

The Current SLE/WN Epidemic Assessment

Funding for the Florida Medical Entomology Laboratory Epidemic Risk Model ended in mid-2012. The absence of funding will greatly impede our ability to produce timely updates during the 2013 arboviral transmission season. You will notice that the content of the First Update for 2013 differs from that of past updates. Specifically, the KBDI EEEV and Flavivirus analysis is missing along with the summary analysis for 2012. The current update MAY be the only update issued this year depending upon arboviral amplification and transmission patterns and future funding issues.

Results of the Modeled Water Table Depth analysis for the Florida peninsula for the first 14 weeks of 2013 are shown in **Figures 1-3**. The First 2013 FMEL Modeled Water Table Depth Epidemic Risk Model (FMEL-MWTD-ERM) for South Florida indicates seven areas of concern for Flavivirus (WNV and SLEV) amplification and potential transmission (**Figure 1**). High risk areas in Levy, Hillsborough, and Pasco Counties currently exist in the northwest region of the Florida peninsula. A large area of risk currently exists in Osceola, Polk, and Okeechobee Counties in the central Florida peninsula. In the southern third of the Florida peninsula high risk areas currently exist in St. Lucie, Palm Beach, Hendry, Collier, Monroe, Broward, and Dade Counties.

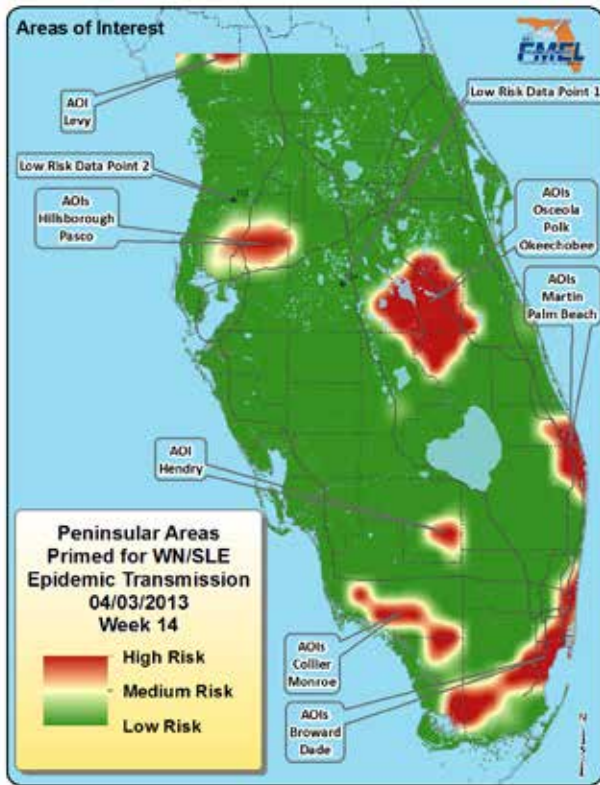
The daily water table depths for each Area Of Interest (AOI) are plotted in **Figure 3**. It is evident from the data presented in this Figure that the water table depths in all of the AOIs are tracking within the lower half of the FMEL-MWTD-ERM. In addition, the water table depths in both of the **Low Risk** areas are tracking on the dry side of the FMEL model. Most of the Florida peninsula is currently dry and many of the current AOIs may drop out of the high risk portion of the Epidemic Risk Model if the drought continues.

Few Florida counties currently have sentinel chickens in the field and there are no independent surveillance data (sentinel chickens, high wild bird and mosquito reproduction indices, virus-positive mosquito pools, or reported cases of human disease) that support ongoing Flavivirus amplification or transmission in South Florida. The South Florida avian breeding season is just beginning and environmentally-mediated contact of susceptible avian amplification hosts and mosquito vectors will be the next important step for efficient arboviral amplification in South Florida.

