
Traffic Flow Impact (TFI)

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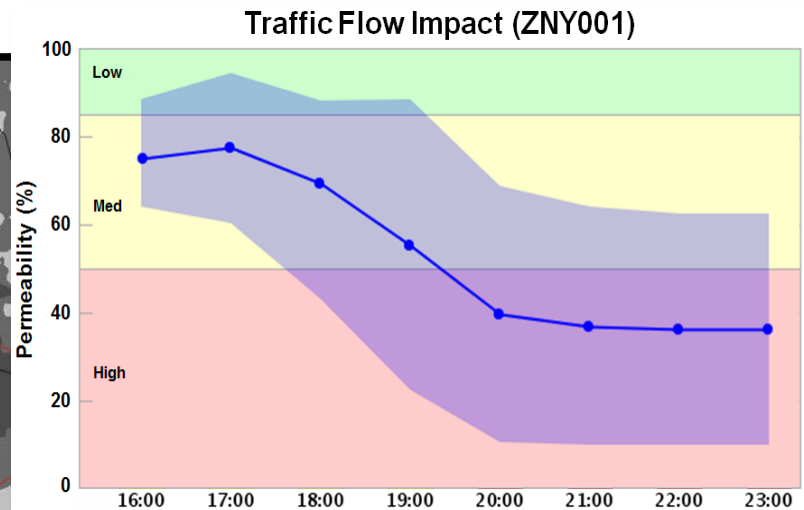
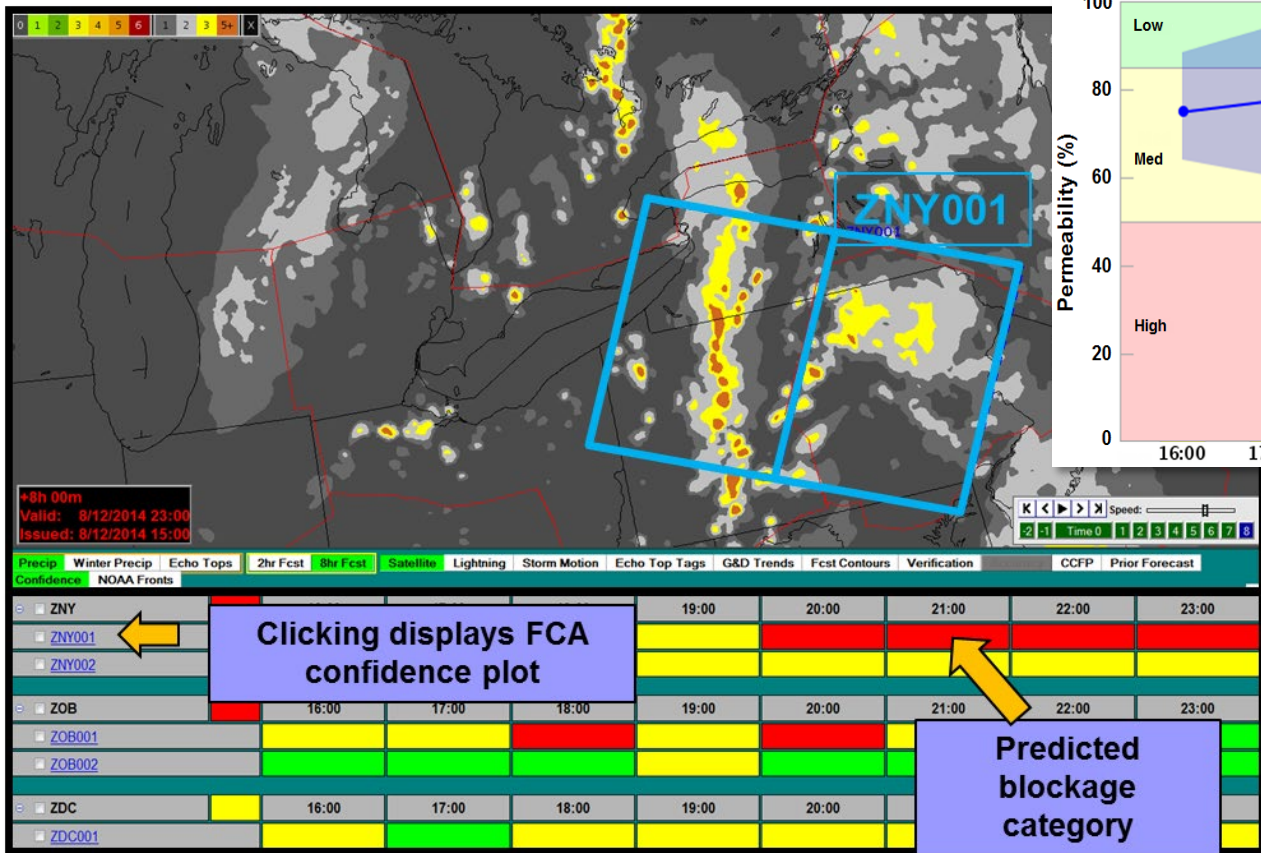
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What is Traffic Flow Impact (TFI)?

