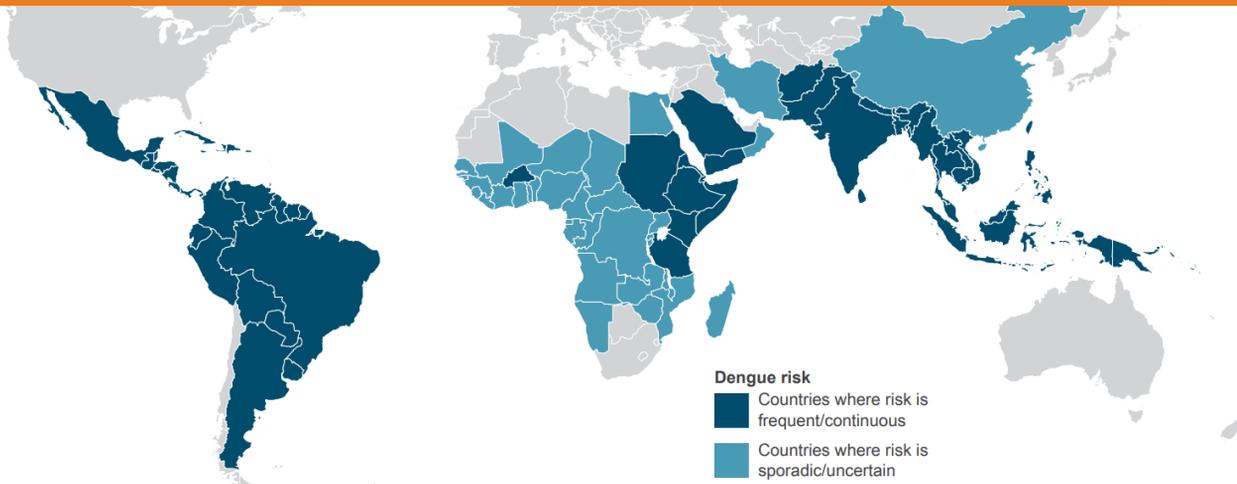




D-MOSS

Dengue forecasting **MO**del **S**atellite-based **S**ystem
Supplying dengue fever and water availability forecasts for Vietnam

The first fully integrated dengue fever forecasting system incorporating Earth Observation data and seasonal climate forecasts to issue warnings on a routine basis.



Dengue risk
 Countries where risk is frequent/continuous
 Countries where risk is sporadic/uncertain

KEY FACTS:



