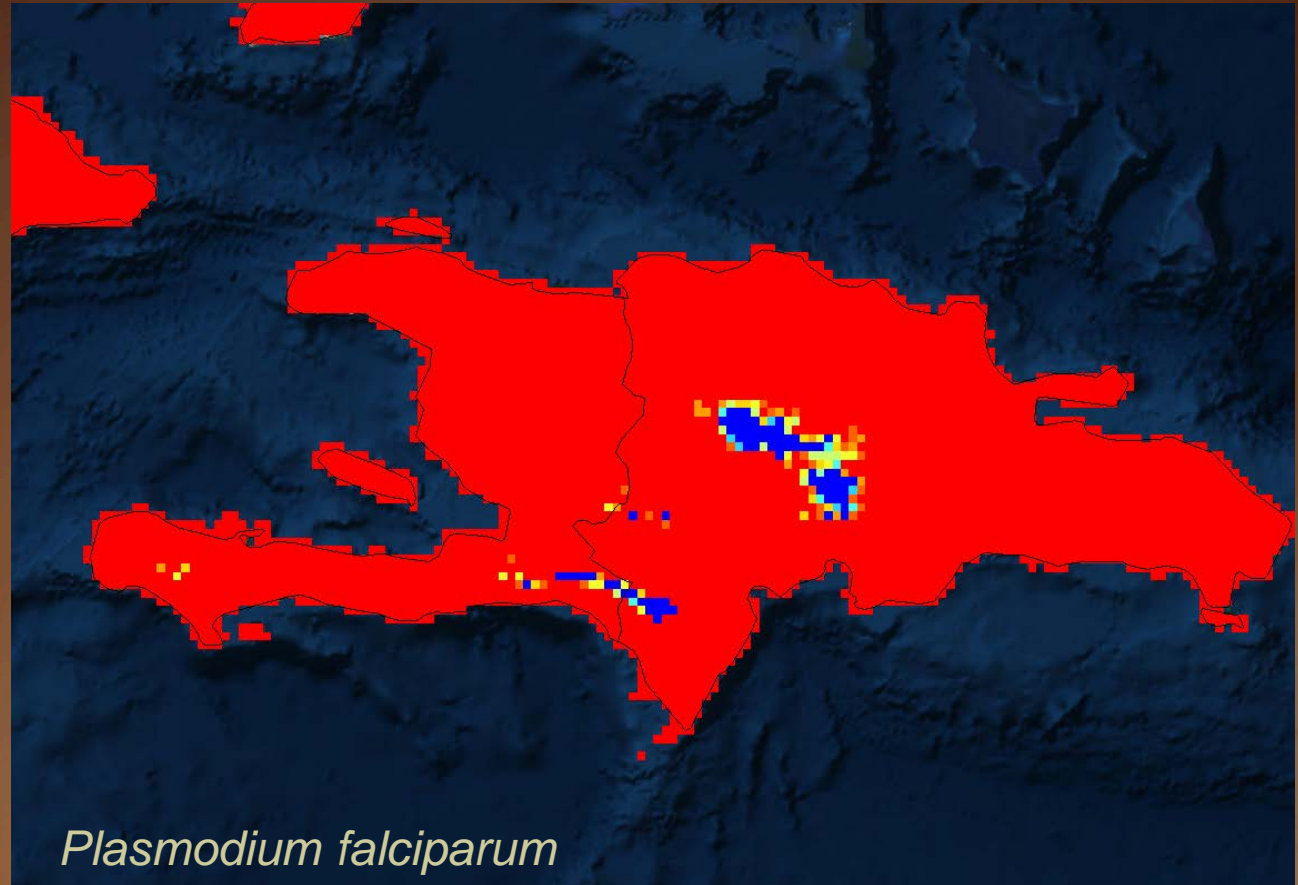
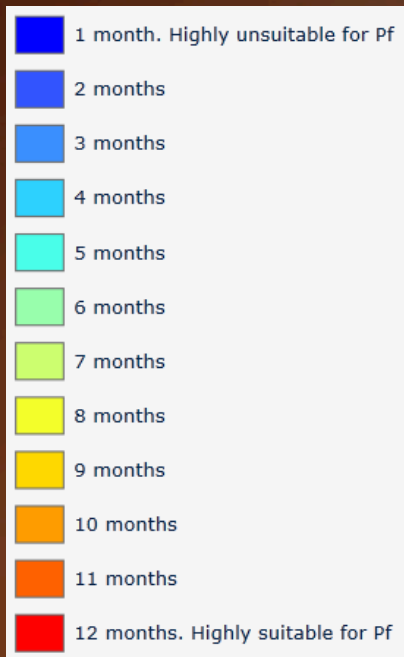
Goats per sq. km