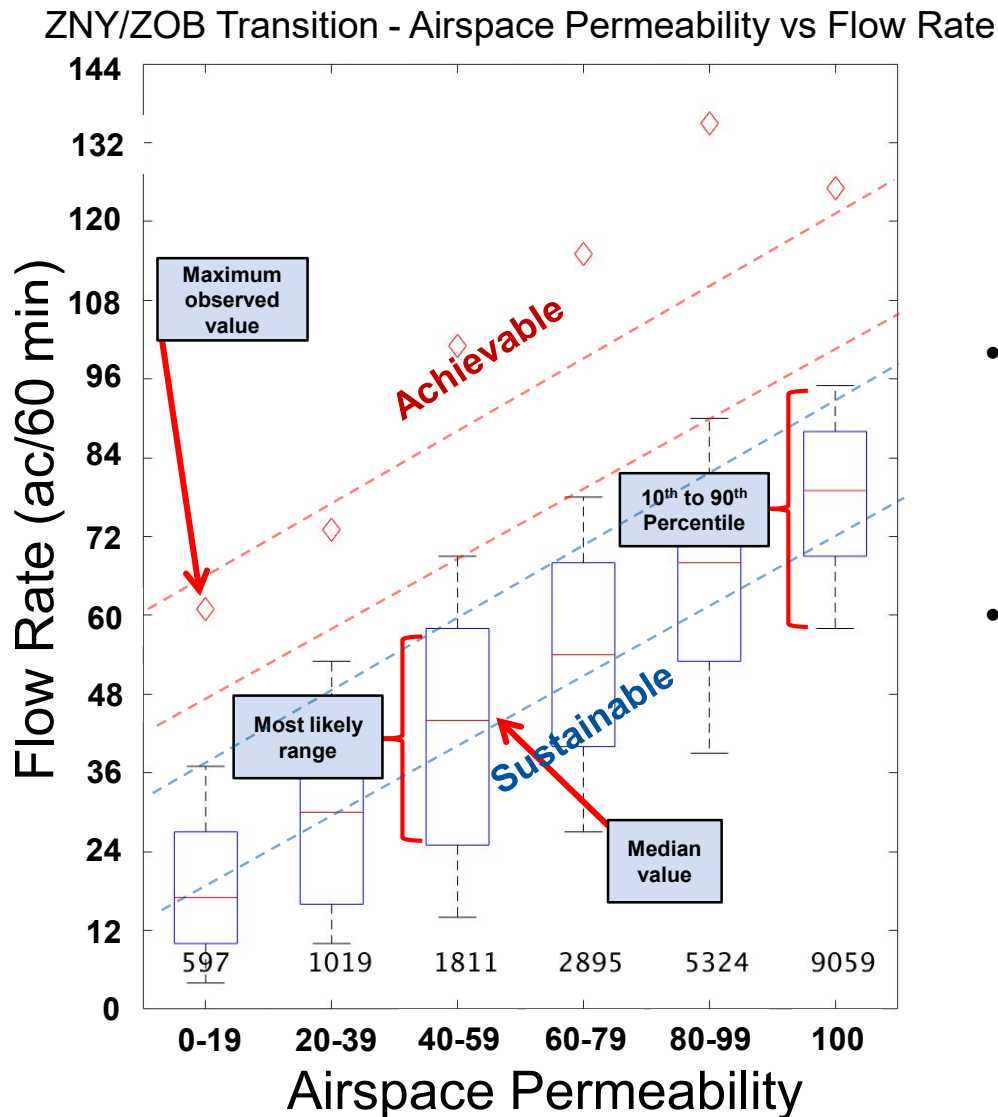
Traffic Flow Impact (TFI) Tool



- Permeability is an estimate of weather impact on traffic flow through an airspace region
- TFI provides forecast of the permeability and a measure of the confidence in that forecast



