



NCAR

METViewer

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

What is METViewer

- Available:

MET output statistics in ASCII tables



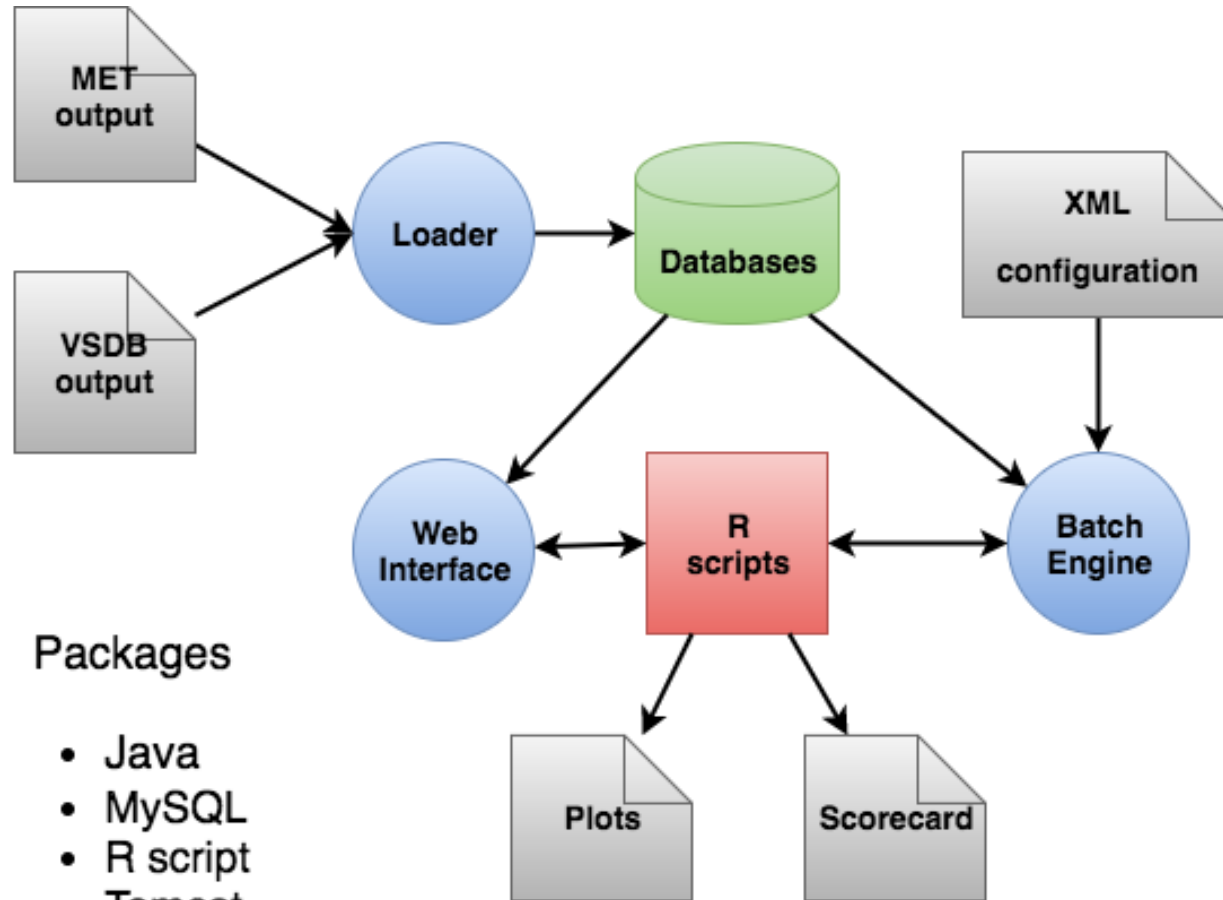
- Need:

plots showing statistics for variables,
cases and relationships

What is METViewer

- A software package designed to help MET users visualize MET output.
- Flexible, can be use as a stand-alone or web application.
- Written in Java and relies on:
 - database for data storage and retrieval
 - R language for plotting

