EPRI Solar Forecasting Trial

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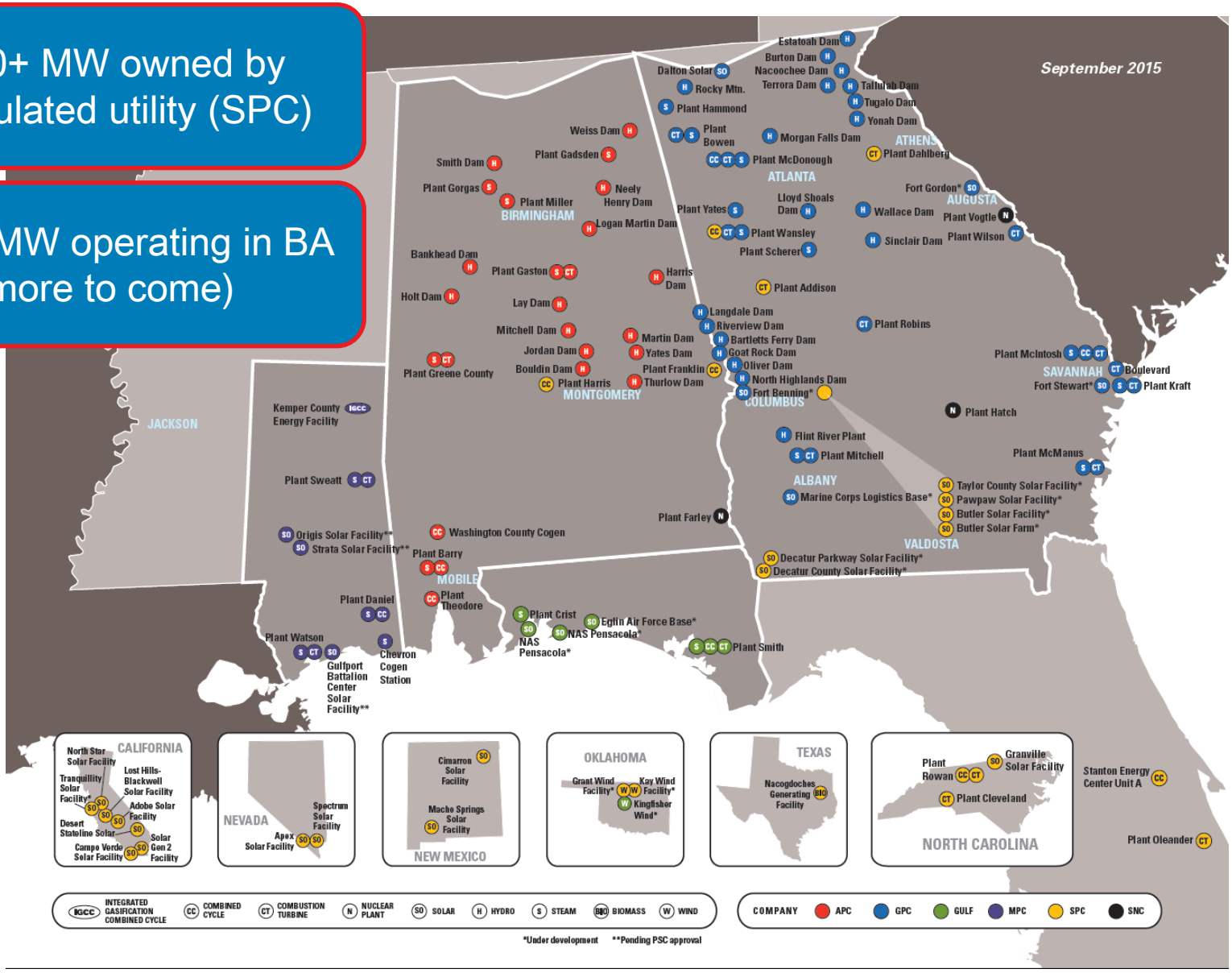
Southern Company Electric Utilities