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SLE\WN Epidemic Risk



*Figure 1. Map of peninsular Florida indicating areas at **Medium to High** risk (highlighted in yellow and red) for arboviral (SLEV/WNV) amplification. The **Medium to High** risk areas tracked the FMEL Arboviral Epidemic Risk Model for SLEV/WNV shown in Figure 3. Focal arboviral transmission may occur in or around the designated **Medium to High** risk Areas of Interest (AOI) if bird and mosquito populations are present at sufficient levels to support arboviral amplification during the avian nesting season from April-June. Two **Low** risk areas (Data Points 1 and 2) are plotted on this Figure as well as on Figure 3.*

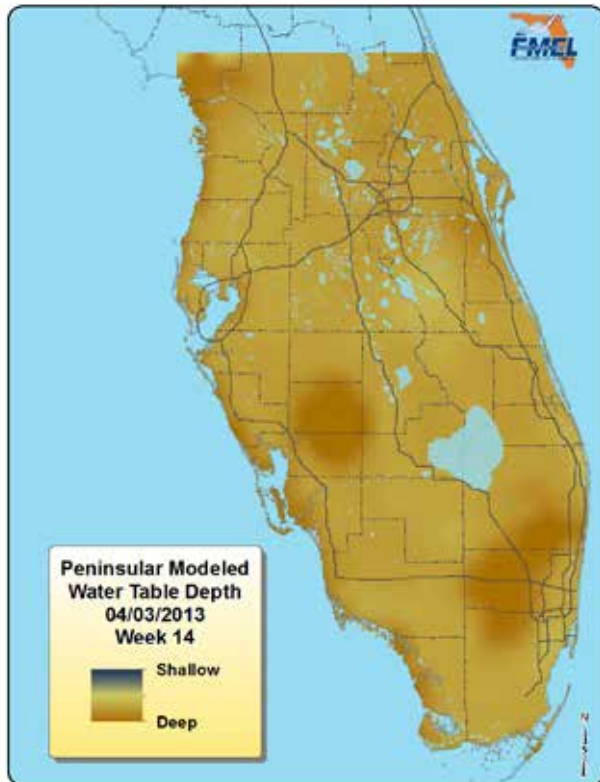


Figure 2. The current Modeled Water Table Depth profile reported for peninsula Florida. Areas highlighted in orange have a deep water table and reduced surface water. Areas highlighted in yellow have a shallower water table and an increased probability for surface water pooling and Culex mosquito production.

