D-MOSS: An integrated dengue early warning system driven by Earth Observations

The D-MOSS project is funded by the UK Space Agency's International Partnership Programme.

Overview: The Dengue forecasting MOdel Satellite-based System (D-MOSS) project is developing a dengue fever early warning system. The tool generates several months advance warning of likely dengue outbreaks. D-MOSS became live in Vietnam in June 2019. It is now being made available to an additional six countries in the region.

D-MOSS benefits:
- Probabilistic forecasts of dengue outbreaks issued every month, up to seven months in advance.
- Seasonal forecasts of water availability, at a catchment scale.
- Visualisation of forecast number of dengue cases and water availability indicators presented in both English and the local language.
- Supporting information on recommended actions to be taken, provided by the decision makers.

Key technical features:
- Incorporation of a variety of Earth observation (EO) data products ranging from historical observations to the latest state-of-the-art missions.
- Hydro-meteorological and societal parameters are analysed in order to infer dengue fever outbreaks.
- A new forecast is issued every month and during outbreaks the forecast can be issued on a weekly basis.
- Web-based visualisation system and numerical model forecasting engine deployed on commercial cloud services which can be accessed via desktop/laptop devices with an internet connection.
- Open-source solutions are employed where possible together with widely known development languages and tools.
- Built in capability to replicate anywhere in the world.

Our Vision: To see D-MOSS become a key factor in reducing dengue fever worldwide.

D-MOSS: Dengue forecasting MOdel Satellite-based System

Dengue is the fastest growing mosquito borne viral infection in the world today. It is present in over 150 countries, and approximately 40% of the world’s population live in countries where dengue is a daily risk.

D-MOSS: A new forecast is issued every month and during outbreaks the forecast can be issued on a weekly basis.

D-MOSS: The Dengue forecasting MOdel Satellite-based System (D-MOSS) project is developing an integrated dengue fever forecasting system incorporating EO data and seasonal climate forecasts to issue warnings on a routine basis. D-MOSS became live in Vietnam in June 2019. It is now being made available to an additional six countries in the region.

D-MOSS benefits:
- Probabilistic forecasts of dengue outbreaks issued every month, up to seven months in advance.
- Seasonal forecasts of water availability, at a catchment scale.
- Visualisation of forecast number of dengue cases and water availability indicators presented in both English and the local language.
- Supporting information on recommended actions to be taken, provided by the decision makers.

Key technical features:
- Incorporation of a variety of Earth observation (EO) data products ranging from historical observations to the latest state-of-the-art missions.
- Hydro-meteorological and societal parameters are analysed in order to infer dengue fever outbreaks.
- A new forecast is issued every month and during outbreaks the forecast can be issued on a weekly basis.
- Web-based visualisation system and numerical model forecasting engine deployed on commercial cloud services which can be accessed via desktop/laptop devices with an internet connection.
- Open-source solutions are employed where possible together with widely known development languages and tools.
- Built in capability to replicate anywhere in the world.

Project team
- The D-MOSS project is funded by the UK Space Agency’s International Partnership Programme.
- The United Nations Development Programme, the World Health Organization, the Vietnamese Institute of Meteorology, Hydrology and Climate Change, the Pasteur Institute Ho Chi Minh City, and the National Institute of Hygiene and Epidemiology in Vietnam.

Gina Tsarouchi (g.tsarouchi@hrwallingford.com) and Darren Lumbroso, HR Wallingford