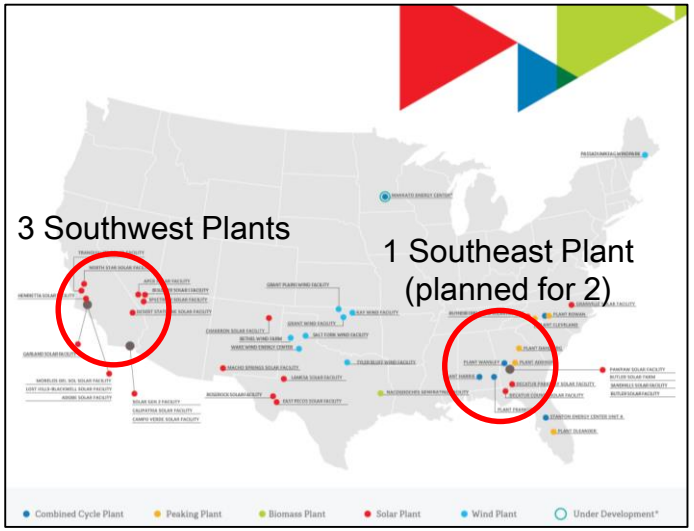
1700+ MW owned by unregulated utility (SPC)

1100+ MW operating in BA (more to come)