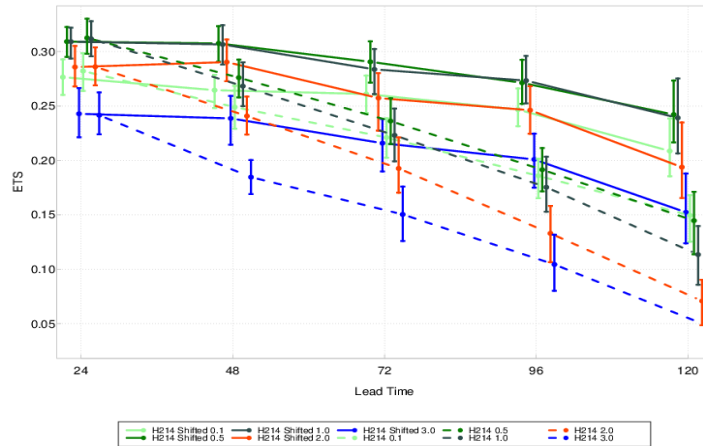
METViewer components



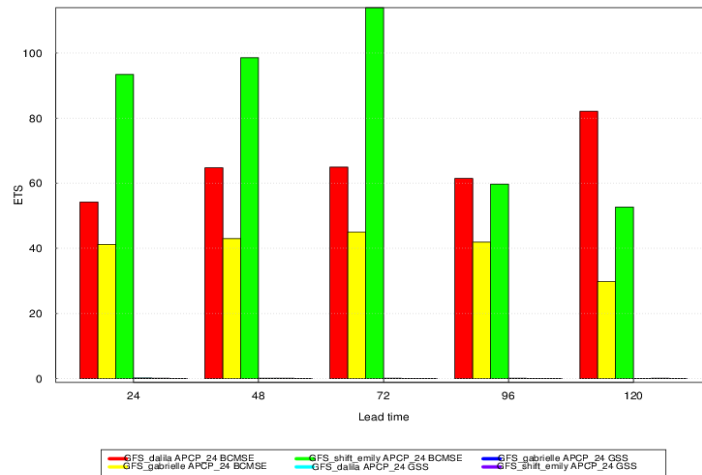


Examples

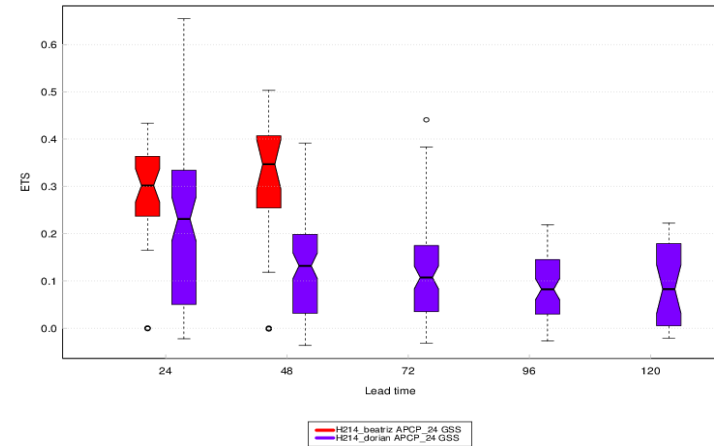
H214 ETS 24-hour APCP vs CMORPH, 16 storms, 600 km BT Mask