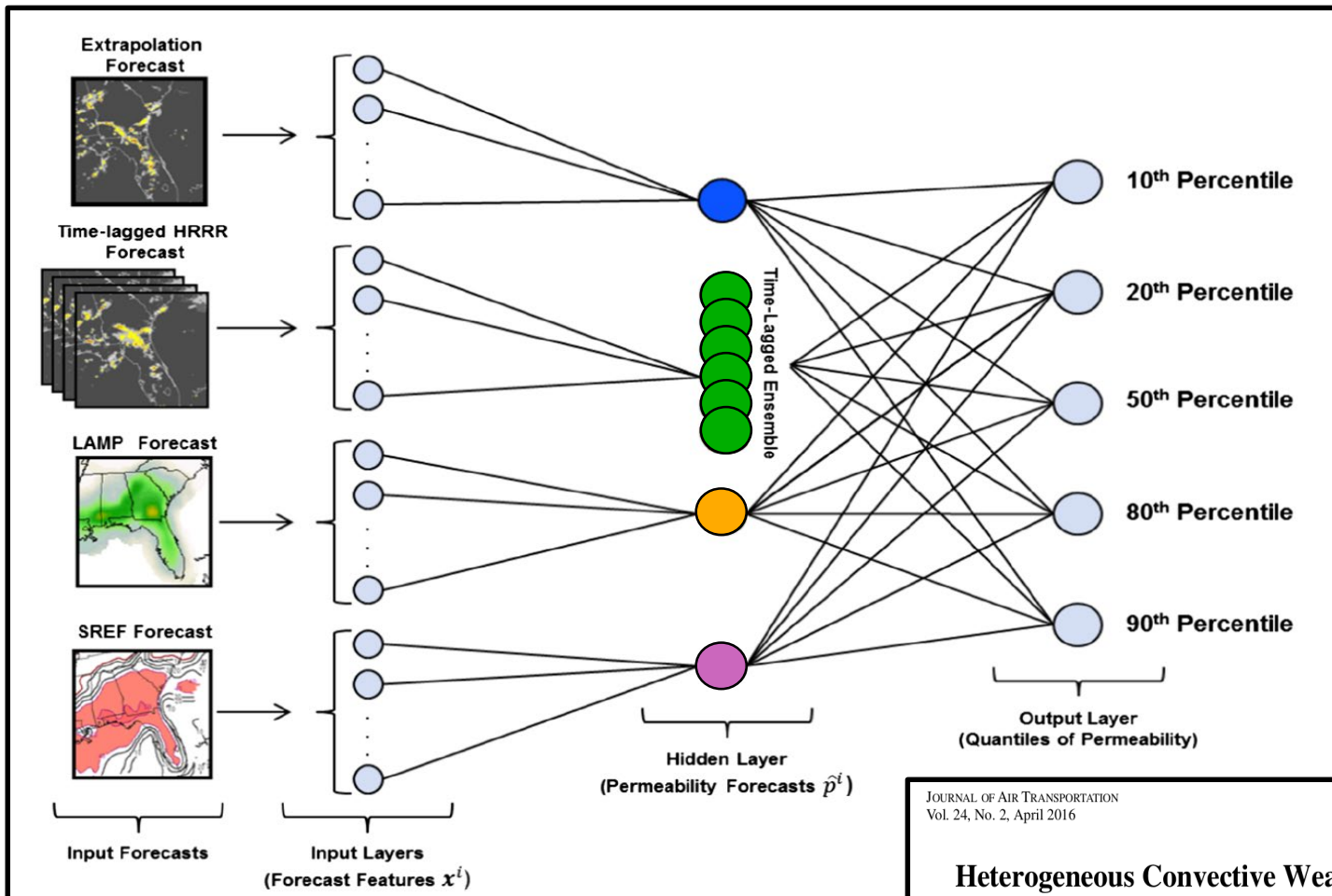
Correlation of Airspace Permeability and Flow Rate



- Modeled Permeability and Observed Flow Rates are correlated
- Translation of weather forecasts into meaningful flow impacts has not been possible until now!



