Figure 1. A map of peninsular Florida indicating areas currently at Medium to High risk (highlighted in yellow and red) and Low risk (highlighted in green) for St. Louis encephalitis virus (SLEV) and West Nile virus (WNV) amplification and transmission. The Medium to High risk areas closely tracked the FMEL Arboviral Epidemic Risk (AER) Model for SLEV/WNV, while the Low risk areas consistently tracked outside of the FMEL AER Model (Figure 3). Focal arboviral transmission may occur in or around the 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.

Figure 2. The current Modeled Water Table Depth (MWTD) profile reported in peninsula Florida. Areas highlighted in brown and dark orange have a deep water table and reduced potential for surface water pooling. These areas correspond with the green, Low risk regions highlighted in Figure 1. Areas highlighted in light orange, yellow, and blue have a shallow water table and increased potential for surface water pooling and Culex mosquito production. These areas correspond with the red and yellow regions highlighted in Figure 1.

Current Assessment of SLW/WN Epidemic Risk
**Figure 3.** The weekly (averaged) MWTD values reported between January 1 and June 12, 2012 for the five Areas of Interest (AOI) and the low risk data point shown in Figure 1. The real-time MWTD data from each AOI were compared with the SLEV/WNV FMEL Arboviral Epidemic Risk Models generated from MWTD observations made in Indian River County during the 1977 and 1990 St. Louis encephalitis epidemics (highlighted in orange) (Day and Shaman 2008). Deviation of real-time MWTD data from the SLEV/WNV FMEL Arboviral Epidemic Risk Models may reduce the future likelihood of SLEV/WNV amplification and transmission.

**Figure 4.** The weekly (averaged) MWTD values observed between January 1 and December 31, 2011 for four Areas of Interest (AOI) reported during the Amplification Phase of the 2011 arboviral transmission season. The real-time MWTD data from each AOI were compared with the SLEV/WNV FMEL Arboviral Epidemic Risk Models generated from MWTD observations made in Indian River County during the 1977 and 1990 St. Louis encephalitis epidemics (highlighted in orange). Deviation of real-time MWTD data from the FMEL Arboviral Epidemic Risk Model reduces the likelihood of SLEV/WNV amplification and transmission.
**Explanation of Current SLEV/WNV Epidemic Risk Assessment**

There continue to be five Areas of Interest (AOI) in peninsular Florida (Figures 1 and 2) relative to the potential for SLEV/WNV amplification and transmission during 2012. The AOIs are located in 1) Brevard, Indian River, and Osceola Counties, 2) coastal Palm Beach County, 3) coastal Broward and Dade Counties, 4) coastal Lee, Collier, and Monroe Counties, and 5) northwest Pinellas County. Areas of Interest are calculated based on water table depth (WTD) and measured throughout peninsular Florida at an 11.0 km² resolution. Individual daily WTDs are compared with the SLEV/WNV FMEL Arboviral Epidemic Risk Model to determine how closely individual regions of the Florida peninsula track the model. Areas of Interest are identified and their WTDs are plotted on the FMEL Arboviral Epidemic Risk Model (Figure 3). The model is then used to generate a risk map and a WTD map (Figures 1 and 2). An explanation of the utility of the model can be found in Day and Shaman (2008). The 2011 cumulative FMEL AER Model for SLEV/WNV is shown in Figure 4. A detailed explanation of model development and archived updates can be viewed at: [http://mosquito.ifas.ufl.edu/MWTD_Risk_Model.htm](http://mosquito.ifas.ufl.edu/MWTD_Risk_Model.htm)

The current model run indicates five regions of the state where rainfall and ground water levels closely follow the FMEL AER Model for SLE/WNV. As we complete the south Florida avian nesting season (April, May, and June) these areas need to be closely scrutinized for possible SLEV and WNV amplification and transmission. During the next six weeks we will initiate frequent model runs and monitor these areas for additional developments in arboviral amplification and transmission risk. Updates will be released if these model runs indicate elevated arboviral transmission risk.
The current La Niña event is all but doomed, with the tropical Pacific now warming above the -0.5 degree anomaly threshold for the second time in 2012; after doing so very briefly earlier in the year. However, the La Niña event is not officially considered over until the longer-term three month average has warmed above the -0.5 degree threshold.

With La Niña coming to an end and a return to ENSO-neutral conditions, we may see the current above normal temperatures and below normal precipitation trend back to normal after April, 2012. However, even if May and early June record normal rainfall levels, this is typically a dry time of the year until the more frequent summer rains kick in.

In the longer term, we may see temperatures and rainfall return to levels closer to climatological normal. However, it bears noting that this time of year generally tends to be warm and rather dry before the summer rains. This scenario assumes a gradual decline in La Niña towards neutral conditions. There is a potential for a fairly quick shift through neutral to the opposite phase, El Niño. Though the impact of ENSO-phase on Florida weather is lessened in the summer, this potential does create uncertainty in the seasonal forecast outlook.

The next seasonal outlook will be issued during the first week of July, 2012. Should there be any questions, please contact Sean.Luchs@freshfromflorida.com
**Current Assessment of EEE Epidemic Transmission Risk**

**Figure 6.** A Map of Florida indicating areas at *Medium to High* risk (highlighted in yellow and red) and *Low* risk (highlighted in green) for eastern equine encephalitis virus (EEEV) amplification and transmission. The *Medium to High* risk areas closely tracked the FMEL Arboviral Epidemic Risk Model for EEEV shown in Figure 8. Focal EEEV 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 and transmission during the upcoming summer wet season from June through August.

**Figure 7.** First of the month Keetch-Byram Drought Index values (at a 4.0 km² resolution) reported in Florida between **February 1, 2011 and June 12, 2012**.
Figure 8. The weekly (averaged) KBDI values collected between November 1, 2011 and June 12, 2012 for the three Areas of interest (AOI) shown in Figure 6. The real-time KBDI data from each AOI were compared with the EEEV FMEL Arboviral Epidemic Risk Model generated from KBDI observations made throughout Florida during three years (2003, 2005, and 2008) when EEEV transmission levels to horses and sentinel chickens were unusually high. Deviation of real-time KBDI data from the FMEL Arboviral Epidemic Risk Model for EEEV may reduce the likelihood of EEEV amplification and transmission.
Explanation of Current EEEV Epidemic Risk Assessment

There continue to be three Areas of Interest (AOI) in the western Florida panhandle relative to the potential for EEEV amplification and transmission (Figures 6 and 8). The AOIs are located in 1) Okaloosa County, 2) western Gadsden and northern Liberty Counties, and 3) coastal Franklin and Wakulla Counties. Amplification of EEEV in Florida begins in the fall and extends through early spring. This is why our KBDI surveillance for EEEV begins on November 1 KBDI surface maps (Figure 8). The three current AOIs (Figure 6) are calculated based on KBDI values measured throughout Florida at a 4.0 km² resolution. Individual daily KBDI values are compared with the EEEV FMEL Arboviral Epidemic Risk Model to determine how closely individual regions throughout Florida track the model. Areas of Interest are identified and their daily KBDI values are plotted on the FMEL AER Model (Figure 8). The model is then used to generate the EEEV FMEL Epidemic Risk map (Figure 6). An explanation of the utility of the model can be found in Day and Shaman (2008) and a detailed explanation of model development and archived updates can be found at: http://mosquito.ifas.ufl.edu/MWTD_Risk_Model.htm

The current model run indicates three regions of the western Florida panhandle where winter and spring environmental conditions (rainfall and drought cycles) have likely favored EEEV amplification. Typically, extremely wet late winter and spring conditions favor EEEV transmission from the Florida panhandle east into north Florida and south into the central part of the Florida peninsula. As evidenced by the monthly KBDI images from February 1, 2012 through June 12, 2012, much of Florida was been extremely dry during the winter and spring months. Early summer rains have saturated the surface soils in the western panhandle, north Florida, and along the west coast of the Florida peninsula. This suggests that the risk of EEEV transmission in these regions may increase as summer progresses. This is particularly true for the Northeast Florida region where EEEV transmission needs to be monitored carefully. The first indication of increased EEEV transmission risk will be EEEV-positive horses and the appearance of EEEV antibody in sentinel chickens.
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Three Month Precipitation and Temperature Probability Forecast is courtesy of the Florida Department of Agriculture and Consumer Services, Florida Forest Service and is taken all or in part with permission.

If you would like to receive future updates via email please contact Jonathan Day: jfda@ufl.edu

Additional Reading


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