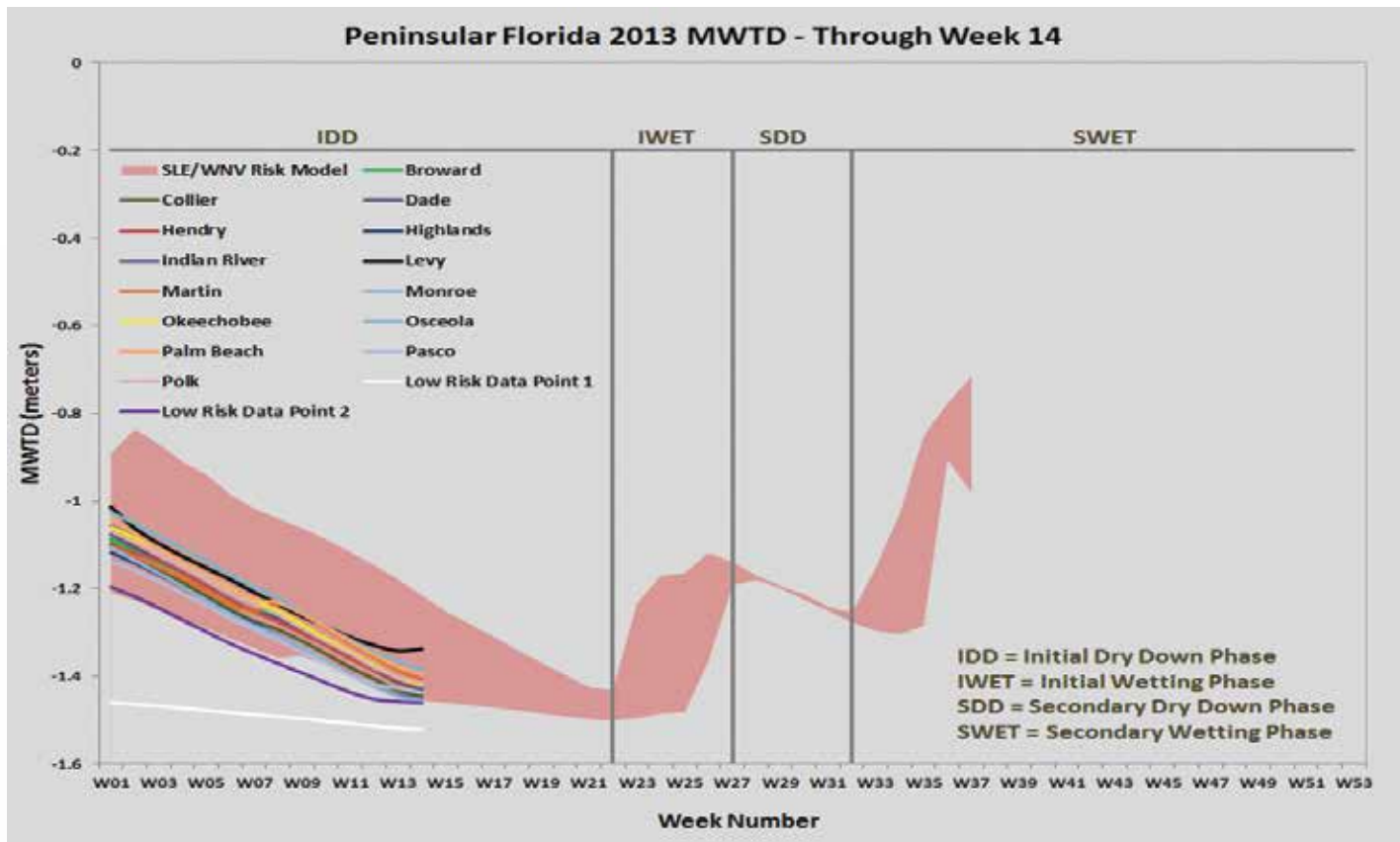


Figure 3. The weekly (averaged) MWTD values collected between **January 1 and April 3, 2013** for the areas of elevated epidemic risk shown in Figure 1. The real-time MWTD data from each Area of Interest (AOI) were compared with the FMEL Arboviral Epidemic Risk Model for SLEV/WNV generated from MWTD observations made in Indian River County during the 1977 and 1990 St. Louis encephalitis epidemics. Deviation of real-time MWTD data from the FMEL Arboviral Epidemic Risk Model for SLEV/WNV (shown in orange) may reduce the likelihood of SLEV/WNV amplification and transmission.

