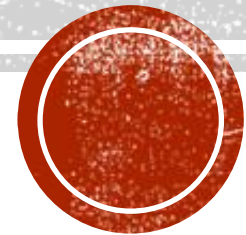


INFECTIOUS DISEASES



AGU Updates
Antar Jutla, University of Florida

SUGGESTIONS FROM LAST MEETING

- Experimental resources on where expertise exist.. Mapping, monitoring and following up with people, resources
 - This would be a huge task- but doable.
 - We have initiated efforts to achieve this task
 - Request all who are interested to complete the spreadsheet shared earlier
 - Link to map
 - <https://remote-sensing-infectious-diseases-ufl.hub.arcgis.com/>
 - Link to database
 - https://uflorida-my.sharepoint.com/:x/g/person/ajutla_ufl_edu/ETeOGJNB0J5ItOrBqV-oxIIBFxV_YoMdCMnd2qOABRrIYg?e=qUFa2m
- Showcasing our work for COP- products and services developed, limitations and further improvements.
 - Schematics being chalked out



Earth Observations and Infectious Diseases

Antar Jutla & Members of GEO Infectious Disease Small Group
University of Florida, Gainesville, FL

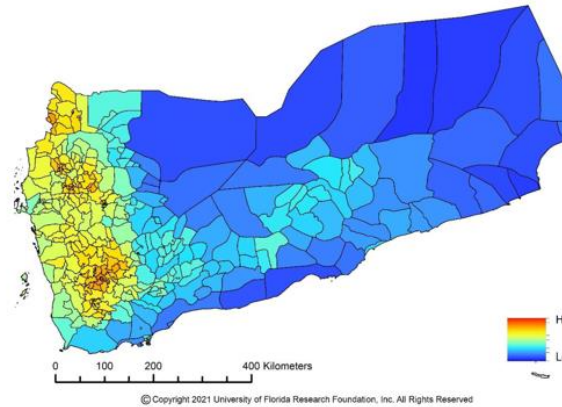
Abstract

Improve prediction and prevention systems for environmentally-sensitive infectious diseases to help reduce risks for human health by application of Earth Observations (EO) to enhance decision-relevant risk monitoring, with particular focus on underserved communities.

- 1) Develop a generalization framework for incorporating climatic and environmental data for enhancing predictive and decision-making mapping capacity to serve as the EO backbone for water- air- and vector-borne diseases; and
- 2) Develop platform for the monitoring and prediction of emerging pathogens and toxins risk in marine and coastal environments coupled with critical EO-derived coastal and inland water quality parameters.

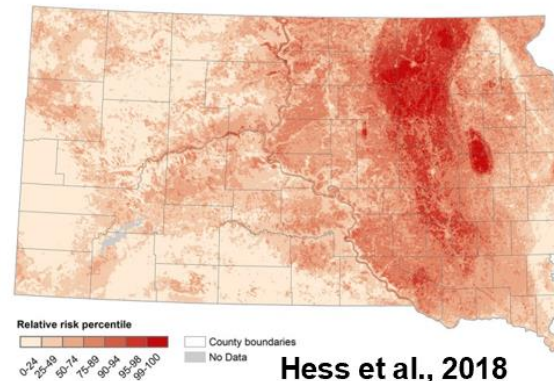
Examples of application of EO

Cholera



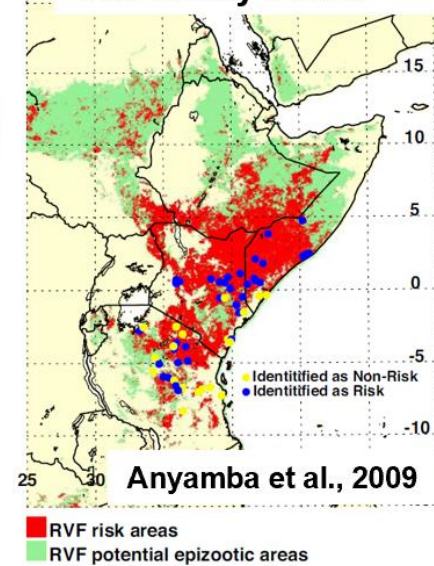
Jutla et al., 2021

West Nile Virus



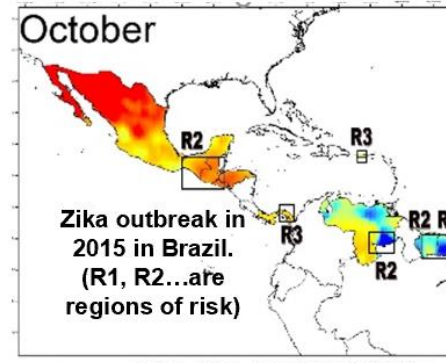
Hess et al., 2018

Rift Valley Fever



Anyamba et al., 2009

Zika



Discussion points

- Identification of critical EO and prediction requirements for health, specifically for evolutionary aspects of pathogens.
- What data, surveillance systems and tools are currently being used?
- What data and surveillance systems and tools are required to be able to measure risk of disease outbreak in future?
- Enhance integrated modeling of disease risk or prediction of environmental drivers of disease and other health outcomes.
- Understand links between environmental and climate change, food quality and nutrition, and health.
- Predict when, how, and where diseases will emerge and identify the populations most at risk and most vulnerable
- Earth observation and health equity justice
- Communication across aisle (other disciplines)

MEETING MINUTES 04/05/2021

- COVID-19 provided opportunity to explore and advance integration of earth observations with epidemiological modeling. This is because there is a public conscience and attention on what these models can (or cannot) do. This can also provide a carving space for complementary expertise in geosciences.
- Need to understand evolutionary processes- specifically for viruses.
 - Immune systems and integration of animal science aspects (especially for zoonotic diseases)
 - Resolve scale issues of where pathogens are and what earth observations can provide.
 - EO cannot be useful for all infectious pathogens.
 - Need to develop comprehensive understanding on mutation of viruses so that proxy EOs can be identified.
- A need for a space for creation of actionable knowledgebase within geosciences community. Perhaps a policy document need to be prepared.
- Can EO be used as personal or personalized medicine?
 - May be both but needs quantification.
- How can EO based methods and algorithms can be communicated to “the other side”- public health and medicine? Is there sufficient trust or effective communication channels?
- A need for a review article that can summarize history of EO in predicting various infectious pathogens (or develop proxies for emergence of pathogens). While all agreed that this would be a good idea, yet this would be a mammoth task and we will continue discussion on it in our next meeting. One of the ways to do it is to gage interest of group members and assign particular pathogen for summary. Other ways would include thinking of a possibility to discuss availability of resources in terms of a post doctoral scientist.



IF YOU ARE HERE, IT IMPLIES

- AGU internet connection is unstable (or I am at location where it is unstable)
- My computer cannot connect to internet
- Internet speed is slow.