Malaria Risk Maps

Malaria Risk Maps

The number of infectious days (by month) in which the annual temperature regime could support malaria infection.

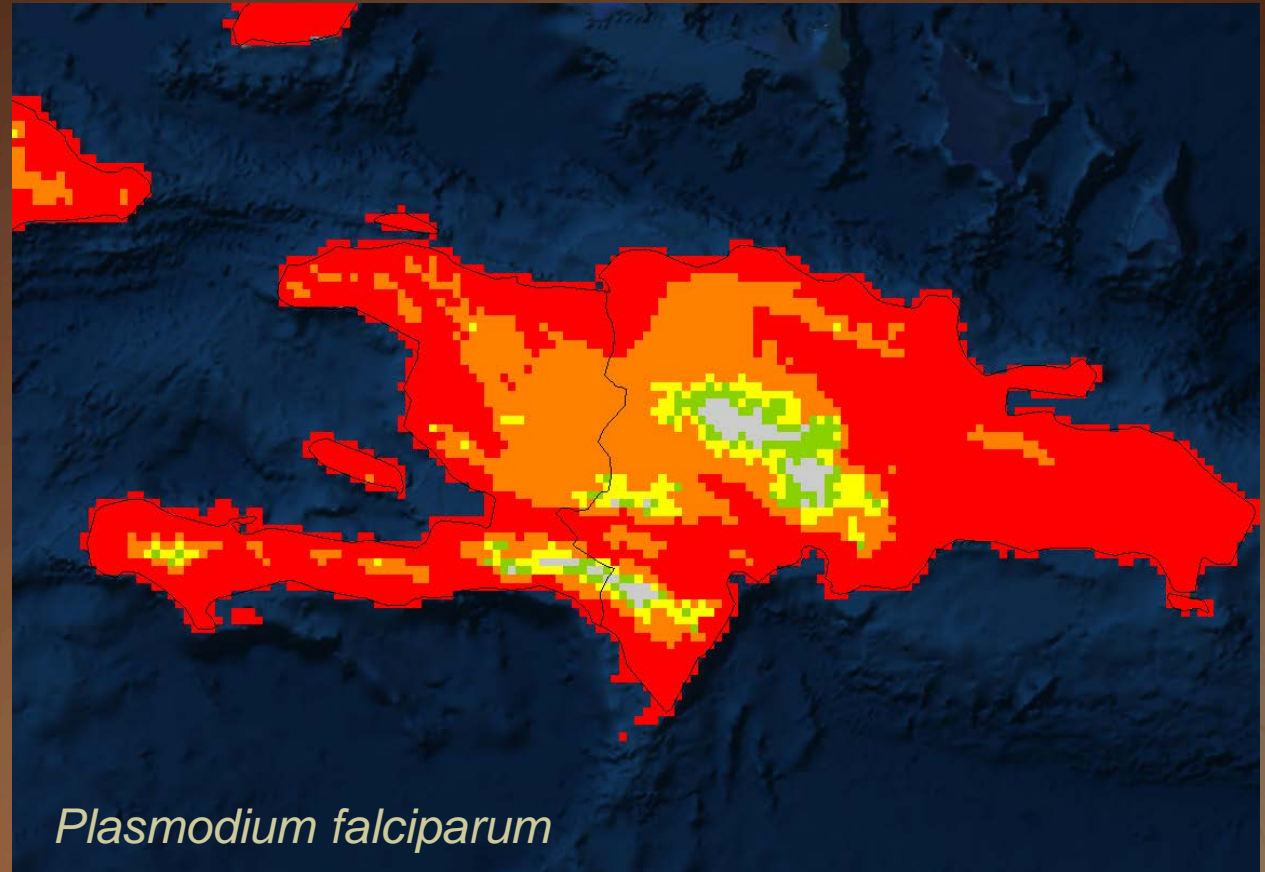
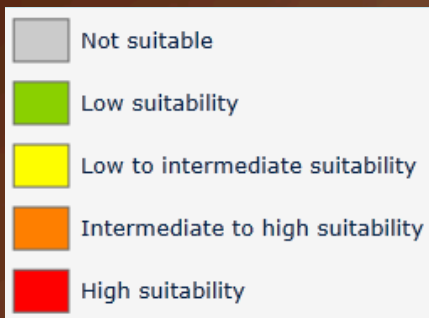
Gething et al. 2011