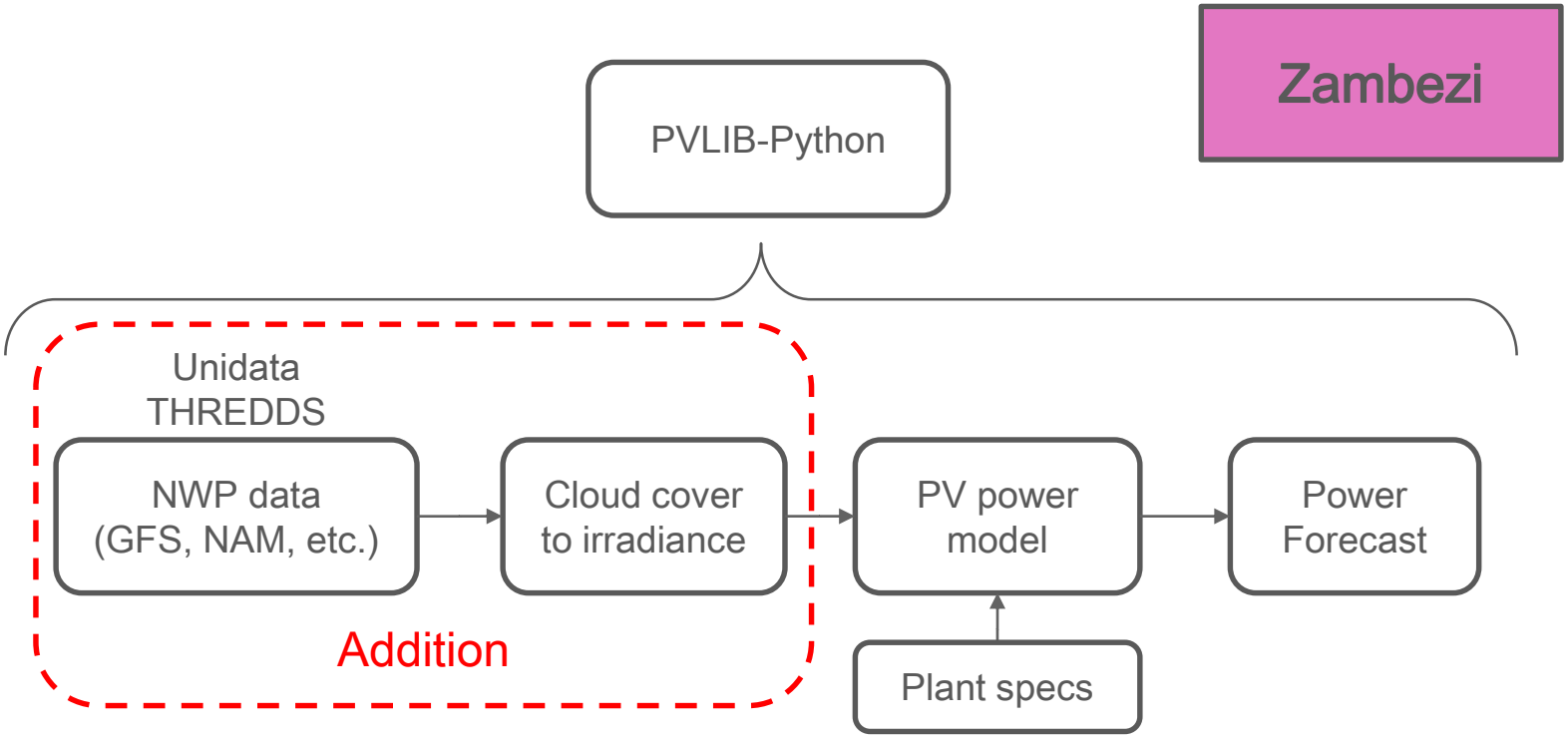
Trial project overview

- 2nd phase of ongoing EPRI project (Aidan Tuohy presented other results at earlier UVIG meeting)
- 12 vendor forecasts (not necessarily commercial)
- 6 month period
- 4 plants in 2 regions
- Emphasis on day-ahead
  - Novel “baseline” forecast



Baseline Forecast: PVLIB-Python

- Persistence would not be a good baseline for day-ahead
- New forecast tool developed by University of Arizona for this project
- Open source addition to PVLIB-python



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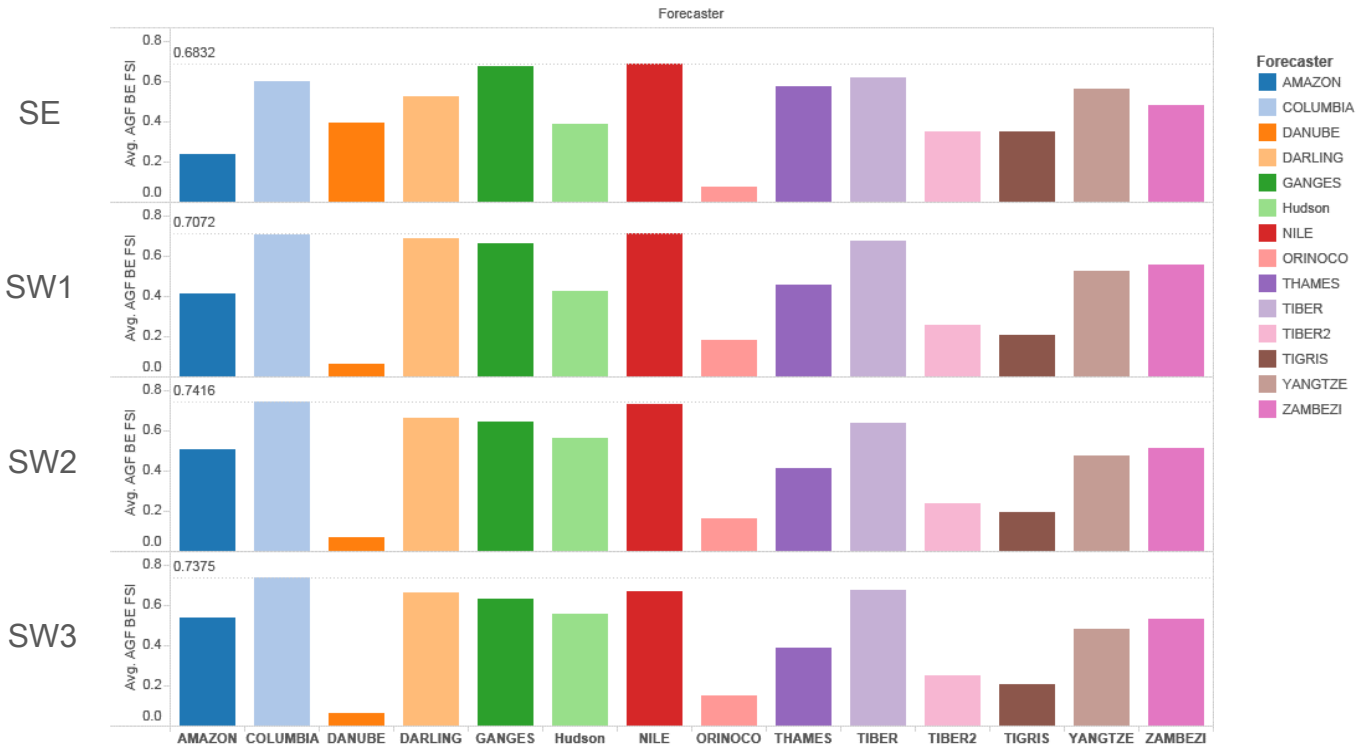
INITIAL RESULTS