Traffic Flow Impact (TFI) Forecast Components



**Permeability
Reference
Data**

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Vol. 24, No. 2, April 2016

Heterogeneous Convective Weather Forecast Translation into Airspace Permeability with Prediction Intervals

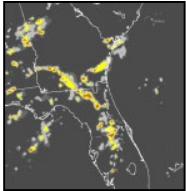
Michael P. Matthews,¹ Mark S. Veillette,² Joseph C. Venuti,³
Richard A. DeLaura,² and James K. Kuchar⁴

HRRR: High-Resolution Rapid Refresh
LAMP: Localized Aviation Model Output Statistics Program
SREF: Short-Range Ensemble Forecast

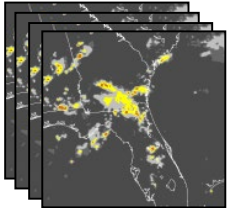


Forecast Confidence Example

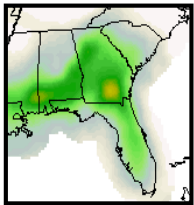
Extrapolation Forecast



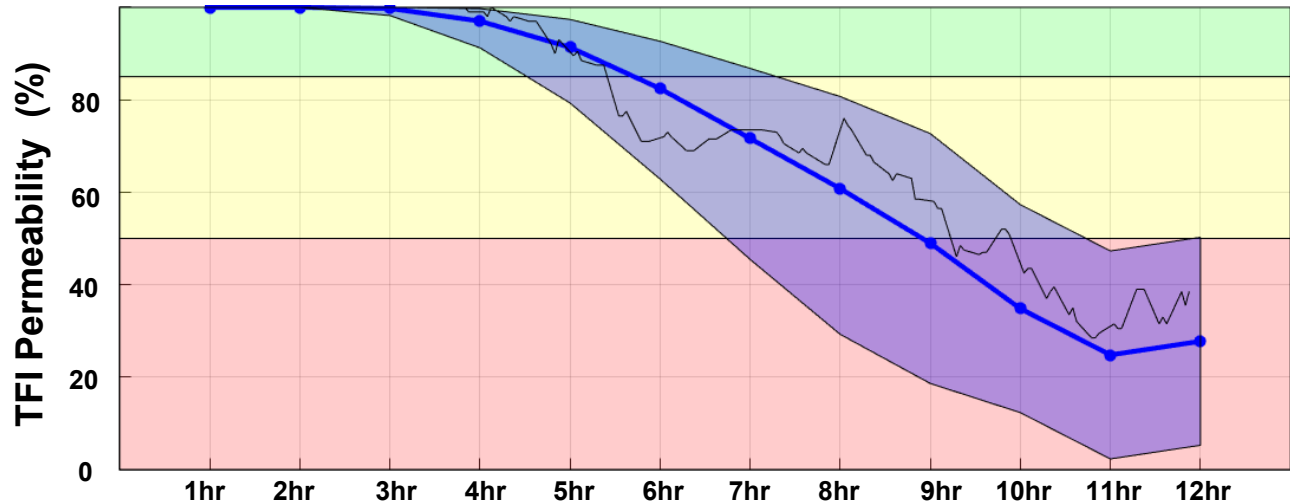
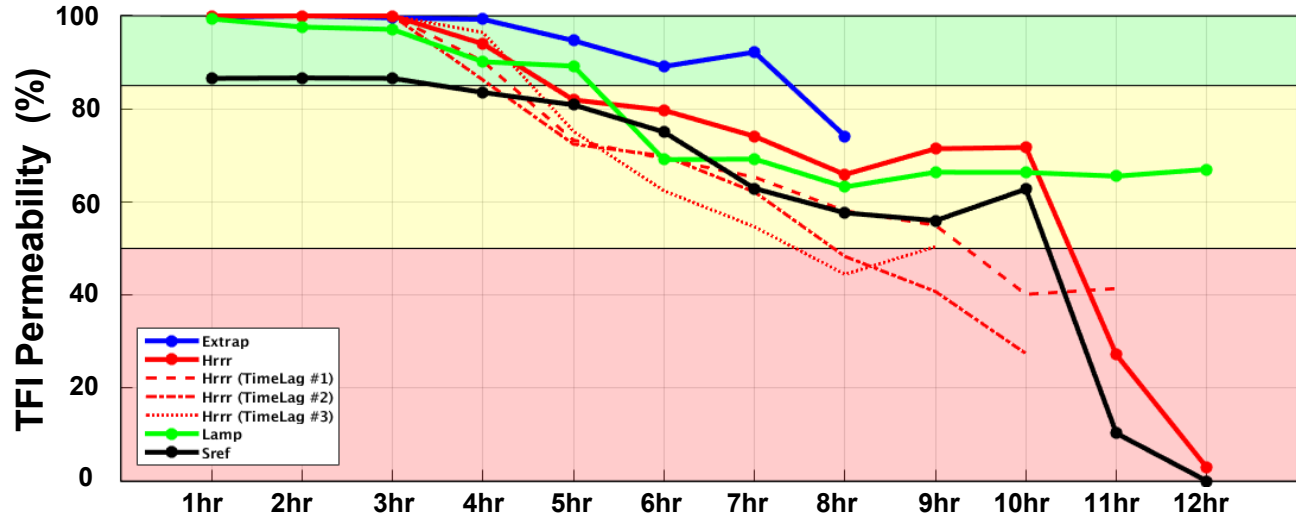
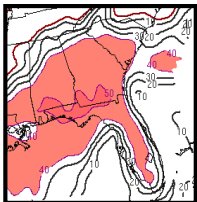
Time lagged HRRR Forecast



