**Mapping Malaria Risk in Africa (MARA) Low-end Information Tool (LITe)**

| **Description** | MARA is a biological model of *Falciparum* malaria transmission that sets decision rules which govern how minimum and mean temperature constrain the development of the parasite and the vector and how precipitation affects survival and breeding. MARA determined the decision rules by reviewing laboratory and field studies throughout Sub-Saharan Africa and looking at current malaria distribution maps. This biological model approximates the current boundaries of malaria distribution across the continent quite well. The model uses three variables to determine any geographic location’s climatic suitability: mean monthly temperature, winter minimum temperature, and total cumulative monthly precipitation. An important distinction between this model and others is that the MARA decision rules were developed using fuzzy logic to resolve the uncertainty in defining distinct boundaries dividing malarious from nonmalarious regions. The MARA/ARMA decision rules stipulate that both temperature and precipitation have to be favorable at the same time of the year to allow transmission, and suitable conditions have to continue long enough for the transmission cycle to be completed. Five months were considered a sufficient length of time for conditions to be suitable for stable transmission.

MARA LITe is a stand-alone query system of the MARA database. MARA LITe converts the MARA relational database (29 separate tables) into a flat structure.

| **Appropriate Use** | MARA LITe can be used to create a baseline against which future increases or decreases in malaria can be quantified. These baselines can be used in conjunction with climate change scenarios to project possible populations at risk and future prevalence of *Falciparum* malaria for a given region.

| **Scope** | MARA has not been validated outside of Sub-Saharan Africa.

| **Key Output** | Calculations of populations at risk and graphic display of regions showing areas with potential *Falciparum* malaria transmission.

| **Key Input** | Specified regions.

| **Ease of Use** | Relatively easy to use.

| **Training Required** | None.

| **Training Available** | Comprehensive online help files exist for all aspects of the tool.

| **Computer Requirements** | MARA is implemented in GIS format.

| **Documentation** | See Contacts below.


Mapping Malaria Risk in Africa (MARA) Low-end Information Tool (LITe) (cont.)

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<th>Cost</th>
<th>MARA LITe available in CD-ROM.</th>
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