(still in draft form)

Forecast Skill Index



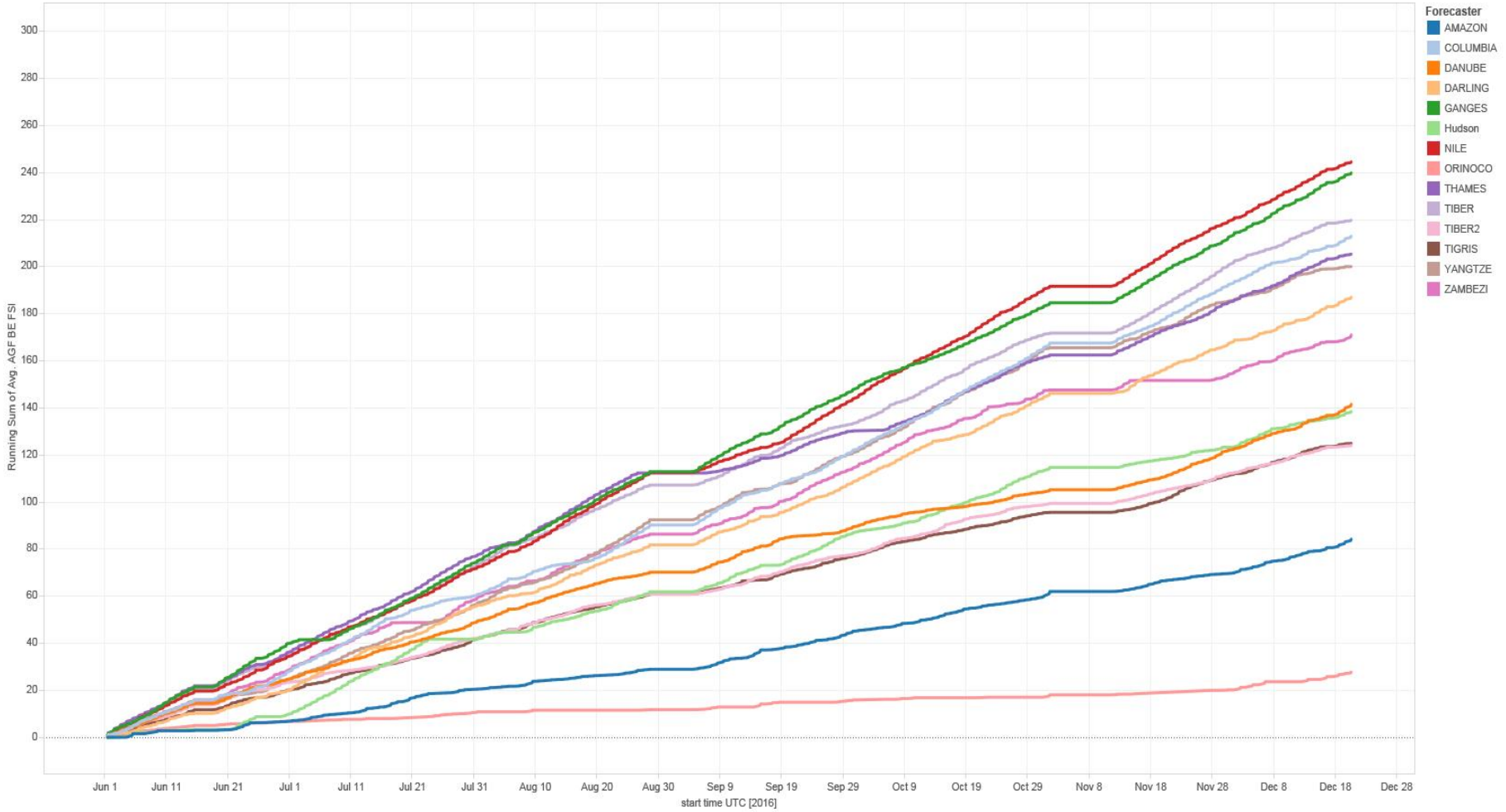
FSI Index = ([R1]+[R2])/ (100+(MAPE + RMSPE + WMAPE)/300))