LAMP Forecast

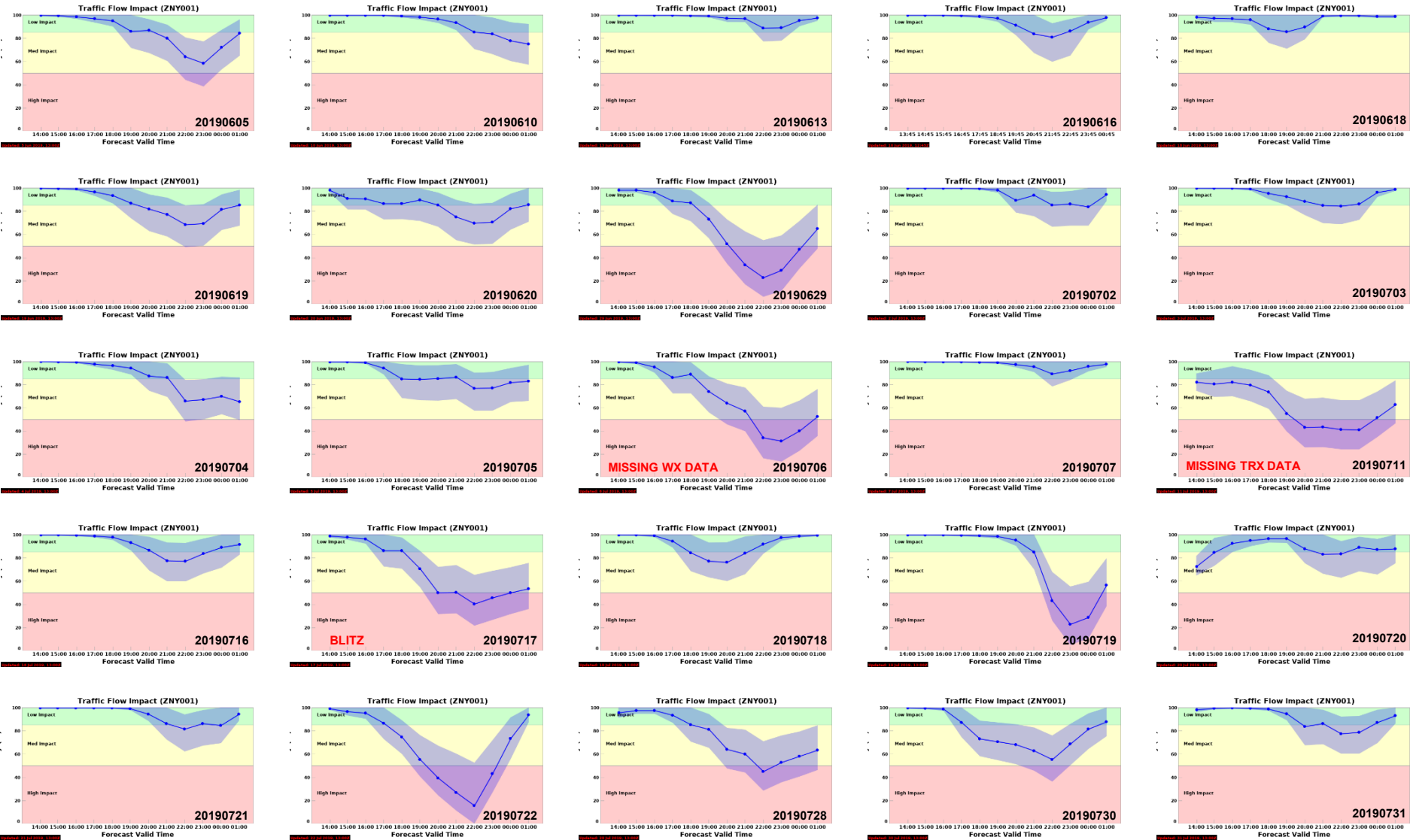


SREF-CTP Forecast





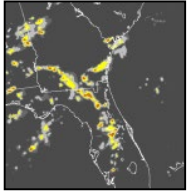
TFI: 2019 Cases of Interest



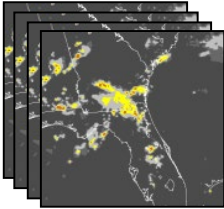


TFI Weather Forecast Translation Strategic Decision Implementation

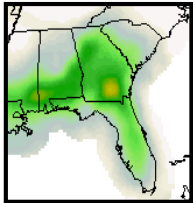
Extrapolation Forecast



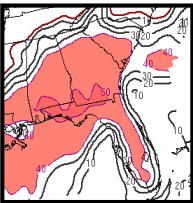
Time lagged HRRR Forecast



LAMP Forecast



SREF-CTP Forecast

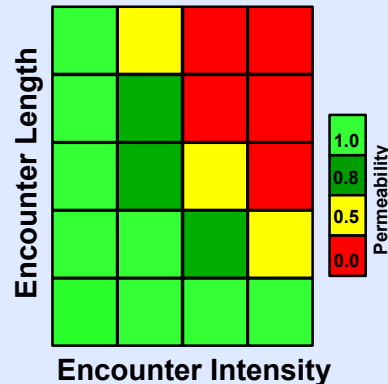
