



GEO-ZTONLINE.IT, A WEB-BASED GIS FOR CHIKUNGUNYA AND DENGUE SURVEILLANCE IN EMILIA-ROMAGNA REGION, ITALY

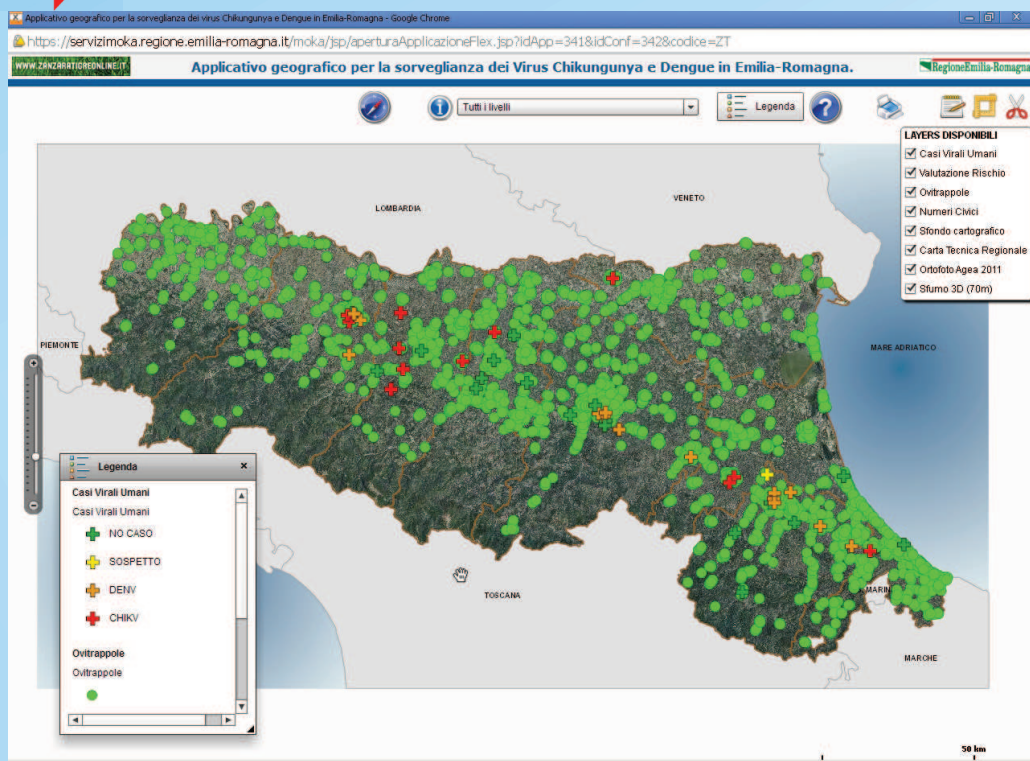
Alessandro Albiери, Romeo Bellini, Marco Carrieri
 Centro Agricoltura Ambiente "G. NICOLI", Medical & Veterinary Entomology Dept., Crevalcore (BO), Italy <http://www.caa.it/entomology>
 Paola Angelini - Emilia-Romagna Region Public Health Service, Bologna, Italy
 Claudio Venturelli - DSP Cesena, AUSL Romagna, Cesena, Italy
 Luigi Colò, Giovanni Ciardi - Emilia-Romagna GIS Service, Bologna, Italy