where R1 = (NFI –MAPE_RANK)/(NFI-1)*50

and R2 = (NFI –VMAPE _RANK)/(NFI-1)*50

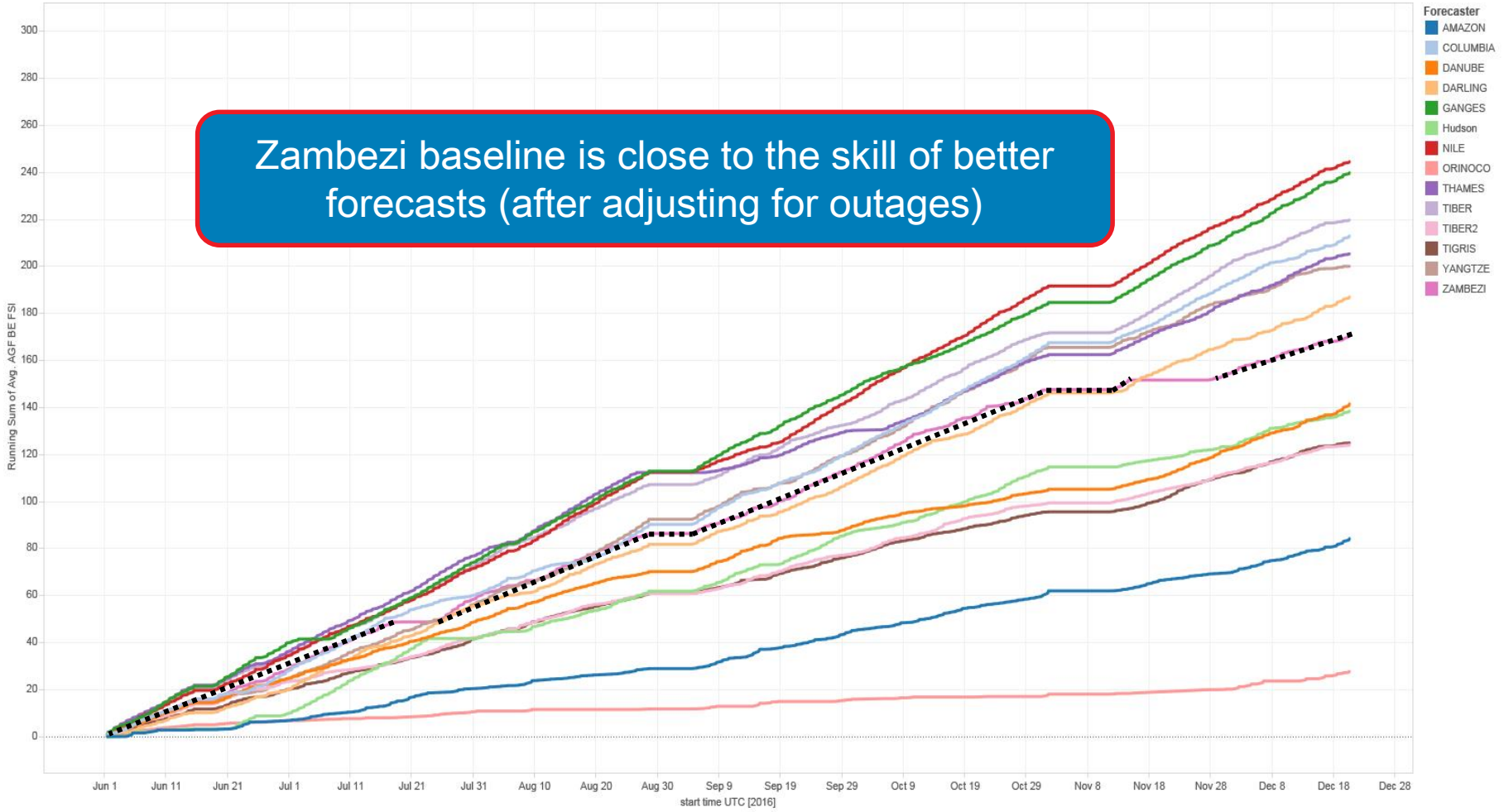
Higher is better - Max value of 1.0

Cumulative FSI (SE site)

