

A BioPortal System For Global Foot-And-Mouth Disease Surveillance

Perez AM (1,2); Willeberg P (1); Ascher M (1); Whedbee Z (1); Thurmond MC (1)

(1) Center for Animal Disease Modeling and Surveillance, UC Davis, USA
(2) CONICET and Fac. Cs. Veterinarias UNR, Argentina

ABSTRACT

Prerequisite for global control and eradication of foot-and-mouth disease (FMD) is development of a global FMD surveillance program, the main mission of which would be to provide high quality, accurate, real-time FMD surveillance service on a global scale. This paper describes the attributes of a web-based information system, referred to as the BioPortal, that became operational in January 2007 for global FMD surveillance (<https://fmdbiportal.ucdavis.edu>).

KEYWORDS: Foot-and-mouth disease, global, surveillance, BioPortal

INTRODUCTION

Establishment of a global foot-and-mouth disease (FMD) surveillance program will be critically important before success can be achieved toward world-wide control and eradication of the disease.

A key prerequisite for formal, purposeful global surveillance will be an operational IT system capable of capturing surveillance-related data and information and of routing it in real time to decision makers for assessment and analysis.

The objective of this paper is to describe some of the attributes of a currently operational web-based information system, referred to as the BioPortal, for global FMD surveillance (<https://fmdbiportal.ucdavis.edu>).

TEXT

The FMD BioPortal is a web-based system, developed as part of a multi-agency effort, that makes FMD-related global data available in near real-time via the web.. There is no fee or charge for its use.

The FMD BioPortal can integrate data in disparate formats with various adapter tools. Users can operate the program at different levels of security, in cases where restricted data are being considered.

Currently, the databases available in unrestricted access to the FMD BioPortal have been made available for public use by various organizations and through public websites. Databases available at the FMD BioPortal include the FMD News database, FMD serotype data for samples submitted since 1957 to the World Reference Laboratory in Pirbright, England; the OIE WAHID FMD database, and GenBank FMDV sequence submissions. For users with the required permits that allow restricted access, selected databases are available.

Since becoming operational in January 2007, 370 users from 46 countries or international organizations have subscribed to the FMD BioPortal. Users can search multiple databases, create tables and apply graphics, download selected records to Excel files, analyze data, align FMD virus sequences, build and compare phylogenetic trees of virus isolates, and display temporal, spatial, and phylogenetic relationships among isolates.