Malaria Risk Maps

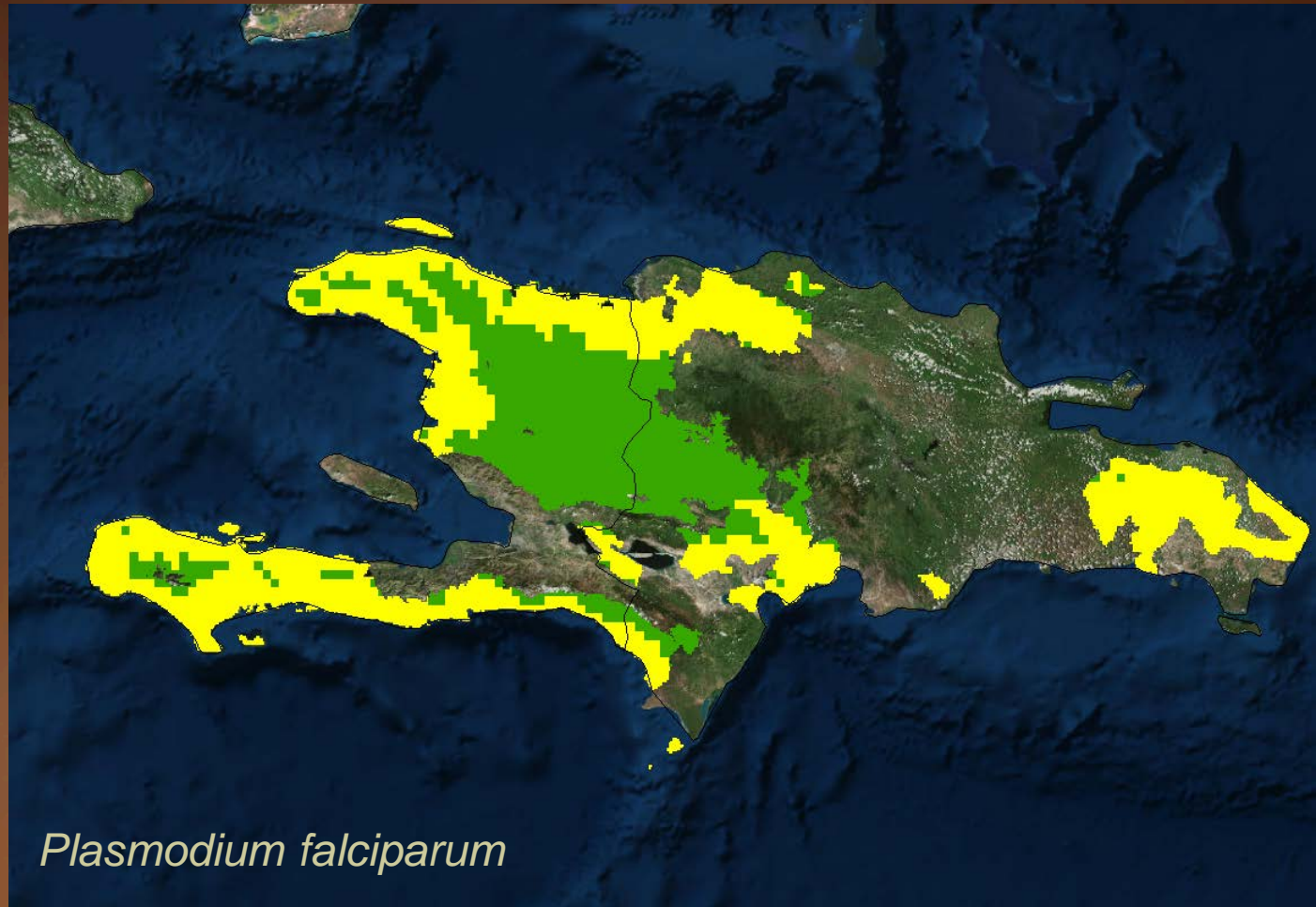
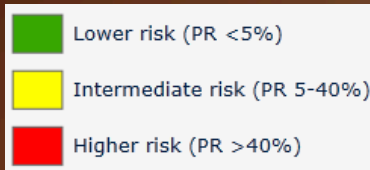
The normalized Z(T) index of temperature suitability that incorporates the duration and degree of suitability across an average year