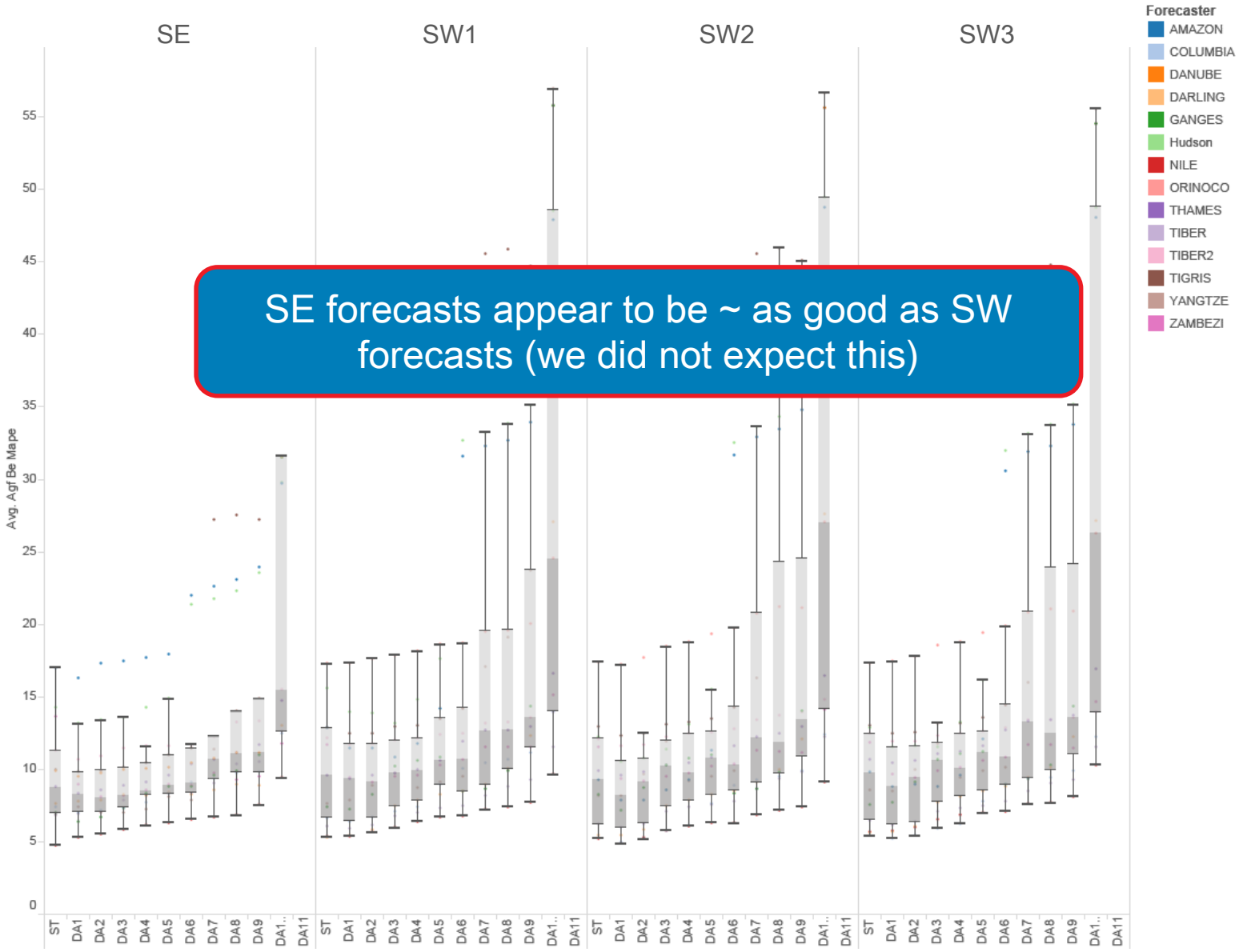


Cumulative FSI (SE site)

Zambezi baseline is close to the skill of better forecasts (after adjusting for outages)