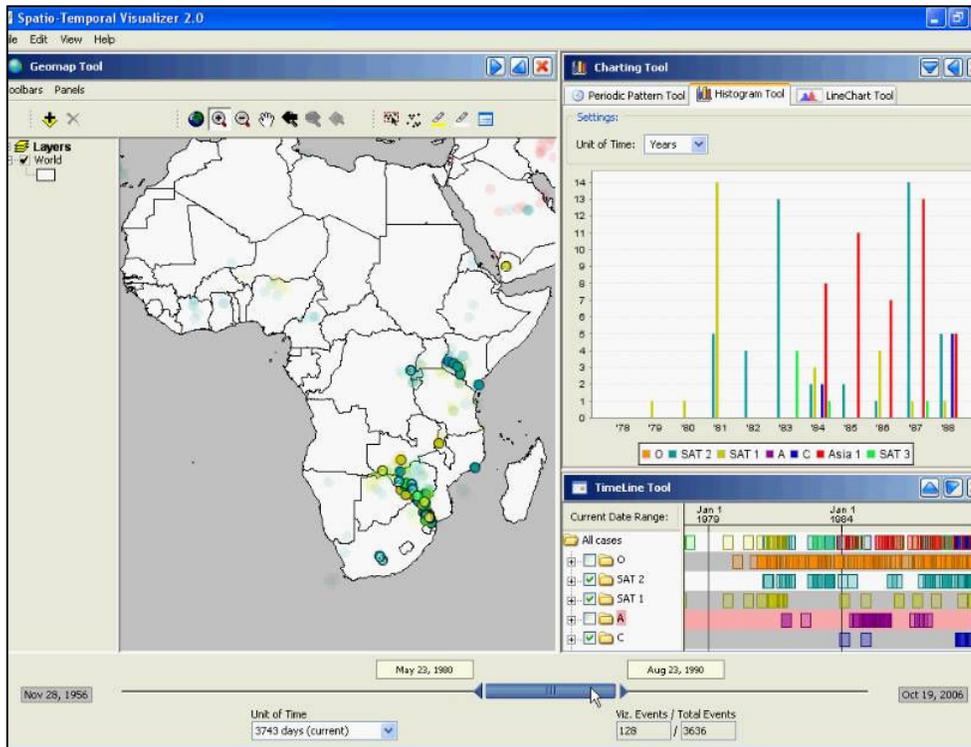


Figure 1: Screenshot of the FMD BioPortal space-time visualizer tool displaying the location of serotype SAT 1 (yellow) and SAT 2 (light blue) samples submitted from African countries to the FMD World Reference Laboratory from 1956 through 2006. Isolates collected between 1980 and 1990 are depicted, whereas the location of isolates collected before and after those dates is indicated with a lighter color in the map. The right panel shows the temporal display of the isolates.

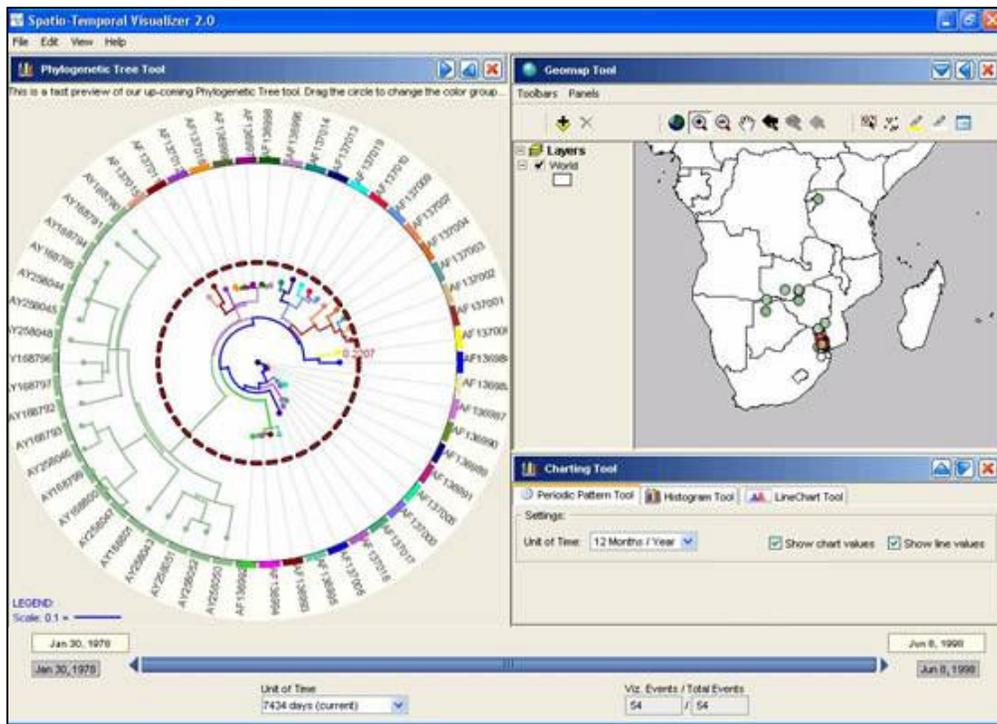


Figure 2: Screenshot of the FMD BioPortal STG visualizer tool displaying the location of serotype SAT samples from southern African countries available in the GenBank database from 1978 through 1996. The left panel shows the phylogenetic relation of the isolates.

CONCLUSIONS

Use of the FMD BioPortal will enhance the ability of countries to prepare for and respond to FMD epidemics. Future initiatives will involve development of BioPortal prototypes for animal diseases other than FMD, including, for example, avian influenza and Rift Valley fever. Interested research groups and agencies are invited to participate in this multiagency effort.

ACKNOWLEDGMENTS

The study was supported in part by the U.S. National Center for Medical Intelligence.