Geophysical Research Abstracts
Vol. 15, EGU2013-1956, 2013
EGU General Assembly 2013

Using a new high resolution regional model for malaria that accounts for population density and surface hydrology to determine sensitivity of malaria risk to climate drivers

Adrian Tompkins (1), Volker Ermert (2), and Francesca Di Giuseppe (3)

(1) ICTP, Earth System Physics, Trieste, Italy (tompkins@ictp.it), (2) Institute of Geophysics and Meteorology, University of Cologne, Germany, (3) ECMWF, Reading, UK

In order to better address the role of population dynamics and surface hydrology in the assessment of malaria risk, a new dynamical disease model been developed at ICTP, known as VECTRI: VECtor borne disease community model of ICTP, TRIeste (VECTRI). The model accounts for the temperature impact on the larvae, parasite and adult vector populations. Local host population density affects the transmission intensity, and the model thus reproduces the differences between peri-urban and rural transmission noted in Africa. A new simple pond model framework represents surface hydrology. The model can be used on with spatial resolutions finer than 10km to resolve individual health districts and thus can be used as a planning tool. Results of the models representation of interannual variability and longer term projections of malaria transmission will be shown for Africa. These will show that the model represents the seasonality and spatial variations of malaria transmission well matching a wide range of survey data of parasite rate and entomological inoculation rate (EIR) from across West and East Africa taken in the period prior to large-scale interventions. The model is used to determine the sensitivity of malaria risk to climate variations, both in rainfall and temperature, and then its use in a prototype forecasting system coupled with ECMWF forecasts will be demonstrated.