Gething et al. 2011



Malaria Risk Maps

Stratified estimate proportion of 2-10 year olds in the general population that are infected with *P. falciparum* at any one time averaged over the 12 months of 2010.
-Malaria Atlas Project



Malaria (*Plasmodium falciparum*)

Entomological Inoculation Rate, 2010. Number of expected bites from infected mosquitoes per person, per year.

-Gething et al. 2011



References

Maxent model of *Cx. nigripalpis* Dornak, L. 2011

Maxent model of *Ae. scapularis* Dornak, L. 2011

Maxent model of *Ae. aegypti* Nyari, A. 2011

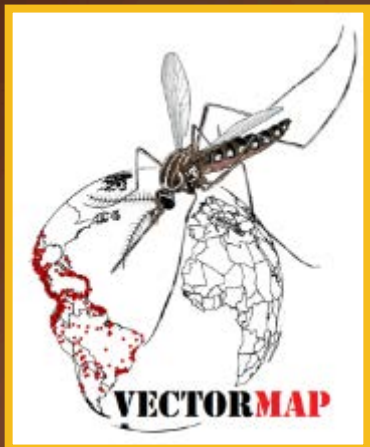
Maxent model of *An. vestitipennis* Nyari, A. 2011

Maxent model of *An. crucians* Nyari, A. 2011

Maxent model of *An. albimanus* Nyari, A. 2011

- People/1 Sq Km. This Product Was Made Utilizing The Landsat (2011)TM High Resolution Global Population Data Set Copyrighted By UT-Battelle, LLC, Operator Of Oak Ridge National Laboratory Under Contract No. DE-AC05-00OR22725 With The United States Department Of Energy. The United States Government Has Certain Rights In This Data Set. Neither Ut-Battelle, Llc Nor The United States Department Of Energy, Nor Any Of Their Employees, Makes Any Warranty, Express Or Implied, Or Assumes Any Legal Liability Or Responsibility For The Accuracy, Completeness, Or Usefulness Of The Data Set. Available At [Http://Www.Ornl.Gov/Sci/Landsat/](http://www.Ornl.Gov/Sci/Landsat/)
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- Samson, D.M. et al. 2015. New Baseline Environmental Assessment of Mosquito Ecology in Northern Haiti During Increased Urbanization. *Journal of Vector Ecology* 40: 46-58

The Walter Reed Biosystematics Unit is part of the Walter Reed Army Institute of Research and is based at the Smithsonian Institution Museum Support Center. To access taxonomic keys, the Systematic Catalog of Culicidae or to learn more about WRBU visit www.wrbu.org.



VectorMap is only as good as the data you provide. If you have collection records, models or pathogen testing results please contact the VectorMap team to learn how to contribute data at mosquitomap@si.edu.



Vector Photos Provided by
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Biosystematics Unit