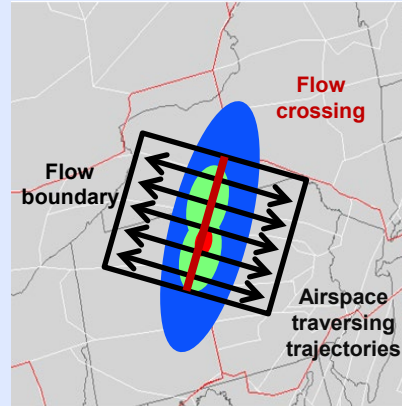


Database

Historical Forecasts

Translator

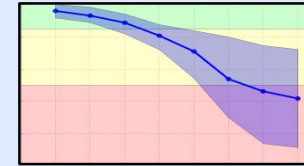
Route & Flow Impact Model



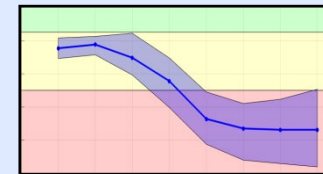
- CWAM / WAF – based
- Resource-specific
- Directional

Translated Metrics

3rd order translated metric (Event onset time, duration, target rate)



2nd order translated metric (e.g., flow rate)



1st order translated metric (e.g., permeability)



Categorical Impact

Increasing specificity