Introduction

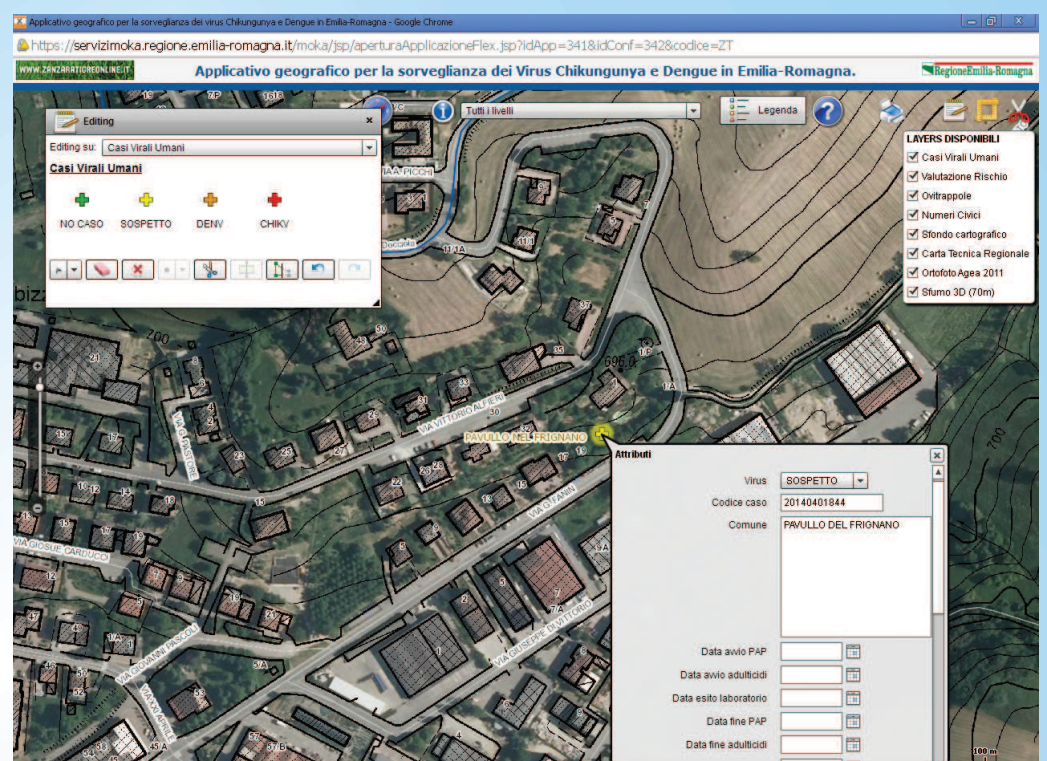
The *Aedes albopictus* management group of Emilia-Romagna Region, Italy, is developing in a multidisciplinary context (entomology, epidemiology, informatics, public health) a Web-Based Geographic Information Systems (Web-GIS) that enable storage and processing of spatial monitoring and public health data. GEO-ZTONLINE.IT was developed using the regional Content Management System (CMS) Moka (www.mokagis.it) based on ArcGIS Server technology in particular the Flex development framework that allows to create very productive applications in Flash technology. At the moment the Web-GIS allow the following functions: supporting the geolocation of human cases (suspected and confirmed) of Chikungunya (CHIKV) and the Dengue (DENV) viruses in the regional updated topographic geo-database, human cases data entry by specific form, interfacing with *Aedes albopictus* regional monitoring data (2,650 ovitraps, Carrieri et al. 2011), printing function, measure functions, navigation in the map, automatic extraction of premises to be treated around human cases (following the regional protocol) to assist professionals and human care decision-makers control and surveillance of CHIKV and DENV.



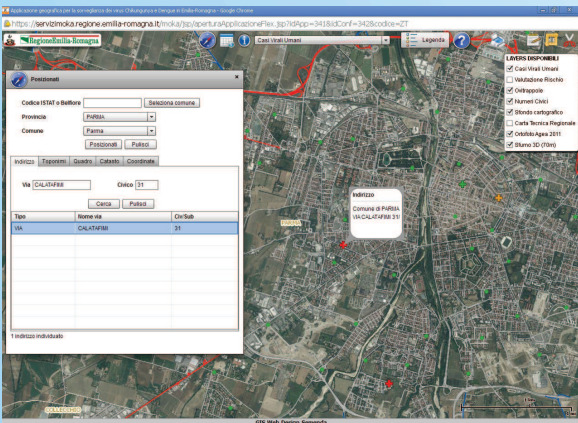
GEO-ZTONLINE.IT features



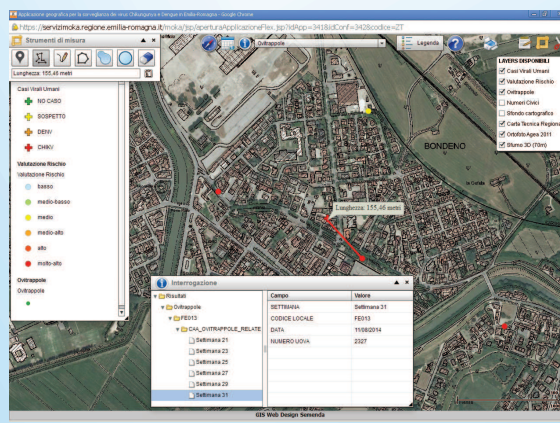
Web-GIS main window; on the top the functions buttons; on the bottom left, the legend.



