

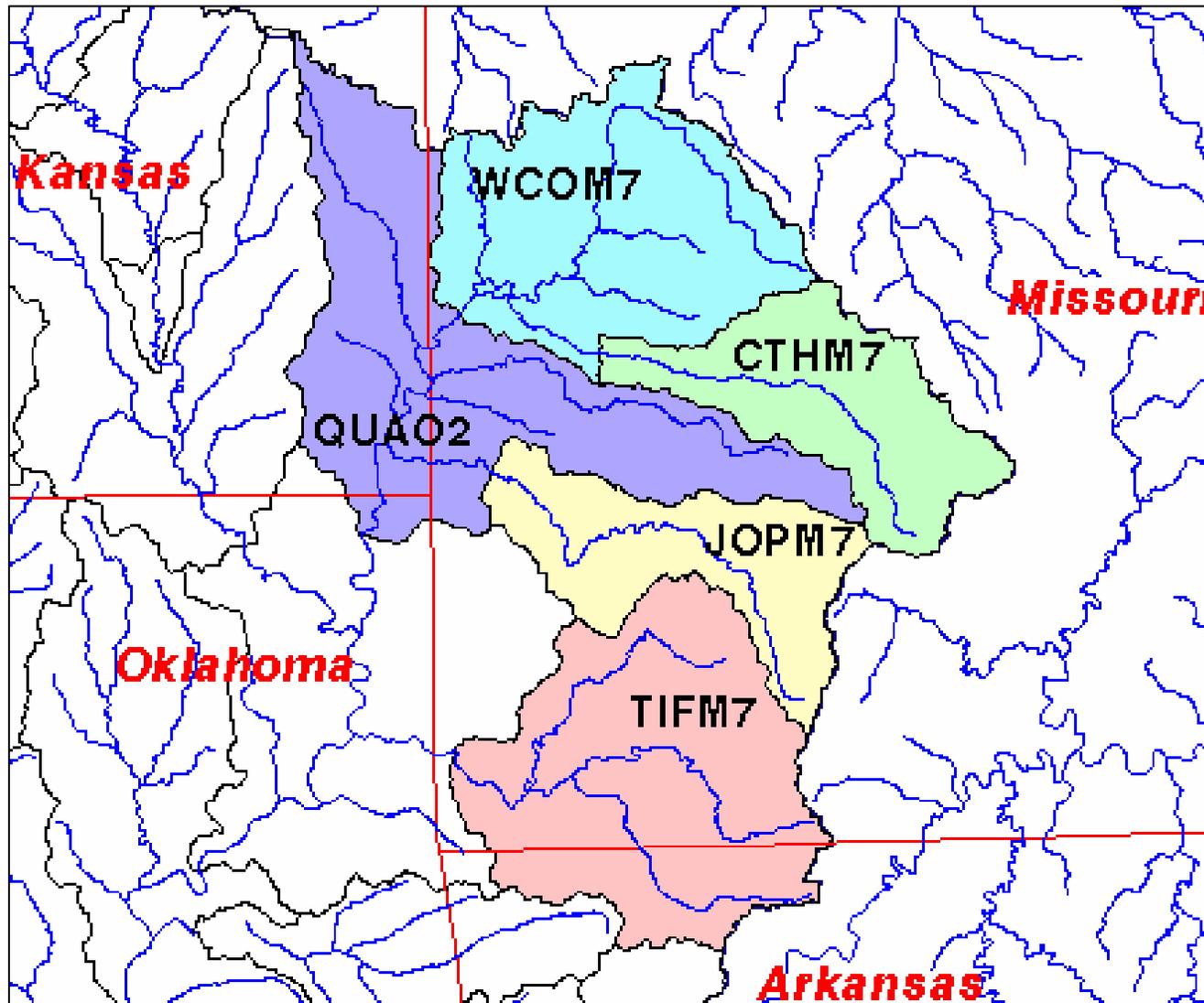


Precipitation Ensemble Verification Example - ABRFC

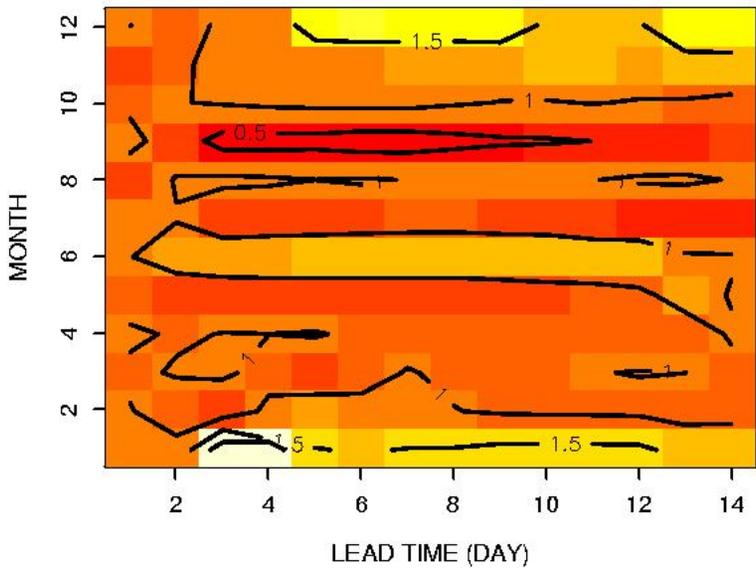
Hydrologic Ensemble Prediction Group
Hydrologic Science and Modeling Branch
Hydrology Laboratory
Office of Hydrologic Development
NOAA/National Weather Service



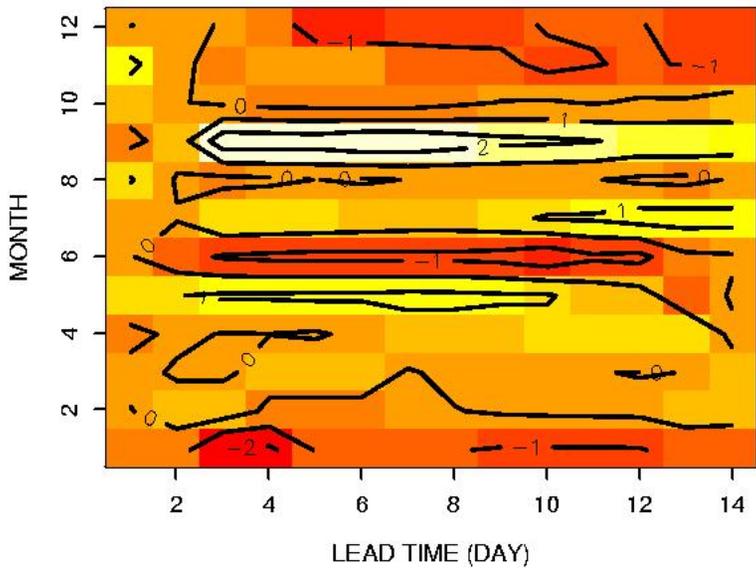
ABRFC/Spring & Elk/5 Segments



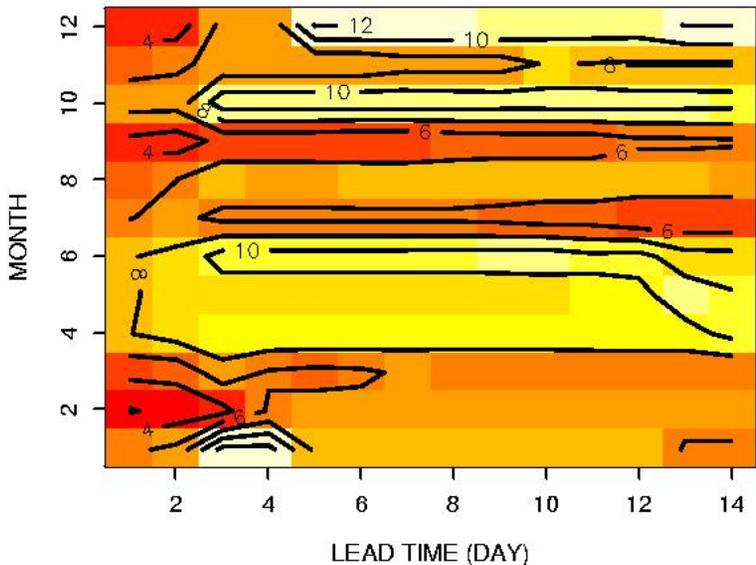
chtm7 - RATIO, ENS. MEAN, 24HR PRECIP.



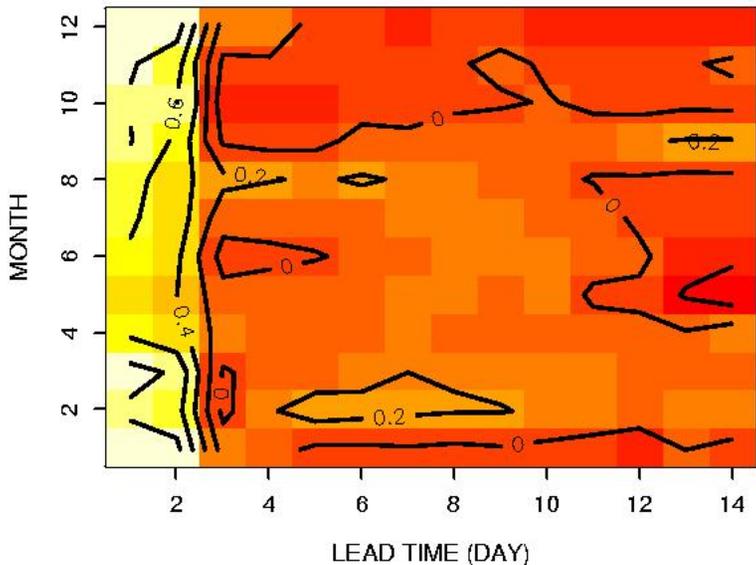
chtm7 - MEAN ERR., ENS. MEAN, 24HR PRECIP. (MM)



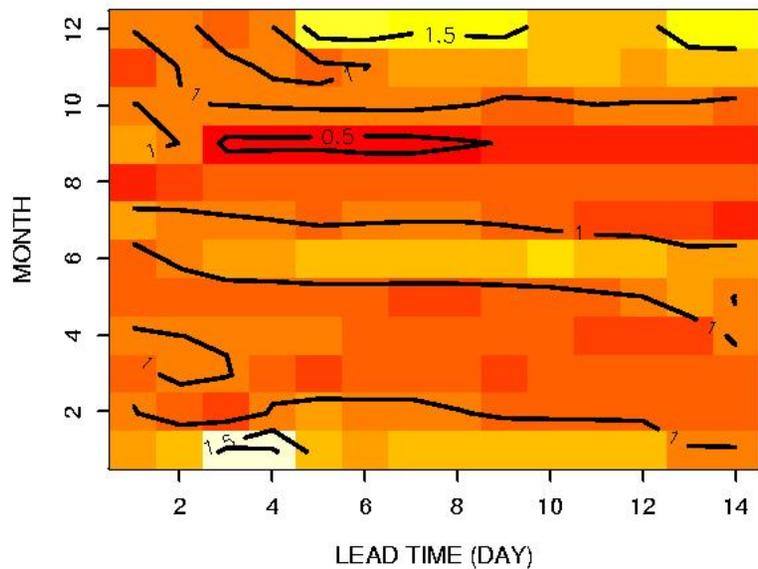
chtm7 - RMSE, ENS. MEAN, 24HR PRECIP. (MM)



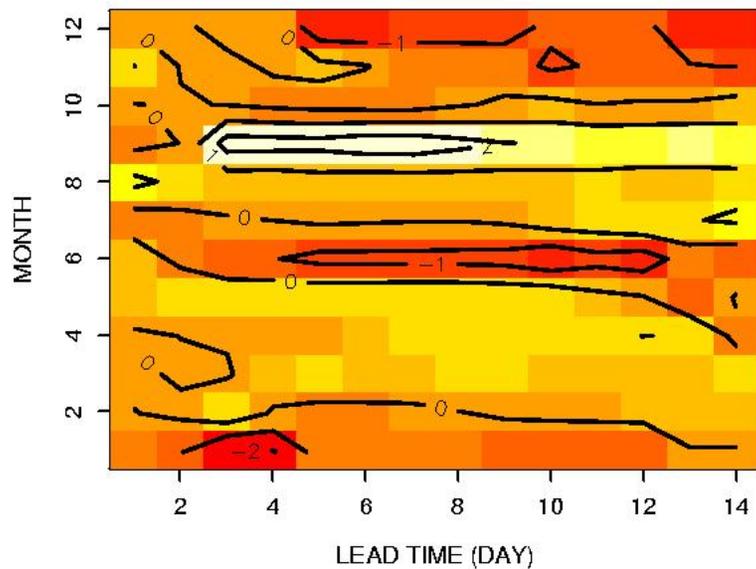
chtm7 - CORR., ENS. MEAN, 24HR PRECIP.



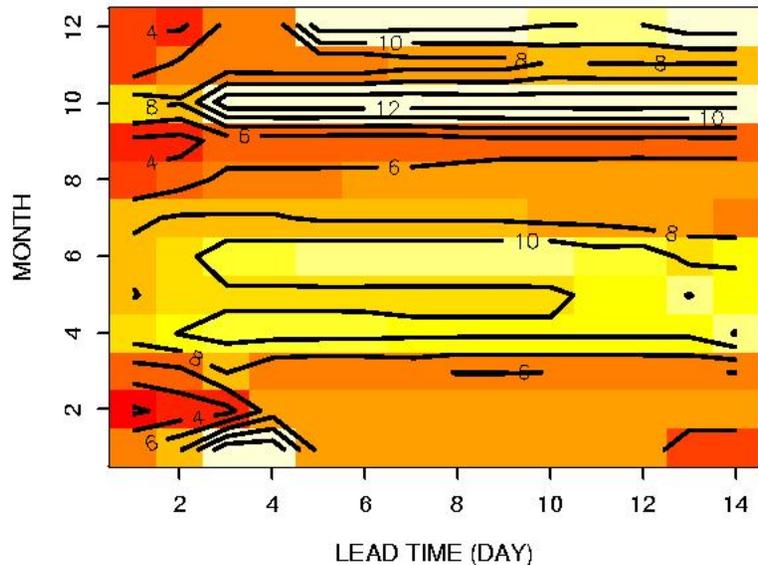
jopm7 - RATIO, ENS. MEAN, 24HR PRECIP.



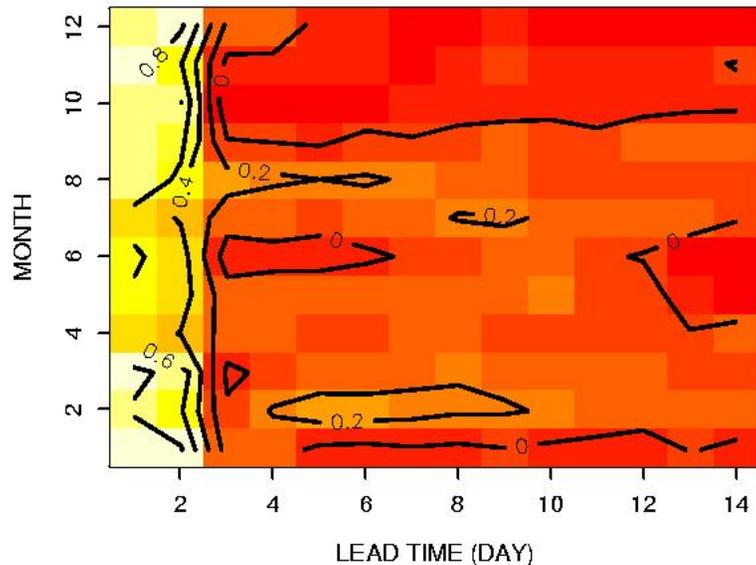
jopm7 - MEAN ERR., ENS. MEAN, 24HR PRECIP. (MM)



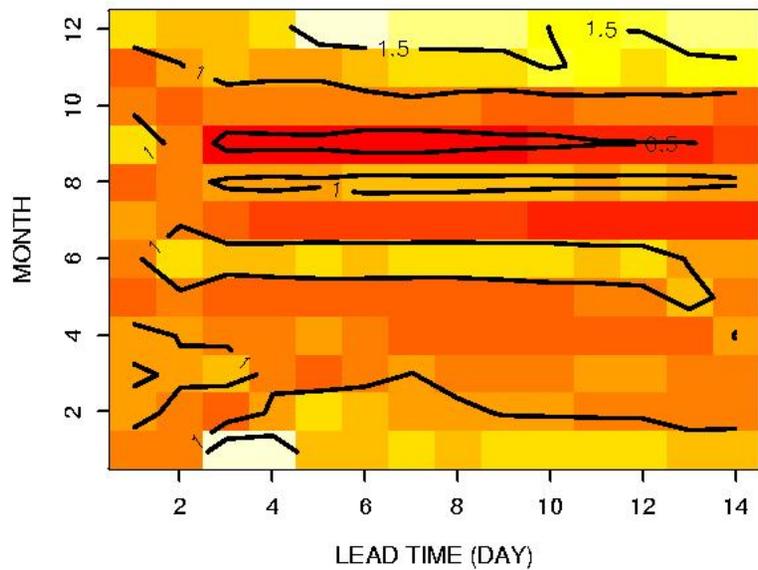
jopm7 - RMSE, ENS. MEAN, 24HR PRECIP. (MM)



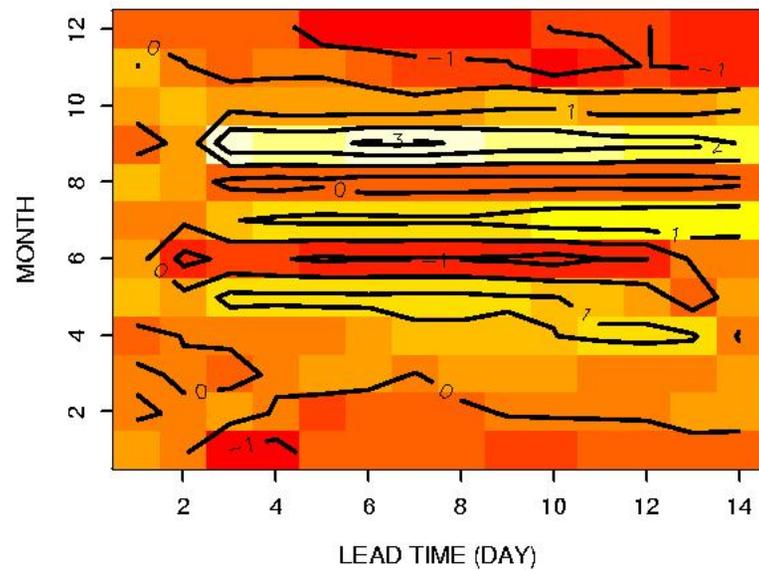
jopm7 - CORR., ENS. MEAN, 24HR PRECIP.



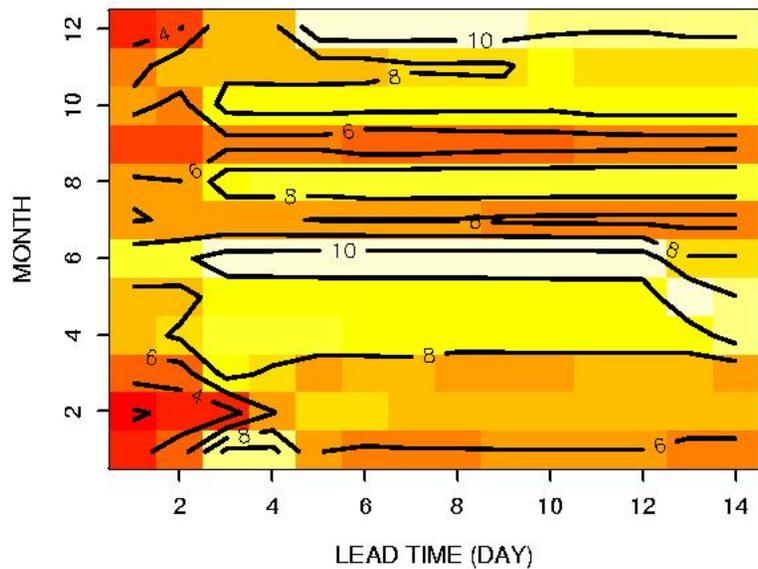
quao2 - RATIO, ENS. MEAN, 24HR PRECIP.



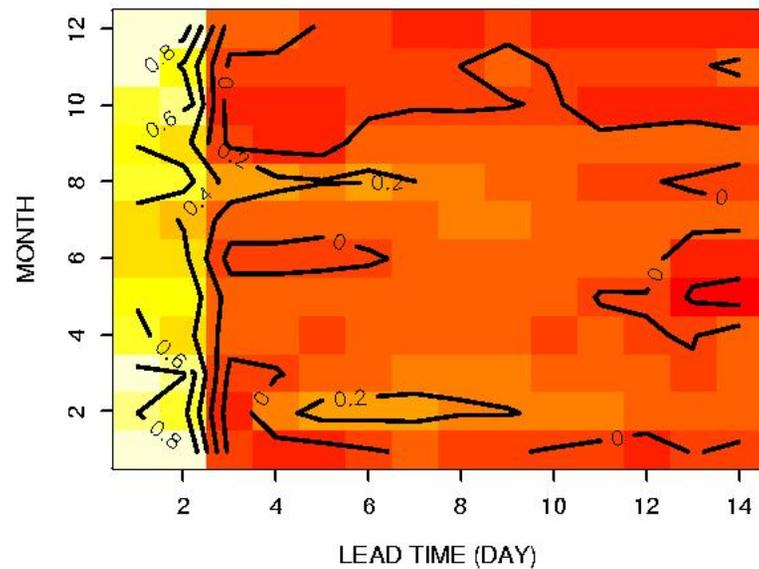
quao2 - MEAN ERR., ENS. MEAN, 24HR PRECIP. (MM)



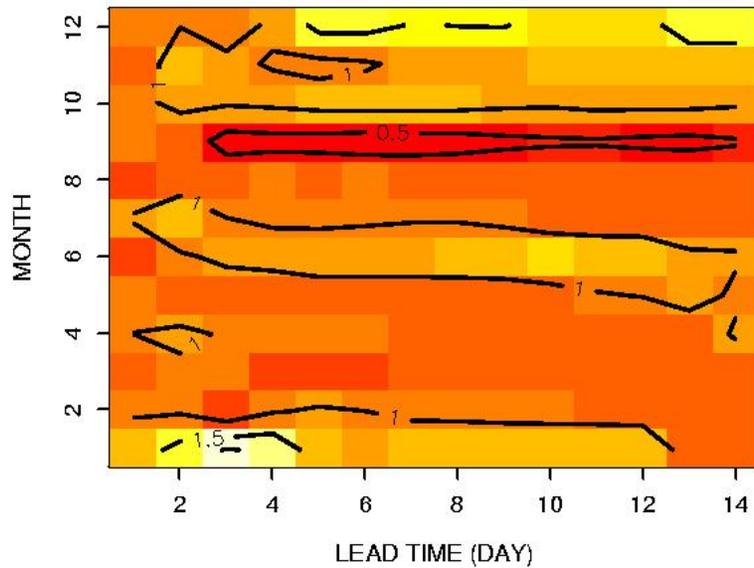
quao2 - RMSE, ENS. MEAN, 24HR PRECIP. (MM)



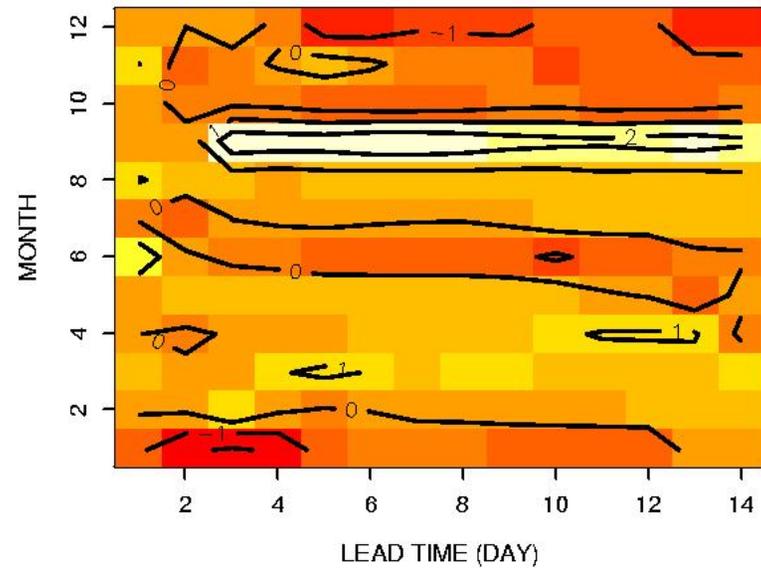
quao2 - CORR., ENS. MEAN, 24HR PRECIP.



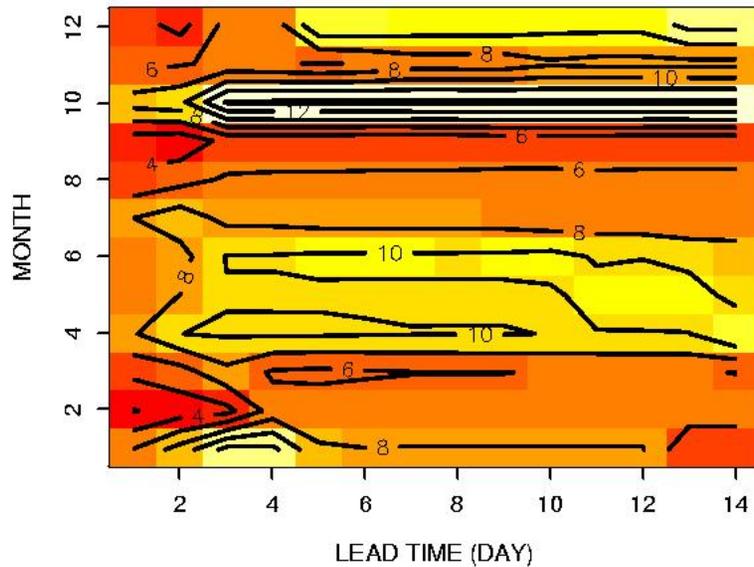
tifm7 - RATIO, ENS. MEAN, 24HR PRECIP.



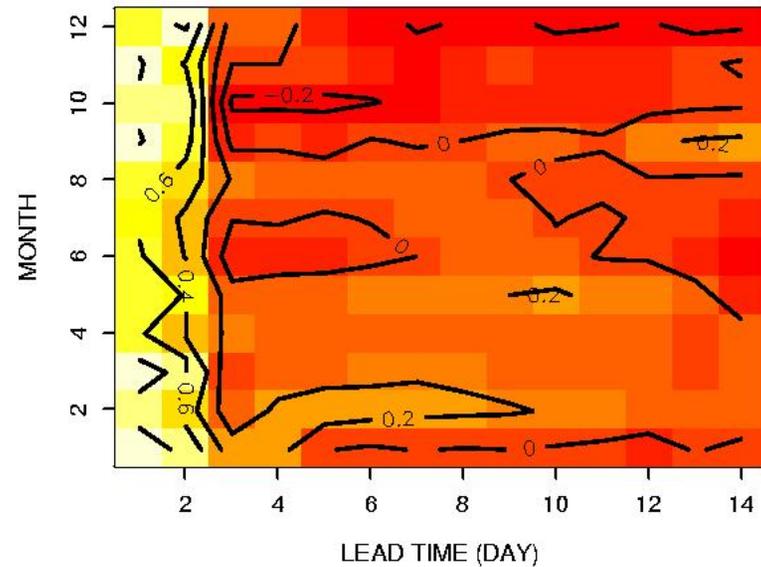
tifm7 - MEAN ERR., ENS. MEAN, 24HR PRECIP. (MM)



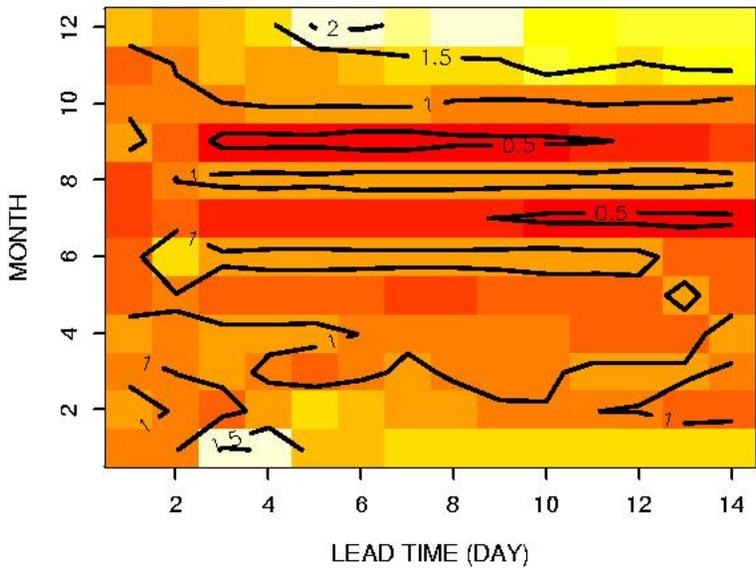
tifm7 - RMSE, ENS. MEAN, 24HR PRECIP. (MM)



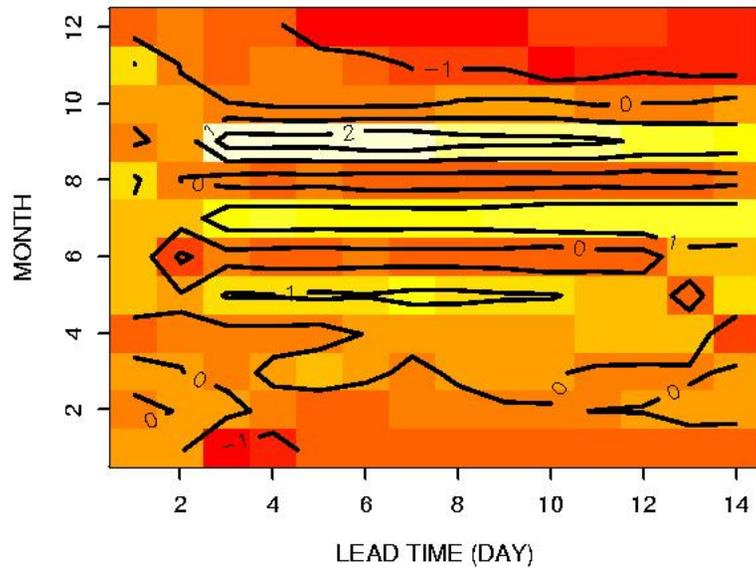
tifm7 - CORR., ENS. MEAN, 24HR PRECIP.



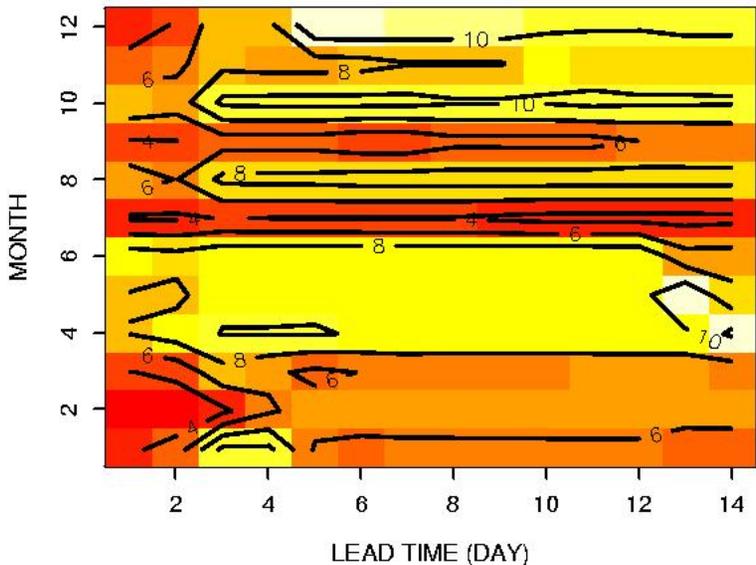
wcom7 - RATIO, ENS. MEAN, 24HR PRECIP.



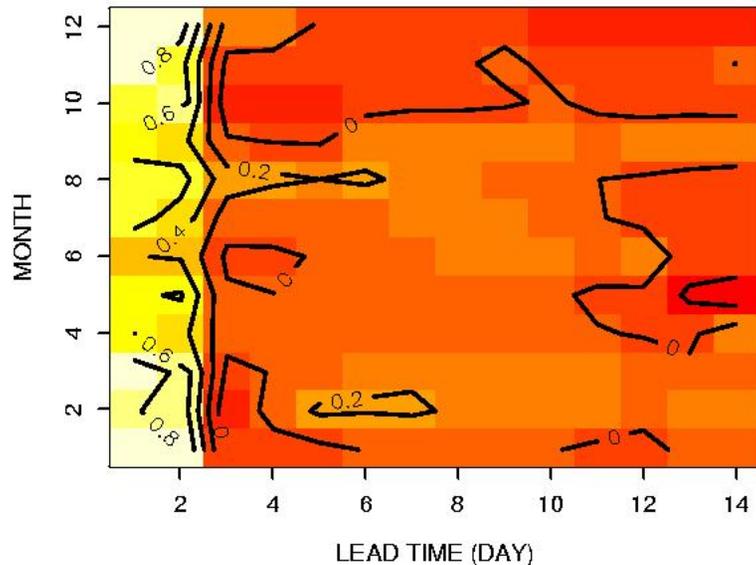
wcom7 - MEAN ERR., ENS. MEAN, 24HR PRECIP. (MM)



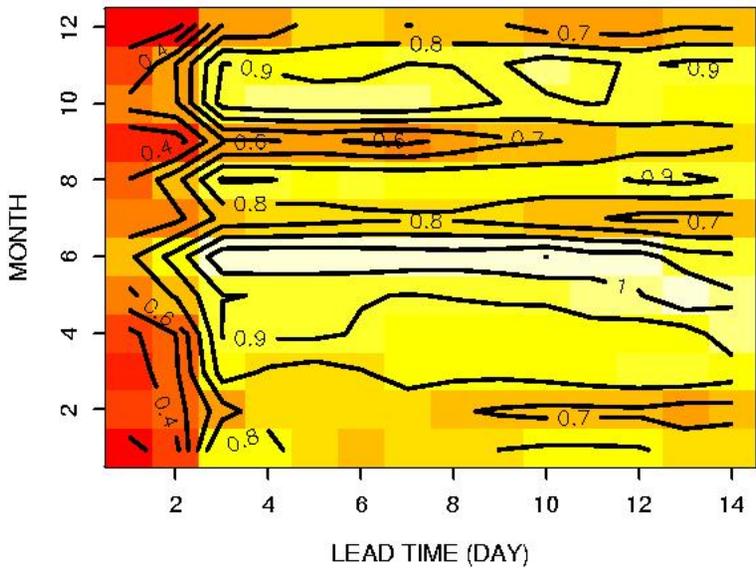
wcom7 - RMSE, ENS. MEAN, 24HR PRECIP. (MM)



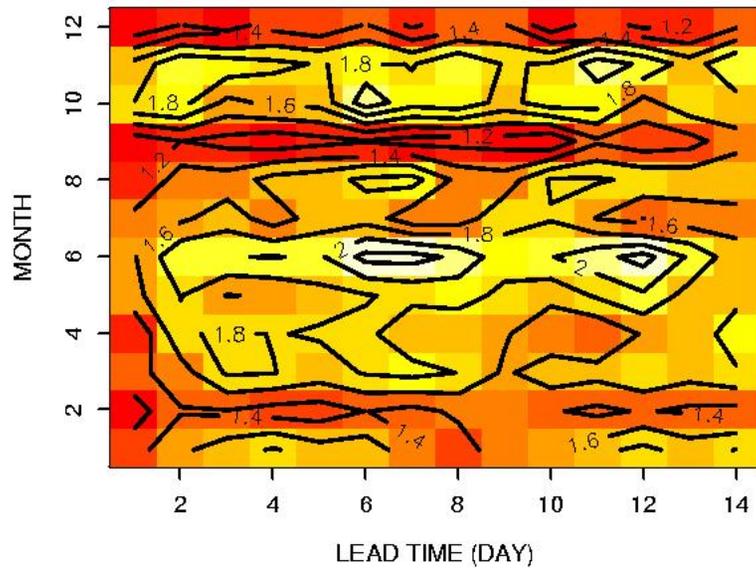
wcom7 - CORR., ENS. MEAN, 24HR PRECIP.



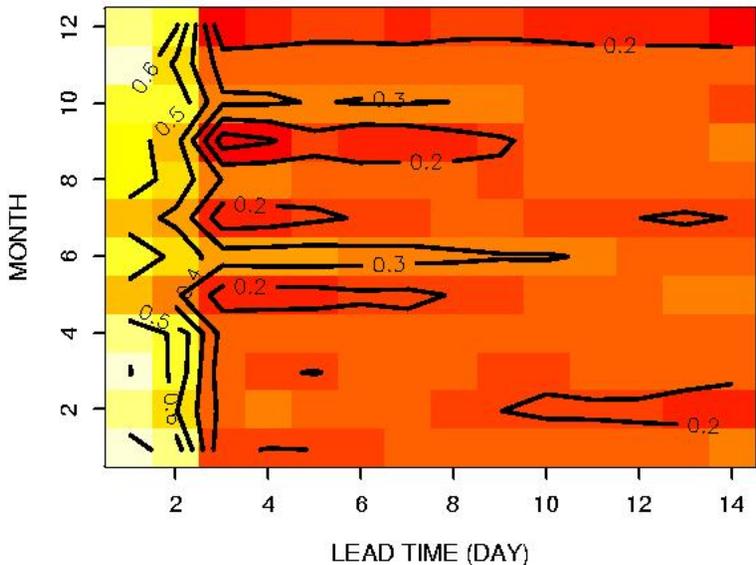
chtm7 - RPS, ENSEMBLE FCST OF 24HR PRECIP.