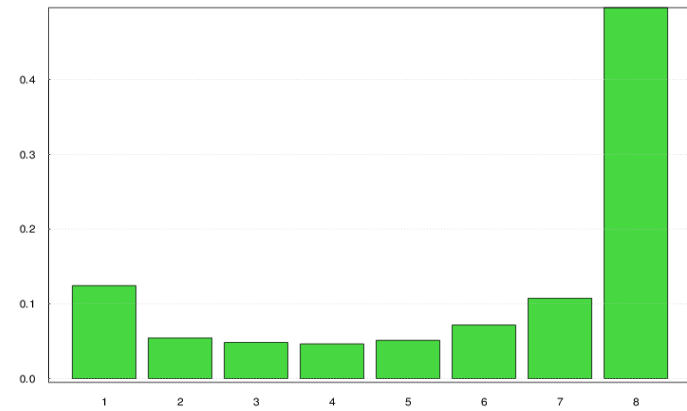
Bar plot



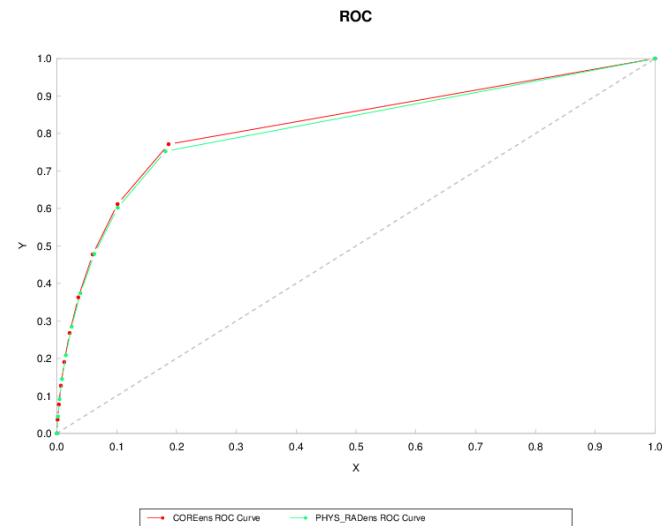
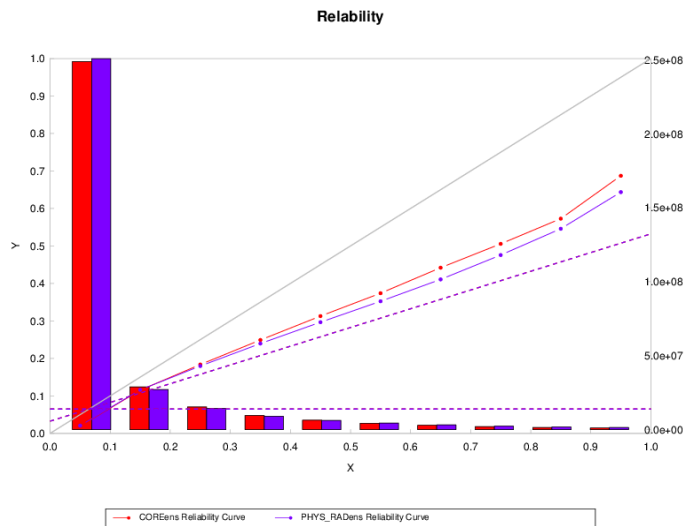
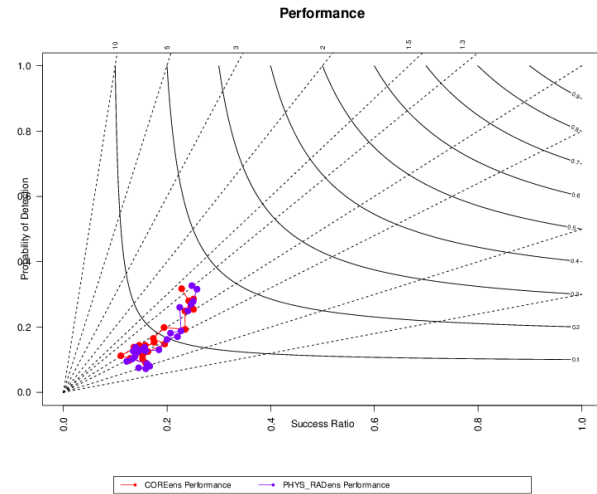
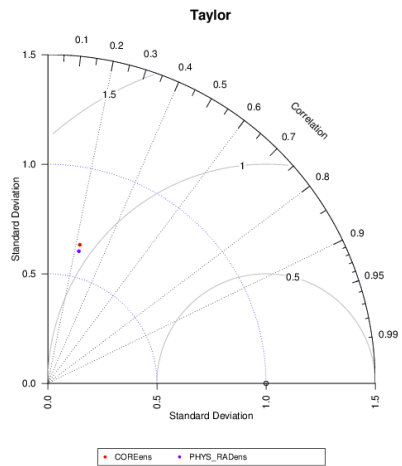
Box plot



Rank Histogram



Examples

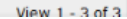


Scorecard

2016-06-01 00:00:00 - 2016-08-31 00:00:00

[illegible]

Database: mv_det_sref_2013





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Plot type

METViewer 2.3 Database: mv_hwrf_2014_qpf_ee [Generate Plot](#) [Reload databases](#) [Load XML](#)

Series Box Bar Roc Rely Ens_ss Perf Taylor Hist Eclv

20180116_160124

Plot XML Log R script R data SQL Y1 Points Y2 Points

Series Variables:
+ Series Variable

Specialized Plot Fixed Values:
FCST_VAR APCP_24 ☐ Equalize
+ Fixed Value
☐ Event Equalizer

Plot Cond

NO IMAGE AVAILABLE

Series, Box, Bar, ROC, Reliability, Ensemble Spread-Skill,
Performance Diagram, Taylor Diagram, Hist (Rhists, Phists, RELP), ECLV

Y-axis variables



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Click on down arrow to pick variable then pick the statistic(s)

Database: mv_det_sref_2013 Generate Plot Reload databases Load XML

Series: Box Bar Rhist Phist Roc Rely Ens_ss

20140722_151502

Plot XML Log R script R data SQL

Y1 Dependent (forecast) Variables:

TMP ME

Y1 Series Variables:

MODEL ens-16km-mp, ens-16km-std, ens-9km-std Group_y1_1

Fixed Values:

2013-05-01 00:00:00, 2013-05-02 00:00:00, 2013-05-03 00:00:00, 2013-05-04 00:00:00, 2013-05-05 00:00:00, 2013-05-06 00:00:00, 2013-05-07 00:00:00, 2013-05-08 00:00:00, 2013-05-09 00:00:00, 2013-05-10 00:00:00, 2013-05-11 00:00:00, 2013-05-12 00:00:00, 2013-05-13 00:00:00, 2013-05-14 00:00:00, 2013-05-15 00:00:00, 2013-05-16 00:00:00, 2013-05-17 00:00:00, 2013-05-18 00:00:00, 2013-05-19 00:00:00, 2013-05-20 00:00:00

FCST_INIT_BEG

Fixed Value

Plot Cond

Titles & Labels

Common Formatting X1 X2 Y1 Y2 Legend & Caption

Title: Example for METViewer Interface

X label: Lead Hour

Y1 label: Temperature ME (K)

Y2 label:

Caption:

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Signifi	Conn Across	Legend Text
1	Y1	No	ens-16km-mp TMP ME	none	#FF0000	Small circle	joined lines	solid	1	No	Yes	
2	Y1	No	ens-16km-std TMP ME	none	#00FF7F	Small circle	joined lines	solid	1	No	Yes	
3	Y1	No	ens-9km-std TMP ME	none	#8000FF	Small circle	joined lines	solid	1	No	Yes	

Lock Formatting

View 1 of 3

Y-axis series

Database: mv_det_sref_2013 Generate Plot Reload databases Load XML

Series **Box** Bar Rhist Phist Roc Rely Ens_ss

Plot Data: Stat Plot statistic: Median

Y1 Axis variables Y2 Axis variables

Y1 Dependent (Forecast) Variables:

Y1 Series Variables:

MODEL ens-16km-mp, ens-16km-std, ens-9km-std Group_y1_1

Series Variable

Fixed Values:

FCST_INIT_BEG

00:00:00, 2013-05-05 00:00:00, 2013-05-06 00:00:00, 2013-05-07 00:00:00, 2013-05-08 00:00:00, 2013-05-09 00:00:00, 2013-05-10 00:00:00, 2013-05-11 00:00:00, 2013-05-12 00:00:00, 2013-05-13 00:00:00, 2013-05-14 00:00:00, 2013-05-15 00:00:00, 2013-05-16 00:00:00, 2013-05-17 00:00:00, 2013-05-18 00:00:00, 2013-05-19 00:00:00, 2013-05-20 00:00:00

Fixed Value

Plot Cond

Example for METViewer Interface

Plot XML Log R script R data SQL

Lead Hour

ens-16km-mp TMP ME ens-16km-std TMP ME ens-9km-std TMP ME

Titles & Labels Common Formatting X1 X2 Y1 Y2 Legend & Caption

Title Example for METViewer Interface

X label Lead Hour

Y1 label Temperature ME (K)

Y2 label

Caption

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Signif	Connect Across NA	Legend Text
1	Y1	No	ens-16km-mp TMP ME	none	#FF0000	Small circle	joined lines	solid	1	No	Yes	
2	Y1	No	ens-16km-std TMP ME	none	#00FF7F	Small circle	joined lines	solid	1	No	Yes	
3	Y1	No	ens-9km-std TMP ME	none	#8000FF	Small circle	joined lines	solid	1	No	Yes	

Lock Formatting

View 1 - 3 of 3

Click on down arrow to what lines/boxes you want to include on Y-axis

Click on Group if you want selections grouped into 1 series (e.g. leads 0+12 in group 1 and 24+36hr in group 2, etc...)

Use Series Variable to define additional series

Stratifications



AR

Database: mv_det_sref_2013 Generate Plot Reload databases Load XML

Series **Box** Bar Rhist Phist Roc Rely Ens_ss

Plot Data: Stat Plot statistic: Median

Y1 Axis variables Y2 Axis variables

Y1 Dependent (Forecast) Variables: ?

TMP ME

Variable

Y1 Series Variables: ?

MODI s V

Fixed Value

2013-05-02 00:00:00, 2013-05-03 00:00:00, 2013-05-04 00:00:00, 2013-05-05 00:00:00, 2013-05-06 00:00:00, 2013-05-07 00:00:00, 2013-05-08 00:00:00, 2013-05-09 00:00:00, 2013-05-10 00:00:00, 2013-05-11 00:00:00, 2013-05-12 00:00:00, 2013-05-13 00:00:00, 2013-05-14 00:00:00, 2013-05-15 00:00:00, 2013-05-16 00:00:00, 2013-05-17 00:00:00, 2013-05-18 00:00:00, 2013-05-19 00:00:00, 2013-05-20 00:00:00

FCST_INIT_BEG

Fixed Value

Plot Cond

20140722_151502

Plot XML Log R script R data SQL

Example for METViewer Interface

ME (K)

Lead Hour

ens-16km-mp TMP ME ens-16km-std TMP ME ens-9km-std TMP ME

Titles & Labels Common Formatting X1 X2 Y1 Y2 Legend & Caption

Title Example for METViewer Interface

X label Lead Hour

Y1 label Temperature ME (K)

Y2 label

Caption

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Signifi	Conn Across NA	Legend Text
1	Y1	No	ens-16km-mp TMP ME	none	#FF0000	Small circle	joined lines	solid	1	No	Yes	
2	Y1	No	ens-16km-std TMP ME	none	#00FF7F	Small circle	joined lines	solid	1	No	Yes	
3	Y1	No	ens-9km-std TMP ME	none	#8000FF	Small circle	joined lines	solid	1	No	Yes	

View 1 - 3 of 3

Fixed Values – your stratifications. For example, select 1 or more thresholds to be aggregated, or 1 or more init times, or a date range based on valid times or cycle time

Use Fixed Values to define additional stratifications

X-axis



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Database: mv_afvar_gsi_control Generate Plot Reload databases Load XML

Y1 Series Variables:

MODEL Select value Group_y1_1

Fixed Values:

FCST_LEAD Select value

Independent Variables:

FCST_LEAD Select value

Statistics:

Summary Aggregation statistics

☐ Contingency table count (CTC)

☐ Scalar partial sums (SL1L2)

☒ None

Plot statistic: Median

Titles & Labels Common Formatting X1 X2 Y1 Y2 Legend & Caption

Title: test title

X label: test x_label

Y1 label: test y_label

Y2 label:

Caption:

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Significa	Connect Across NA	Legend Text
+ Add Difference Curve Remove Difference Curve Apply defaults Lock Formatting												

No records to view

Select dropdown arrow to choose what you want to plot against on the X-axis (Independent Variable)

How to compute statistics



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Database: mv_afvar_gsi_control Generate Plot Reload databases Load XML

Variable

Y1 Series Variables:

MODEL

Series Varia

Fixed Values:

FCST_LEAD

Fixed Value

Plot Cond

Independent Variabl

FCST_LEAD

Statistics

Summary **Aggregation statistics**

☐ Contingency table count (CTC)

☐ Scalar partial sums (SL1L2)

☒ None

Plot statistic: Median

Titles & Labels

Common

Formatting

X1

X2

Y1

Y2

Legend & Caption

Title test title

X label test_x_label

Y1 label test_y_label

Y2 label

Caption

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Significa	Connect Across NA	Legend Text
+ Add Difference Curve Remove Difference Curve Apply defaults Lock Formatting												

No records to view

Summary – scores computed per each combination of fixed values and independent variable then mean or median taken

Aggregate statistics – accumulates SL1L2 lines or CTC counts prior to calculating the statistic

Pick SL1L2 if plotting continuous statistics (RMSE, MAE etc...)

Pick CTC (aka FHO) if plotting categorical statistics (ETS, TSS, Freq. Bias etc...)

None is if using MET output and statistics are already computed

Formatting Series

Plot Data: Stat Plot statistic: Median

Y1 Axis variables Y2 Axis variables

Y1 Dependent (Forecast) Variables:

TMP ME

Variable

Y1 Series Variables:

MODEL ens-16km-mp, ens-16km-std, ens-9km-std Group_y1_1

Series Variable

Fixed Values:

2013-05-01 00:00:00, 2013-05-02 00:00:00, 2013-05-03 00:00:00, 2013-05-04 00:00:00, 2013-05-05 00:00:00, 2013-05-06 00:00:00, 2013-05-07 00:00:00, 2013-05-08 00:00:00, 2013-05-09 00:00:00, 2013-05-10 00:00:00, 2013-05-11 00:00:00, 2013-05-12 00:00:00, 2013-05-13 00:00:00, 2013-05-14 00:00:00, 2013-05-15 00:00:00, 2013-05-16 00:00:00, 2013-05-17 00:00:00, 2013-05-18 00:00:00, 2013-05-19 00:00:00, 2013-05-20 00:00:00

FCST_INIT_BEG

Fixed Value

Plot Cond

Plot XML Log R script R data SQL

Example for METViewer interface

Temperature ME (K)

Lead Hour

ens-16km-mp

ens-16km-std TMP ME

Y2 Legend & Caption

Series Formatting

#	Y axis	Hide		Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Signifi	Conne Across NA	Legend Text
1	Y1	No	ens-16km-mp TMP ME	none	#FF0000	Small circle	joined lines	solid	1	No	Yes	
2	Y1	No	ens-16km-std TMP ME	none	#00FF7F	Small circle	joined lines	solid	1	No	Yes	
3	Y1	No	ens-9km-std TMP ME	none	#8000FF	Small circle	joined lines	solid	1	No	Yes	

Format Series

Turn on Conf Intvls

Change line color, symbol, line types and widths

Turn off/on connecting across NAs

Change Legend info

Formatting the Plot



NCAR

Database: mv_det_sref_2013 Generate Plot Reload databases Load XML

Series Box Bar Rhist Phist Roc Rely Ens_ss

Plot Data: Stat Plot statistic: Median

Y1 Axis variables Y2 Axis variables

Y1 Dependent (Forecast) Variables:

TMP ME

Variable

Y1 Series Variables:

MODEL ens-16km-mp, ens-16km-std, ens-9km-std Group_y1_1

Series Variable

Fixed Values:

2013-05-01 00:00:00, 2013-05-02 00:00:00, 2013-05-03 00:00:00, 2013-05-06 00:00:00, 2013-05-09 00:00:00, 2013-05-12 00:00:00, 2013-05-14 00:00:00, 2013-05-15 00:00:00, 2013-05-16 00:00:00, 2013-05-17 00:00:00, 2013-05-18 00:00:00, 2013-05-19 00:00:00, 2013-05-20 00:00:00

FCST_INIT_BEG

Fixed Value

Plot Cond

Example for METViewer Interface

Plot XML Log R script R data SQL

Titles & Labels Common Formatting X1 X2 Y1 Y2 Legend & Caption

Title Example for METViewer Interface

X label

Y1 label

Y2 label

Caption

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Sym
1	Y1	No	ens-16km-mp TMP ME	none	#FF0000	Small circle
2	Y1	No	ens-16km-std TMP ME	none	#00FF7F	Small circle
3	Y1	No	ens-9km-std TMP ME	none	#8000FF	Small circle

Lock Formatting

View 1 of 3

Common

Staggering

Points, Turn on removing Lag1 autocorrelation

Titles, Axes, Legends, etc.

Display number of stats

Formatting

Plot size, image type, font size for titles, additional lines

X1, X2, Y1, Y2 – set axis, font size, label orientatio

Legend & Caption

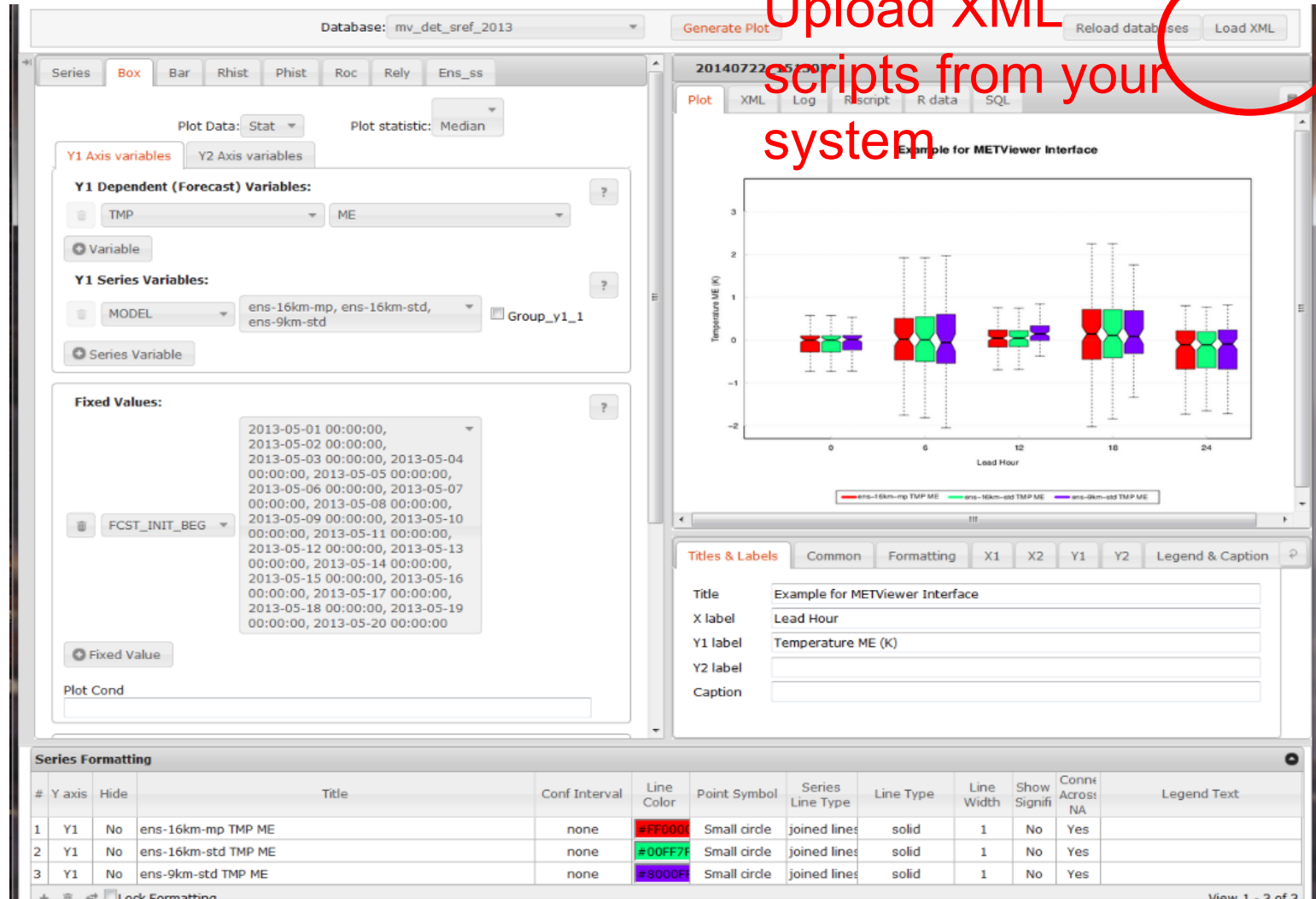
Set font size, location, text color

Upload XML configuration



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Upload XML
scripts from your
system



METViewer History



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Database: mv_det_sref_2013 Generate Plot Reload databases Load XML

Series **Box** Bar Rhist Phist Roc Rely Ens_ss

20140722_151502

Plot XML Log R script R data SQL

Example for METViewer Interface

Temperature ME (K)

10 24

Y1 Axis variable

Y1 Dependent

2013-05-03 00:00:00, 2013-05-04 00:00:00, 2013-05-05 00:00:00, 2013-05-06 00:00:00, 2013-05-07 00:00:00, 2013-05-08 00:00:00, 2013-05-09 00:00:00, 2013-05-10 00:00:00, 2013-05-11 00:00:00, 2013-05-12 00:00:00, 2013-05-13 00:00:00, 2013-05-14 00:00:00, 2013-05-15 00:00:00, 2013-05-16 00:00:00, 2013-05-17 00:00:00, 2013-05-18 00:00:00, 2013-05-19 00:00:00, 2013-05-20 00:00:00

FCST_INIT_BEG

Fixed Value

Plot Cond

History

All Success

20160413_203117

20160413_203030

20160413_202905

20160413_202603

Series Box

Ens_ss Per

Y1 Y2 Legend & Caption

Y1 Axis variable

Y1 Dependent

Series Formatting

#	Y axis	Hide	Title	Conf Interval	Line Color	Point Symbol	Series Line Type	Line Type	Line Width	Show Signif	Conn Across NA	Legend Text
1	Y1	No	ens-16km-mp TMP ME	none	#FF0000	Small circle	joined lines	solid	1	No	Yes	
2	Y1	No	ens-16km-std TMP ME	none	#00FF7F	Small circle	joined lines	solid	1	No	Yes	
3	Y1	No	ens-9km-std TMP ME	none	#8000FF	Small circle	joined lines	solid	1	No	Yes	

Lock Formatting

View 1 - 3 of 3

http://www.dtcenter.org/met/metviewer

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