Three Month Precipitation and Temperature Probability Forecast

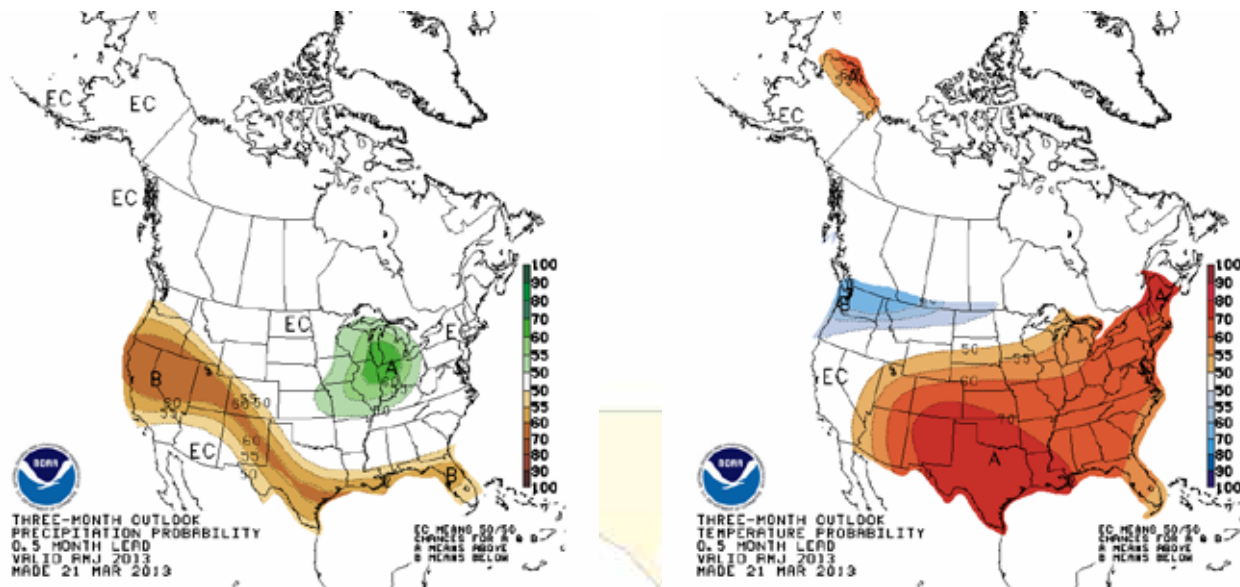


Figure 4. The colored contour lines on these two maps show the probability of two possible extreme conditions: above normal (indicated by "A") and below normal (indicated by "B"). At any geographical position on the maps, the sum of the above normal and below normal probabilities is 100%. If an extreme forecast (high or low) is made, probabilities in excess of 50% are assigned to that area according to the colored scales shown to the right of each map. In regions where there are no indications favoring either A or B, the forecast is for normal temperature or precipitation and the probability of the occurrence of either A or B is 50:50. These regions are labeled "EC" (equal chances). For example, in the three-month precipitation probability map above (left) most of North America is labeled EC, indicating that precipitation amounts will be normal for April-June of 2013. Source: http://www.cpc.ncep.noaa.gov/products/predictions/long_range/two_class.php

Weather Outlook: April - June, 2013

Source: http://www.floridastateservice.com/fire_weather/forecast/seasonal_forecast.html

Updated April 5, 2013

Models currently predict the ENSO phase to remain neutral into the summer. Beyond that, there is significant uncertainty in precisely how long neutral conditions will persist, as this is the time of year in which ENSO forecasts show the least skill (for instance, at this time last year, a forecast was for an emerging El Niño event through the winter – in reality, El Niño conditions collapsed in the early fall). Modeling does indicate, though, that neutral conditions will persist through much of the year.

Both neutral conditions and the time of year represent a minimum of influence from the ENSO phase in Florida. In the near term, blocking continues to be present over Greenland, keeping the AO low and continuing the potential for colder, unsettled weather in the first half of April. However, the AO is a relatively fast-changing index and its strongly negative phase is already quite old. It should at least back away from the extreme values we have been seeing lately. Deeper into spring, very long range models indicate the potential for a return to seeing above normal temperatures, but also drier than normal conditions during a period that is already dry to begin with. There is a good deal of uncertainty for the late spring into summer without a strong influencing signal by features that are better predicted at this time scale. Unforeseen extreme events, such as those that have occurred in late February and March can dramatically alter the picture.

A continued blocking pattern indicates the continuation of our recent weather patterns into the early part of April. This includes colder than normal temperatures and, at least for the northern half of the state, more rainfall. Eventually it is expected that a general trend of above normal temperatures and below normal rainfall will again emerge late in the spring, though confidence in the forecast at the later stages grows significantly with the lack of a strong driving climatic signal. This may help to alleviate some of the drought conditions in Northeast Florida, but help less in the rest of the peninsula.

The next seasonal outlook will be the first week in July, 2013. Should there be any questions, please contact

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Acknowledgments

Weather outlook data and analysis are provided by the Florida Forest Service, 3125 Conner Boulevard, Tallahassee, FL.

Additional Reading

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Model development and links to past updates: http://mosquito.ifas.ufl.edu/MWTD_Risk_Model.htm

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