FASTEST-GROWING mosquito-borne viral infection in the world

Present in over **150 COUNTRIES**



Found in **TROPICAL** and **SUB-TROPICAL CLIMATES**

40% of the

WORLD'S POPULATION live in countries where dengue is a **DAILY RISK**

390 MILLION cases per year

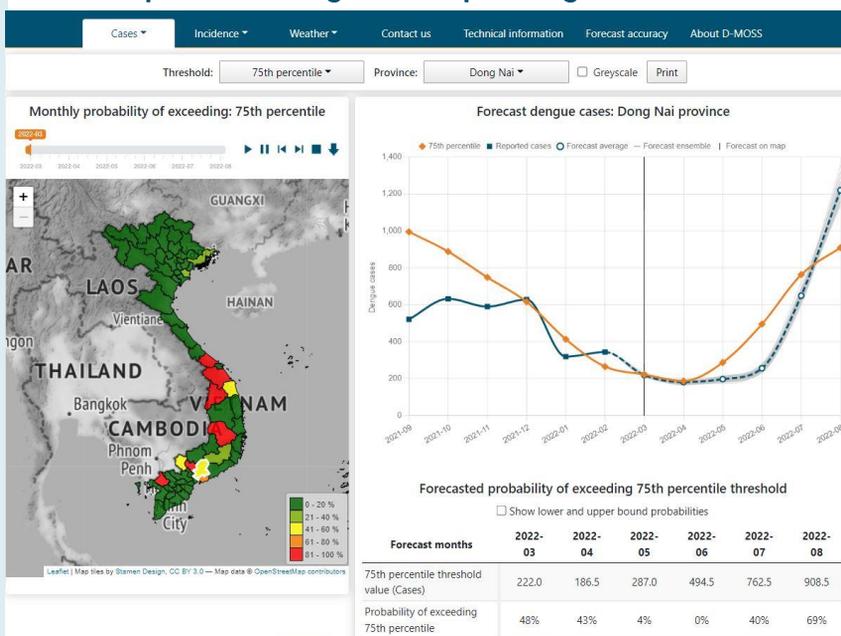


\$ 8 BILLION in global costs

WHAT IS D-MOSS?

- Dengue forecasting system led by HR Wallingford, funded by the UK Space Agency's International Partnership Programme.
- Uses **Earth Observation data** to give early warning for dengue fever outbreaks at province and district level.
- **First became operational in Vietnam in 2019**, and Malaysia and Sri Lanka in 2020. Discussions are underway for its implementation in more countries in South East Asia and Latin America.
- Provides up to six months advance warning of likely outbreaks of dengue fever, allowing local communities to eliminate mosquito-breeding sites and reduce the incidence of dengue.

D-MOSS portal showing an example dengue fever forecast:

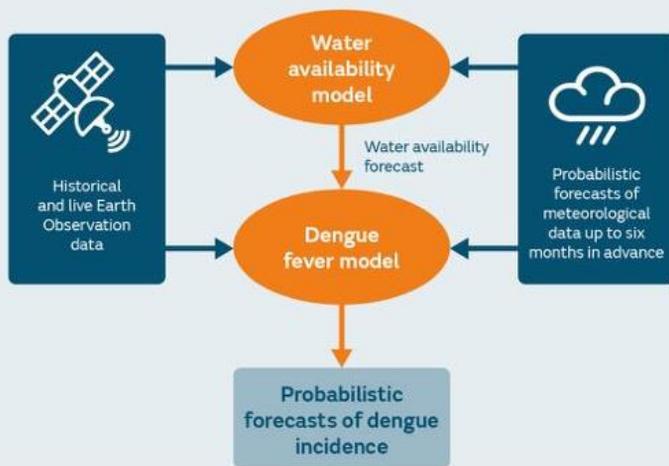




SCIENTIFIC METHODOLOGY:

1. The Met Office seasonal forecasts are integrated into a hydrological model, where the outputs are then combined with Earth Observation-derived variables to generate monthly forecasts of water availability.
2. An ensemble of statistical models is used to forecast disease incidence. These models use environmental and socio-economic Earth Observation data, as well as the water availability forecasts, Met Office seasonal forecasts, and a number of other covariates that are important, such as number of recent dengue cases, land cover, and population density.
3. The system is calibrated against historical data.

Scientific inputs into the D-MOSS system:



BENEFITS:

- Probabilistic forecasts of dengue outbreaks issued every month, up to six months in advance.
- Seasonal forecasts of water availability, at a catchment scale.
- Built in capability to replicate anywhere in the world and for a variety of other diseases.
- Information provided includes forecast number of dengue cases, disease incidence, transmission months, probability of exceeding outbreak thresholds and water availability indicators presented in both English and the local language.

“Using D-MOSS has helped reduce the number of dengue cases and mortality rate.”

“D-MOSS enables provinces to proactively prepare comprehensive and meaningful actions, responses and interventions.”

“D-MOSS is helping bridge the gap between early warning and early action.”

Users in Vietnam include:

National Institute of Hygiene and Epidemiology

Pasteur Institute Ho Chi Minh City

Pasteur Institute Nha Trang

Thay Nguyen Institute of Hygiene and Epidemiology

General Department of Preventive Medicine, Ministry of Health

“D-MOSS’s accurate forecasts have helped us to save resources.”

“D-MOSS has helped policy making officials to develop dengue-prevention and control strategies in advance of an outbreak.”

“D-MOSS is easy to use and has a user-friendly interface.”

Funder:

Partners:

