

Local fog considerations at Spirit of St. Louis airport

Laura Kanofsky (WFO LSX)

Spirit of St. Louis airport (ASOS and TAF identifier: SUS) is located in Chesterfield, MO, a few miles away from WFO LSX. Despite its geographic proximity, weather conditions at LSX are often unrepresentative of airport conditions when fog occurs. This is due to topographic effects near the airport. It is common for KSUS to report rapid visibility changes in successive observations (e.g., 6SM to 1/2 SM), while a glance out the window shows much higher visibilities at the office. It is also common for KSUS to report much lower visibilities than surrounding sites during nighttime fog. For new forecasters at LSX or colleagues providing service backup, it is important to know that these METARs are usually valid and should not be dismissed as products of a malfunctioning ASOS sensor or attributed to a quirky result from the visibility algorithm.

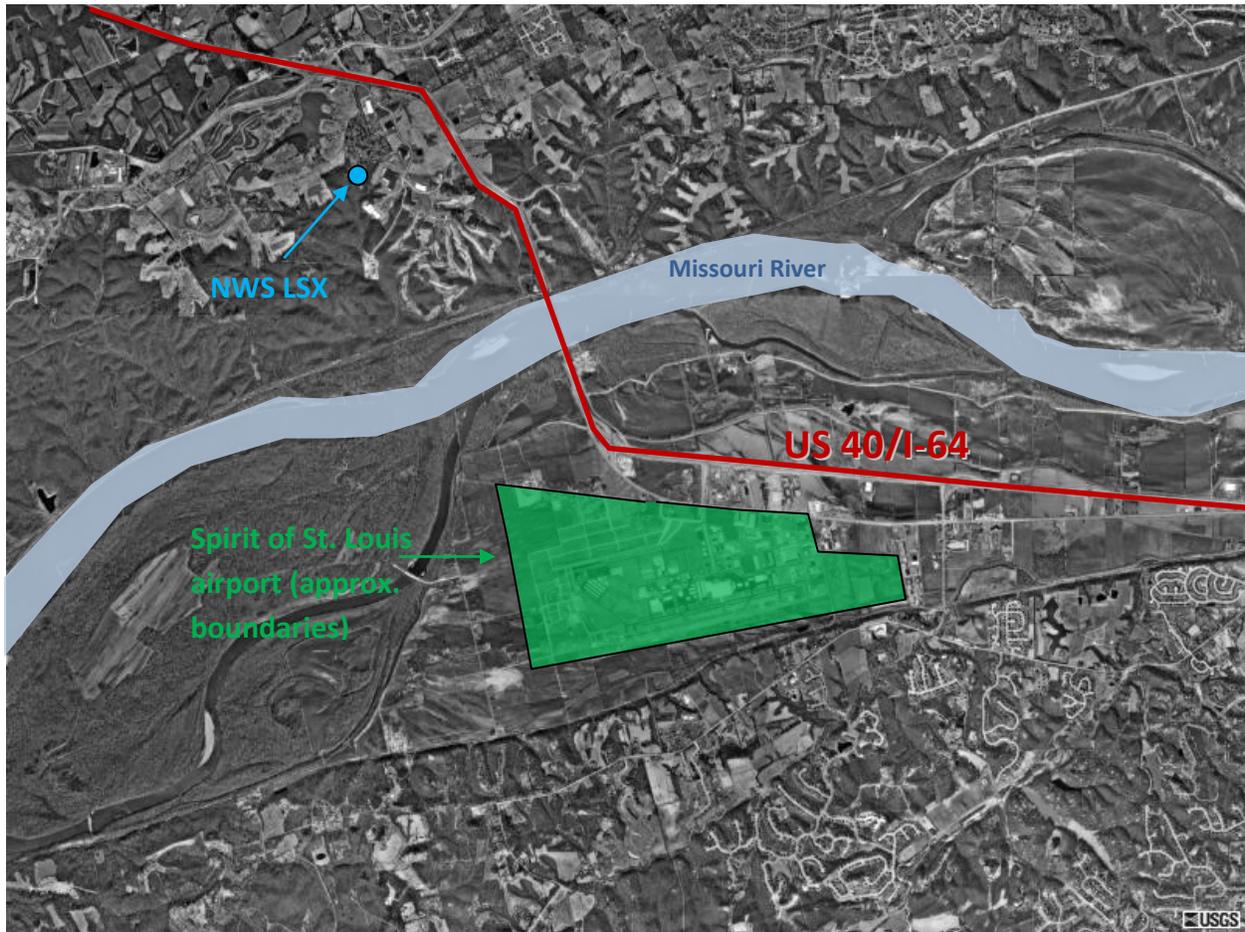


Figure 1. Annotated satellite image of Spirit of St. Louis airport in Chesterfield, MO. Satellite image is from USGS.

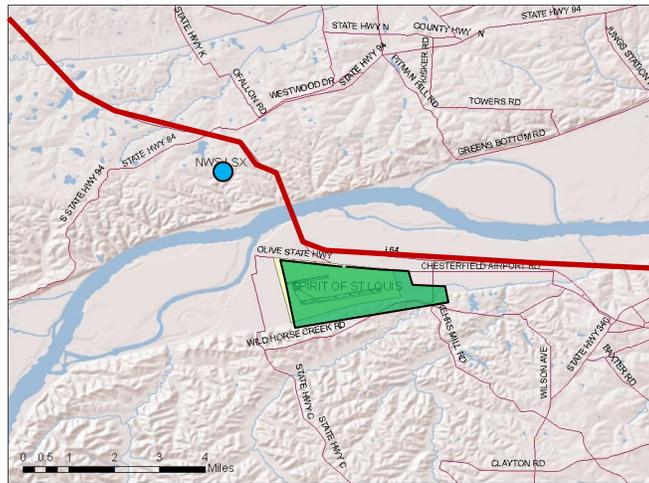


Figure 2. Missouri river valley topography. The approximate airport boundaries are shown by a green polygon.

As shown in the figures above, Spirit of St. Louis airport is in the Missouri river valley just south of the Missouri river. This has two primary impacts with respect to fog. First, winds at Spirit tend to become light or calm more quickly than at surrounding sites when the atmosphere decouples. Second, due to the airport's proximity to the Missouri river, light winds with a northerly component can advect river/steam fog onto the airport grounds.

Rules of thumb:

1. If widespread radiation fog is expected, forecast an earlier onset and lower visibility for Spirit than the other TAF sites.
2. If widespread radiation fog is not expected, consider whether local conditions in the Missouri river valley will become favorable for radiation fog and forecast accordingly. This often occurs when winds decouple in the valley but remain higher elsewhere.
3. Remain alert for advection of river/steam fog, especially when winds are light or have a northerly component.

Aviation forecasters at LSX regularly refer to area traffic cameras near the airport to monitor fog development and the extent of river fog. There is a page on the office intranet for quick access to area webcams and groups of cameras near TAF sites

(<http://intra.lsx.noaa.gov/webcam/webcaminterface.htm>). Since the intranet page might not be accessible to neighboring offices, links to individual images from traffic cameras near SUS are provided below:

- <http://www.gatewayguide.com/atis/cameras/snapshots/MI064E012-7C.jpg>
- <http://www.gatewayguide.com/atis/cameras/snapshots/MI064E014-8C.jpg>
- <http://www.gatewayguide.com/atis/cameras/snapshots/MI064W016-3C.jpg>
- <http://www.gatewayguide.com/atis/cameras/snapshots/MI064W017-2C.jpg>