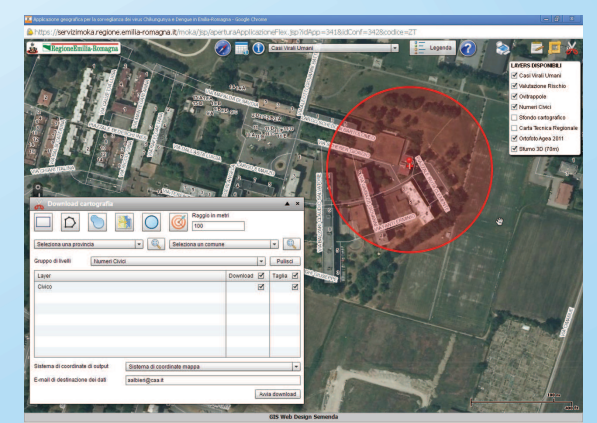
Human case georeferencing with the data of mosquito control activities (larvicides date, adulticide date, etc.).



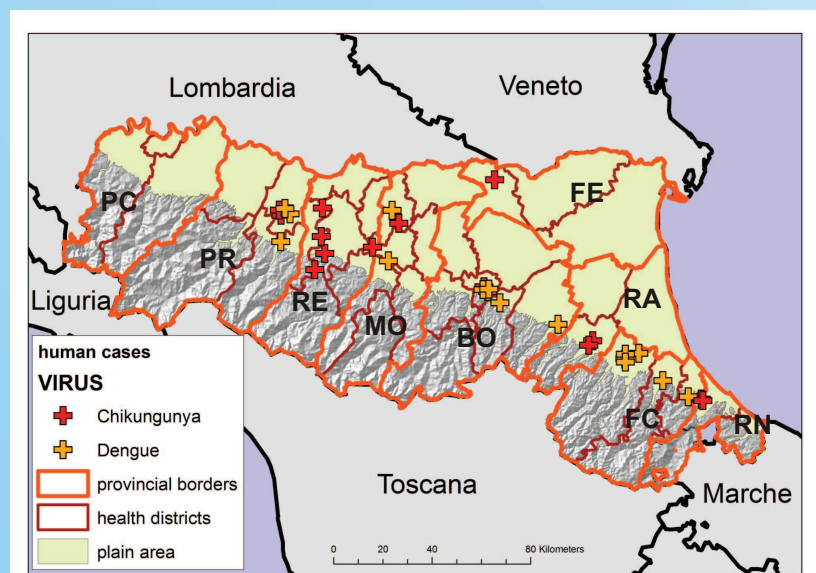
Search address and georeference human case



Evaluate epidemic risk on the base of ovitraps data and egg thresholds (Carrieri et al. 2012)



Extract premises list in a 100 meters buffer for the mosquito control activities



Human cases data extracted from GEO-ZTONLINE.IT were used to create a thematic map of CHIK and DEN virus cases in Emilia-Romagna region. The number of human cases registered in 2014 (from January to September) by province are reported in the table below (updated to 30th September 2014).

Province	VIRUS		Total cases
	CHIKV	DENV	
Bologna	1	5	6
Forlì-Cesena		6	6
Ferrara	1		1
Modena	1	2	3
Parma	2	3	5
Ravenna	2		2
Reggio Emilia	5		5
Rimini	2		2
Total	14	16	30

GEO-ZTONLINE.IT will soon be enriched with species and risk spatial modeling raster layers creating a geo-catalog of medical entomology data in Emilia-Romagna region and other function will be developed to better integrate *Ae. albopictus* monitoring surveillance data.

REFERENCES
 CARRIERI M., A. ALBIERI, P. ANGELINI, F. BALDACCHINI, C. VENTURELLI, S. MASCALI ZEO, R. BELLINI. Surveillance of the chikungunya vector *Aedes albopictus* (Skuse) in Emilia-Romagna (northern Italy): organizational and technical aspects of a large scale monitoring system. *J. Vec. Ecol.* 2011, 36(1): 108-116
 CARRIERI M., P. ANGELINI, C. VENTURELLI, B. MACCAGNANI, R. BELLINI. *Aedes albopictus* (Diptera: Culicidae) population size survey in the 2007 Chikungunya outbreak area in Italy. II: Estimating epidemic thresholds. *J. Med. Entomol.* 2012, 49(2): 388-399; DOI: <http://dx.doi.org/10.1603/ME10259>