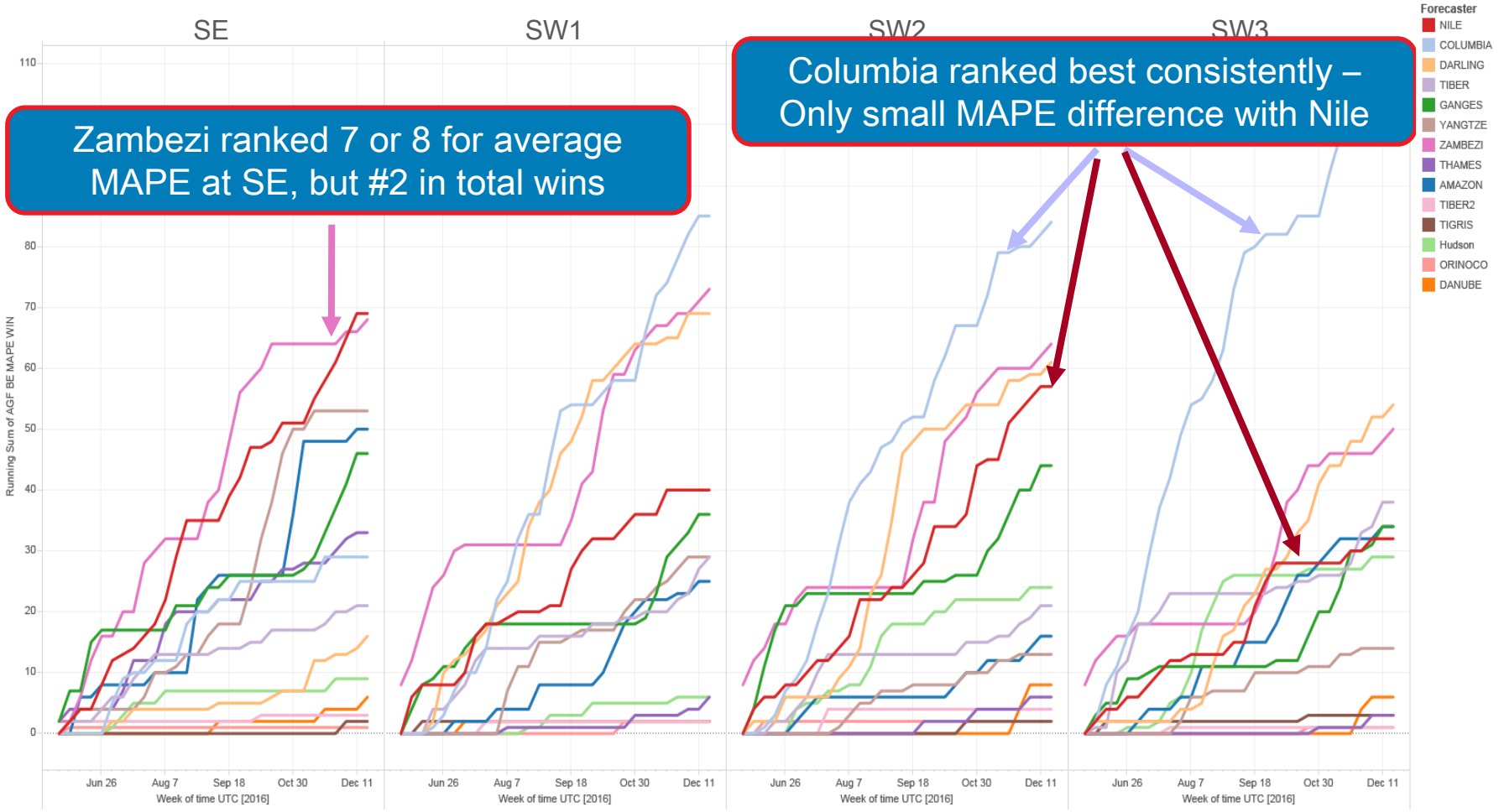


MAPE by horizon (all forecasts)



SE forecasts appear to be ~ as good as SW forecasts (we did not expect this)

Cumulative MAPE Wins



(Initial) Conclusions

- “Best” forecast is hard to define (Everyone already knew this)
- A forecast needs to be more than just reasonably accurate to be valuable
- SE forecasts may be as good as SW forecasts

Thanks to…

…EPRI for project management and analysis
(Aidan Tuohy, Eamonn Lannoye, and others)

…University of Arizona for PVLIB work (Will Holmgren)

…Vendors for participation

Questions?

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