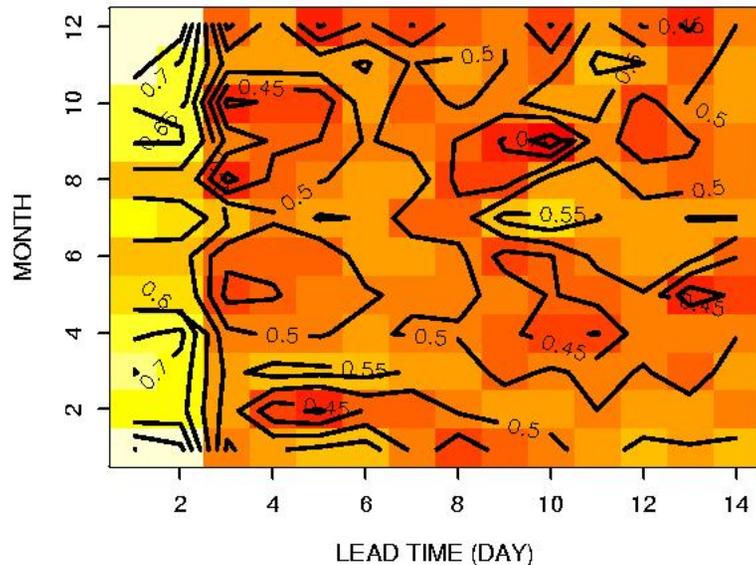
chtm7 - RPS, PERSISTENCE FCST OF 24HR PRECIP.



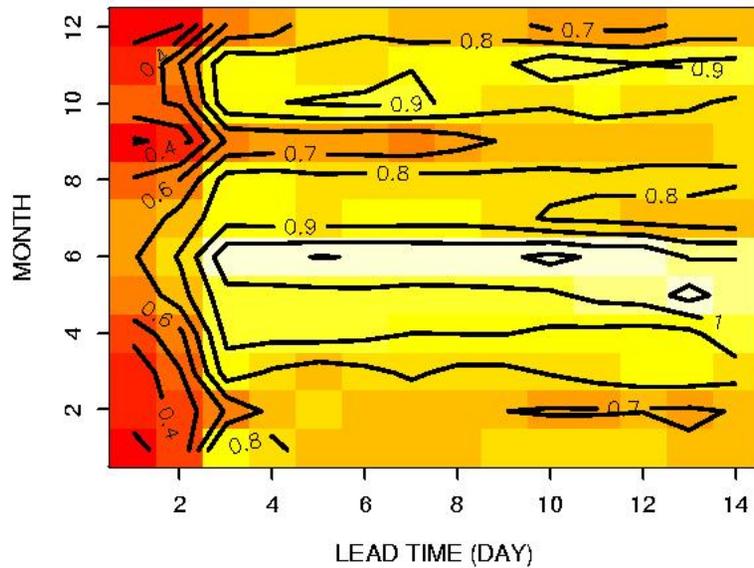
chtm7 - RPSS, ENSEMBLE FCST VS. CLIMATOLOGY



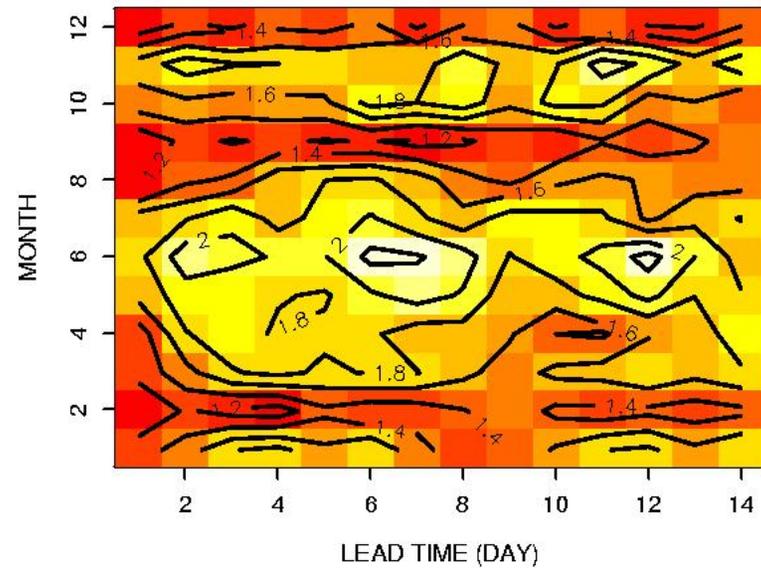
chtm7 - RPSS, ENSEMBLE FCST VS. PERSISTENCE



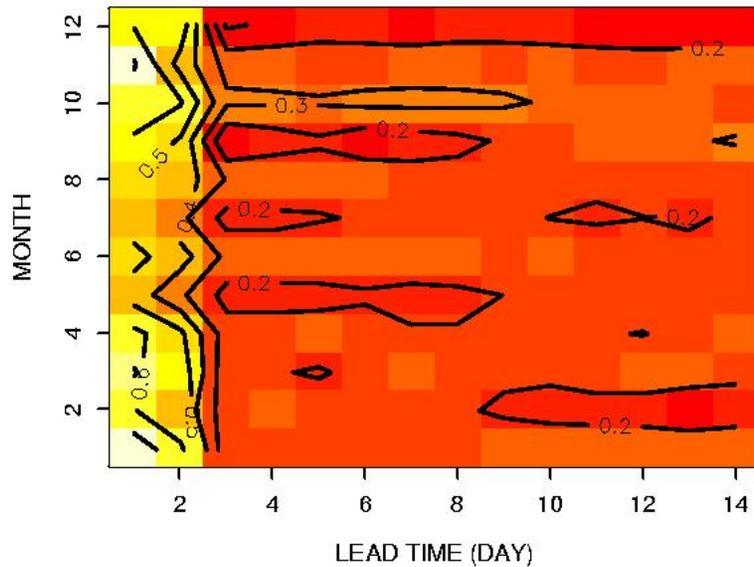
jopm7 - RPS, ENSEMBLE FCST OF 24HR PRECIP.



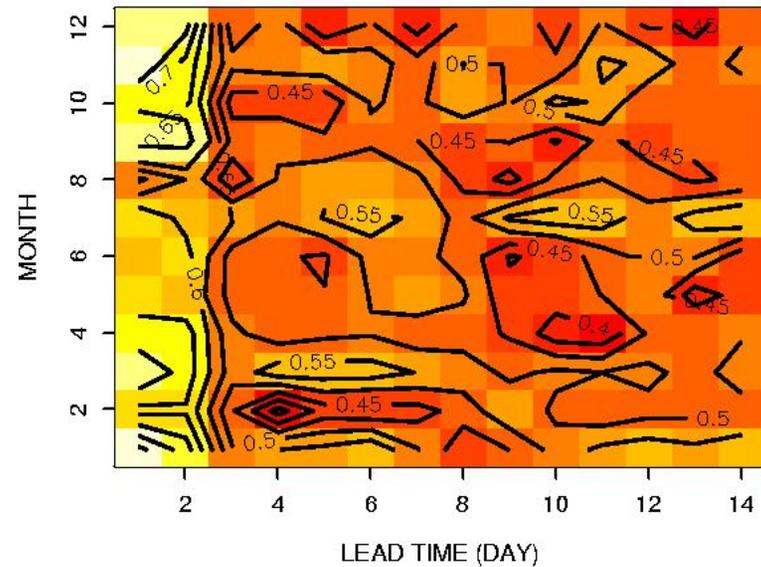
jopm7 - RPS, PERSISTENCE FCST OF 24HR PRECIP.



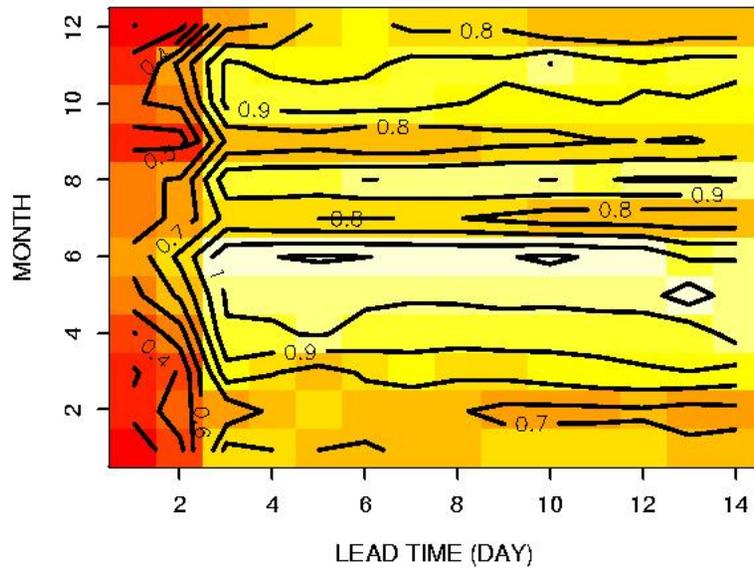
jopm7 - RPSS, ENSEMBLE FCST VS. CLIMATOLOGY



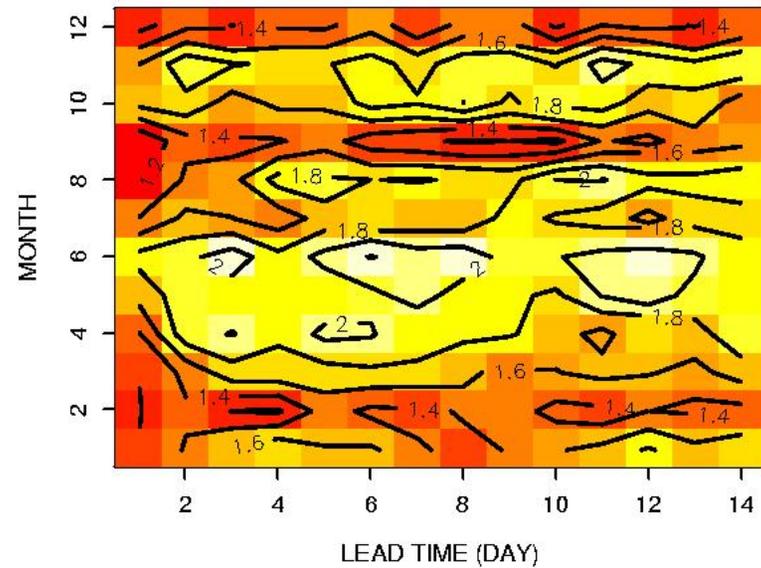
jopm7 - RPSS, ENSEMBLE FCST VS. PERSISTENCE



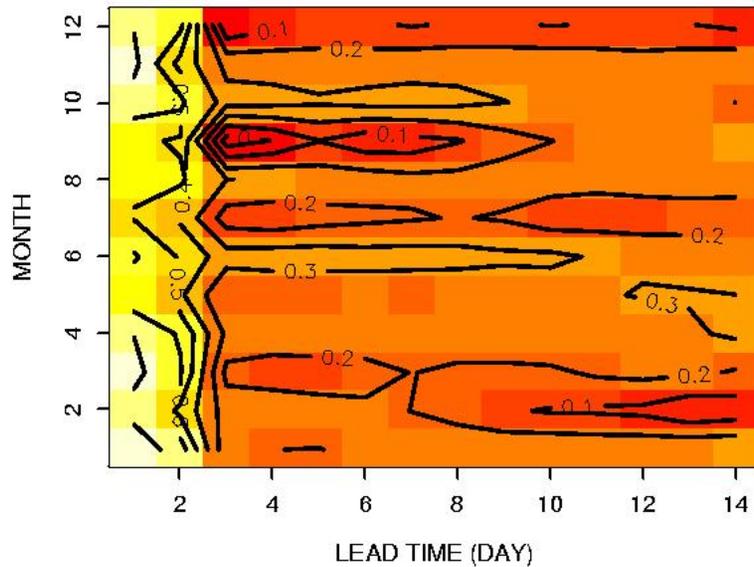
quao2 - RPS, ENSEMBLE FCST OF 24HR PRECIP.



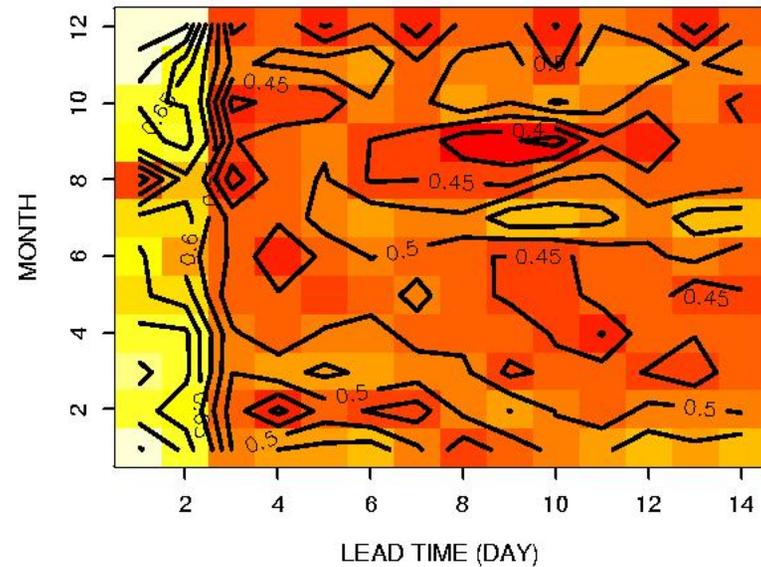
quao2 - RPS, PERSISTENCE FCST OF 24HR PRECIP.



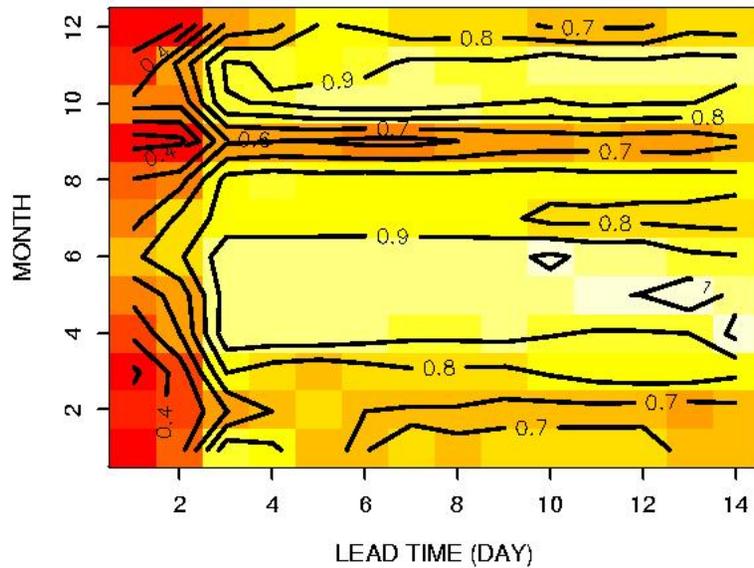
quao2 - RPSS, ENSEMBLE FCST VS. CLIMATOLOGY



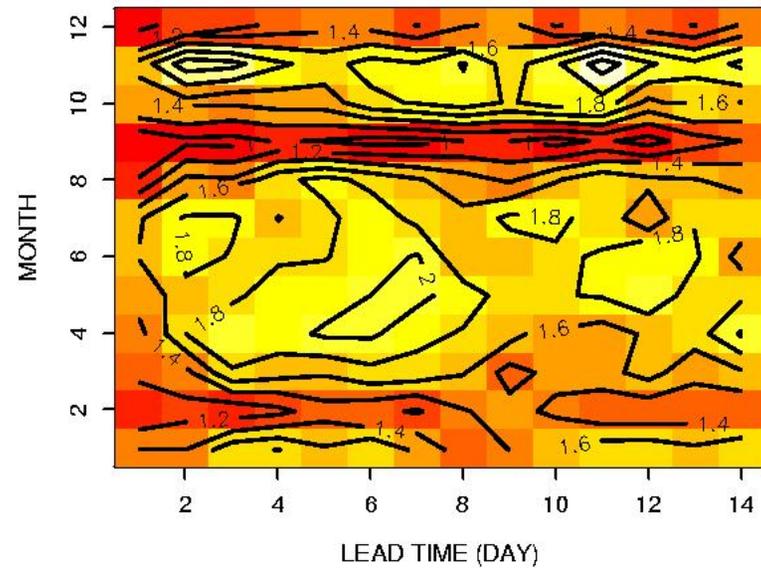
quao2 - RPSS, ENSEMBLE FCST VS. PERSISTENCE



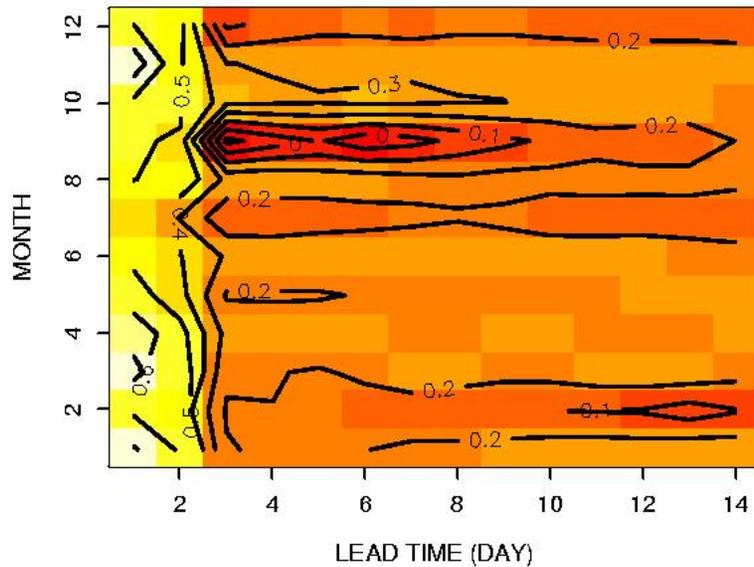
tifm7 - RPS, ENSEMBLE FCST OF 24HR PRECIP.



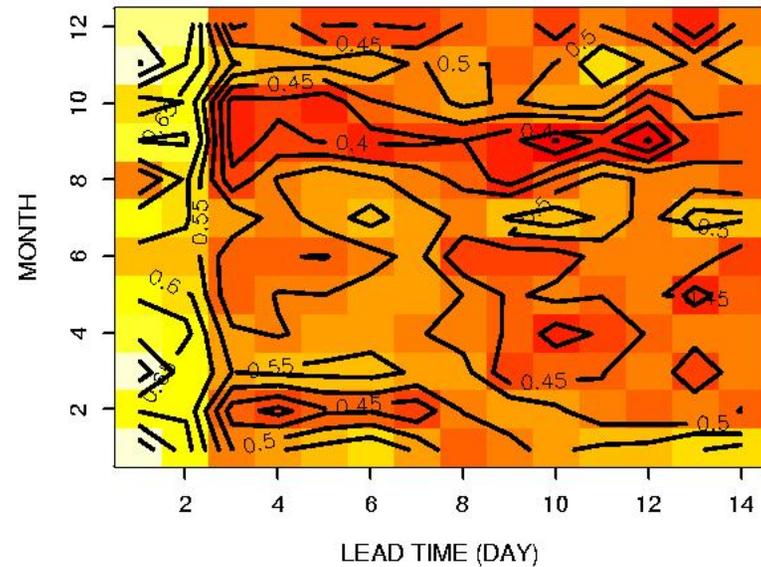
tifm7 - RPS, PERSISTENCE FCST OF 24HR PRECIP.



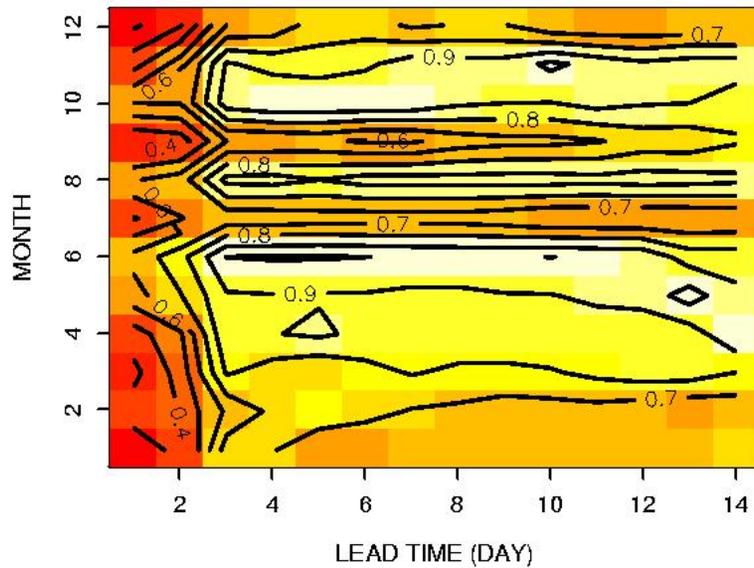
tifm7 - RPSS, ENSEMBLE FCST VS. CLIMATOLOGY



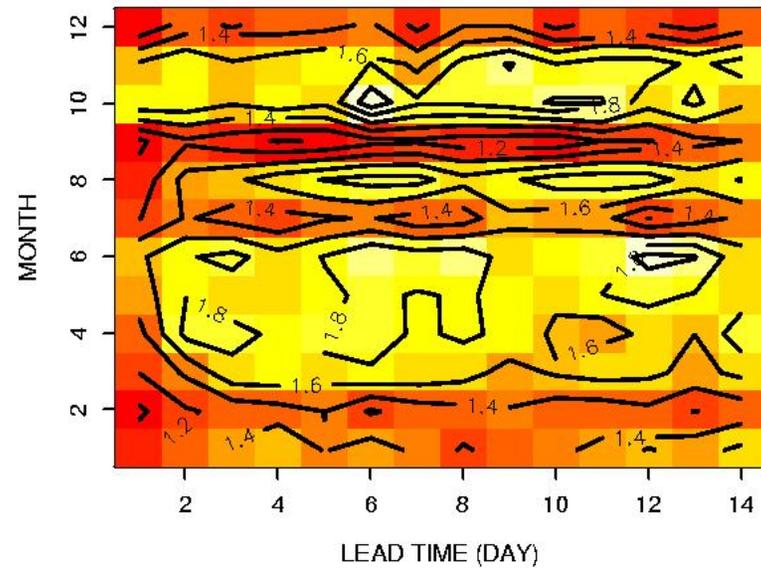
tifm7 - RPSS, ENSEMBLE FCST VS. PERSISTENCE



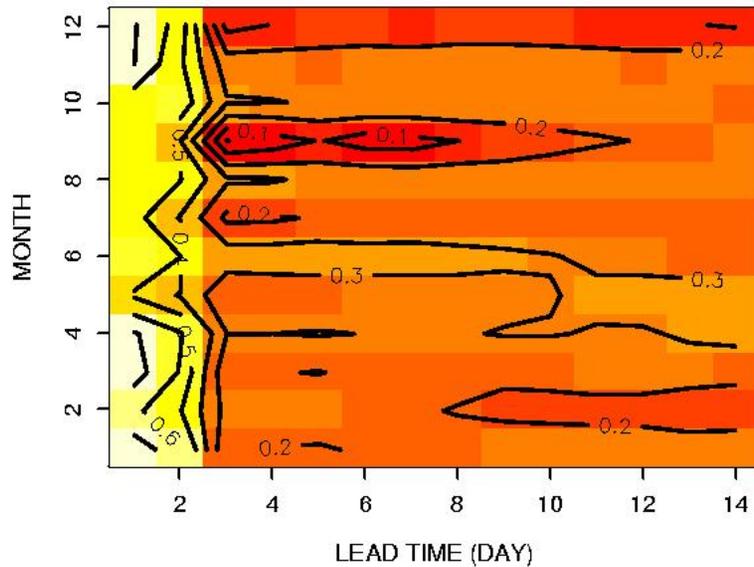
wcom7 - RPS, ENSEMBLE FCST OF 24HR PRECIP.



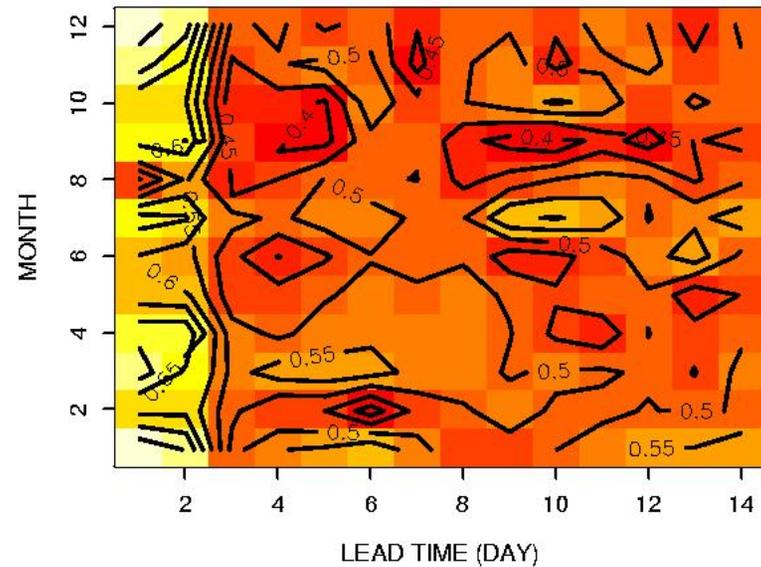
wcom7 - RPS, PERSISTENCE FCST OF 24HR PRECIP.



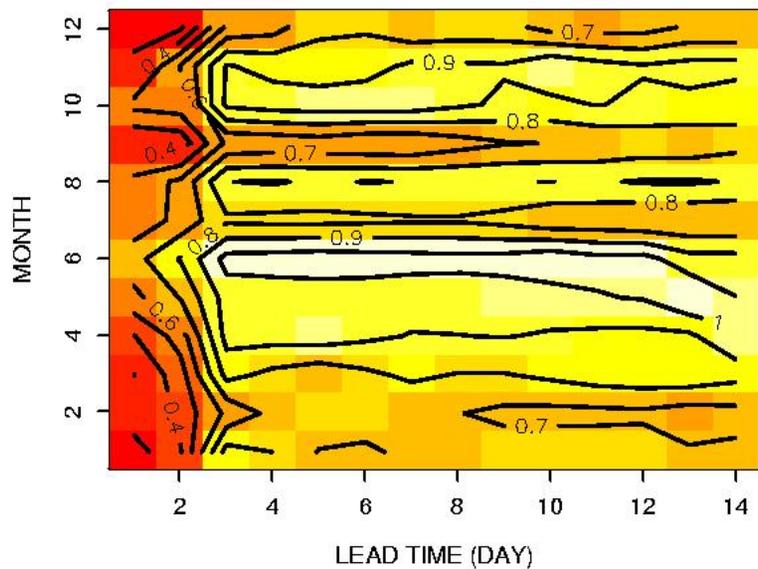
wcom7 - RPSS, ENSEMBLE FCST VS. CLIMATOLOGY



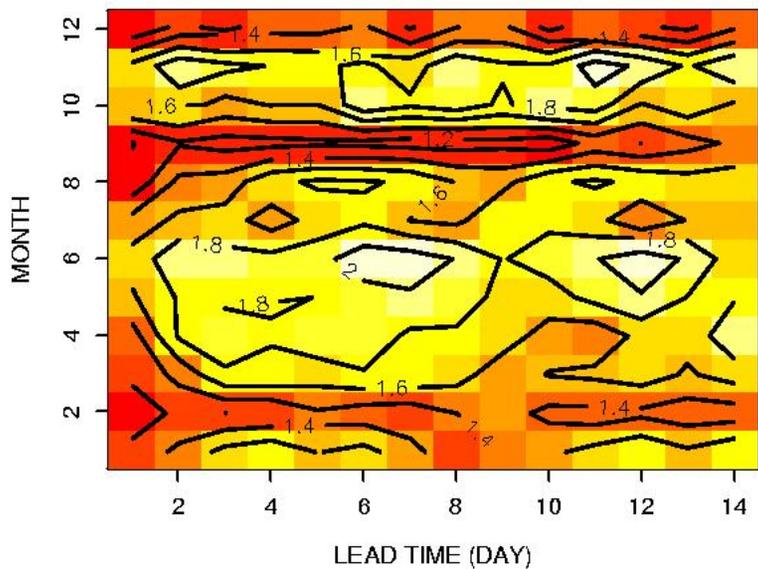
wcom7 - RPSS, ENSEMBLE FCST VS. PERSISTENCE



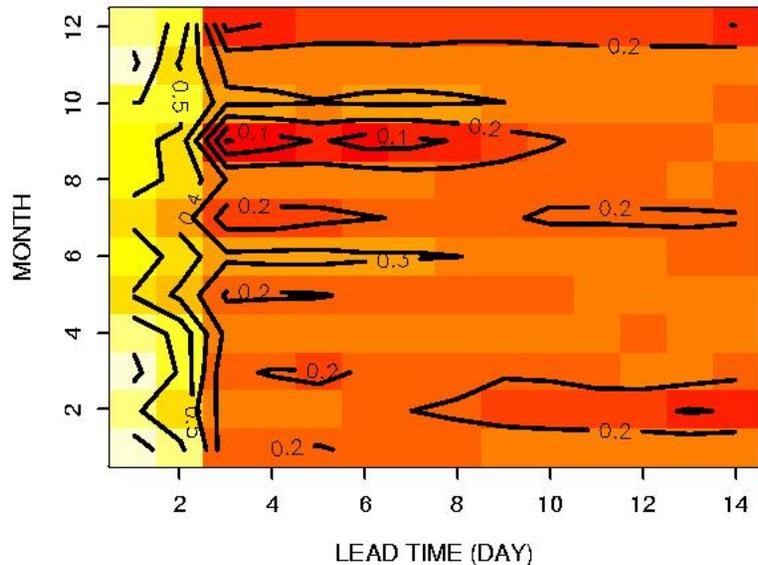
ABRFC - RPS, ENSEMBLE FCST OF 24HR PRECIP.



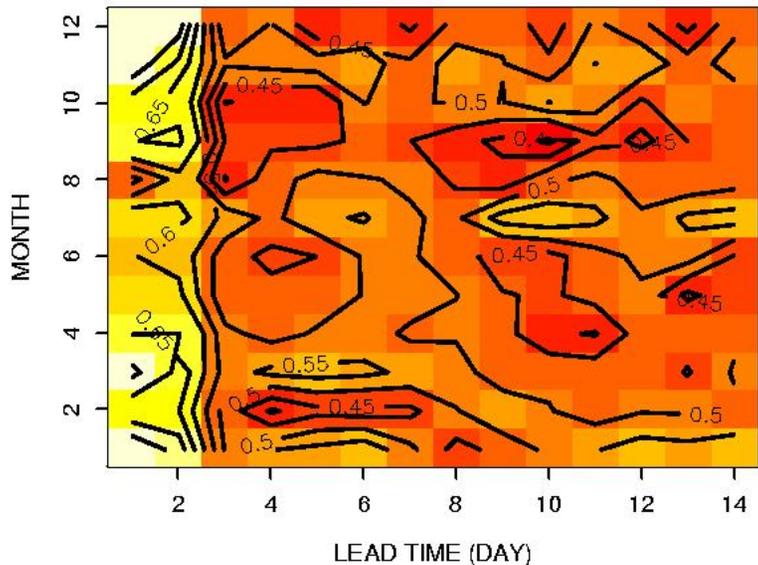
ABRFC - RPS, PERSISTENCE FCST OF 24HR PRECIP.



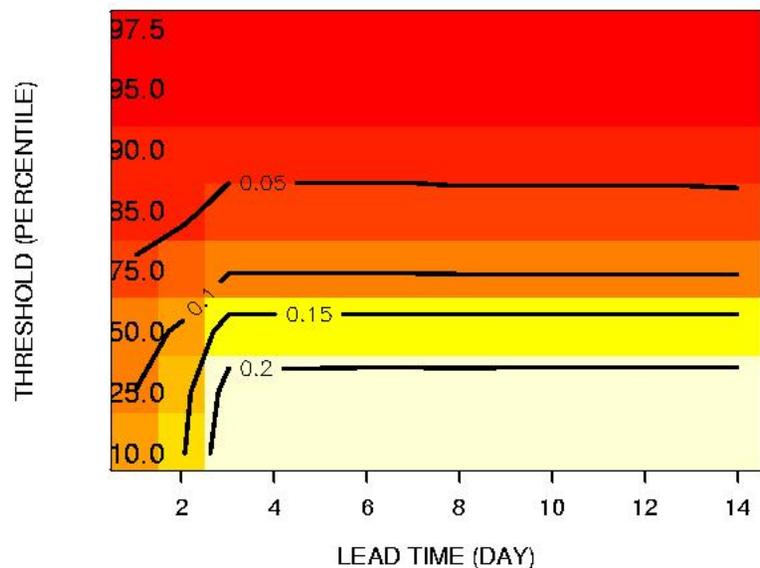
ABRFC - RPSS, ENSEMBLE FCST VS. CLIMATOLOGY



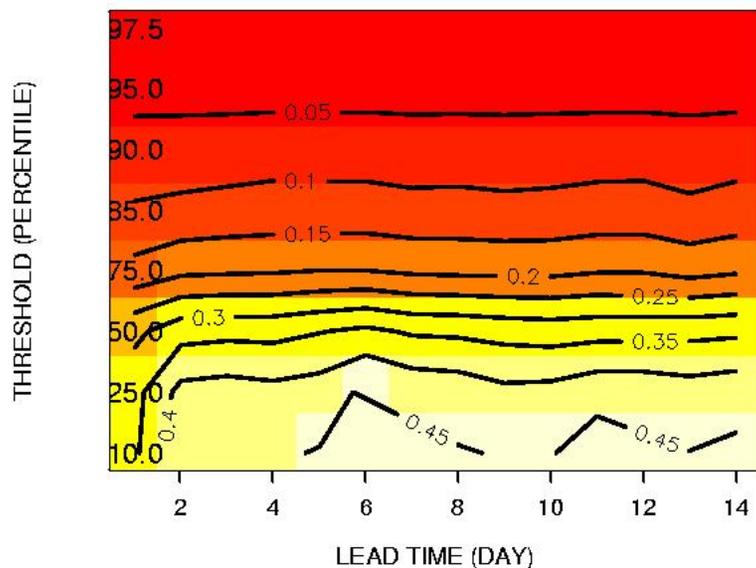
ABRFC - RPSS, ENSEMBLE FCST VS. PERSISTENCE



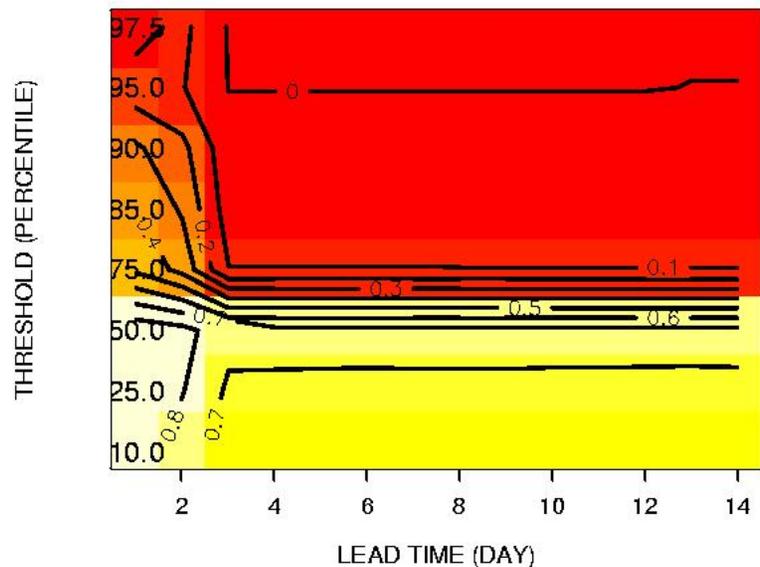
ABRFC - BS, ENSEMBLE FCST OF 24HR PRECIP.



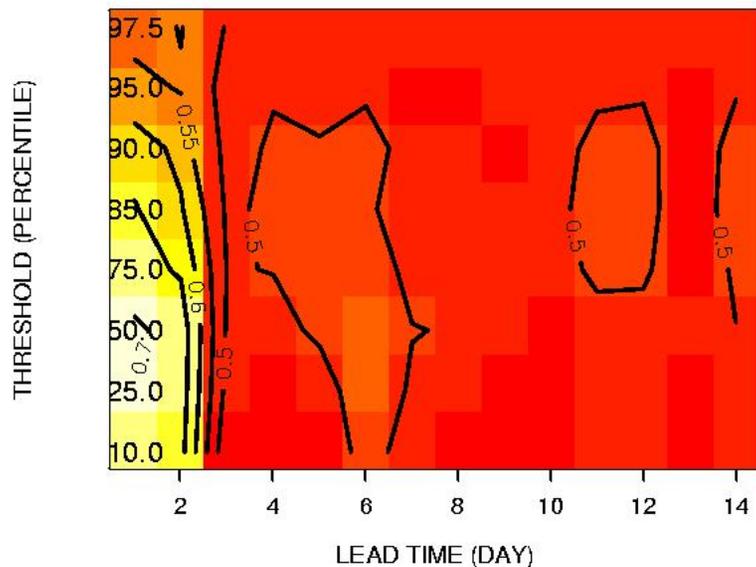
ABRFC - BS, PERSISTENCE FCST OF 24HR PRECIP.



ABRFC - BSS, ENSEMBLE FCST VS. CLIMATOLOGY



ABRFC - BSS, ENSEMBLE FCST VS. PERSISTENCE

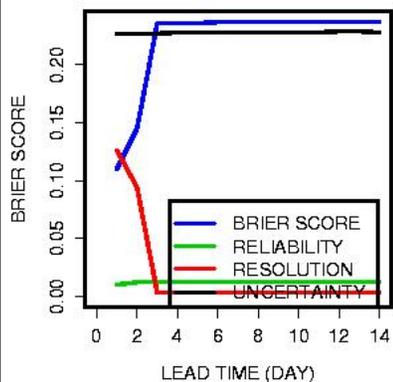




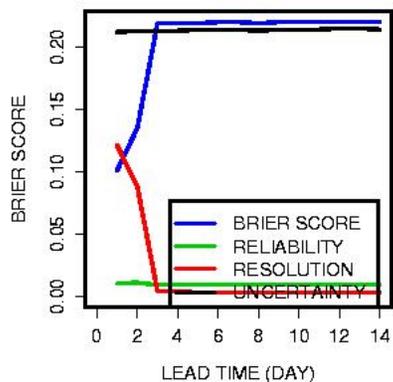
Precipitation amounts in mm

Percentile	chtm7	jopm7	quao2	tifm7	wcom7
10.0	0.127	0.152	0.0762	0.127	0.152
25.0	0.533	0.483	0.356	0.508	0.559
50.0	2.794	2.743	2.134	2.896	2.921
75.0	10.262	10.211	9.068	10.465	10.897
85.0	16.586	17.094	15.748	17.501	17.729
90.0	22.606	23.114	21.895	22.758	23.190
95.0	33.858	34.925	33.553	33.426	34.646
97.0	42.037	43.891	41.478	40.970	43.586

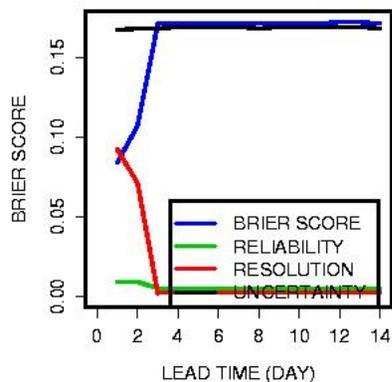
ABRFC - 24HR PRECIP., 10.0TH PER.



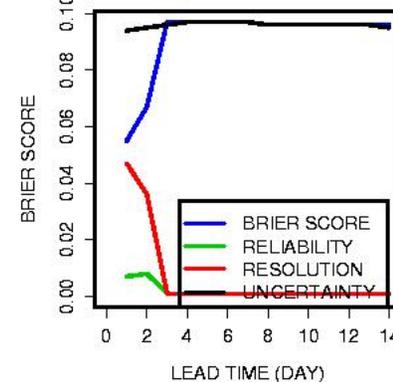
ABRFC - 24HR PRECIP., 25.0TH PER.



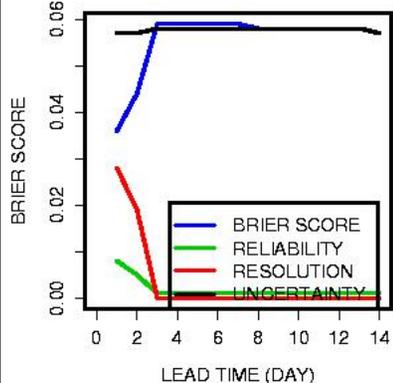
ABRFC - 24HR PRECIP., 50.0TH PER.



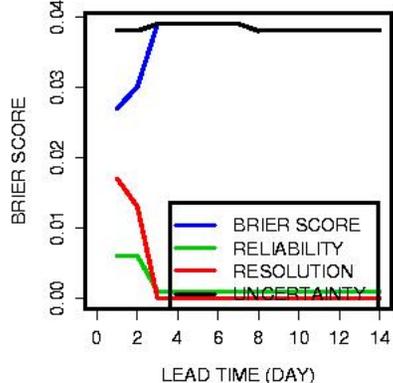
ABRFC - 24HR PRECIP., 75.0TH PER.



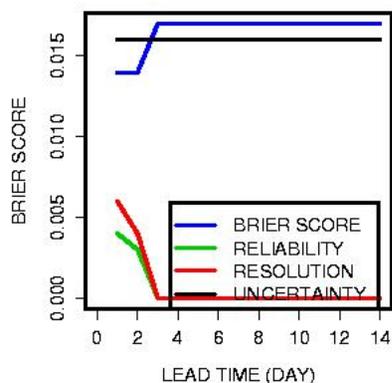
ABRFC - 24HR PRECIP., 85.0TH PER.



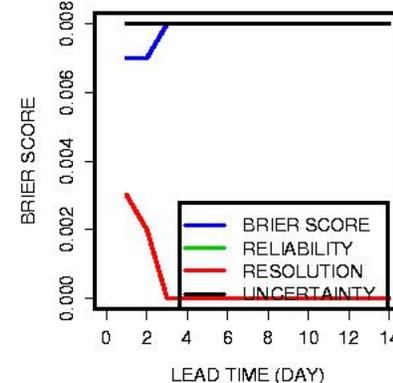
ABRFC - 24HR PRECIP., 90.0TH PER.



ABRFC - 24HR PRECIP., 95.0TH PER.



ABRFC - 24HR PRECIP., 97.5TH PER.



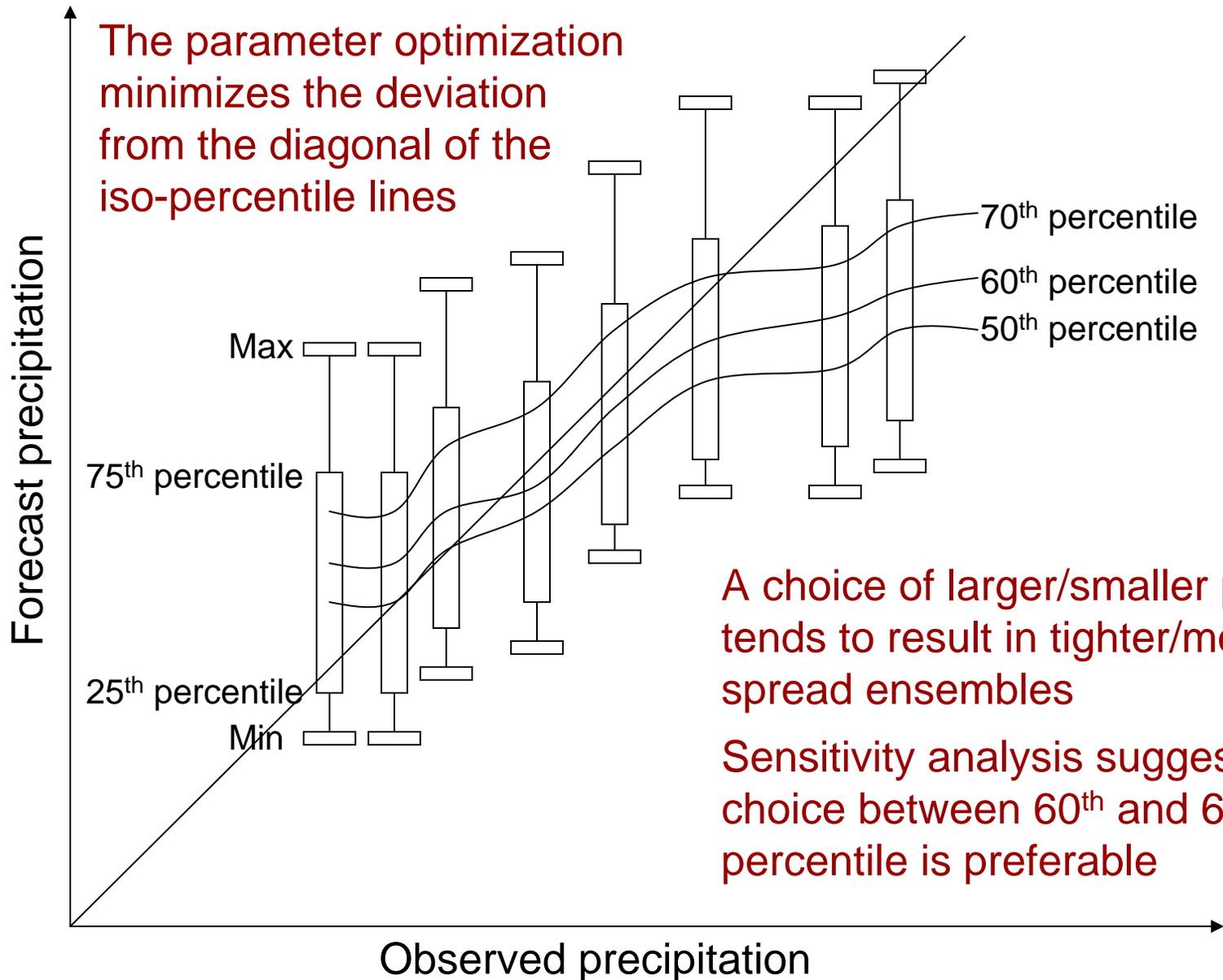


Improved modeling of conditional probability distribution, parameter estimation & user control

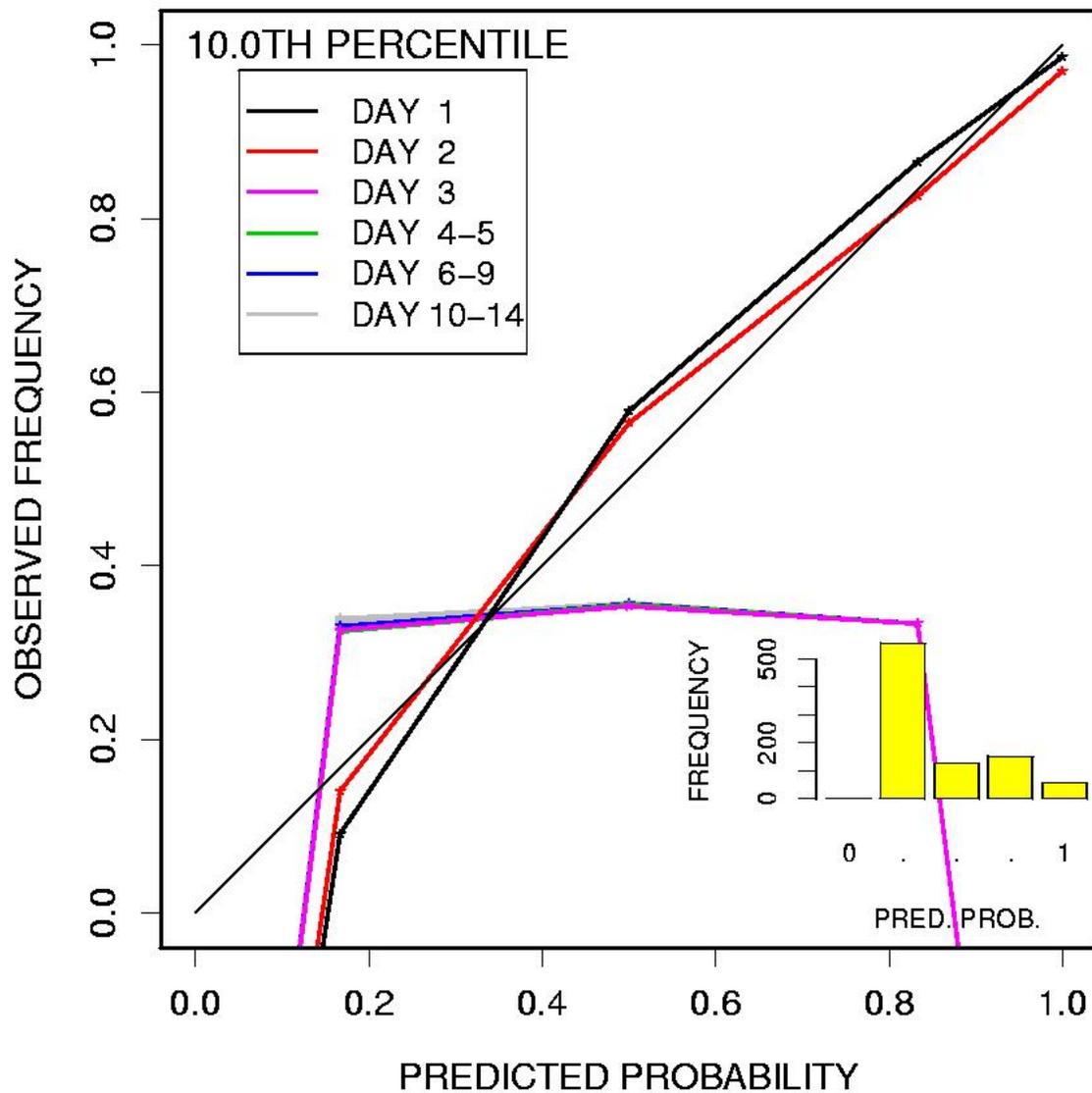
- In FY06, new modules were developed, and implemented in the EPP RFC Subsystem for testing and evaluation, to allow:
 - A more flexible regression model to better-fit the data in modeling of conditional probability distribution
 - Explicit optimization of the regression parameter using a multi-objective function
 - Some control by the user over certain properties of the ensembles being generated
- See “Ensemble verification II” presentation this afternoon for examples



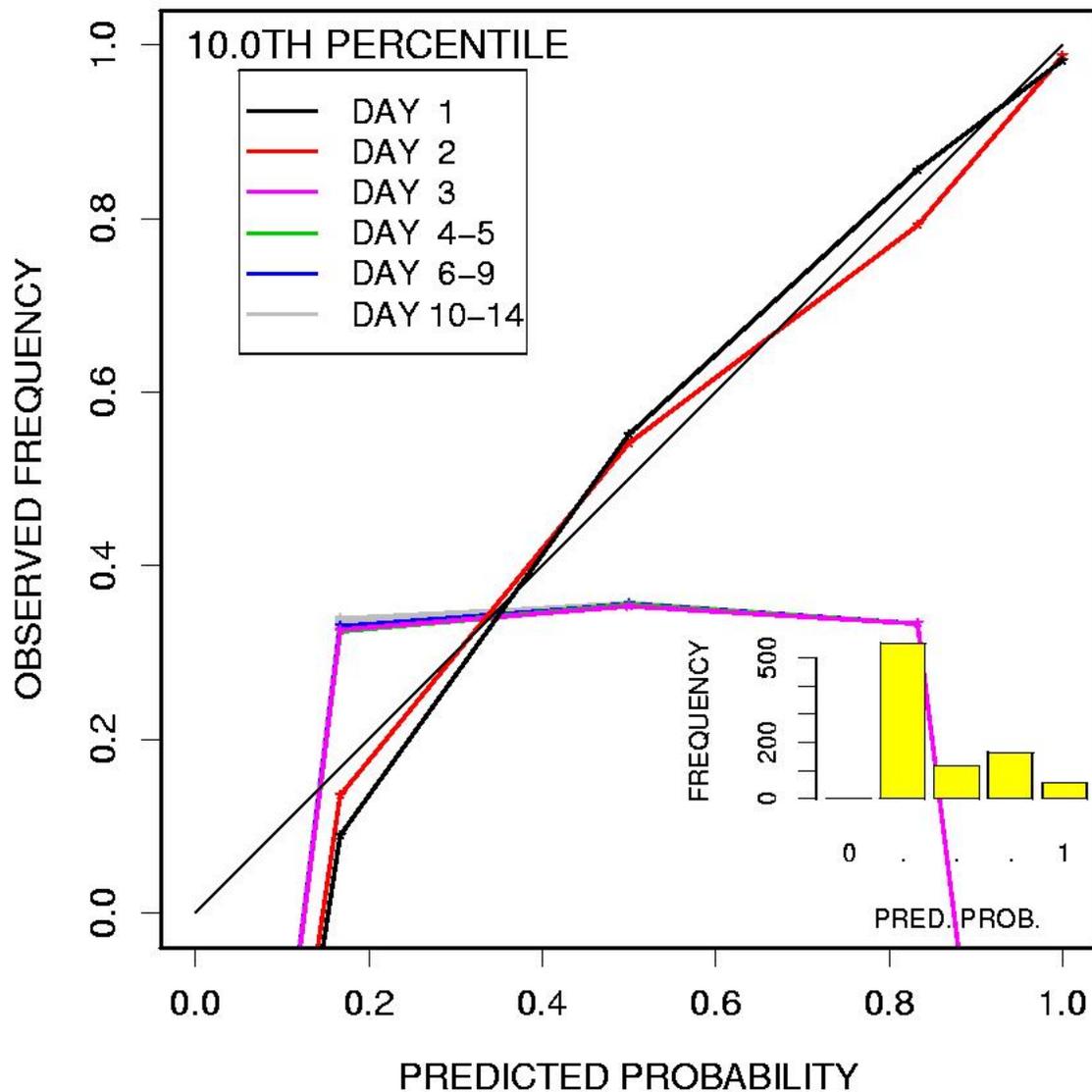
User control of ensemble behavior



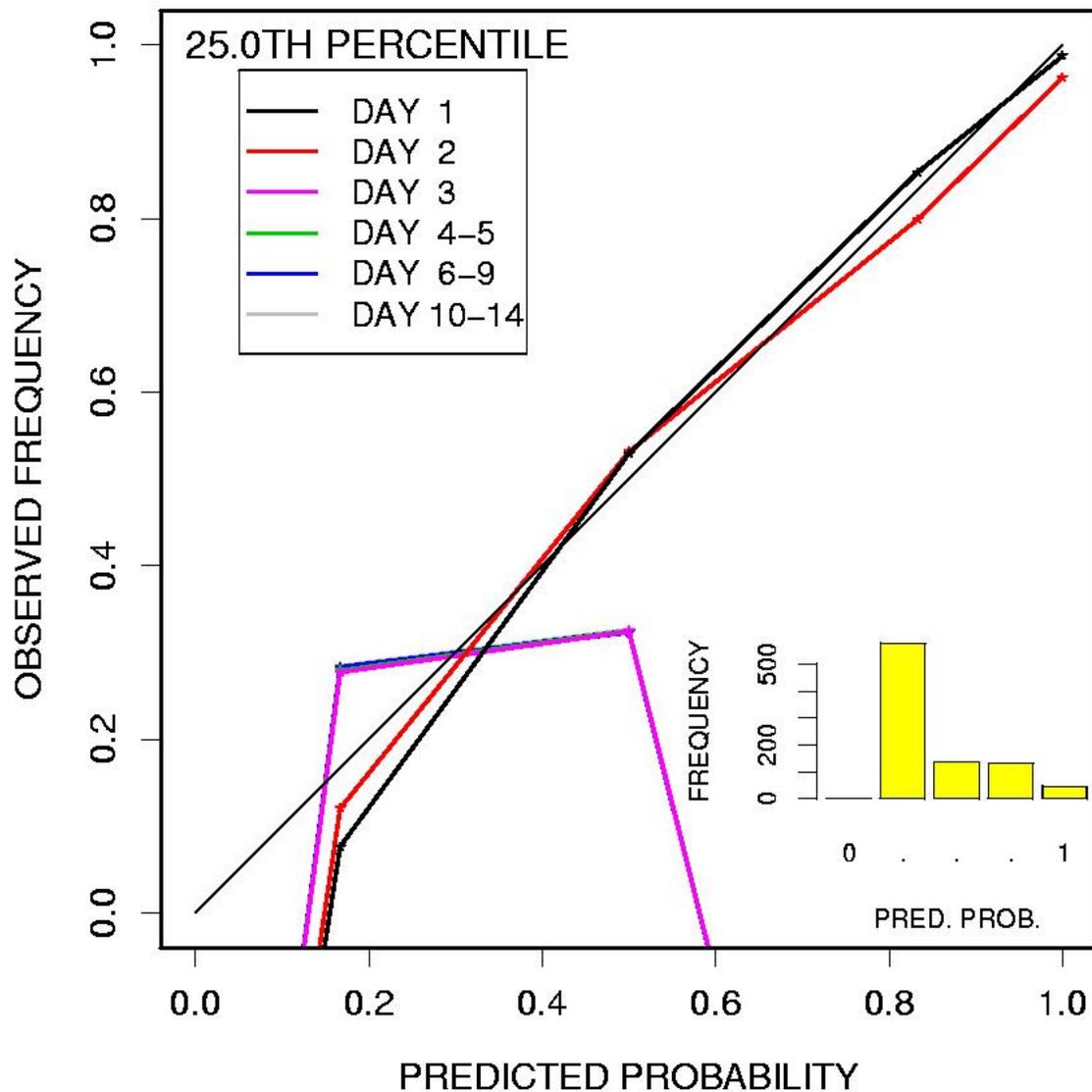
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



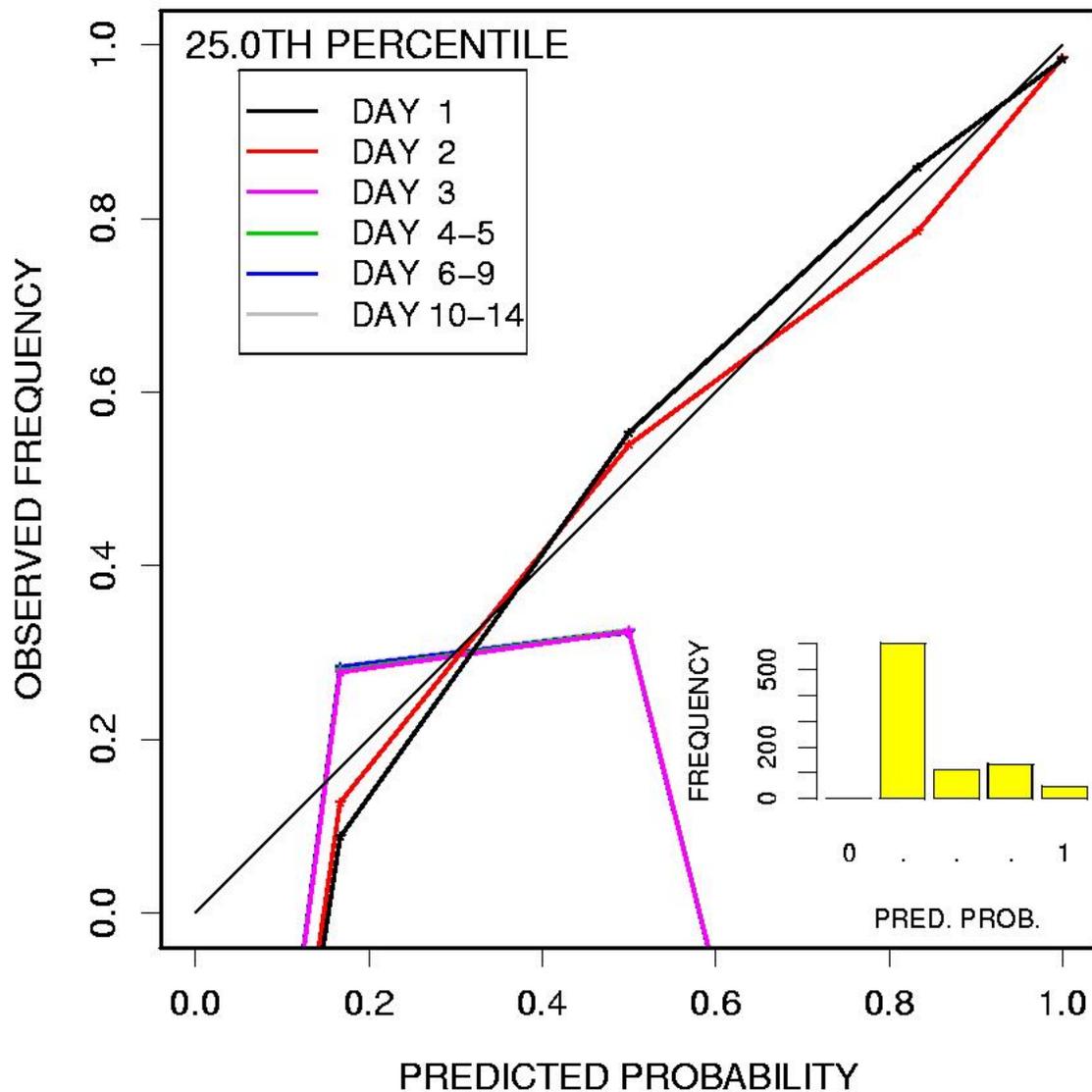
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



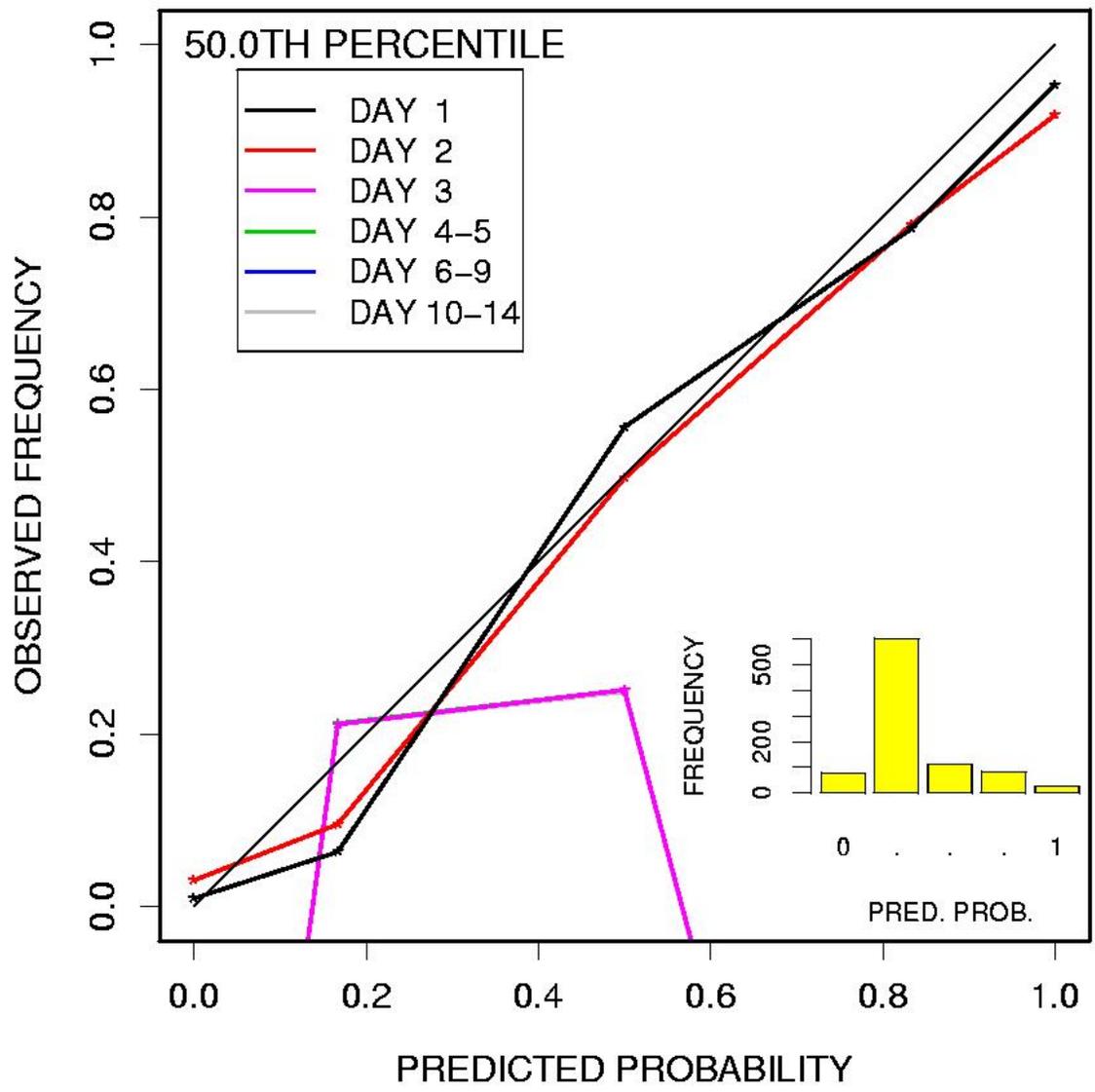
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



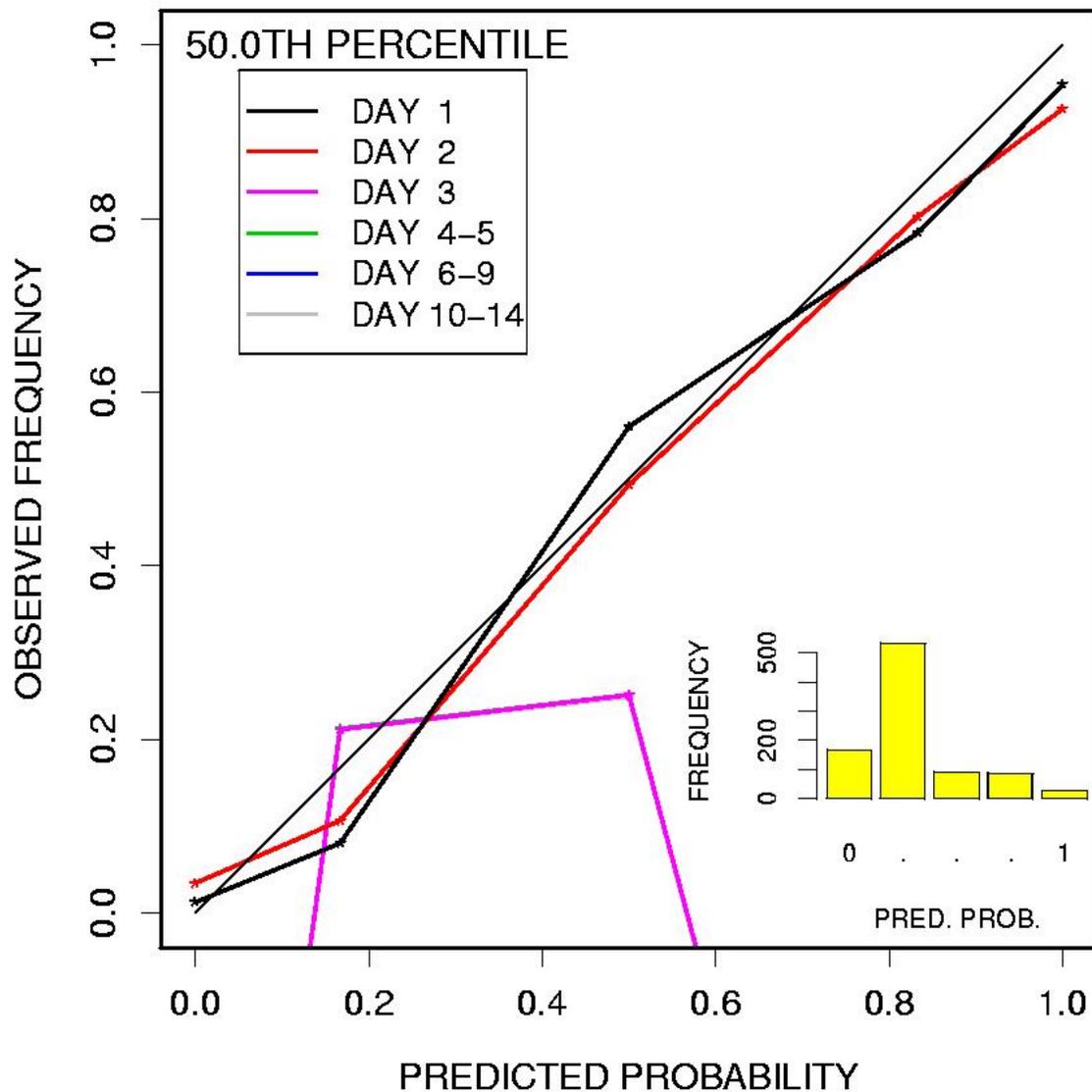
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



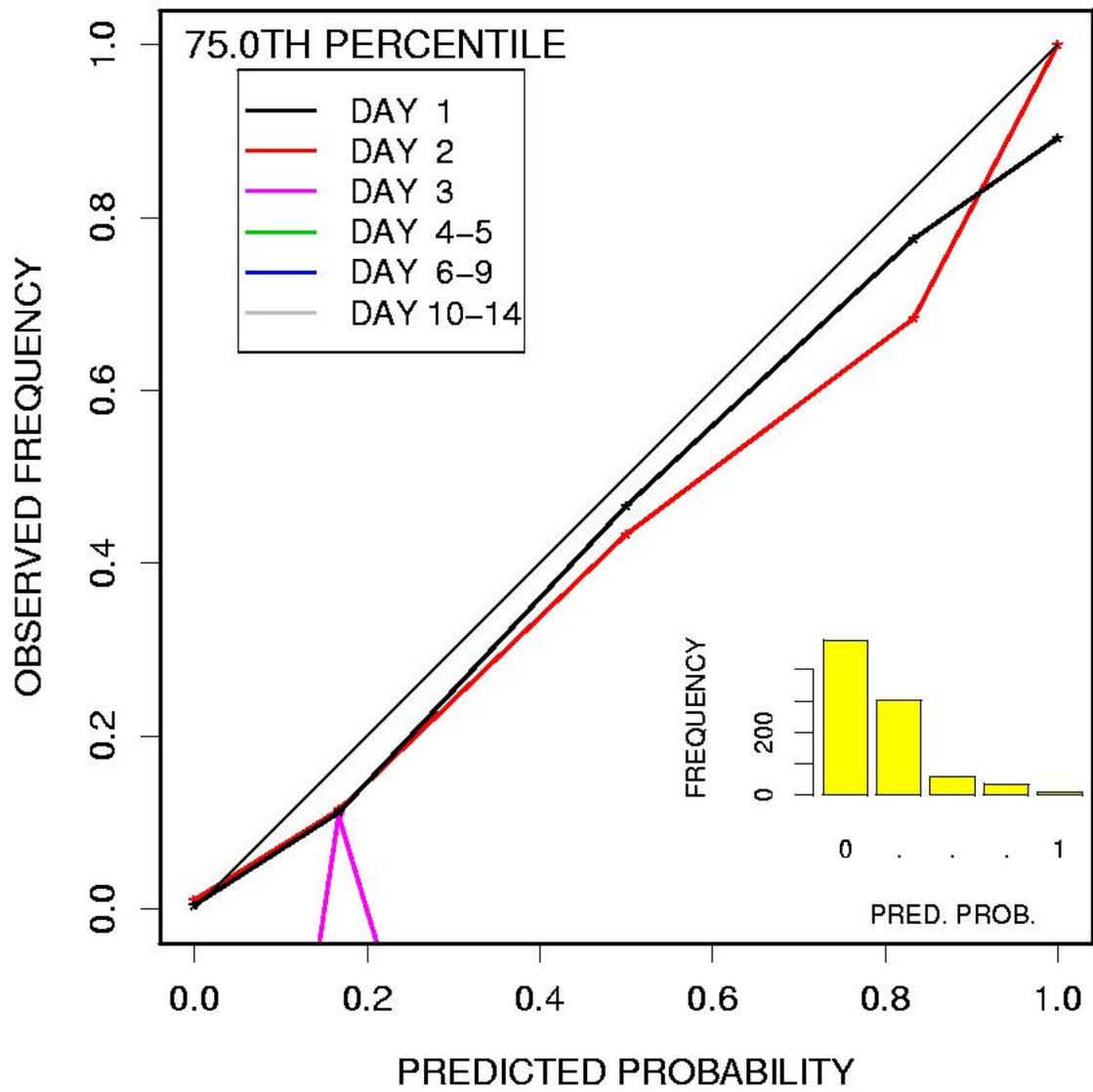
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



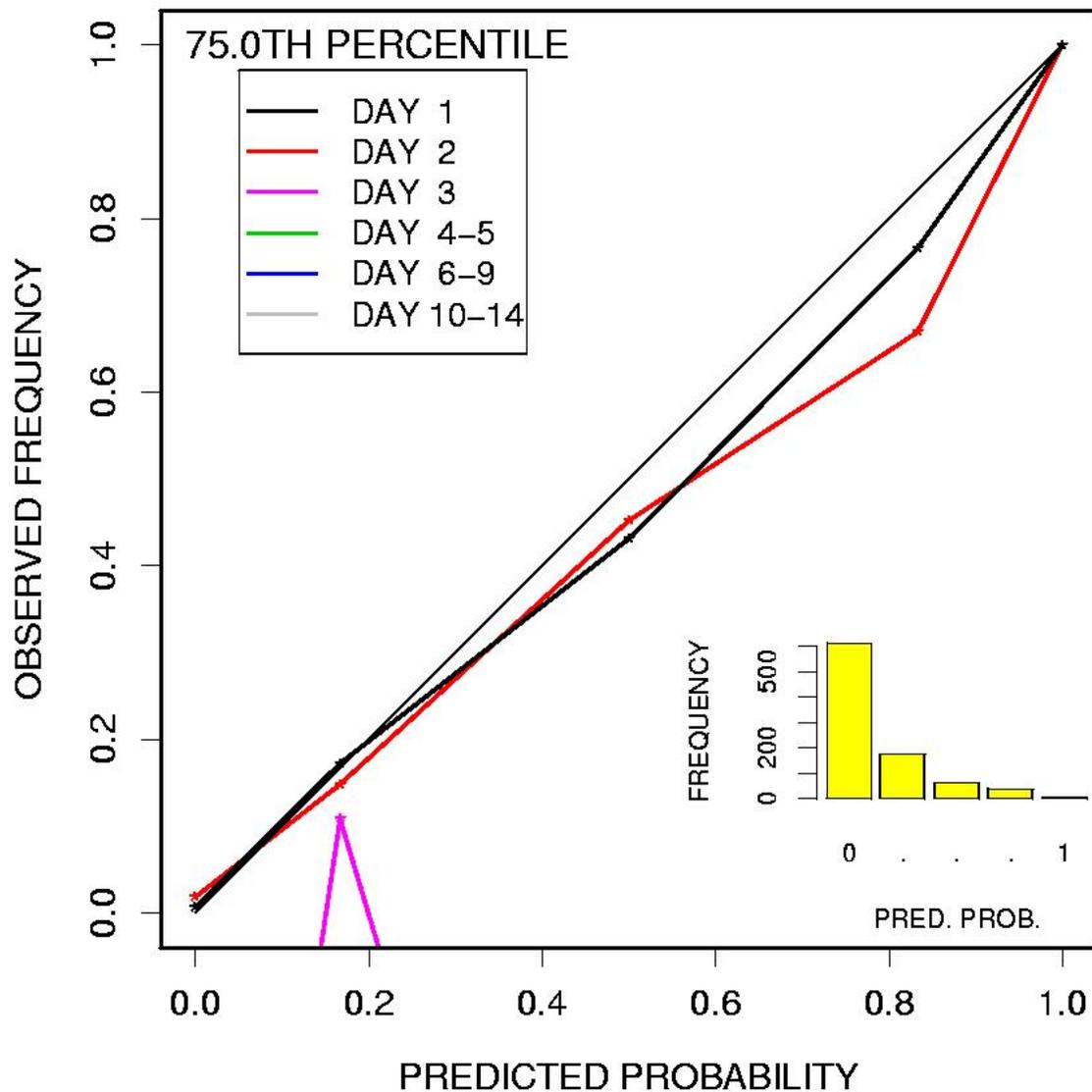
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



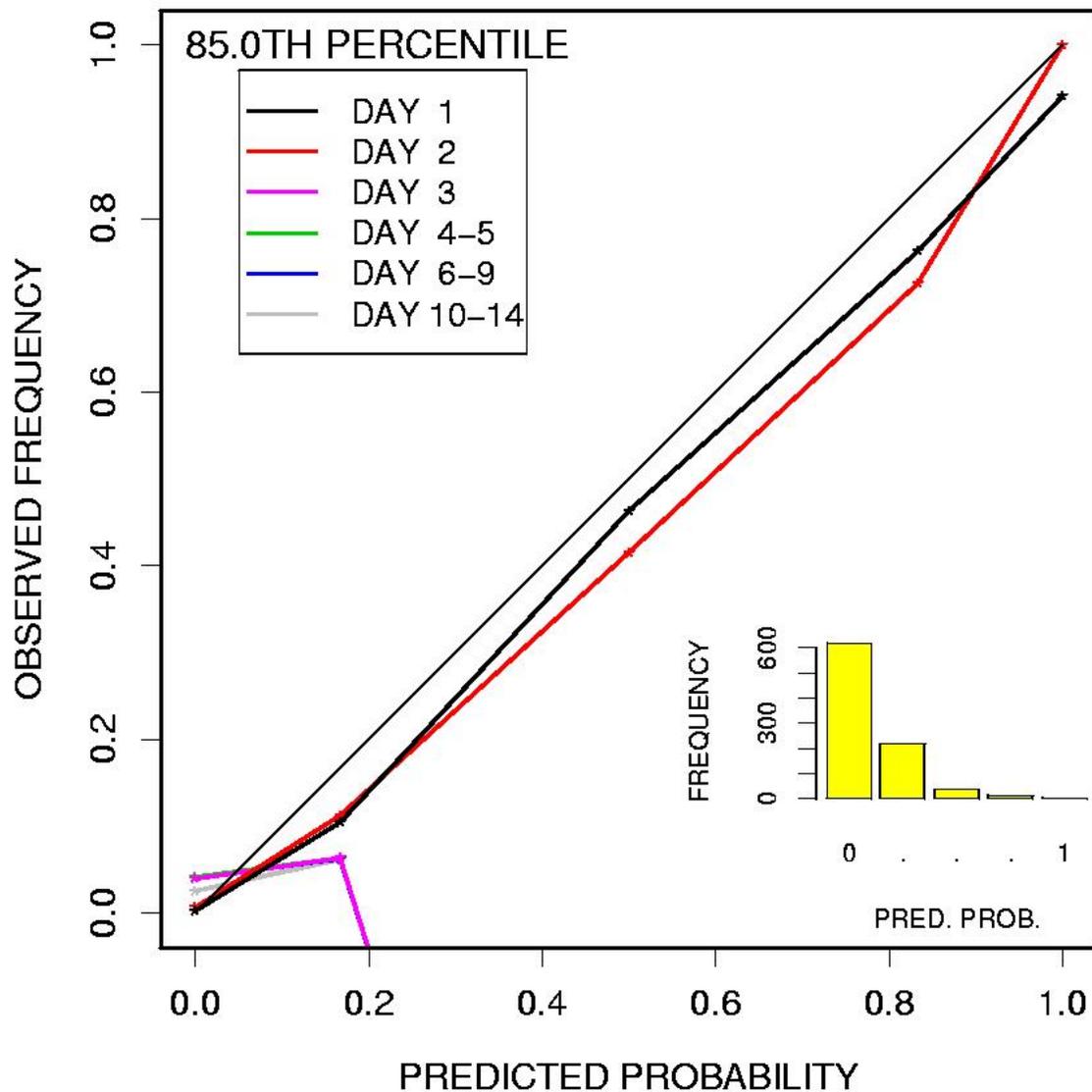
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



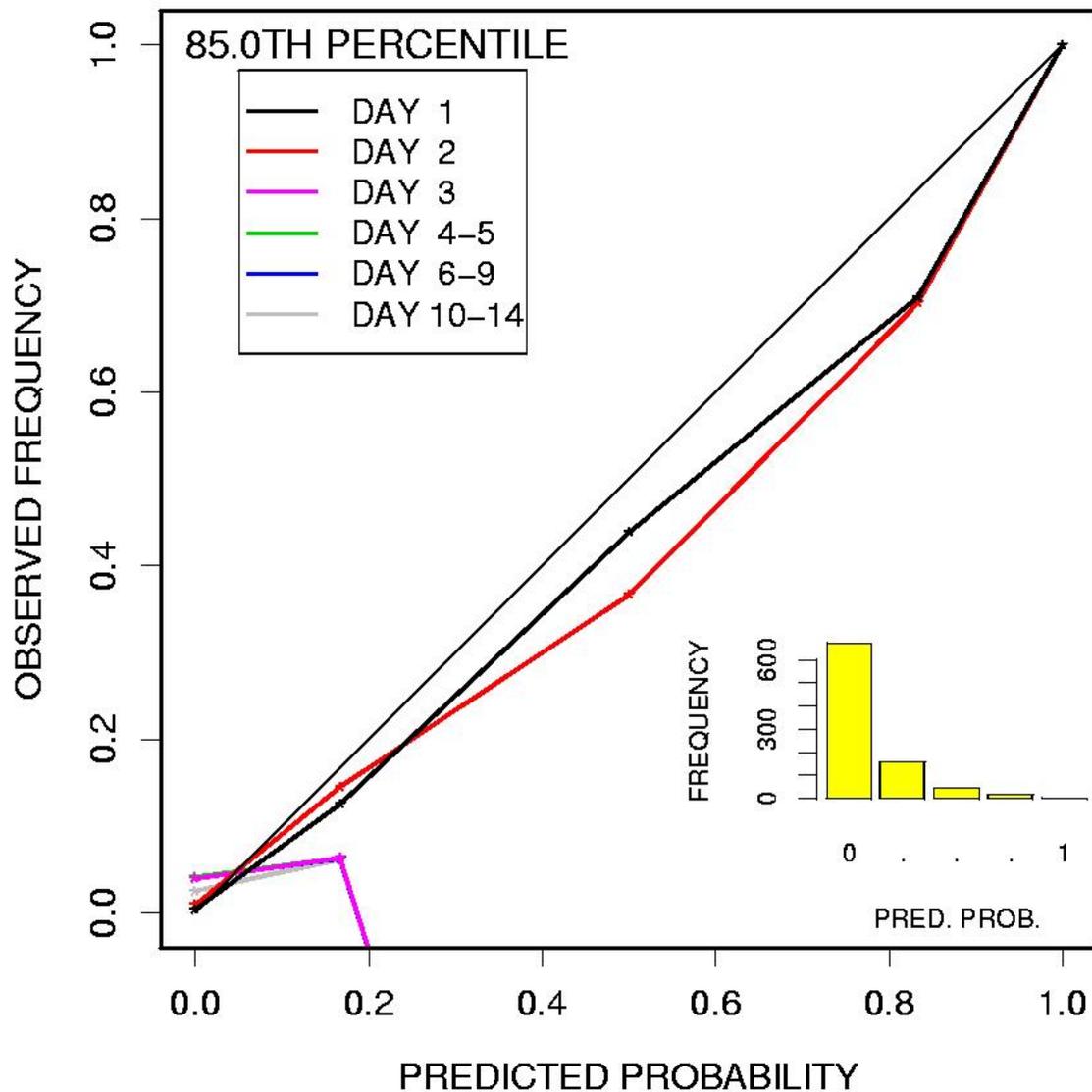
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



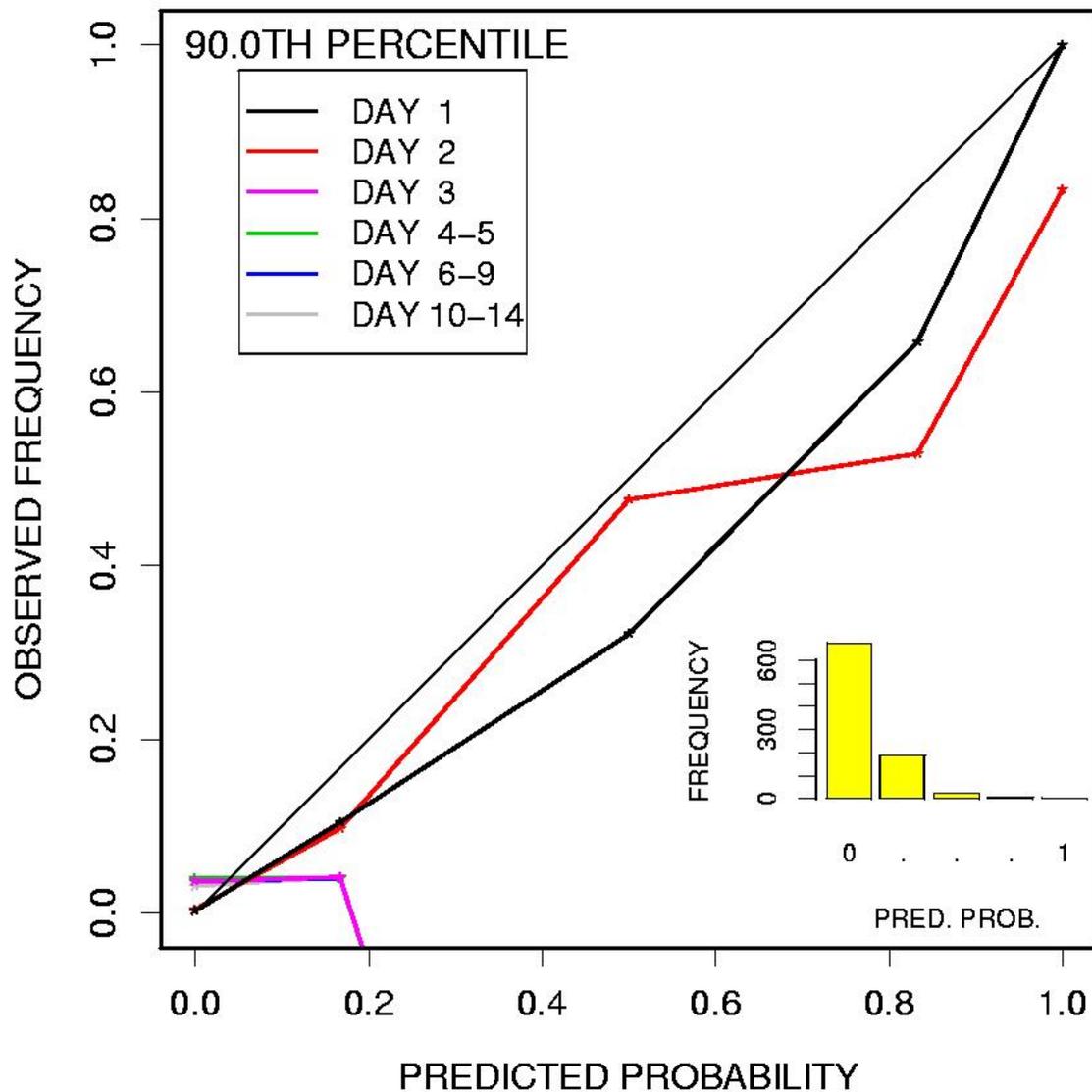
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



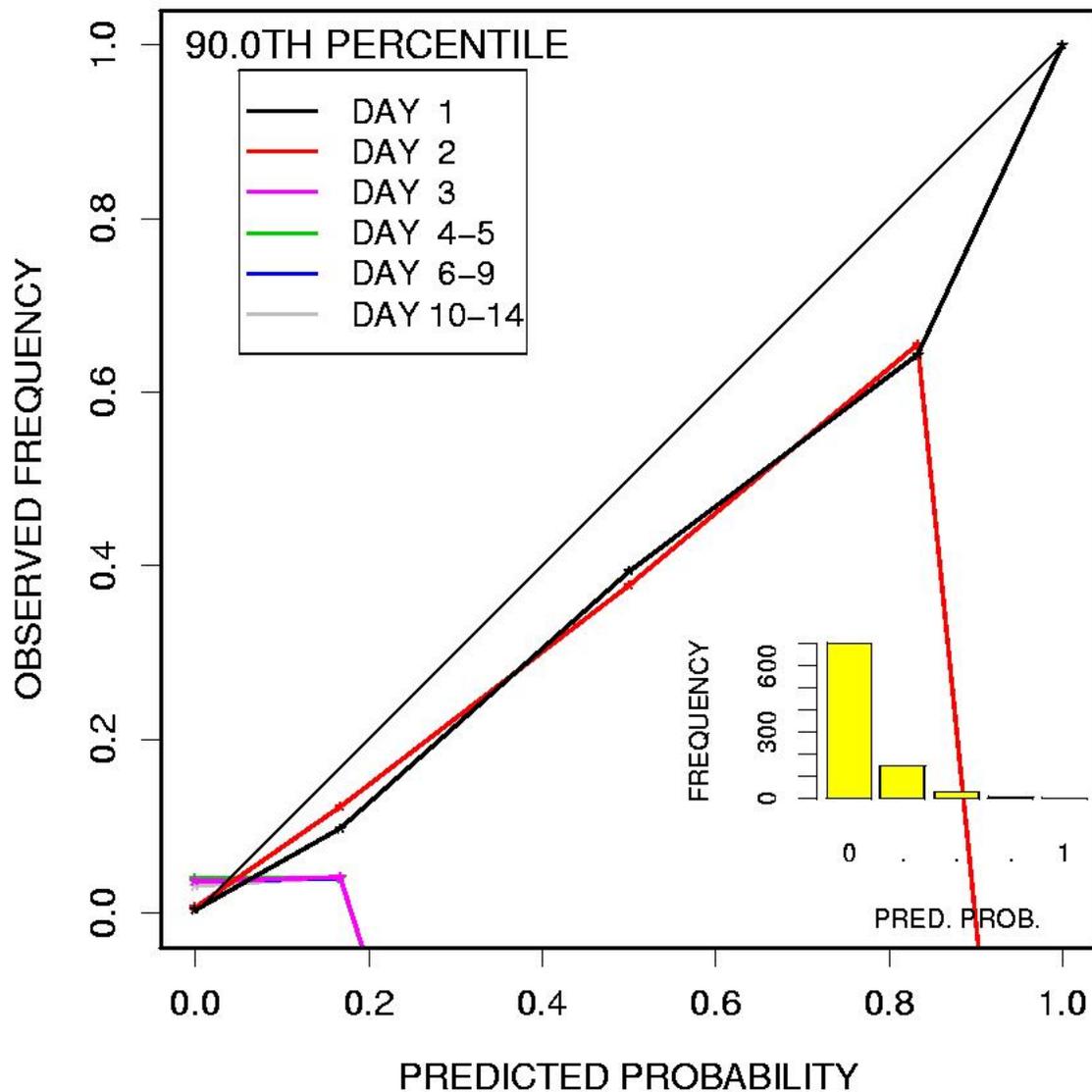
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



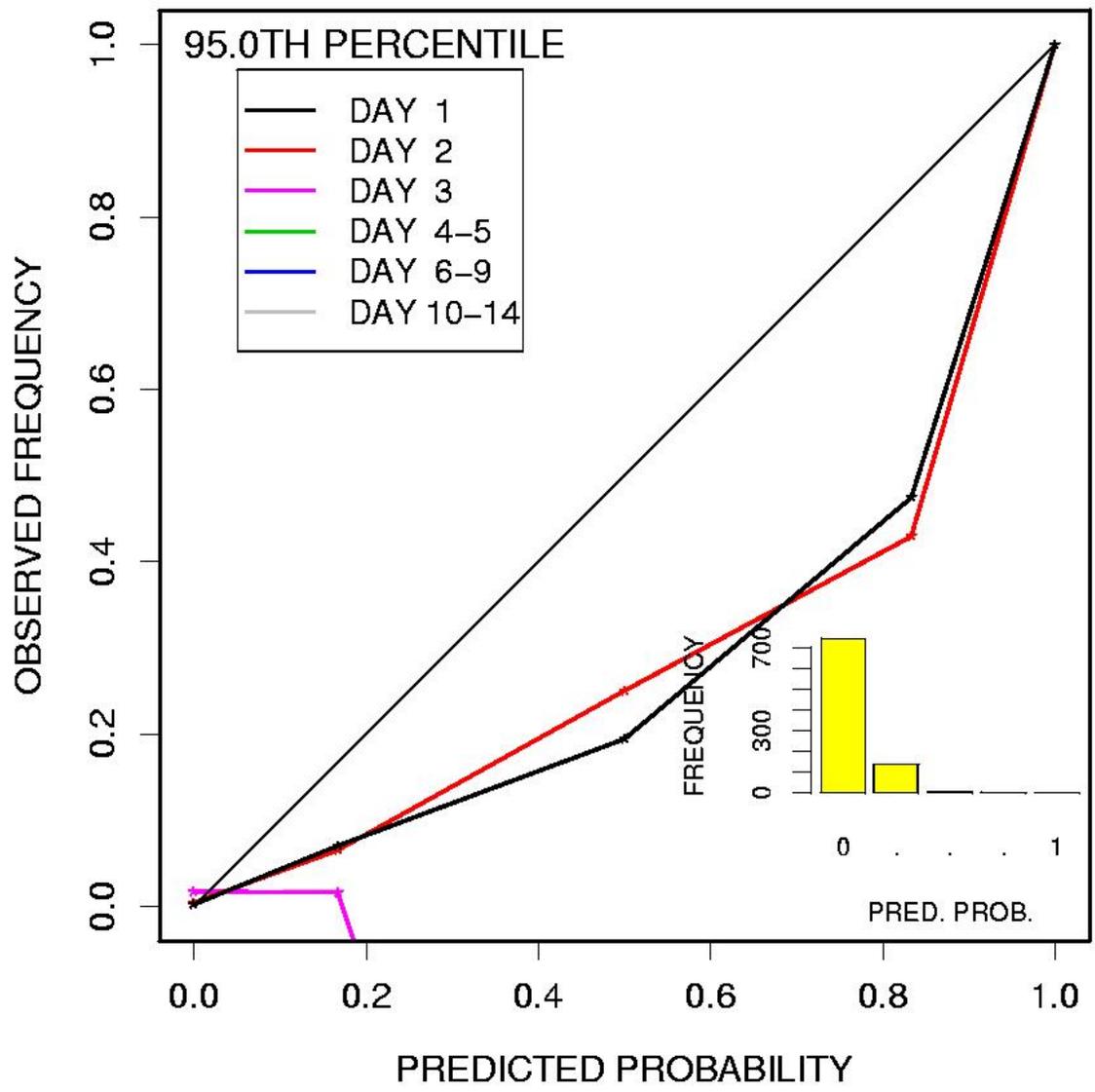
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



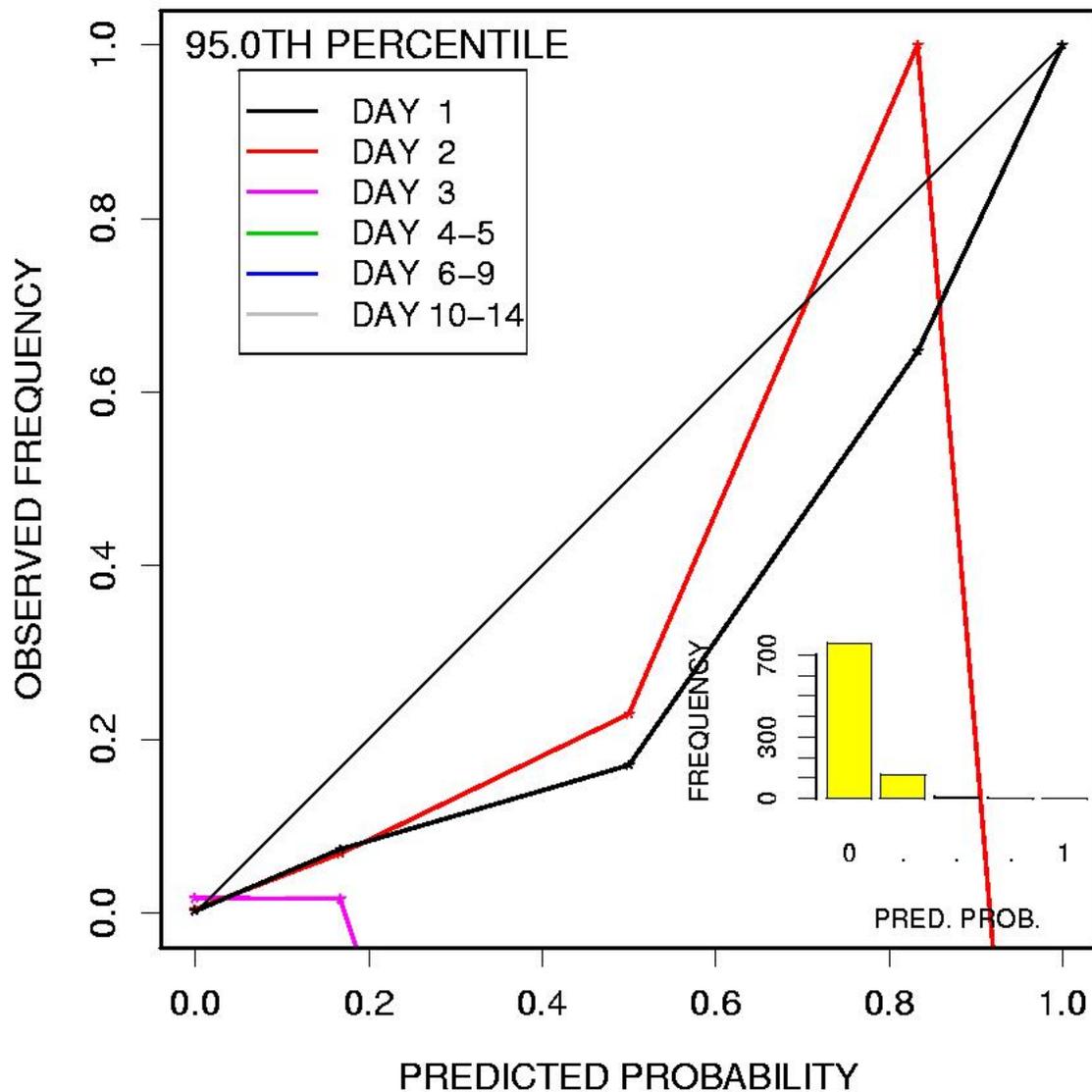
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



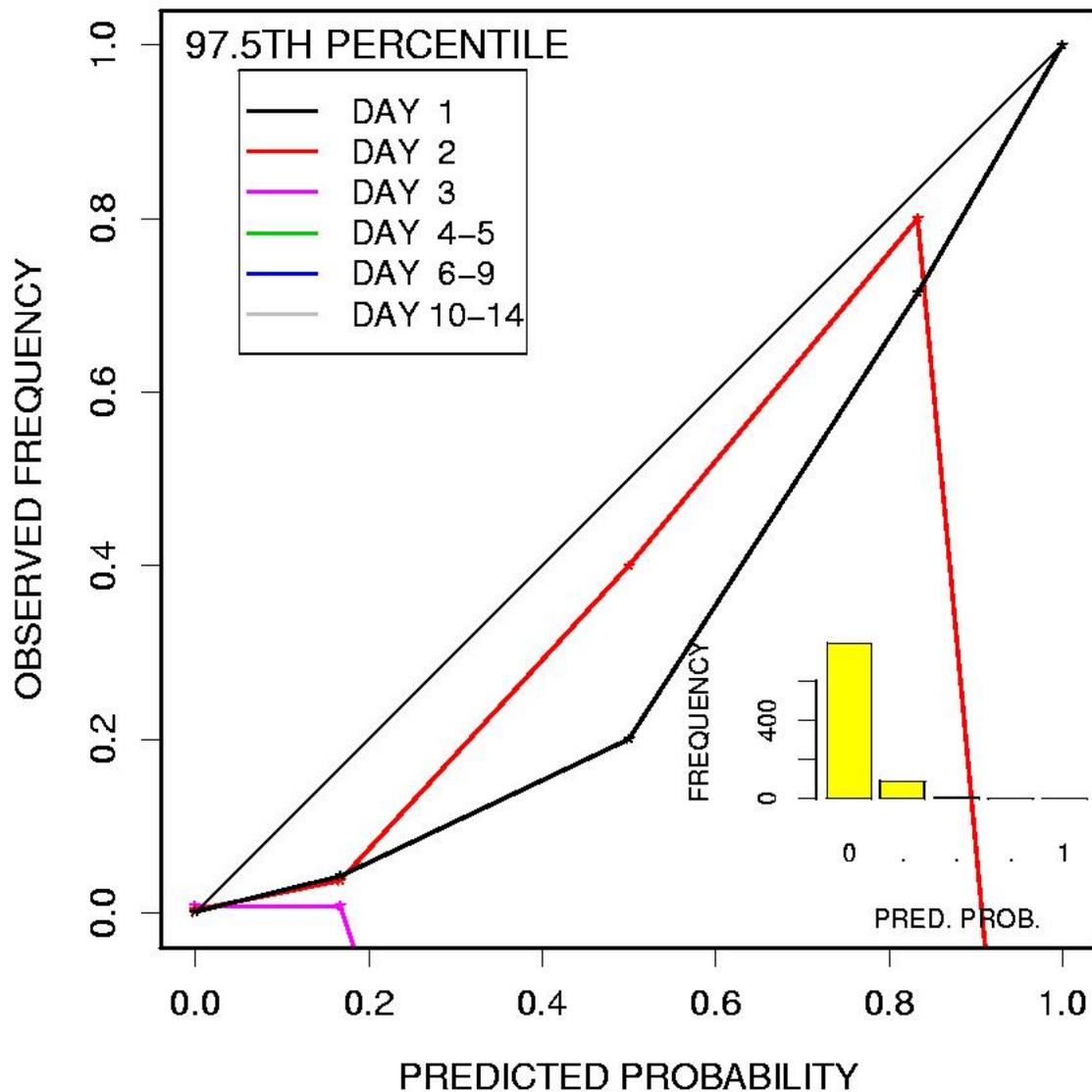
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



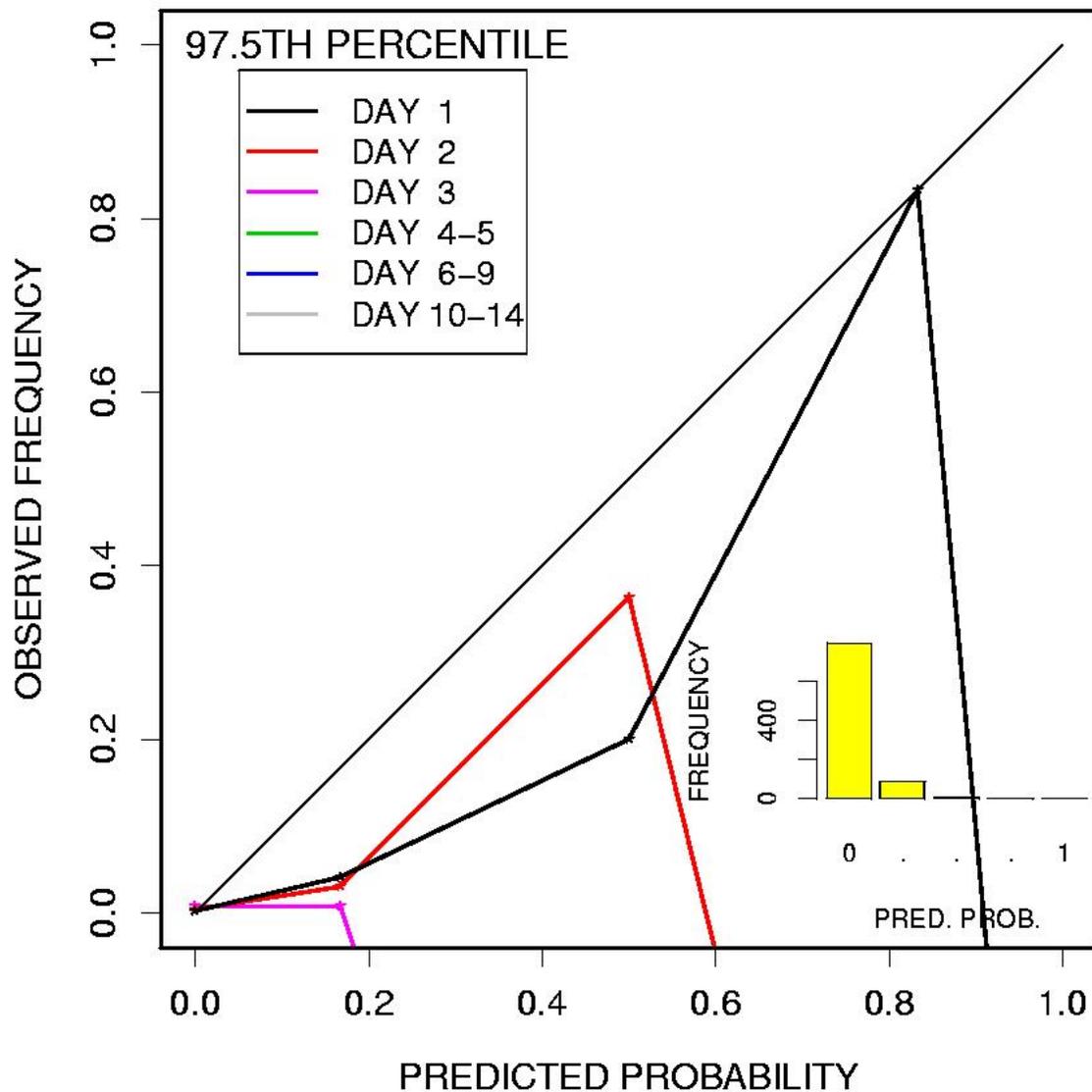
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



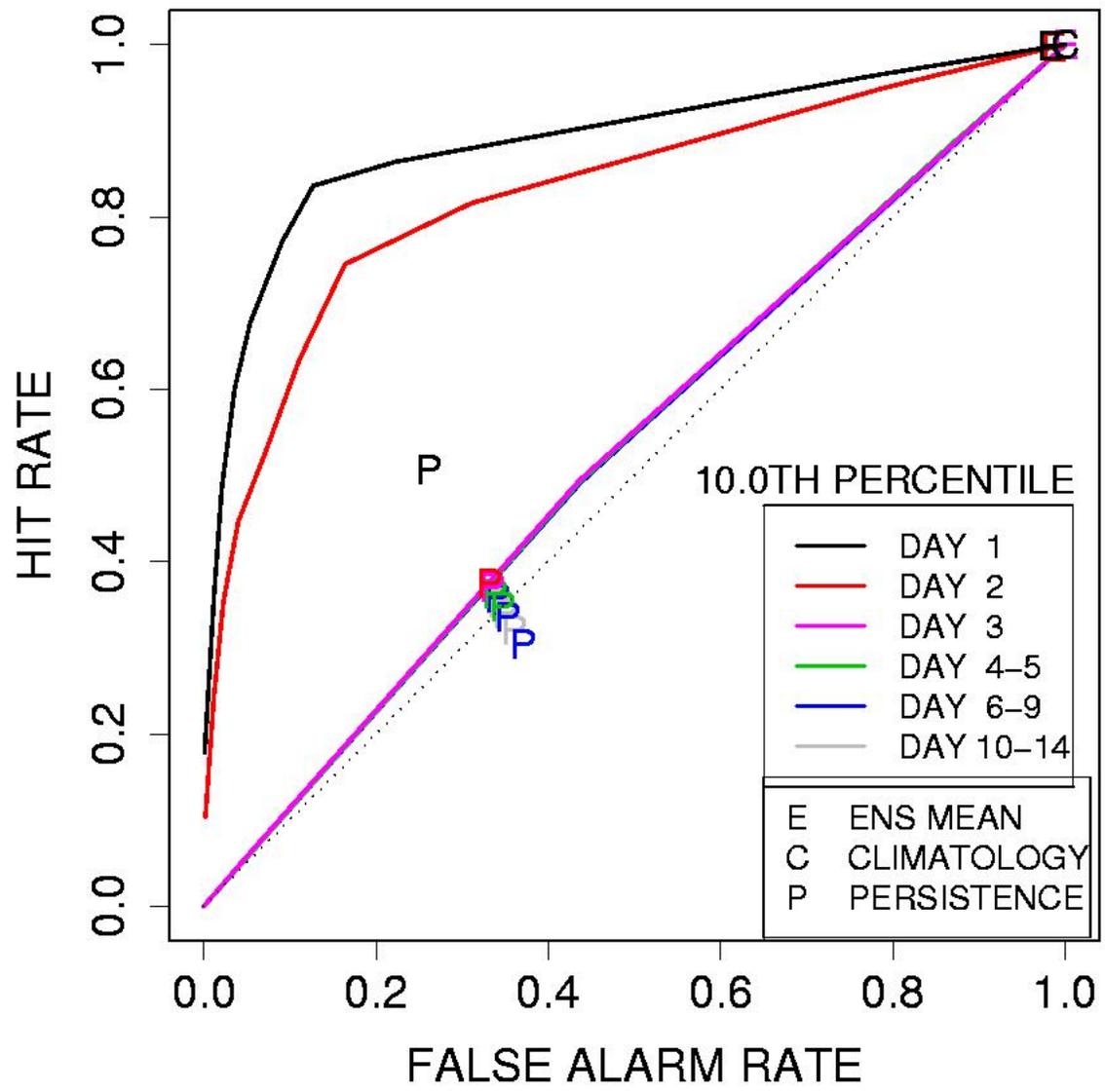
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



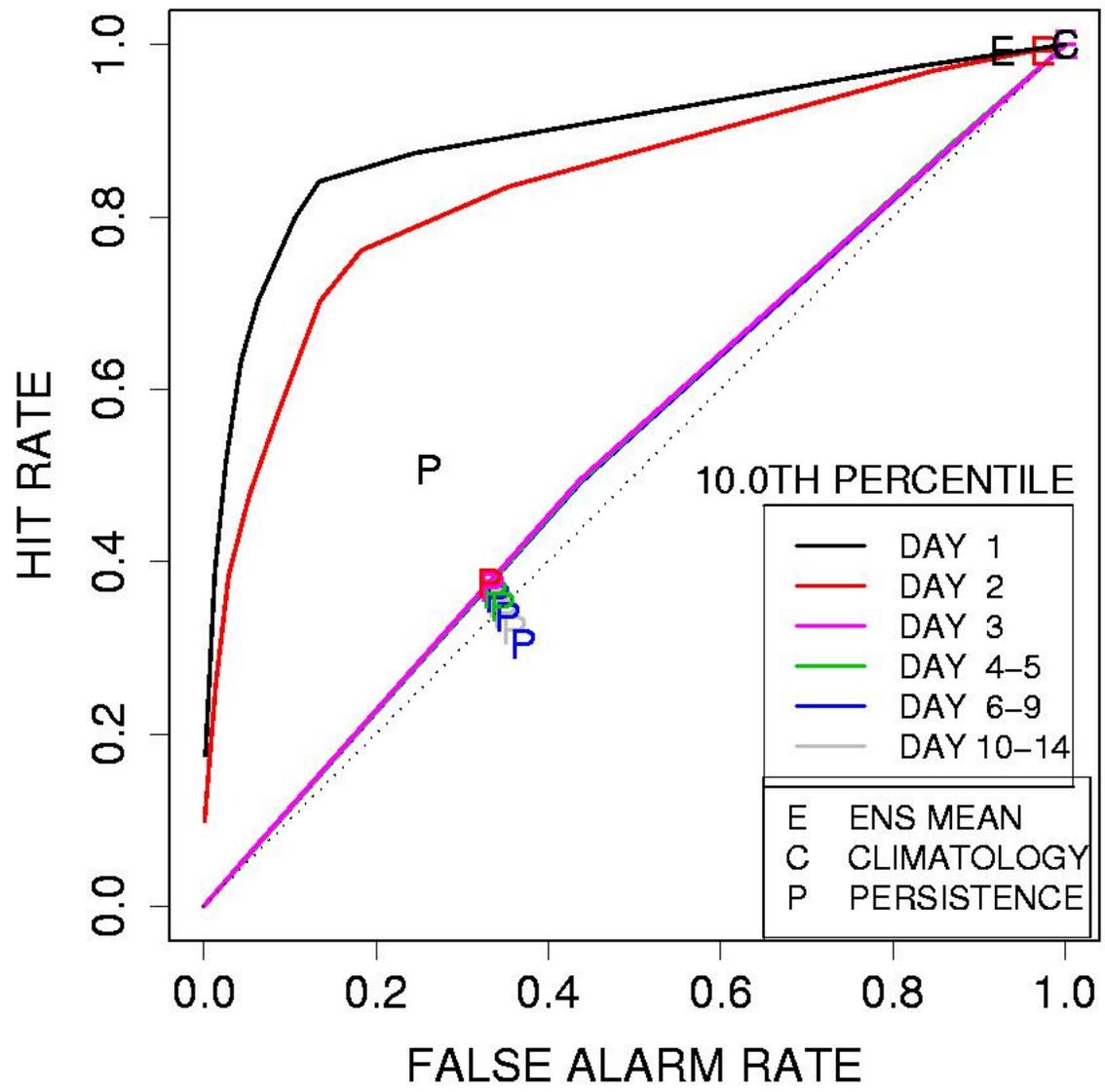
ABRFC – RELIABILITY DIAGRAM, 24-HR PRECIP., AN



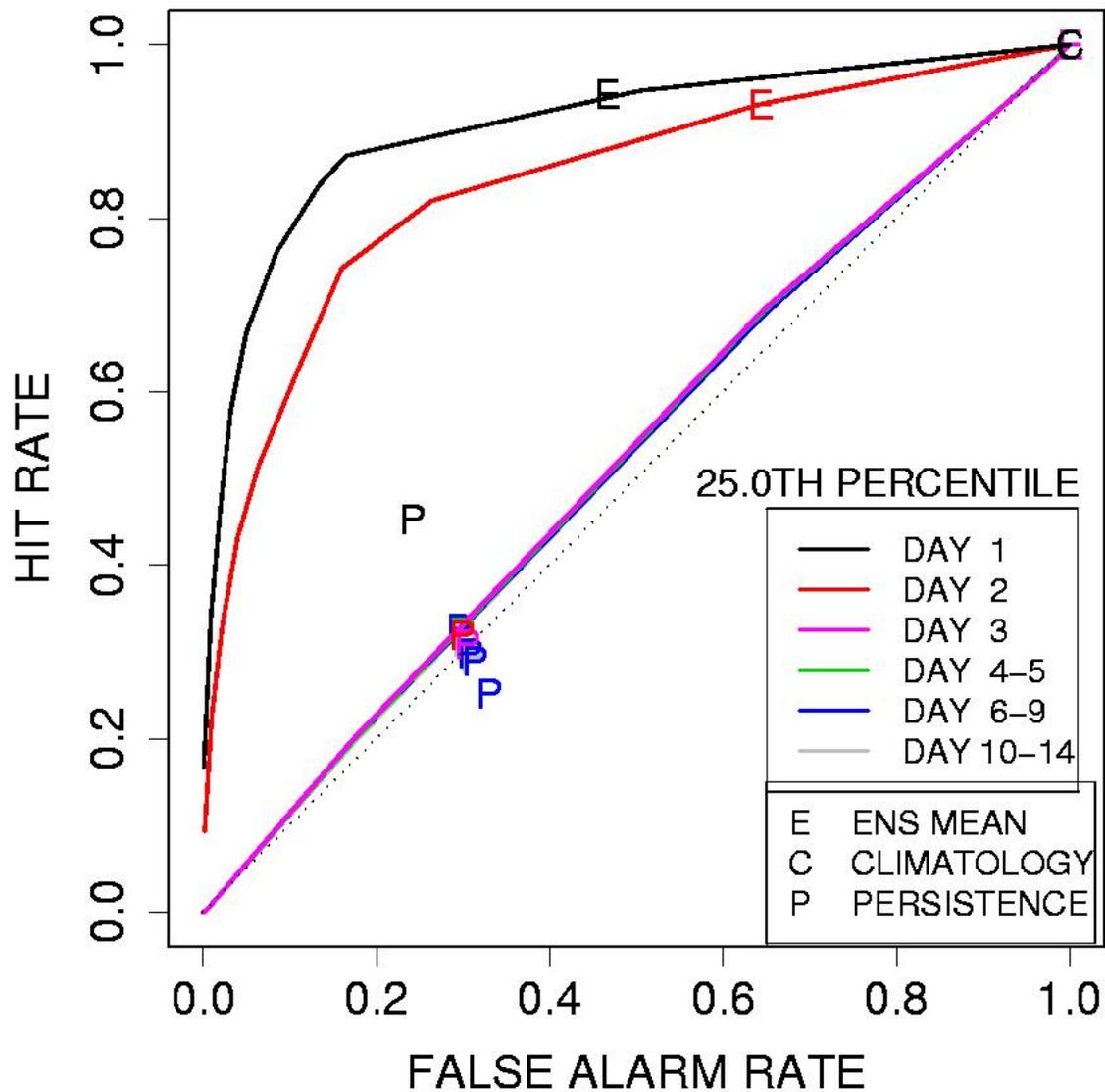
ABRFC - ROC, 24-HR PRECIP., AN



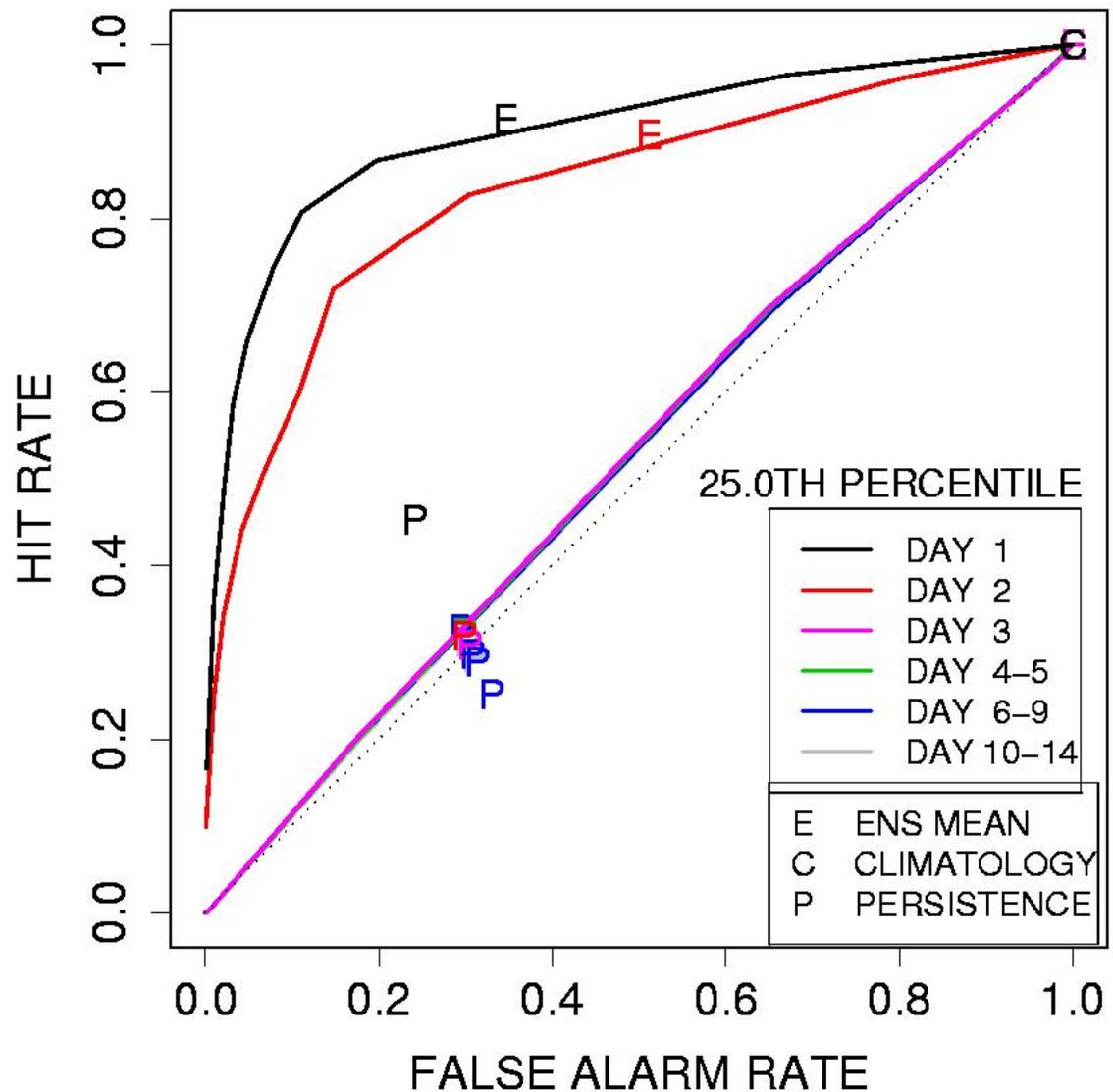
ABRFC - ROC, 24-HR PRECIP., AN



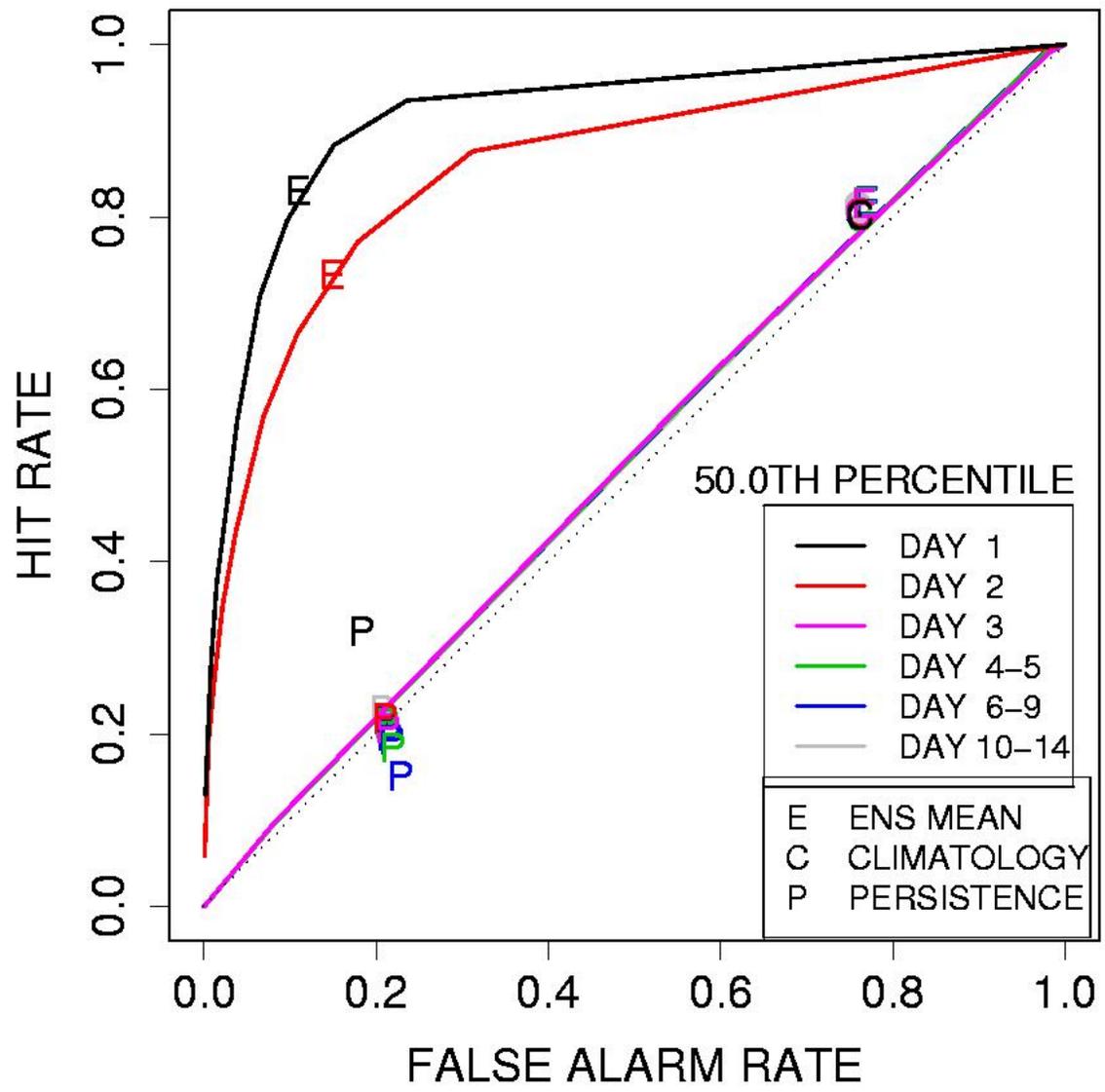
ABRFC - ROC, 24-HR PRECIP., AN



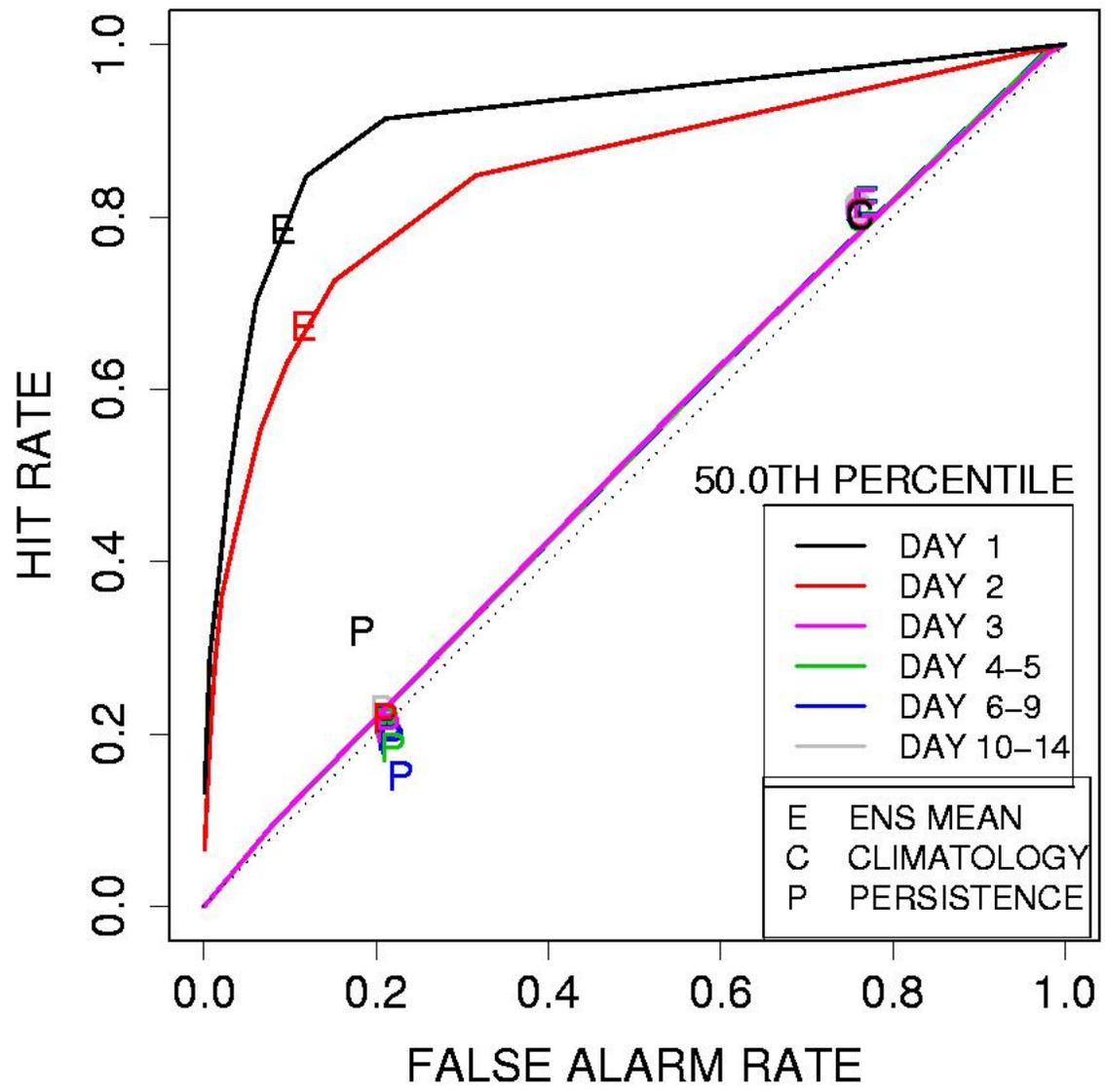
ABRFC - ROC, 24-HR PRECIP., AN



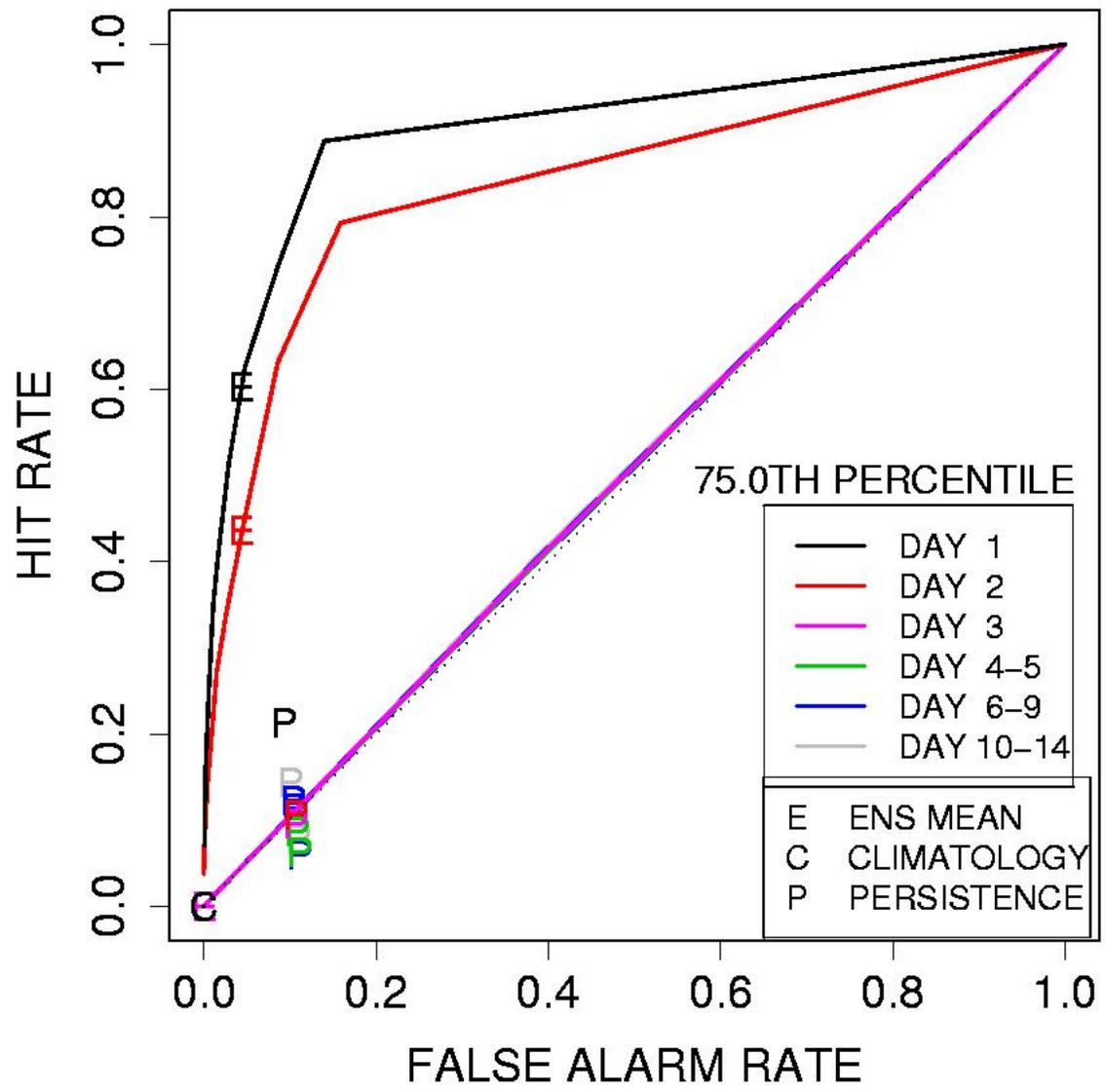
ABRFC - ROC, 24-HR PRECIP., AN



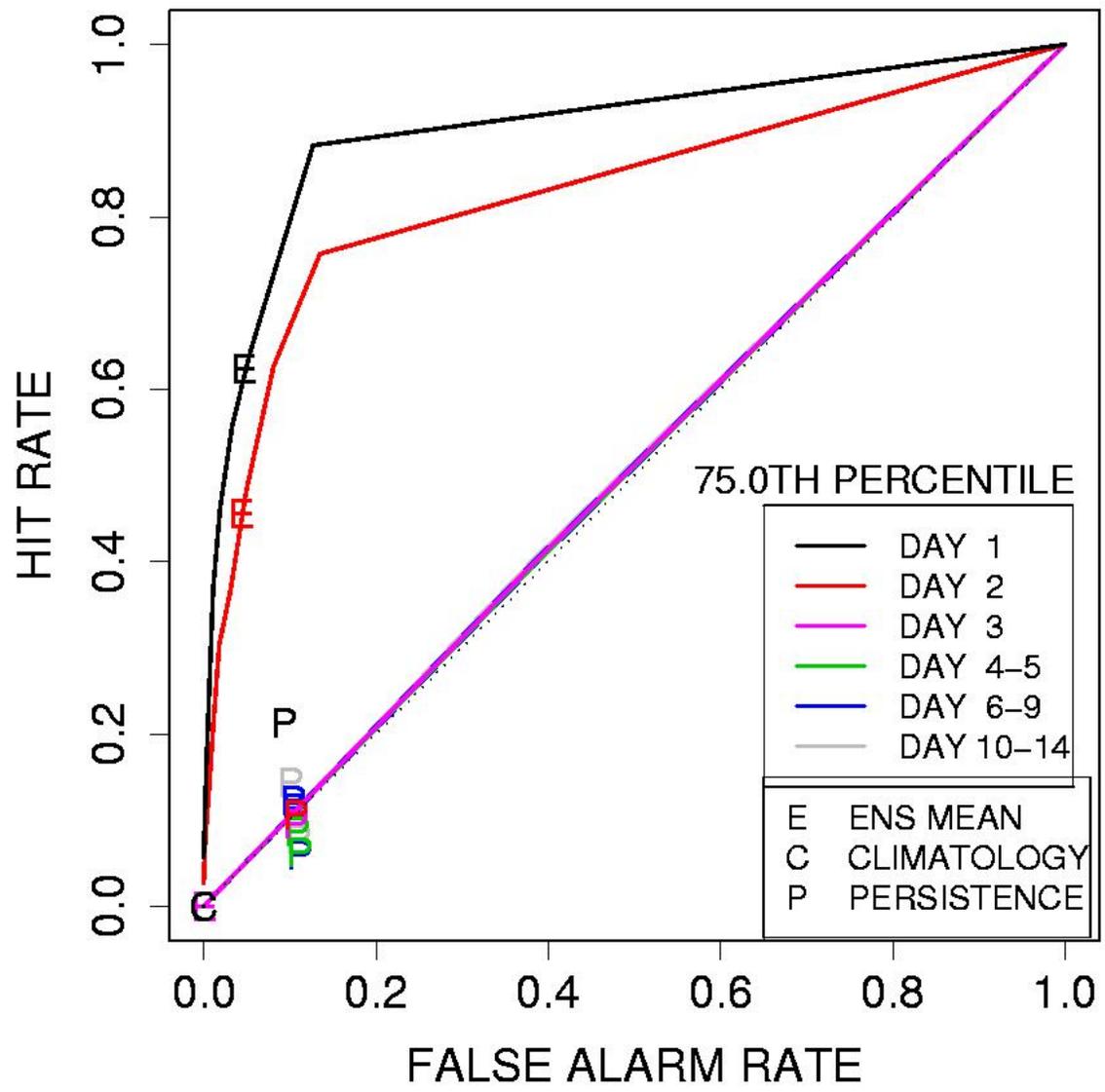
ABRFC - ROC, 24-HR PRECIP., AN



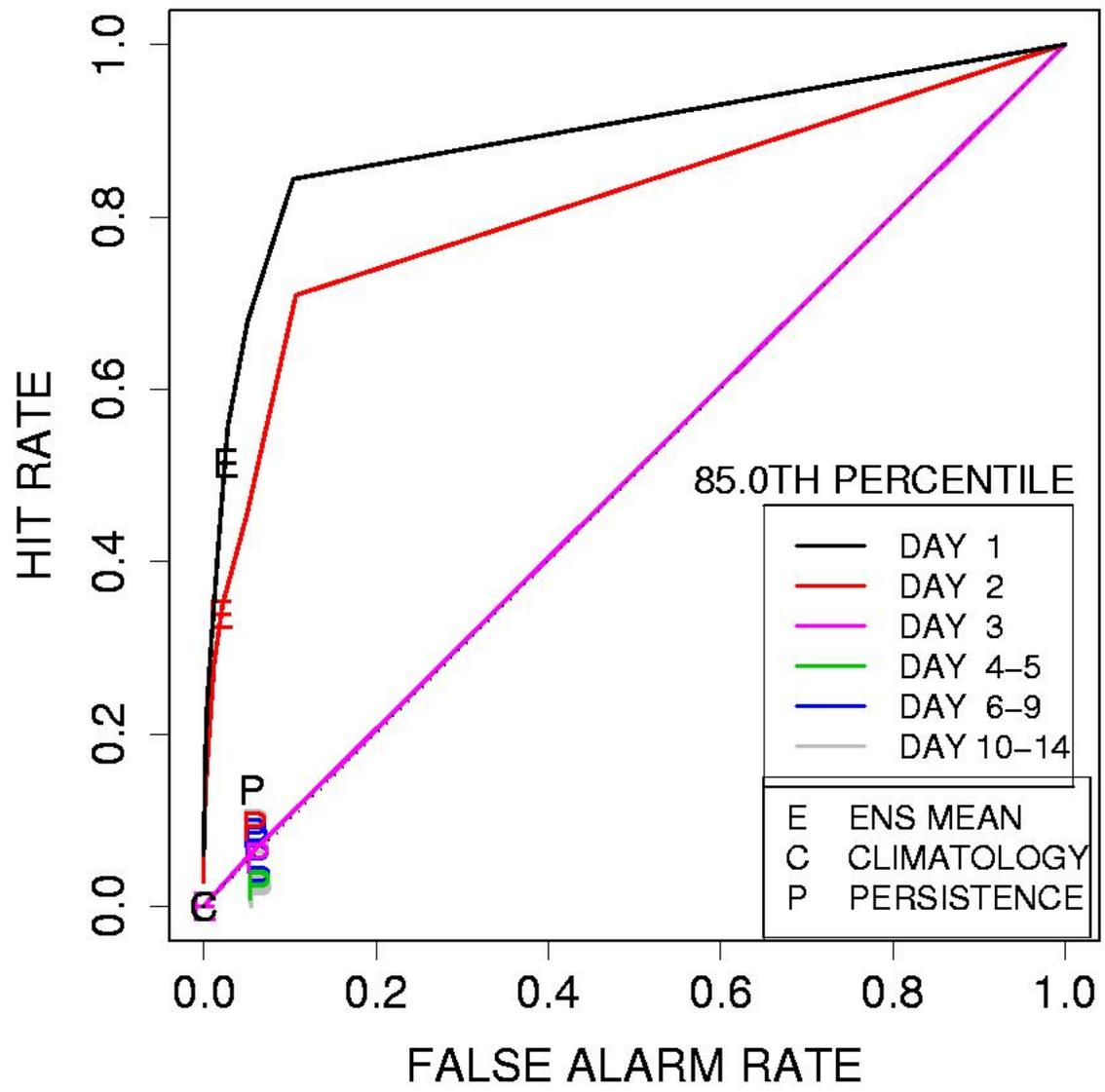
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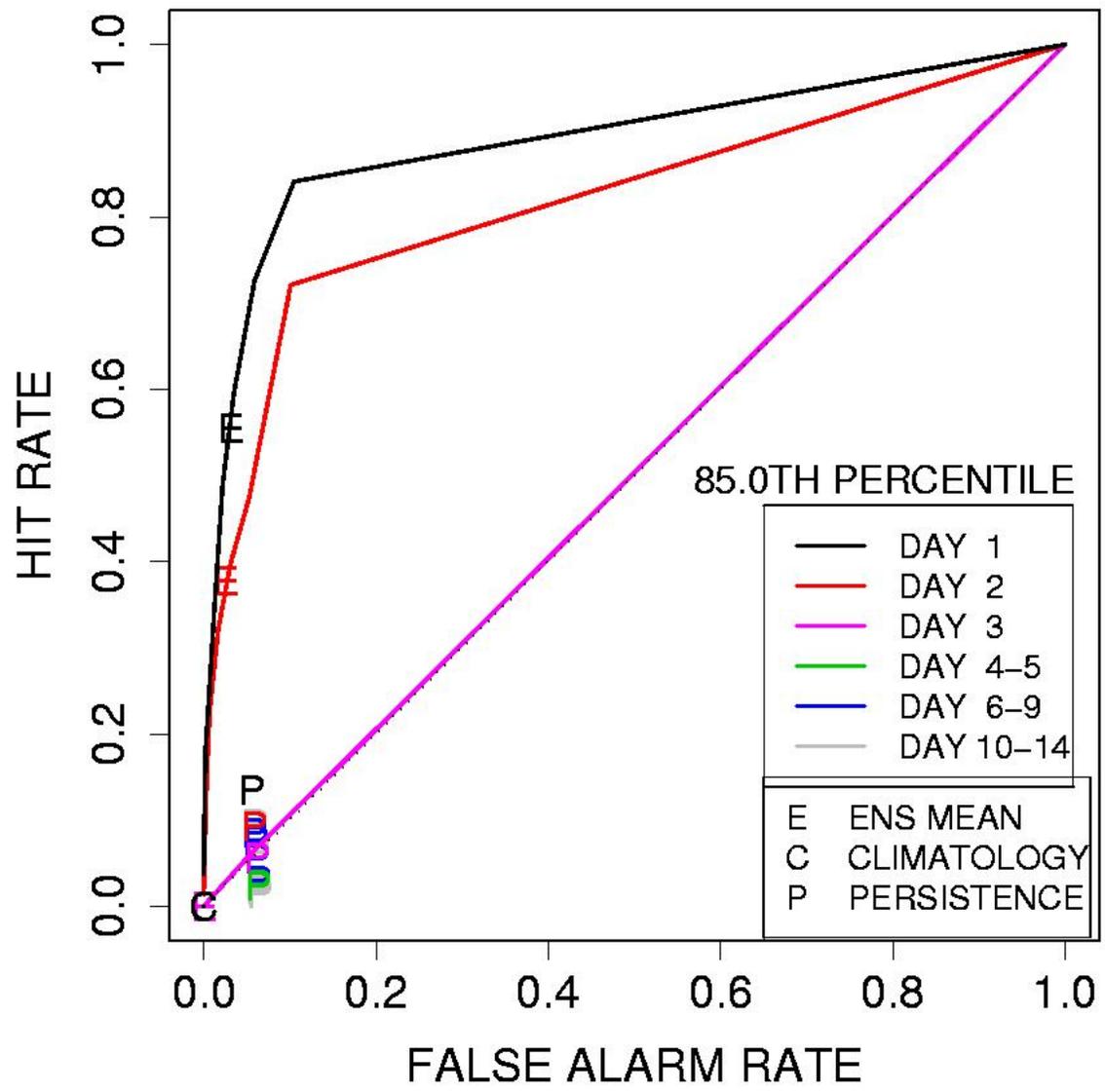
ABRFC - ROC, 24-HR PRECIP., AN



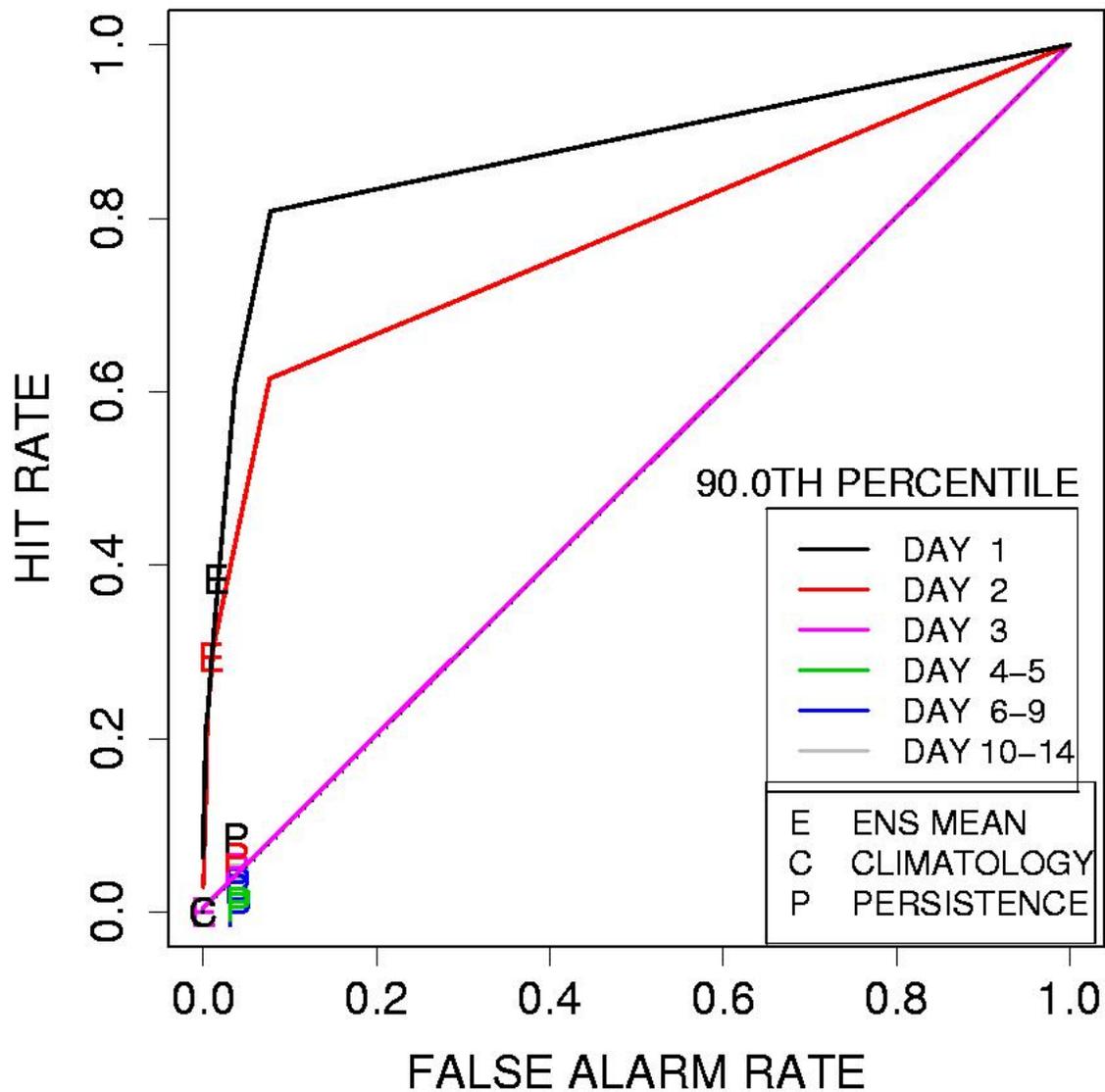
ABRFC - ROC, 24-HR PRECIP., AN



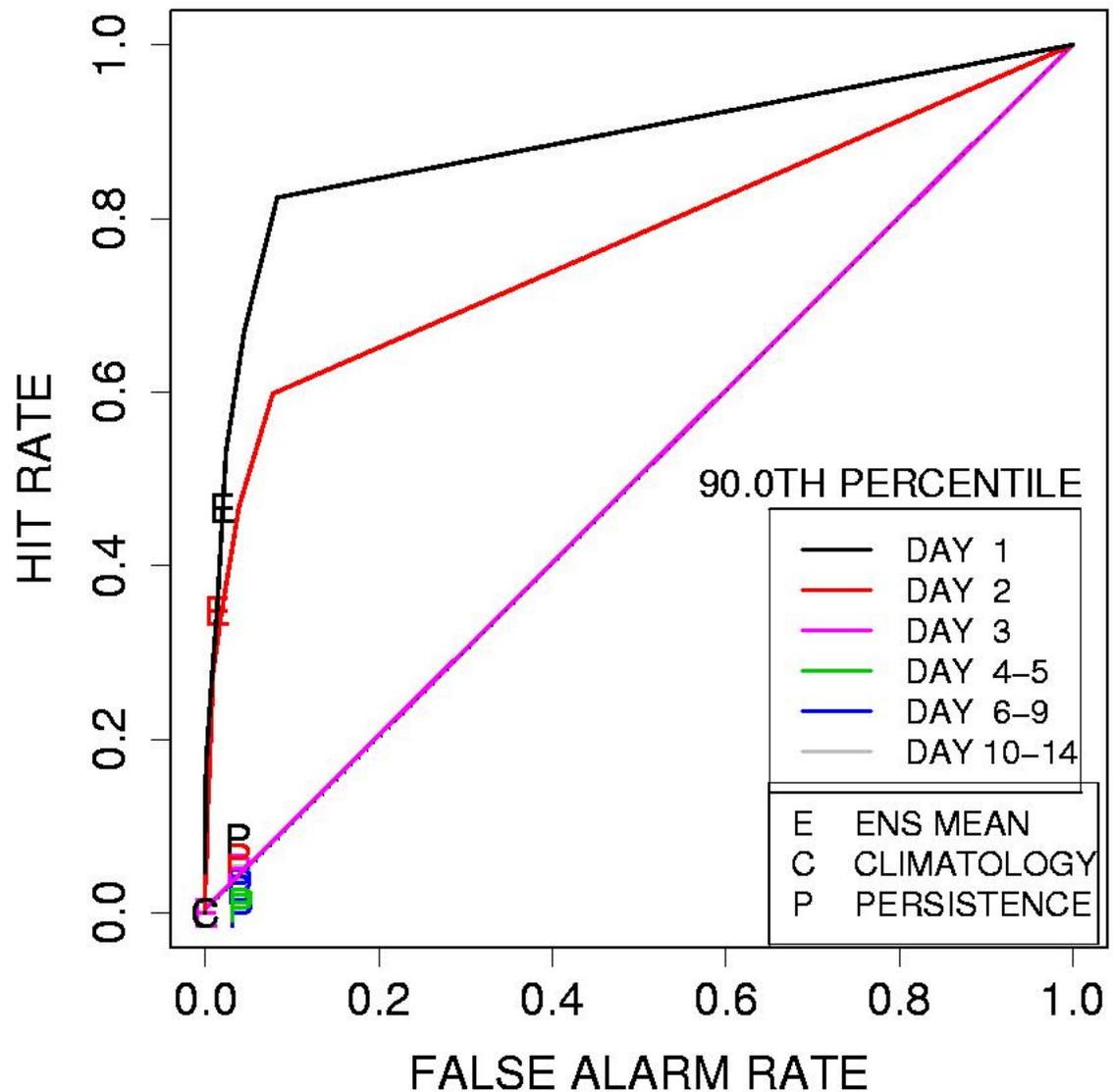
ABRFC - ROC, 24-HR PRECIP., AN



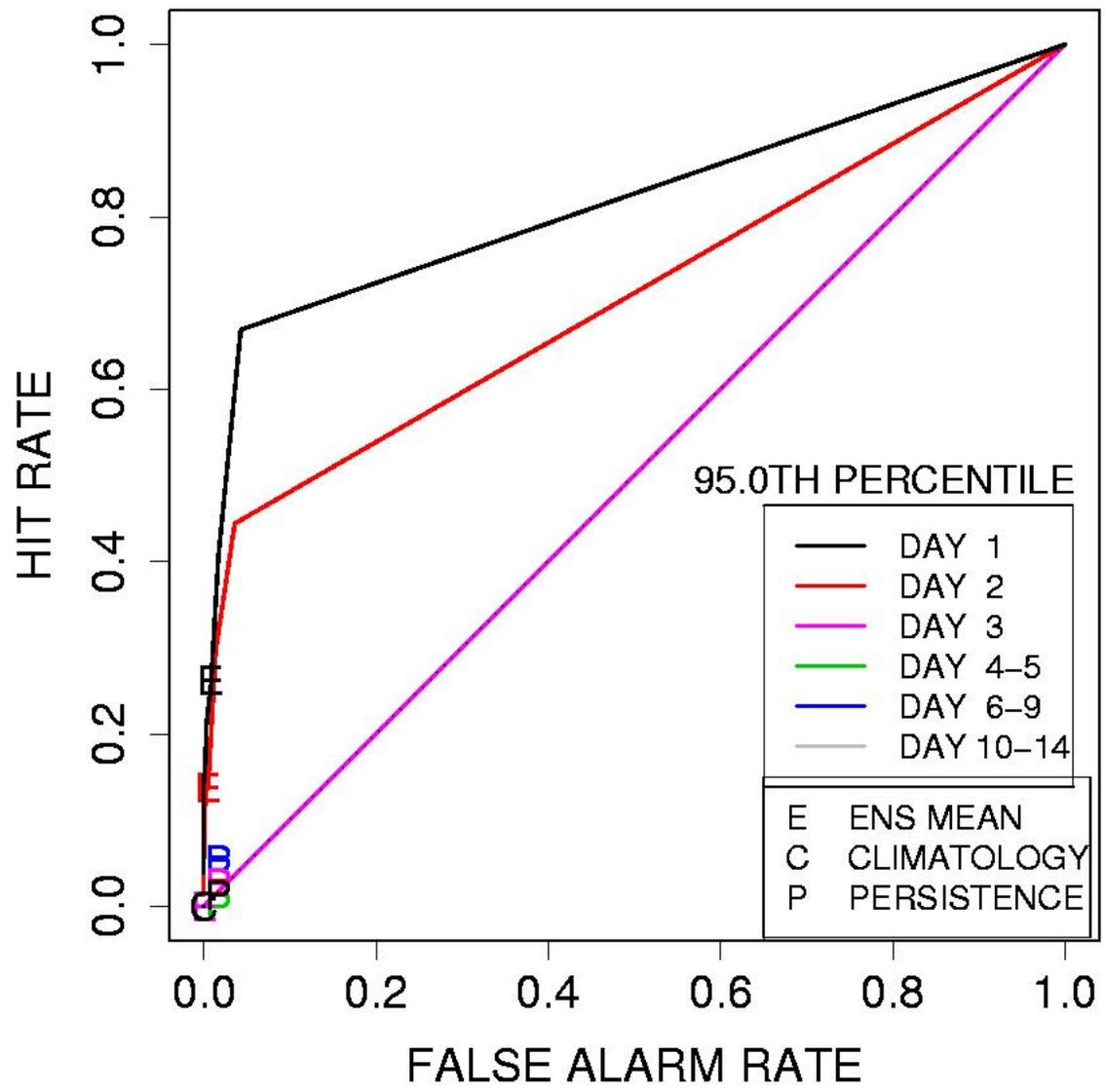
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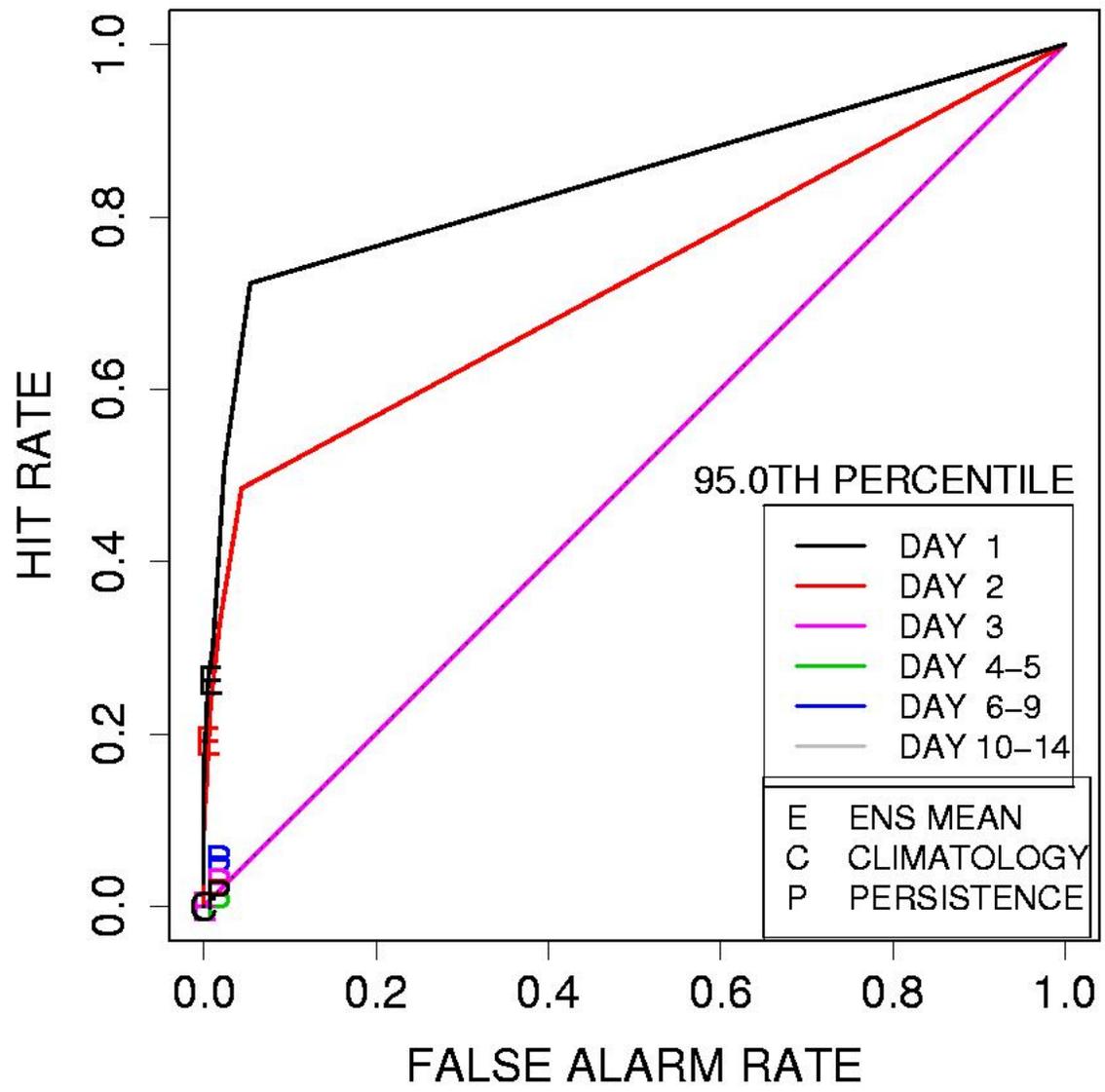
ABRFC - ROC, 24-HR PRECIP., AN



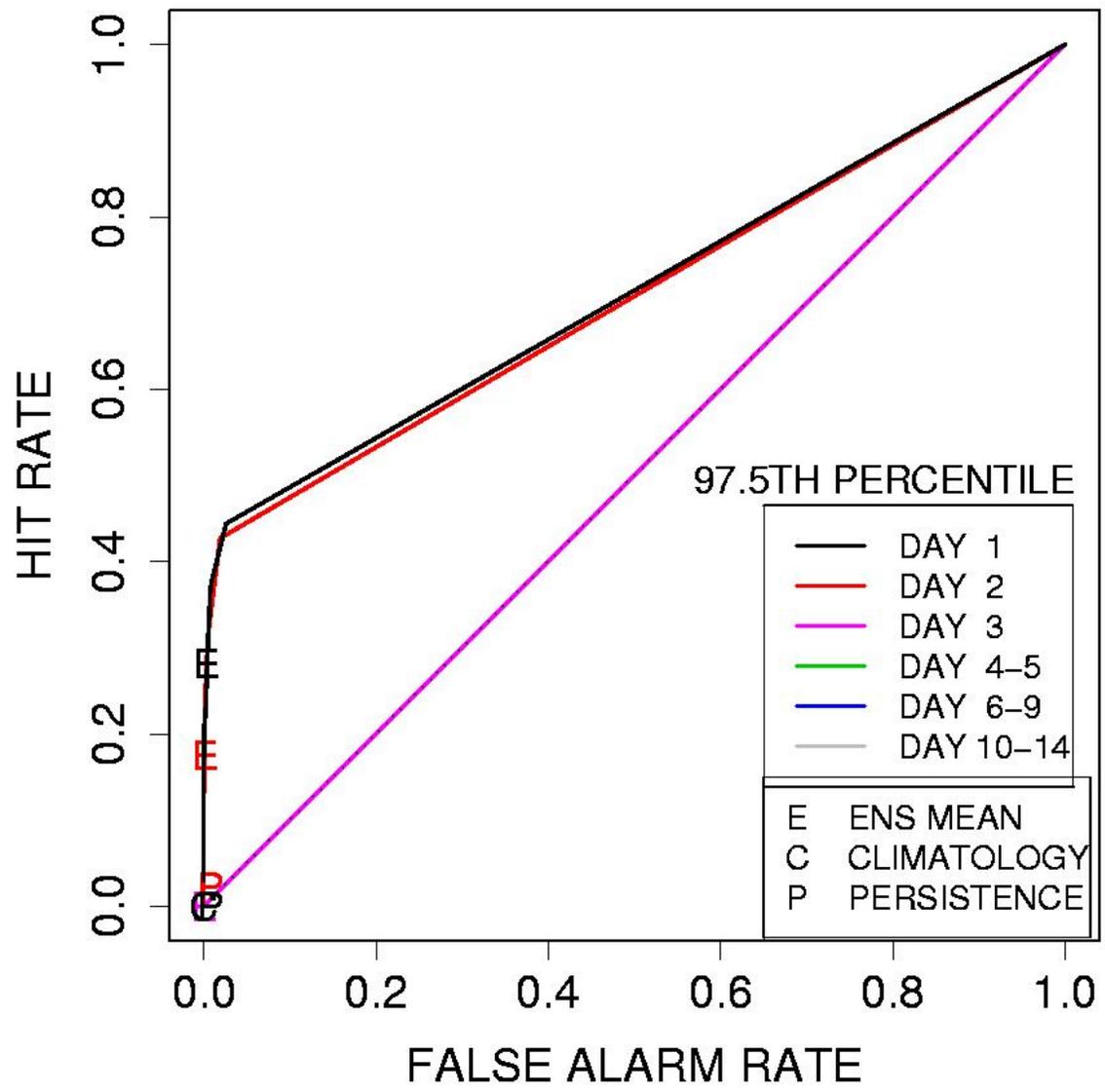
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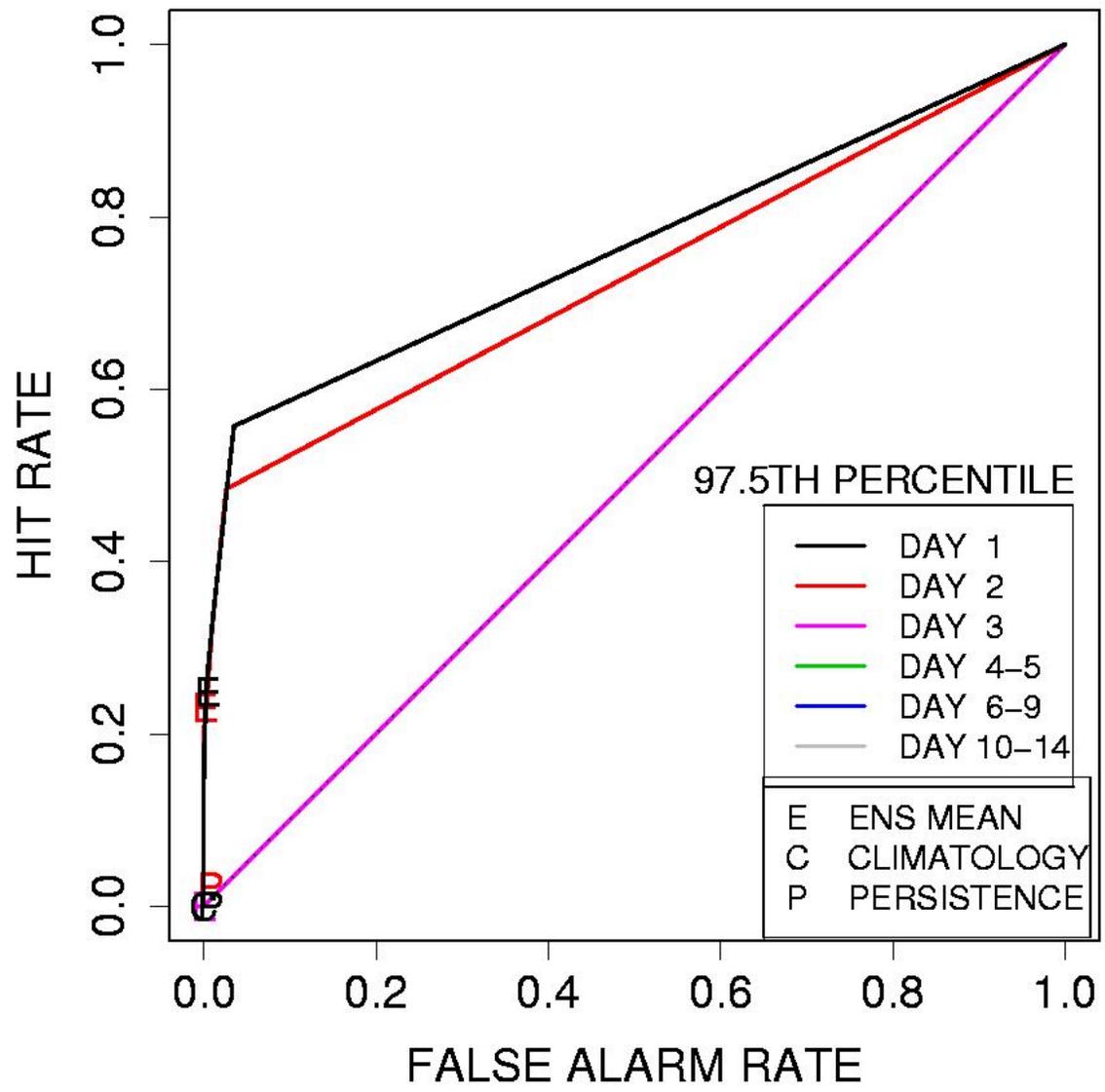
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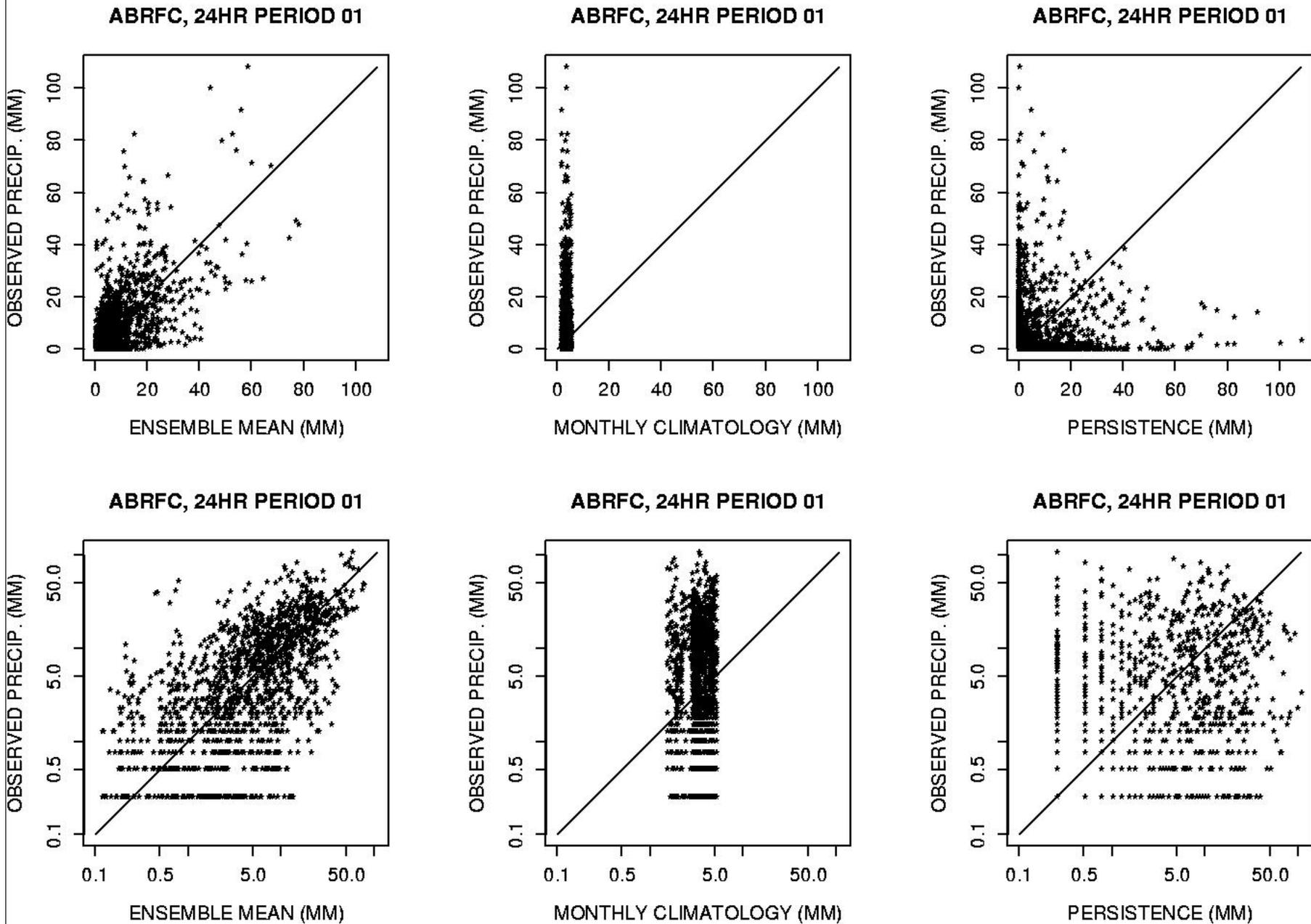


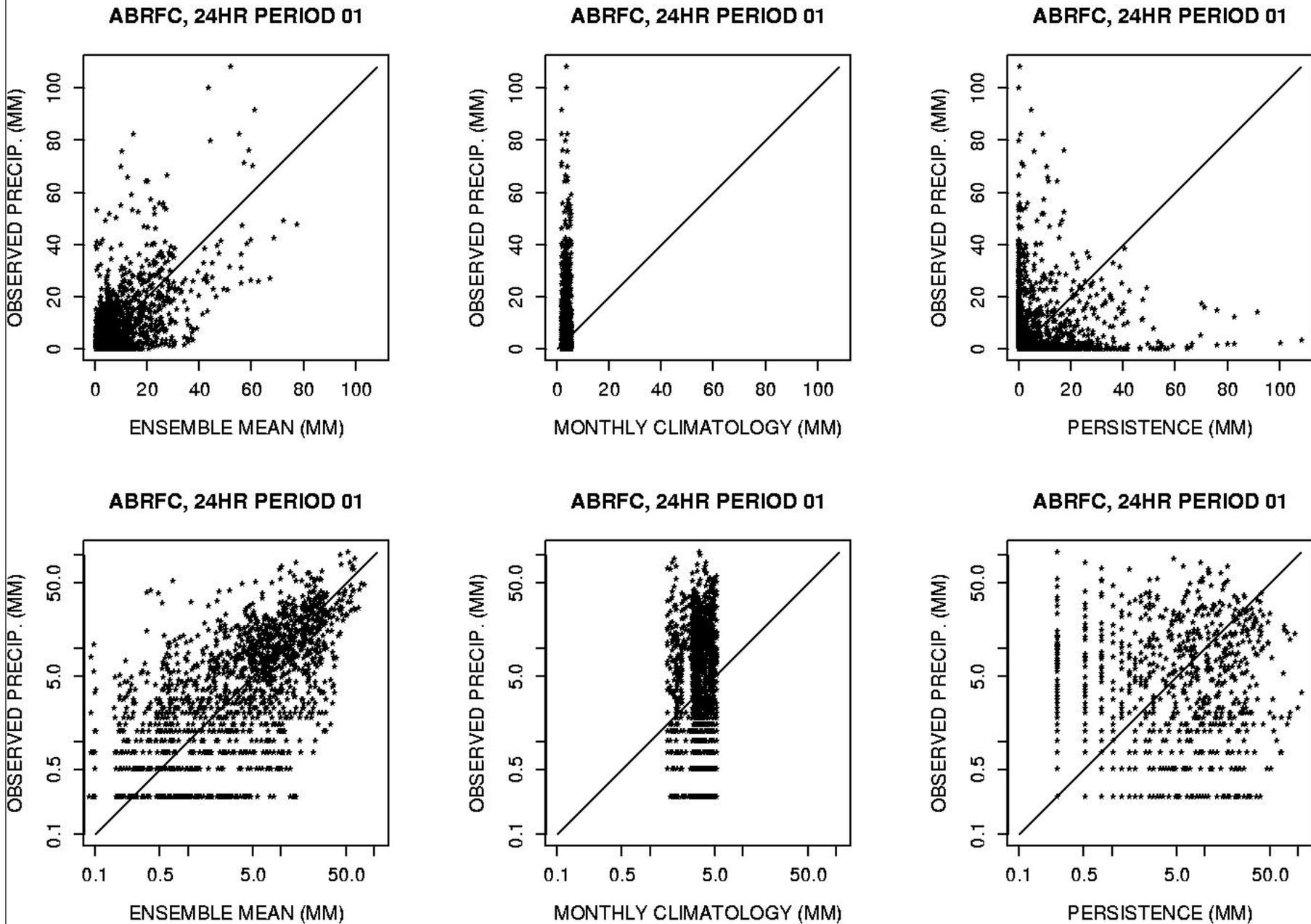
ABRFC - ROC, 24-HR PRECIP., AN

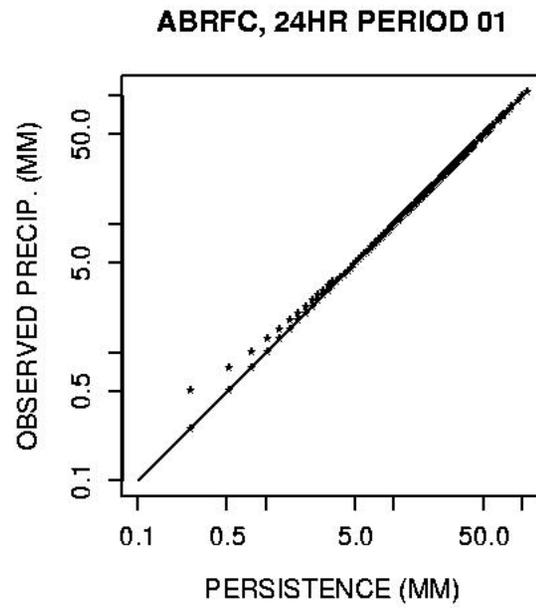
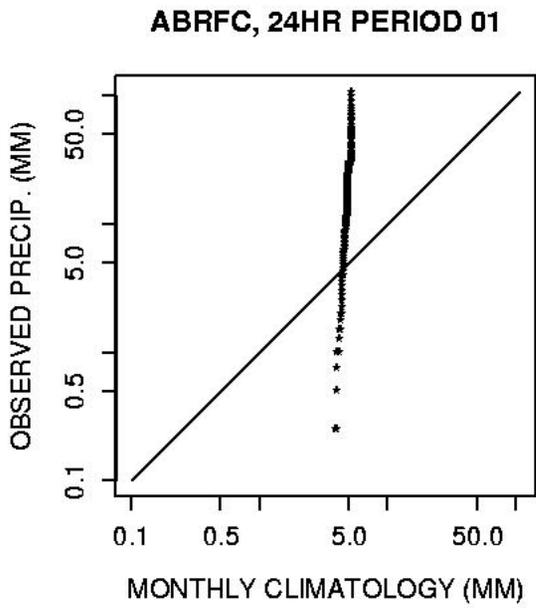
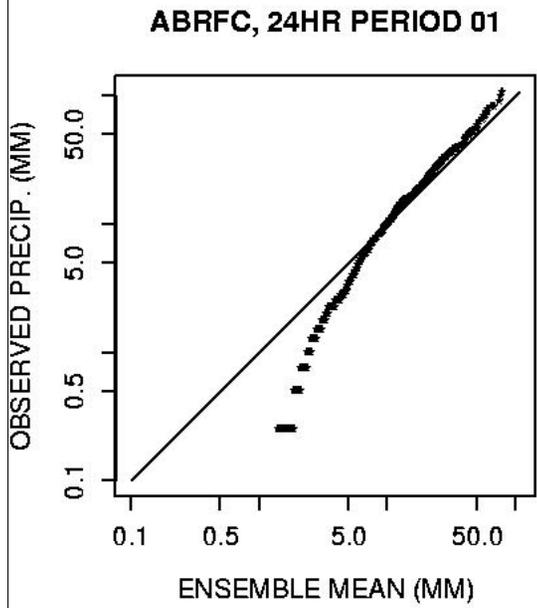
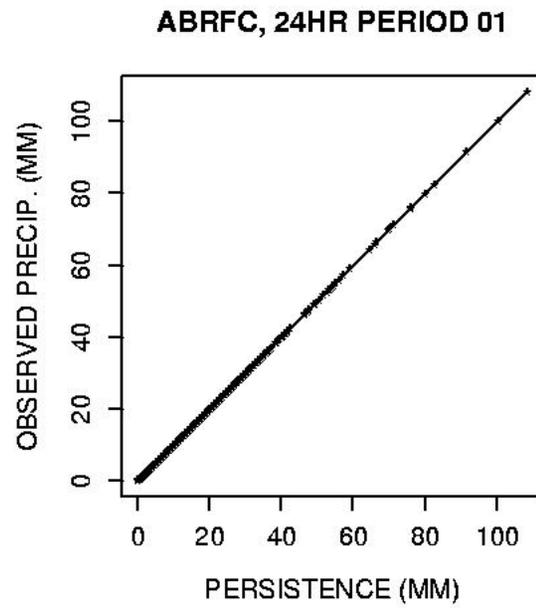
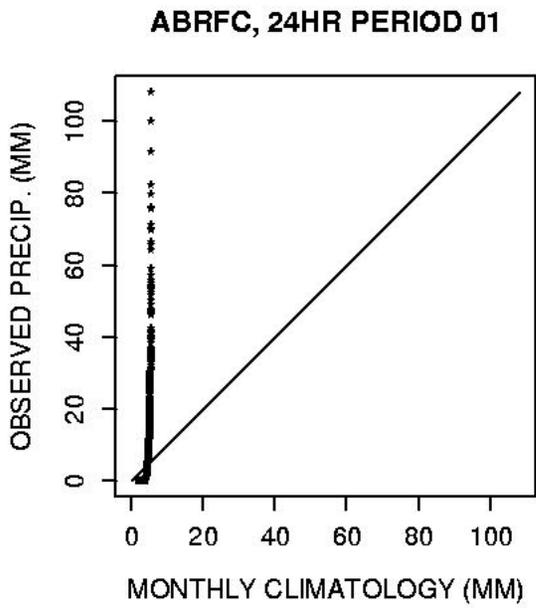
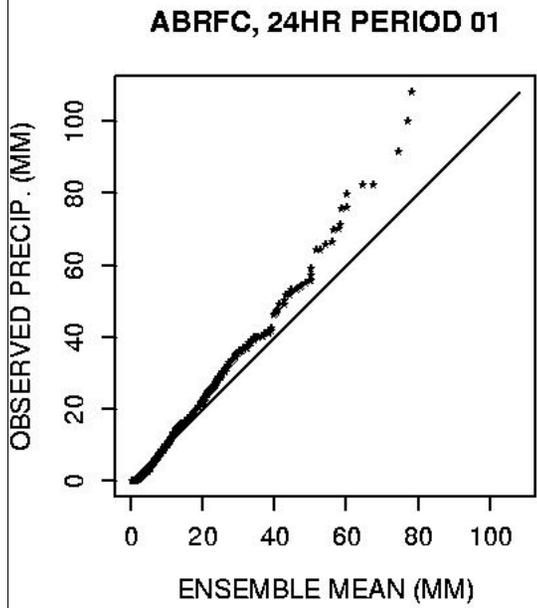


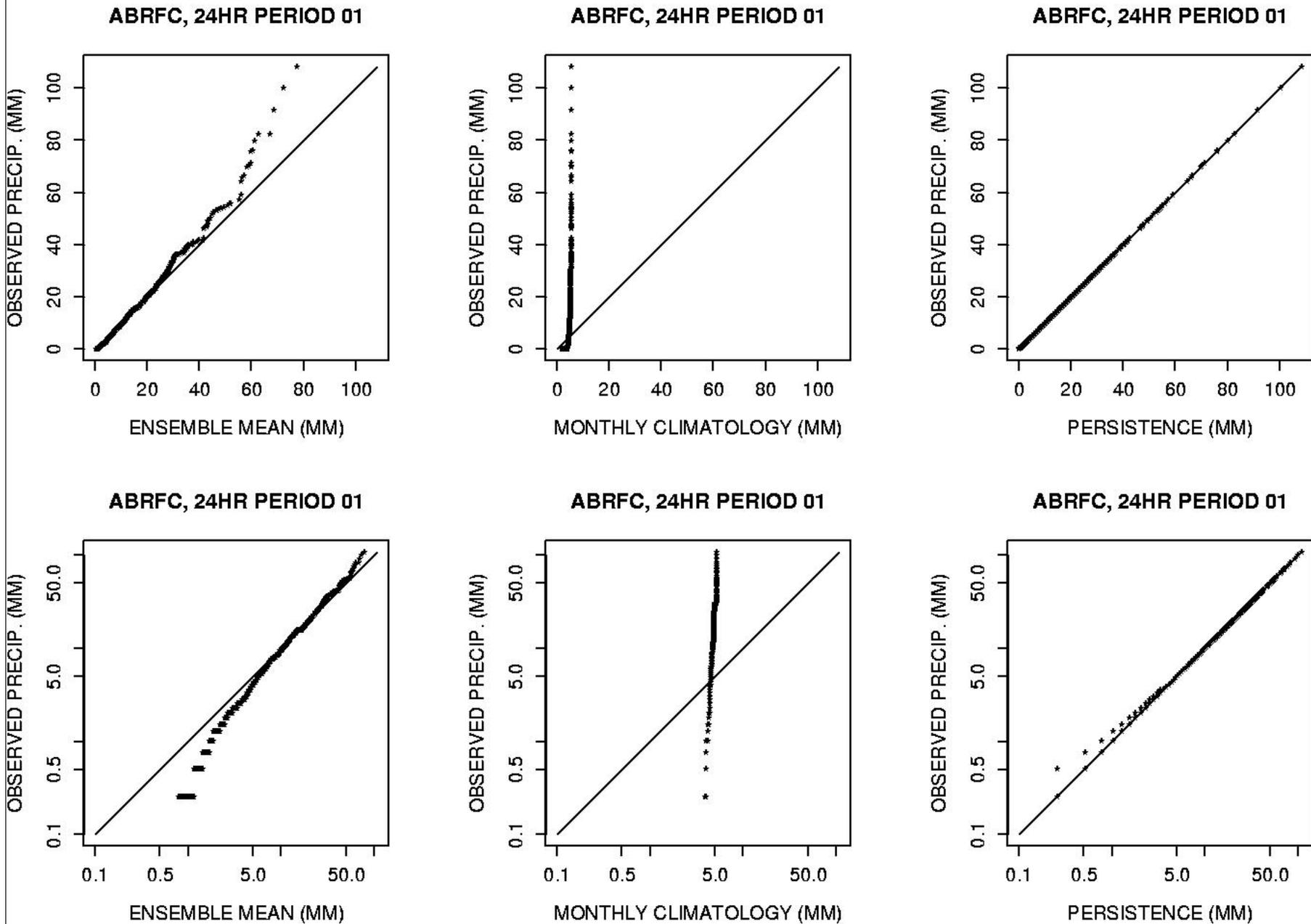
ABRFC - ROC, 24-HR PRECIP., AN

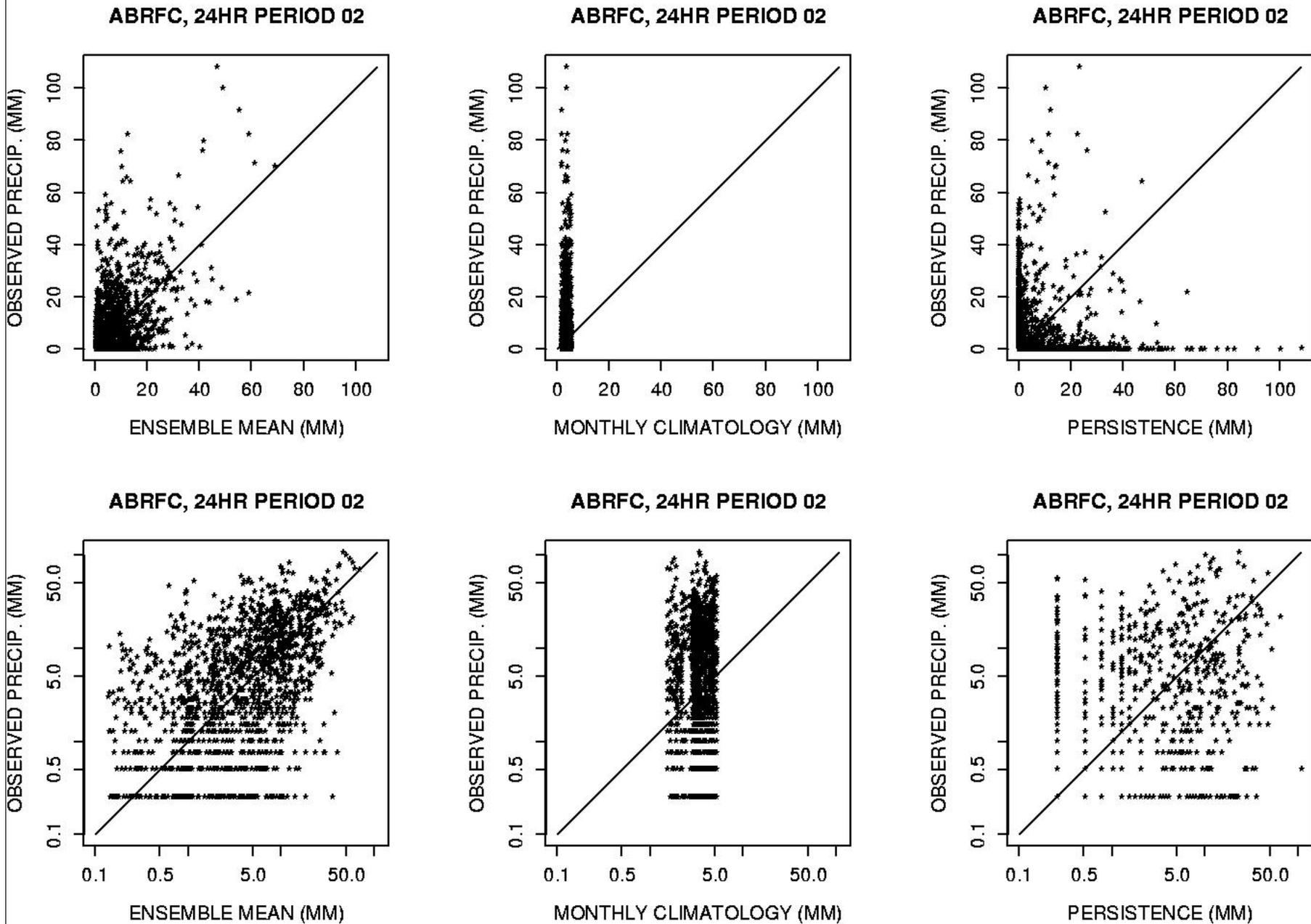


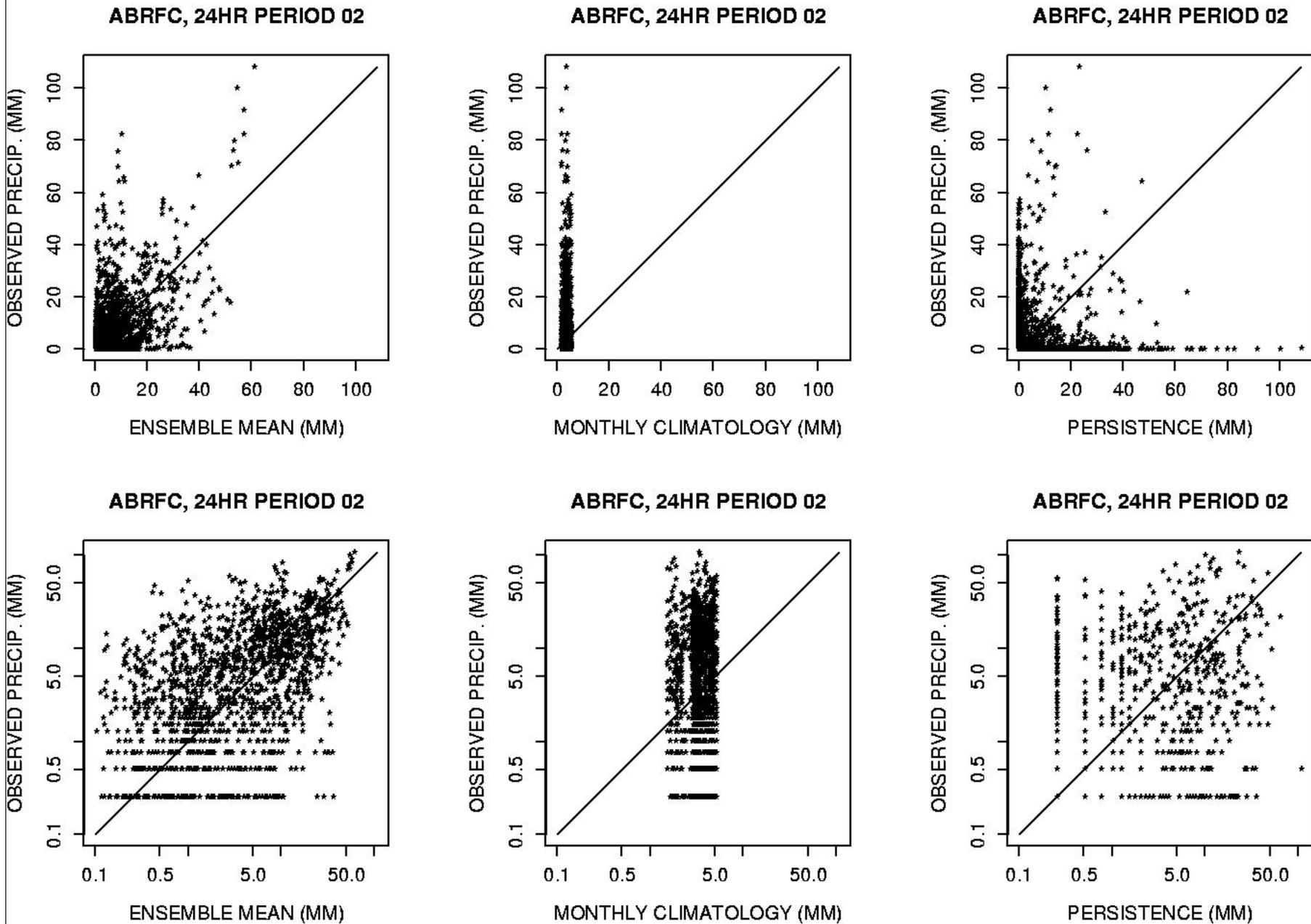


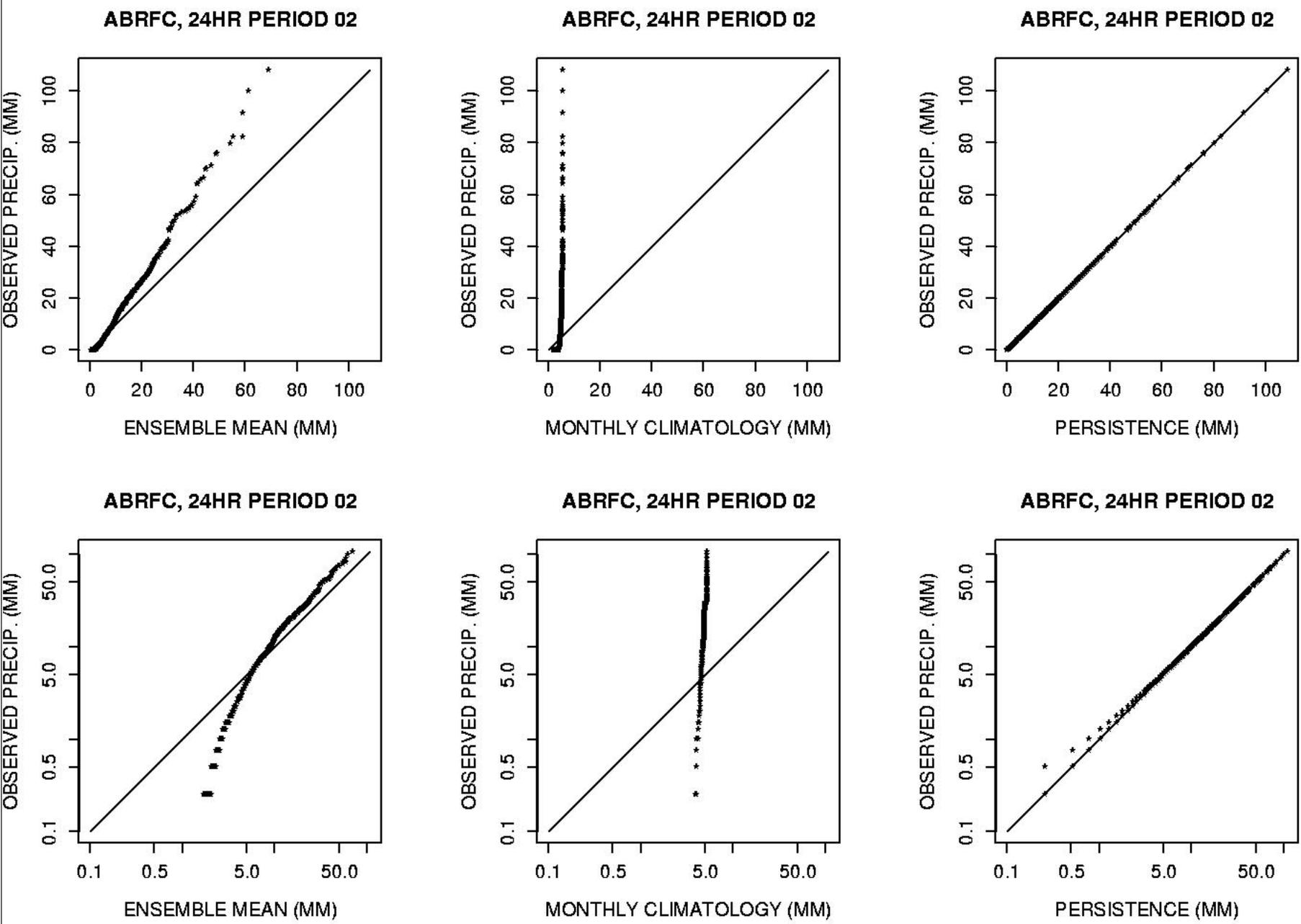


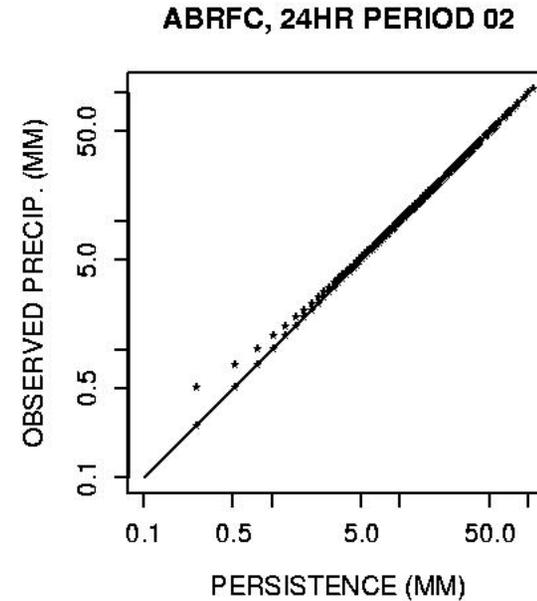
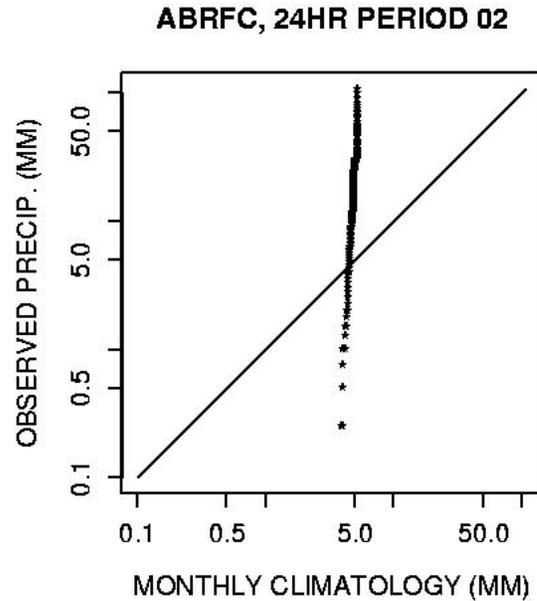
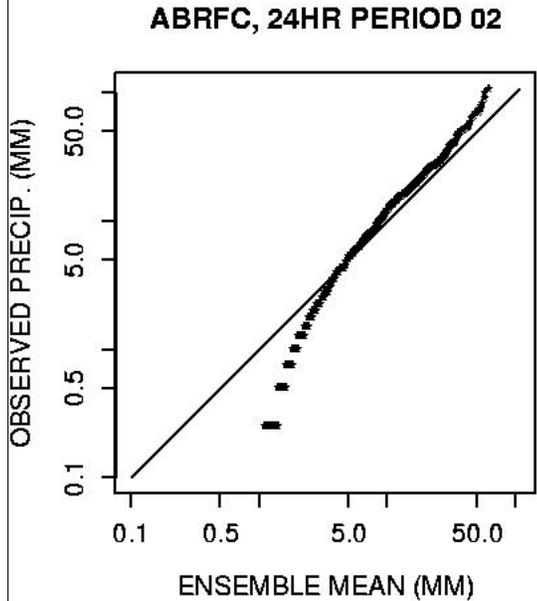
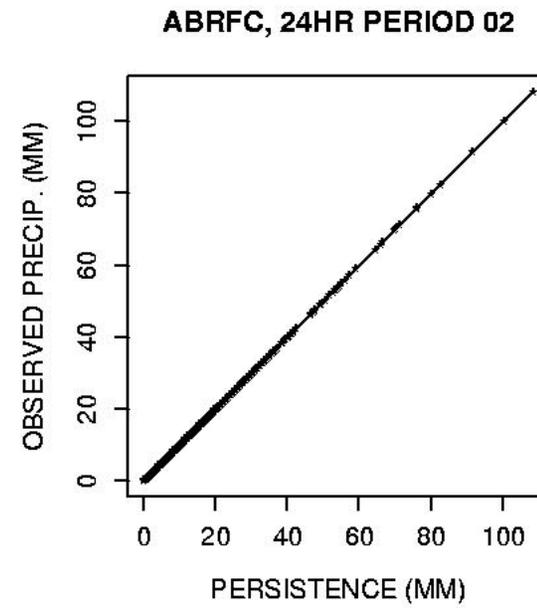
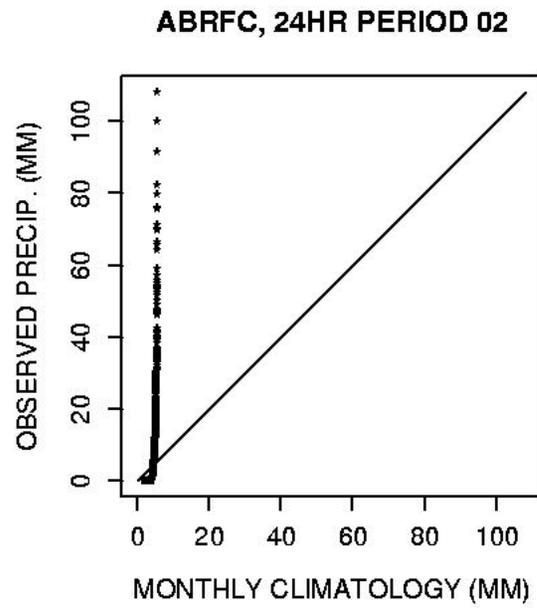
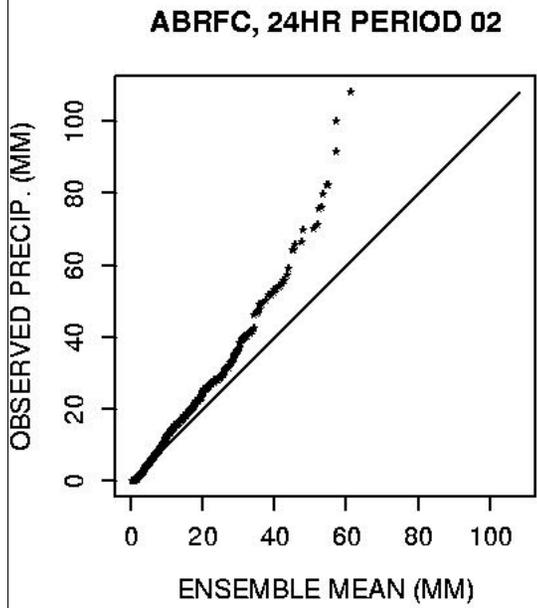






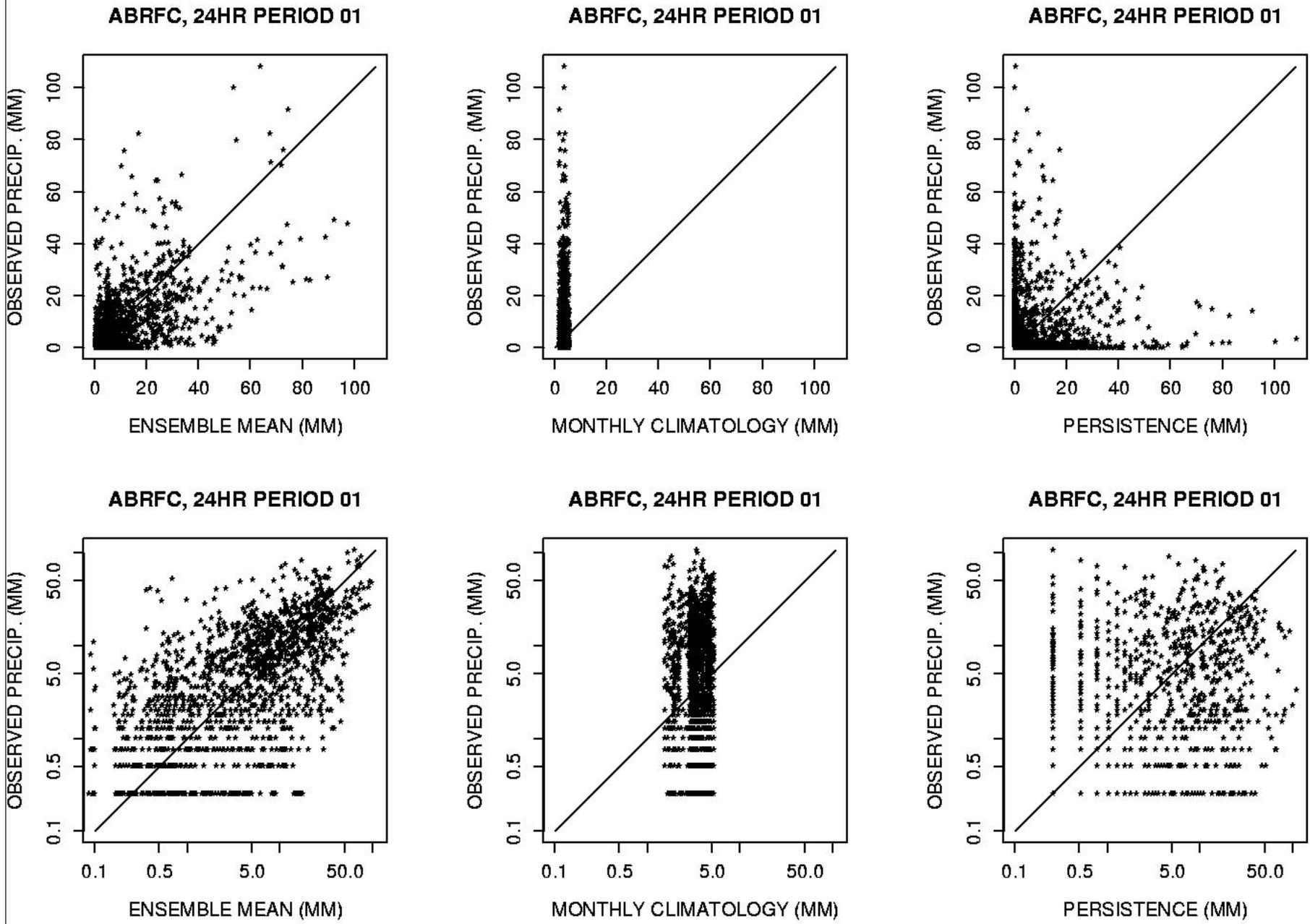


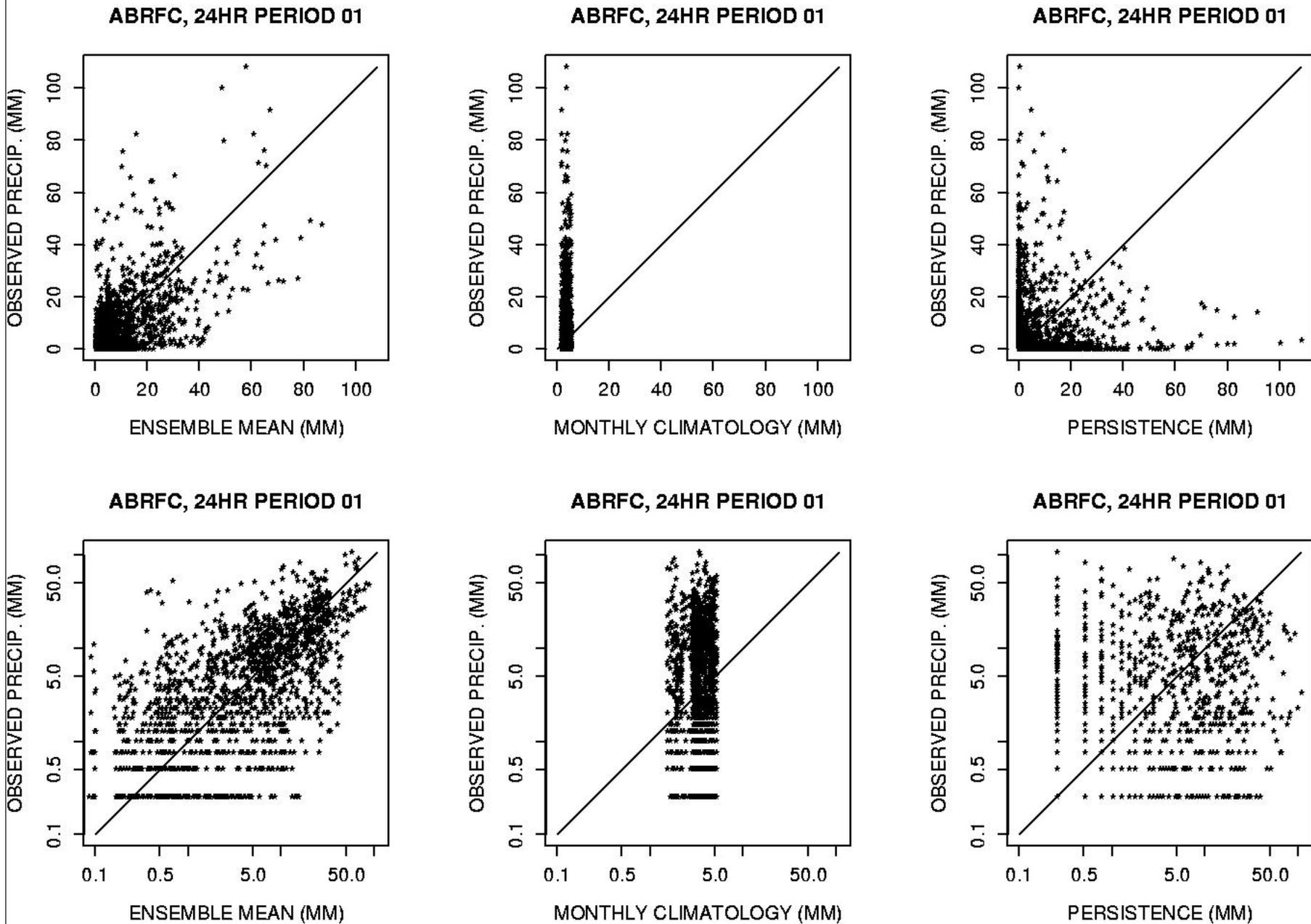


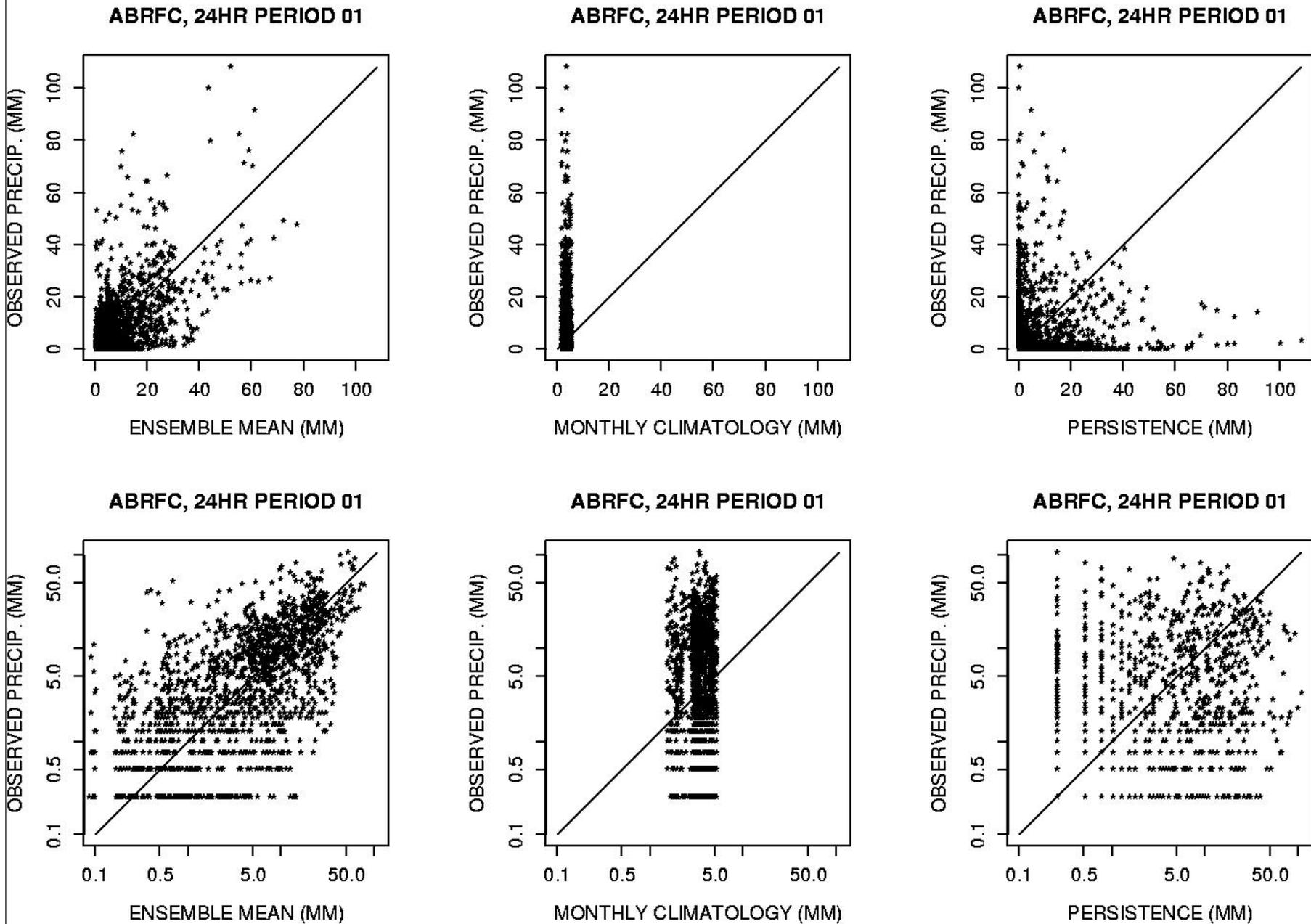


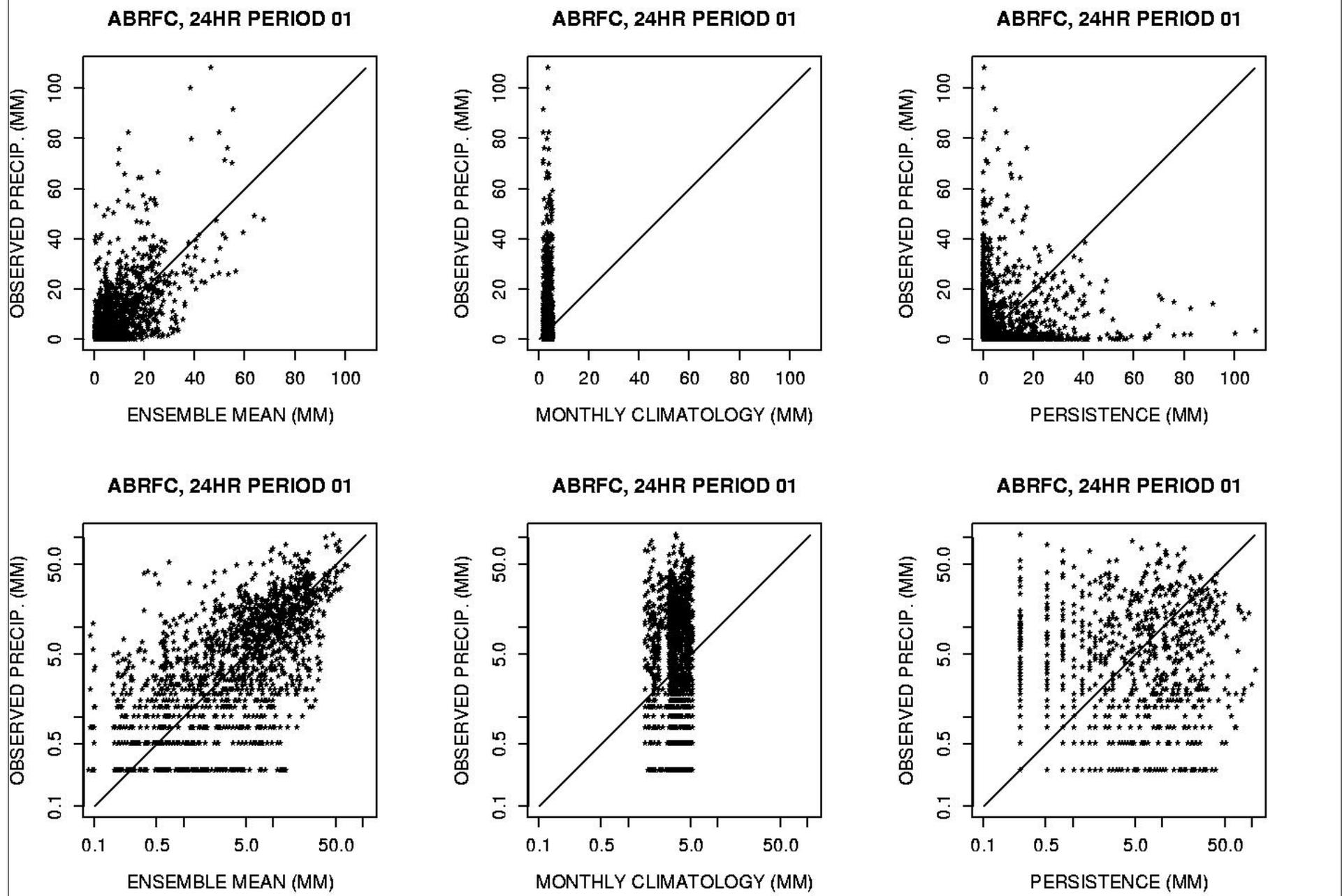


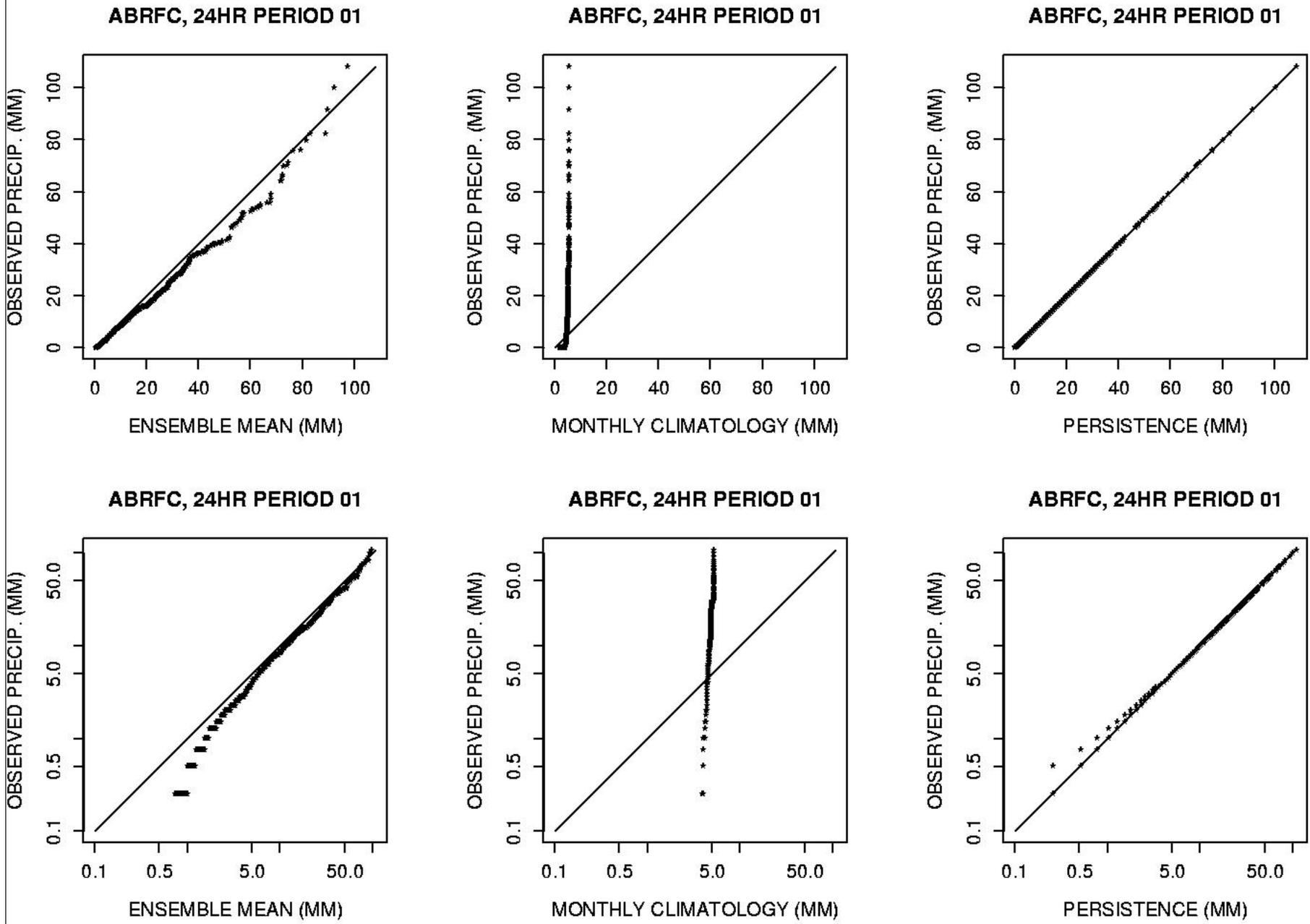
Sensitivity of obs-vs.-ensemble mean to the choice of percentile in parameter optimization

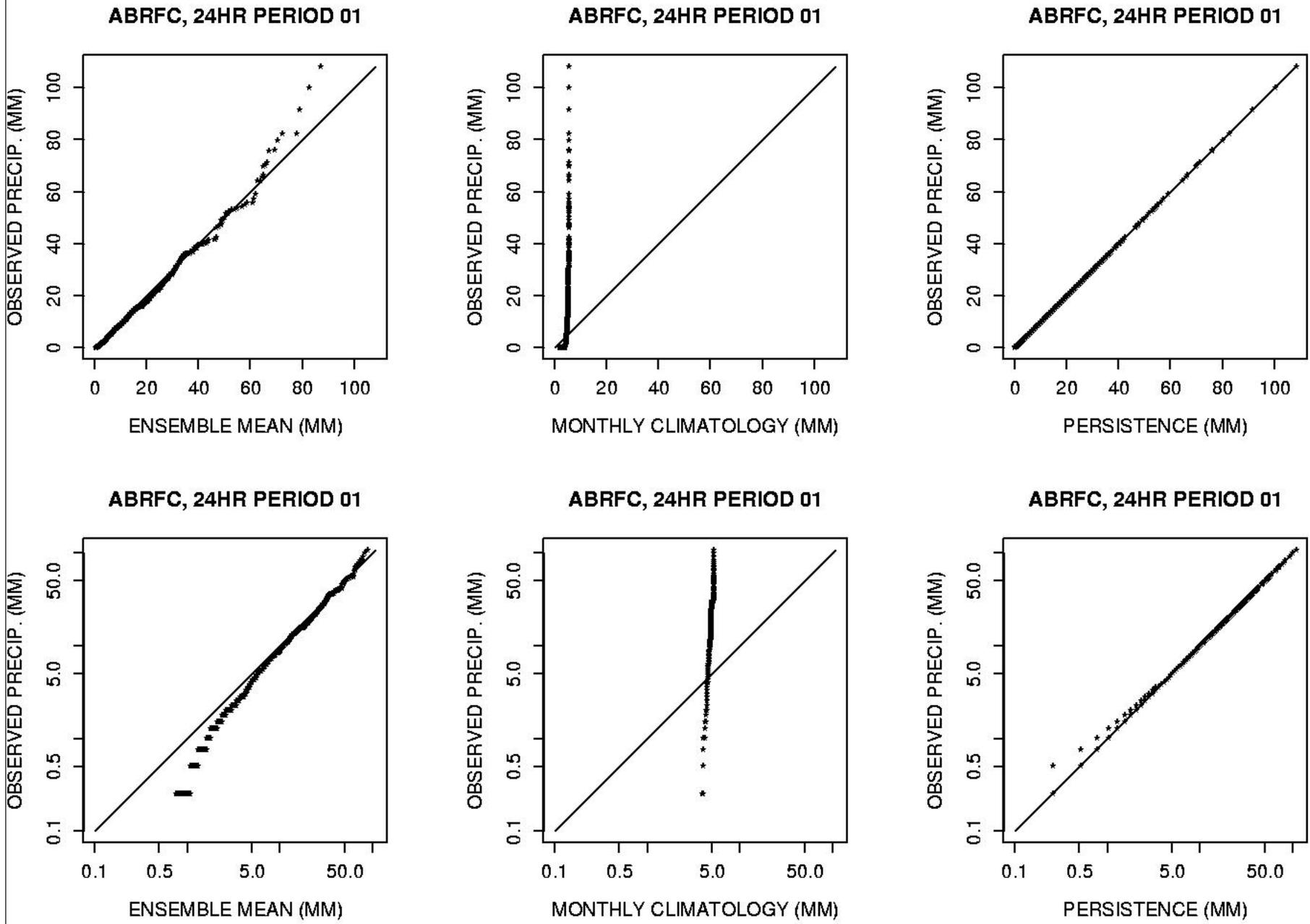


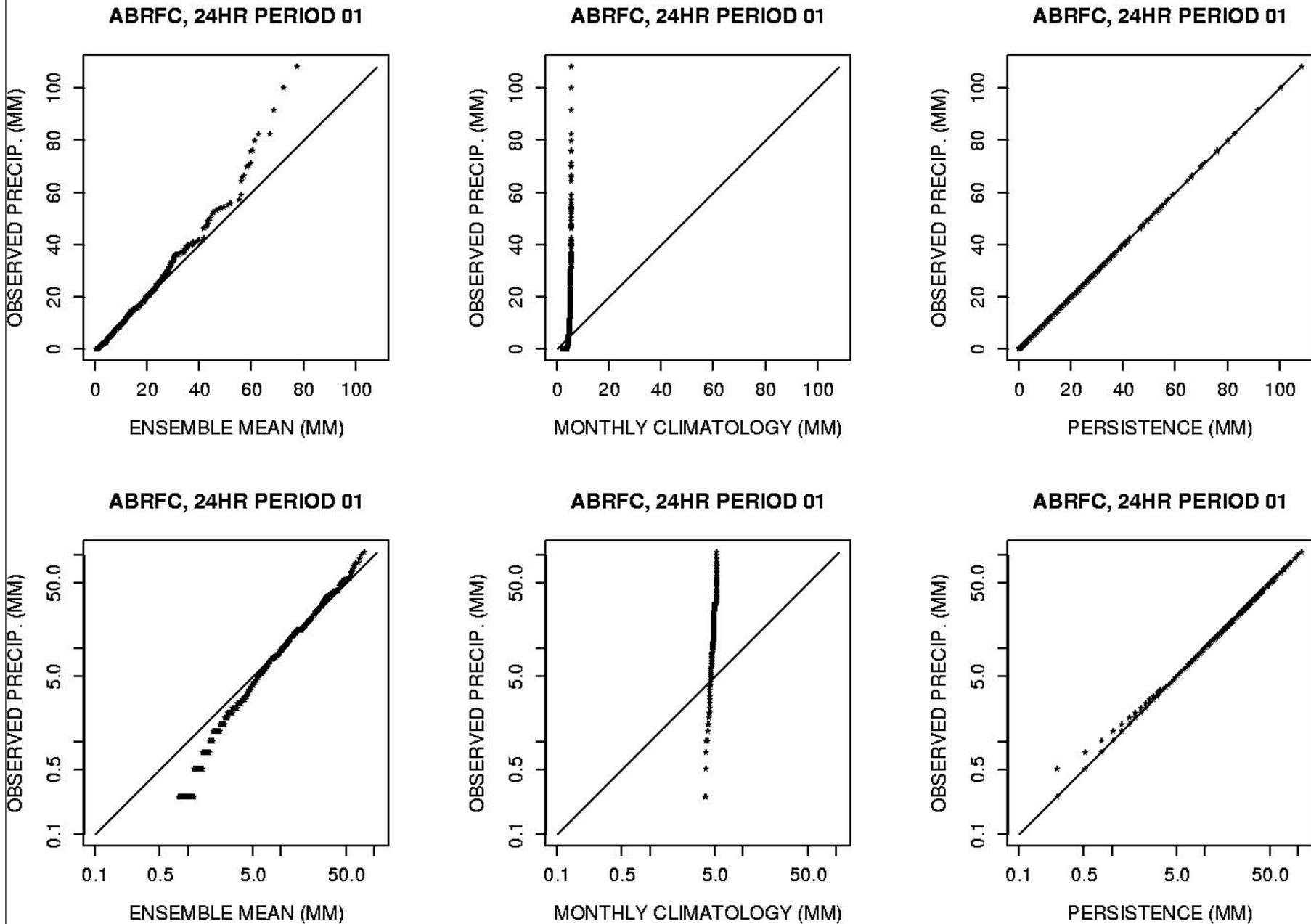


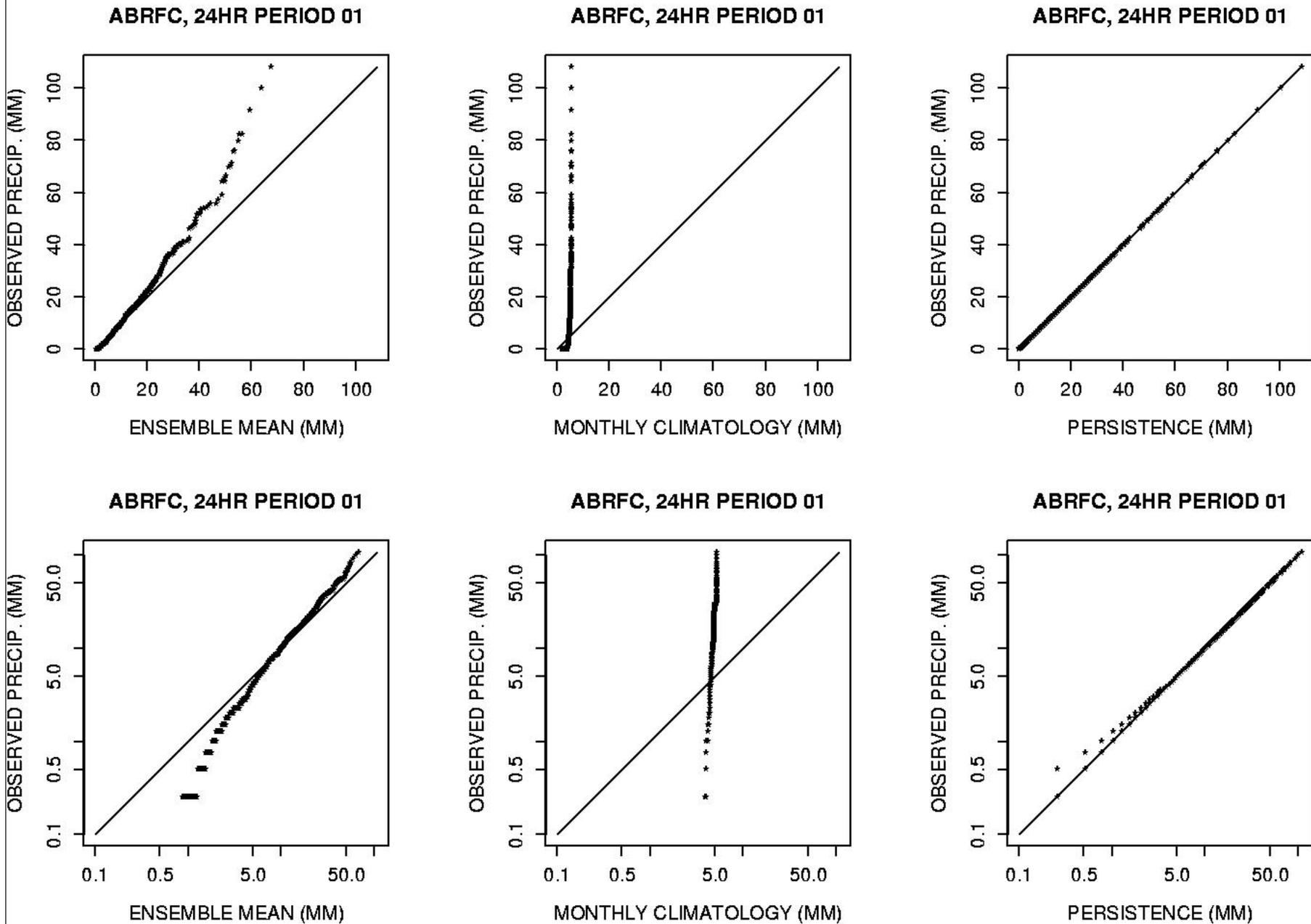


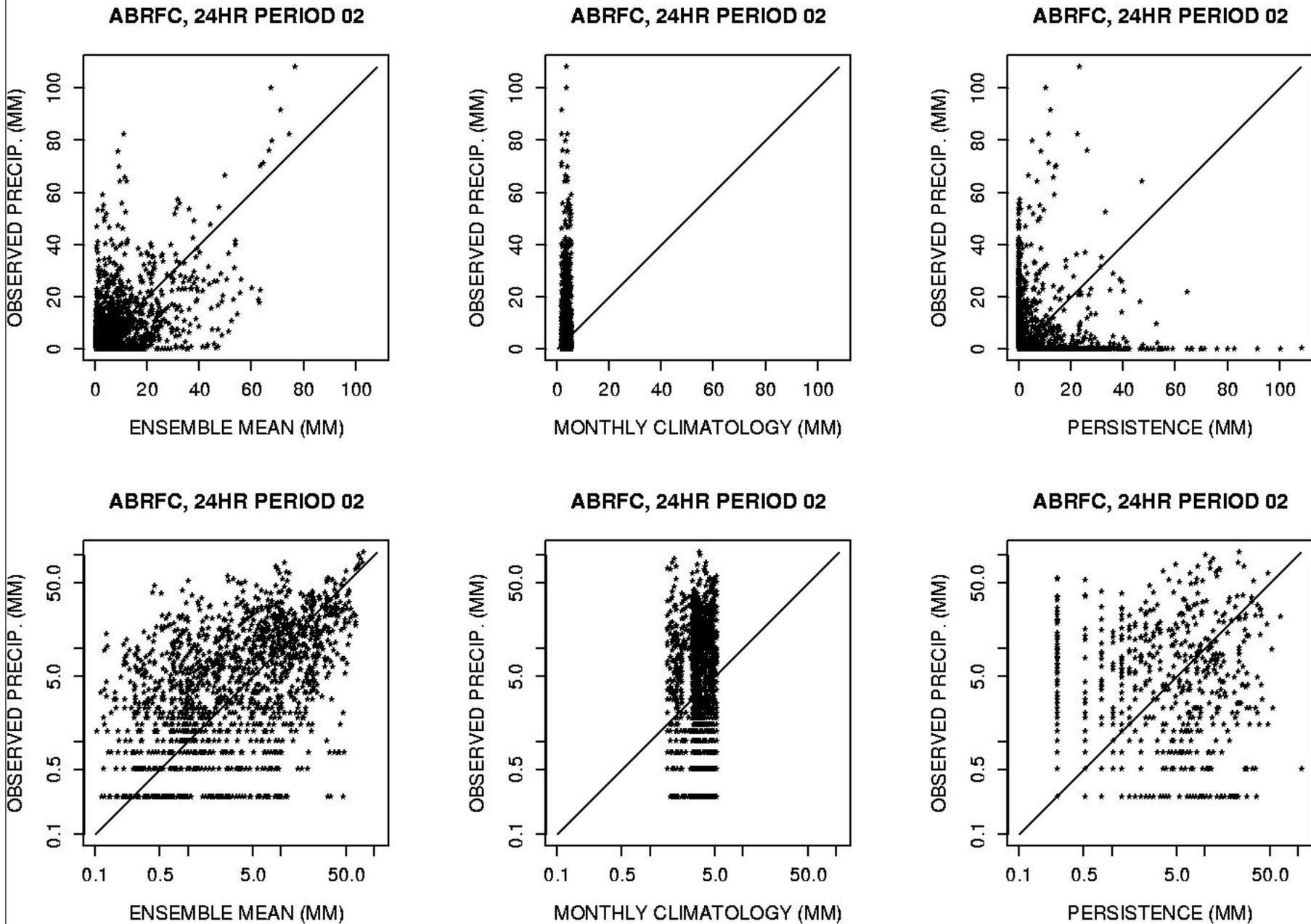


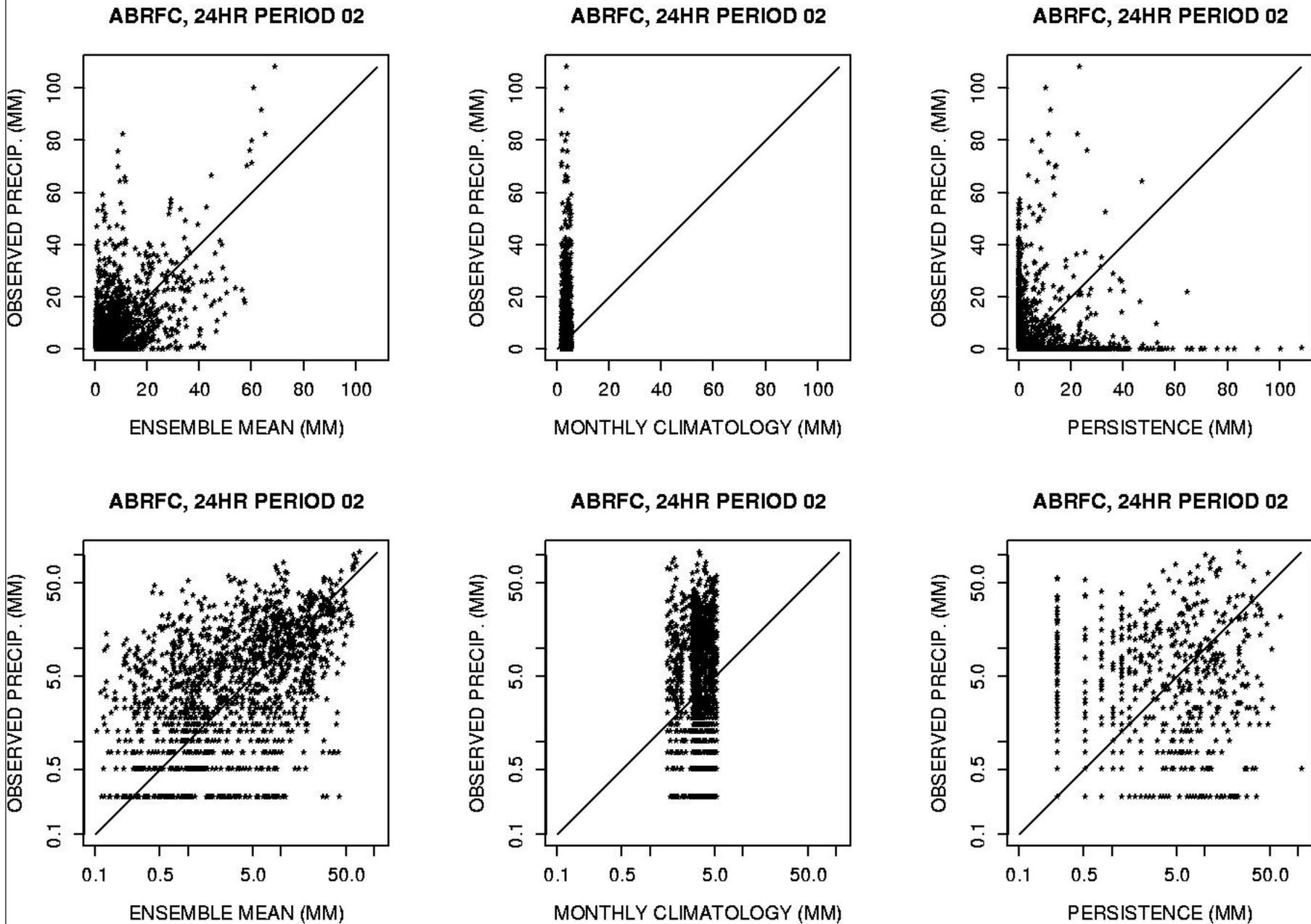


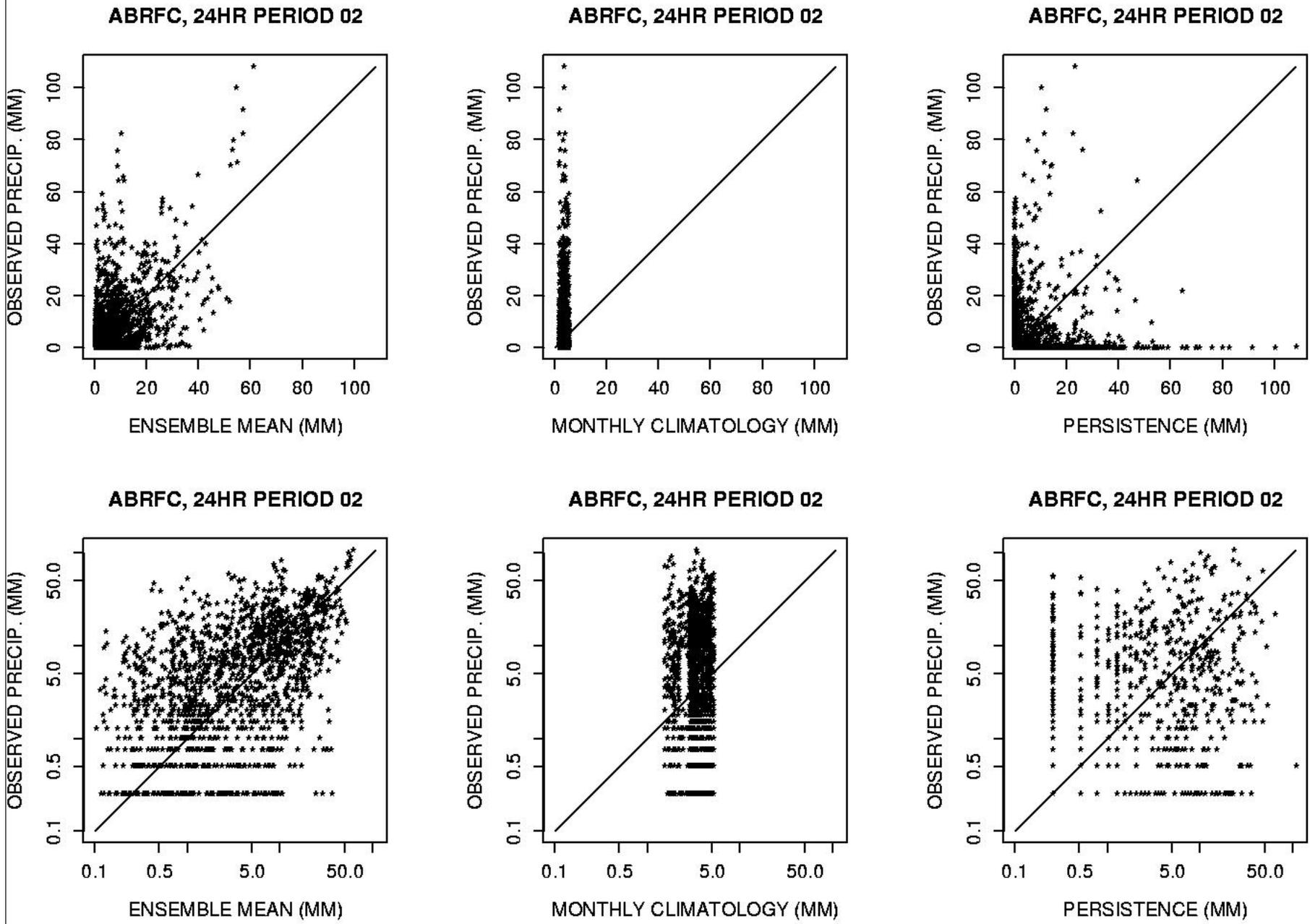


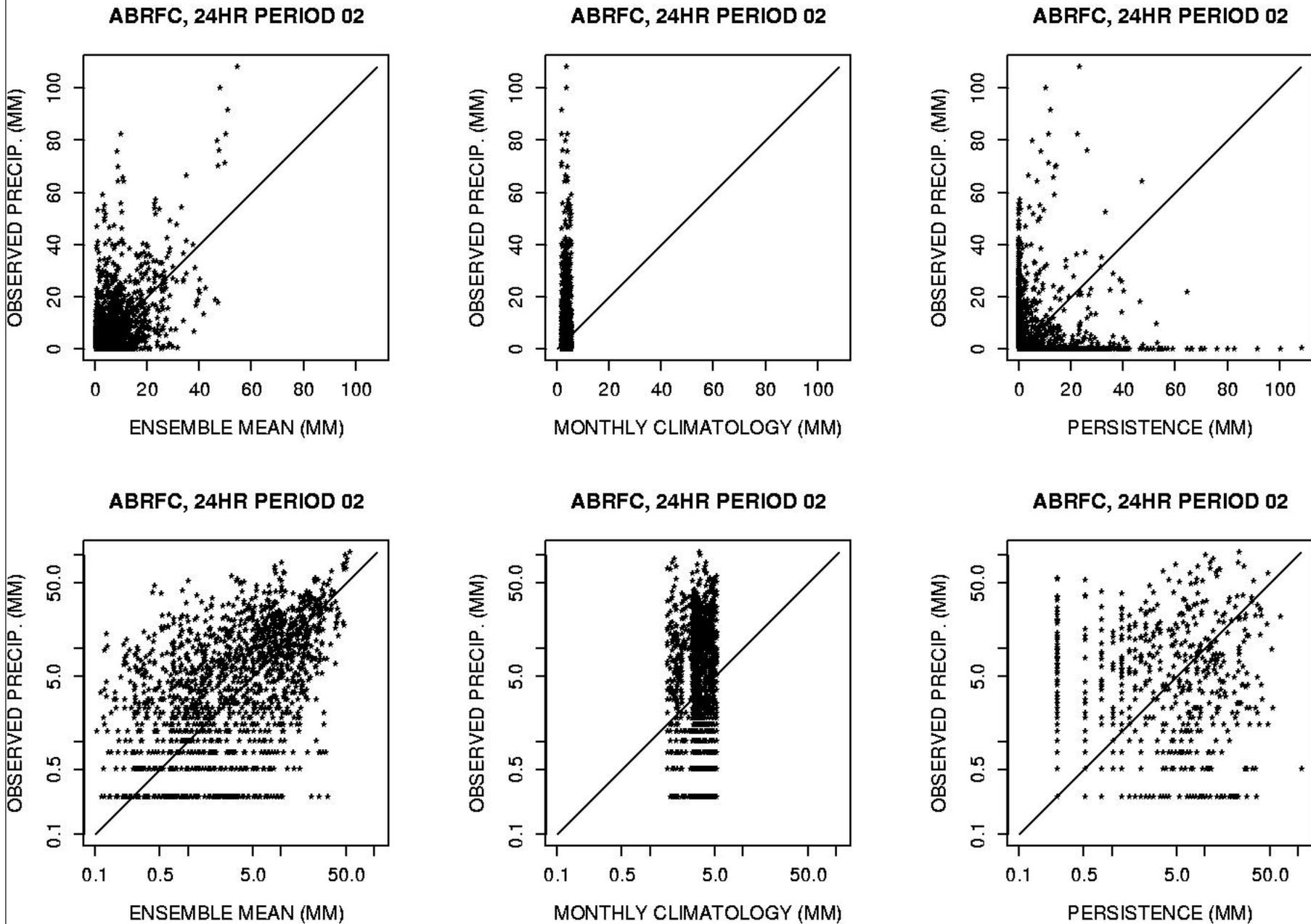


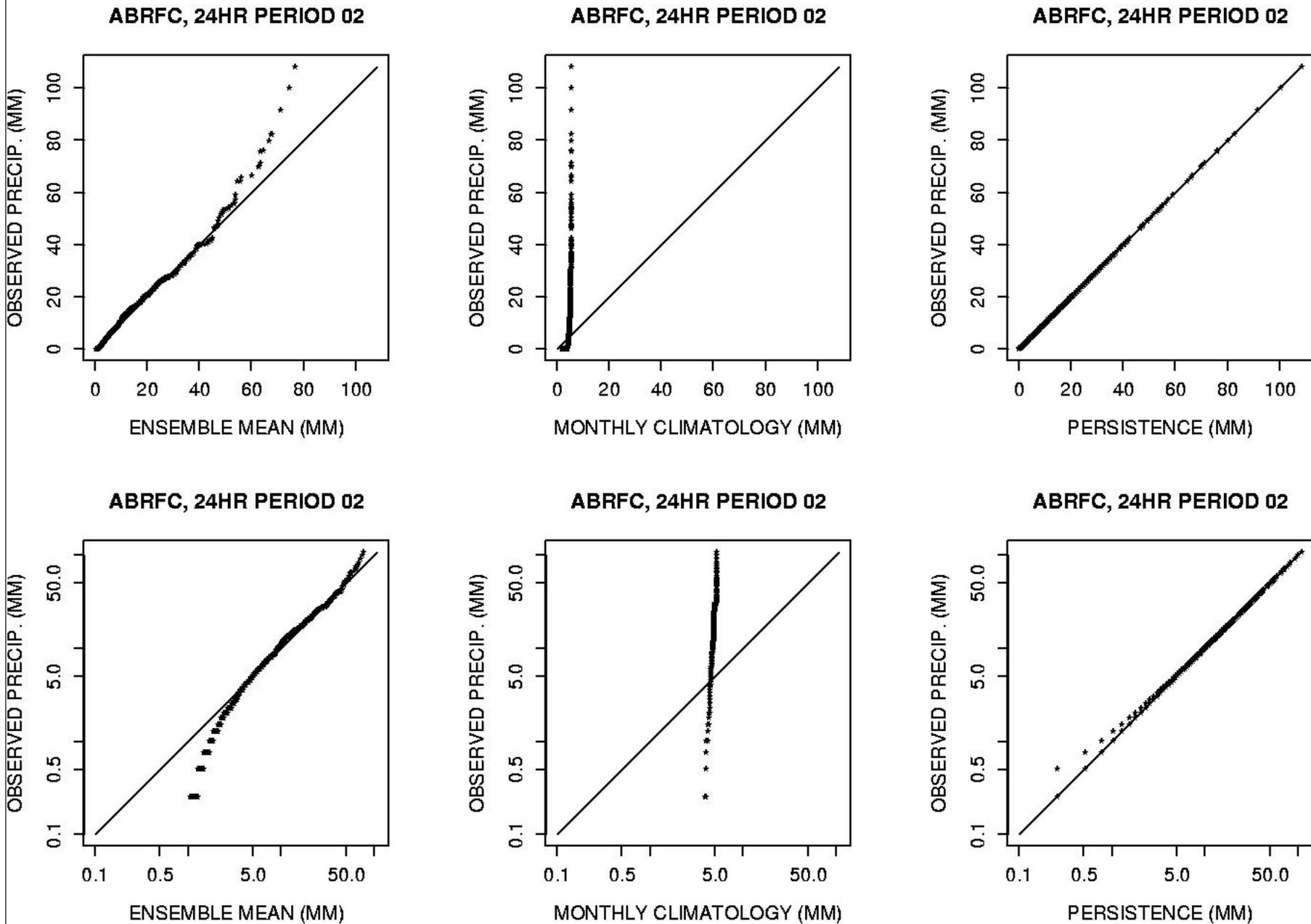


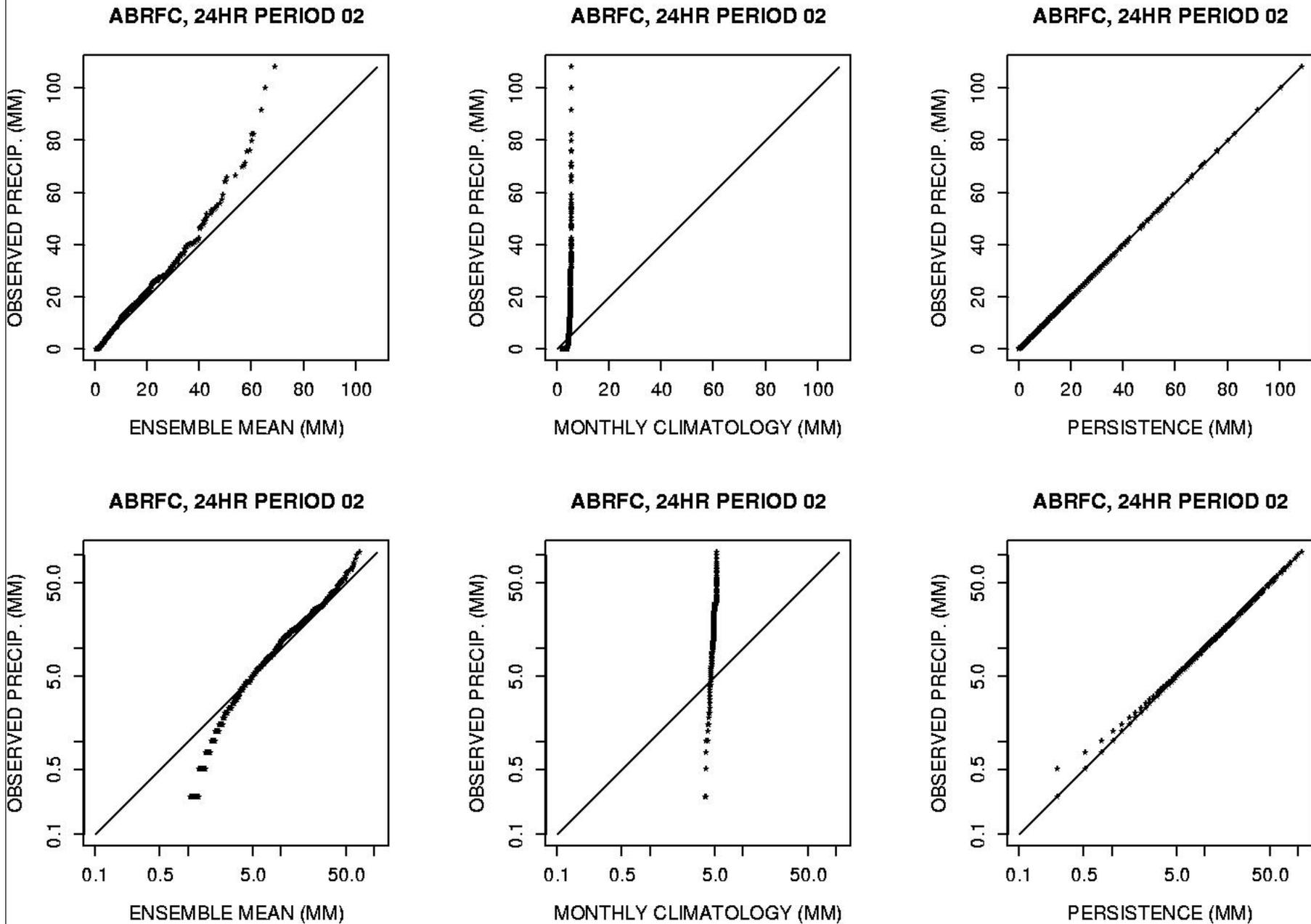


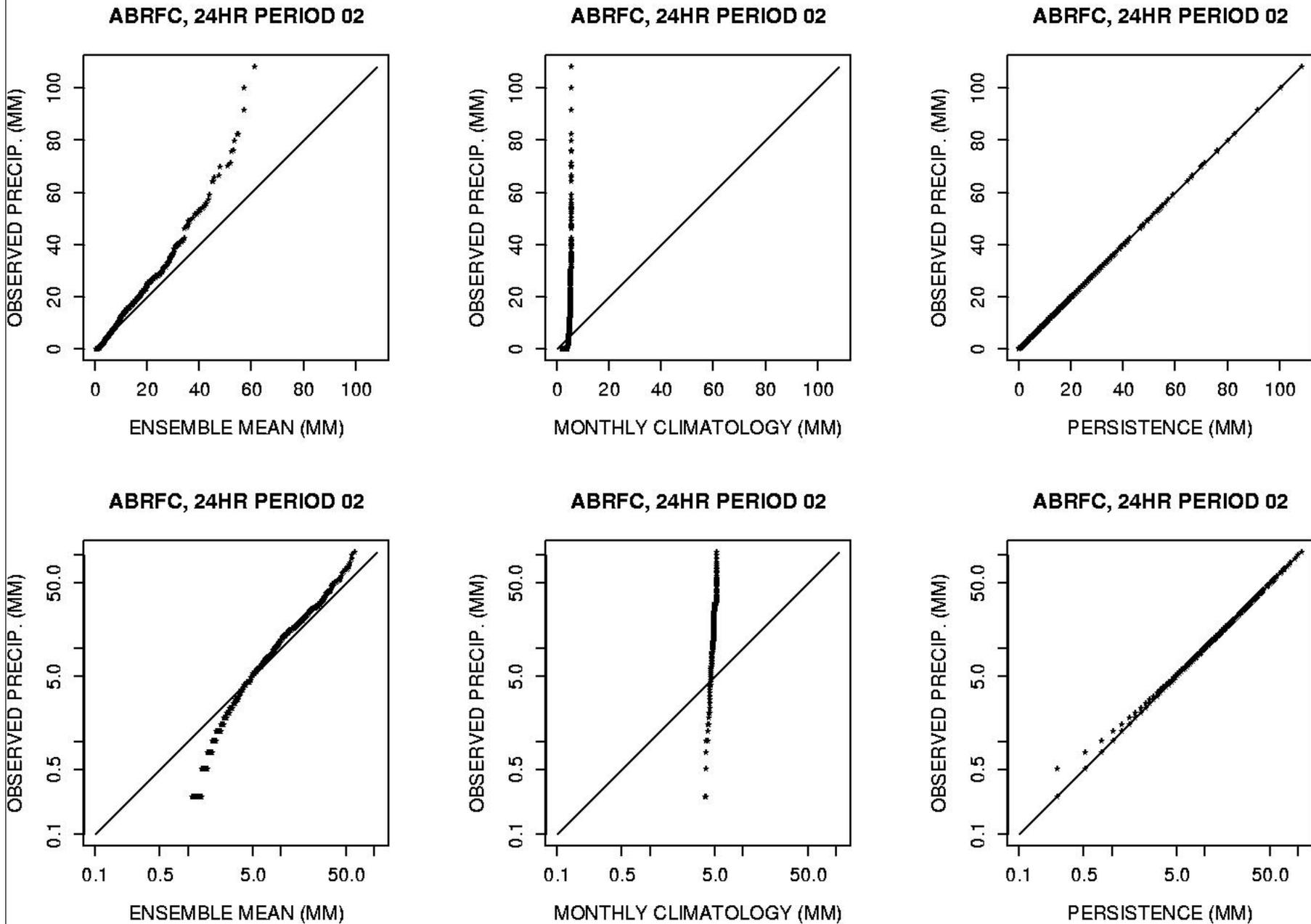


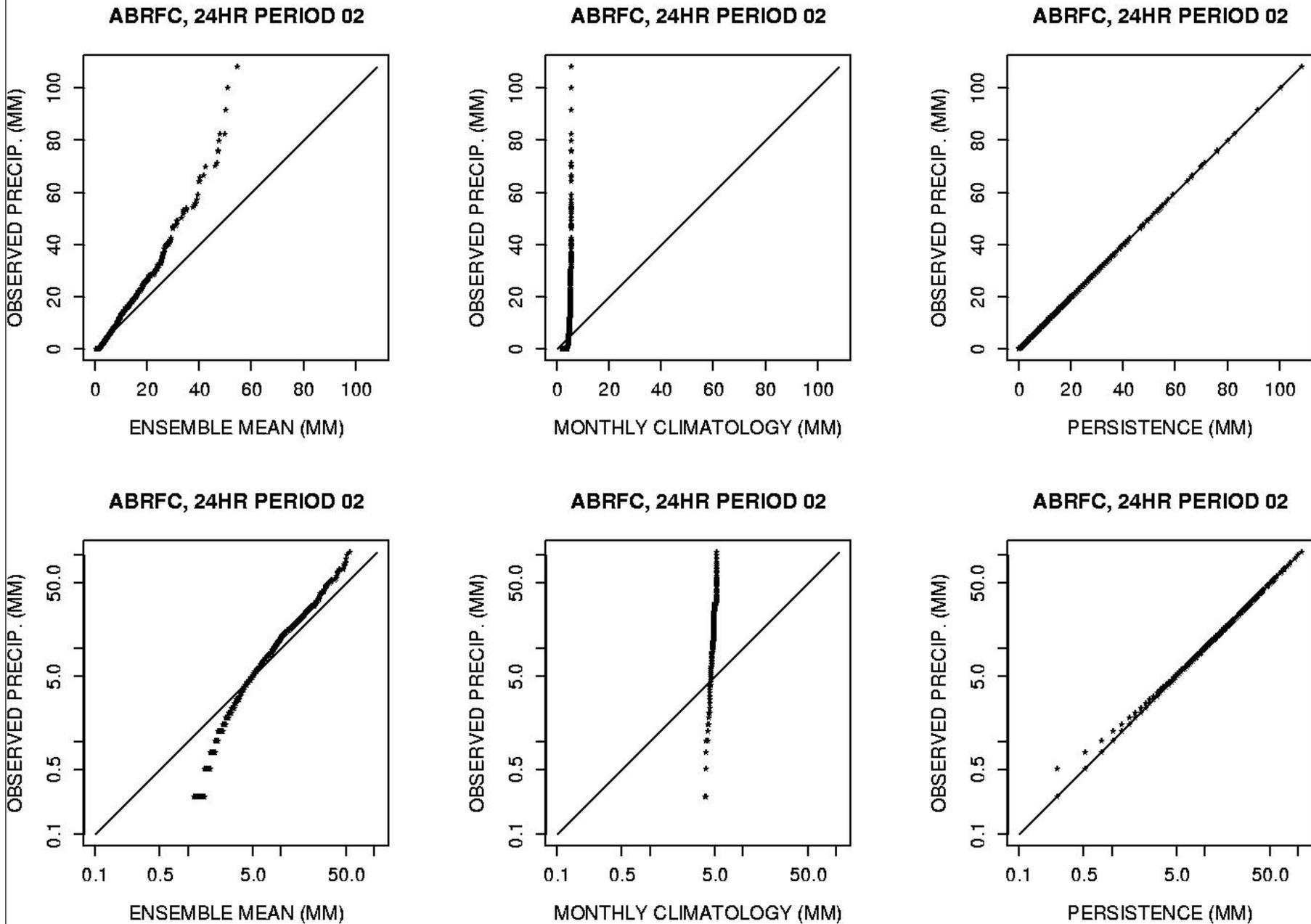














End of slides