

## 1 PredictedObserved Tutorial

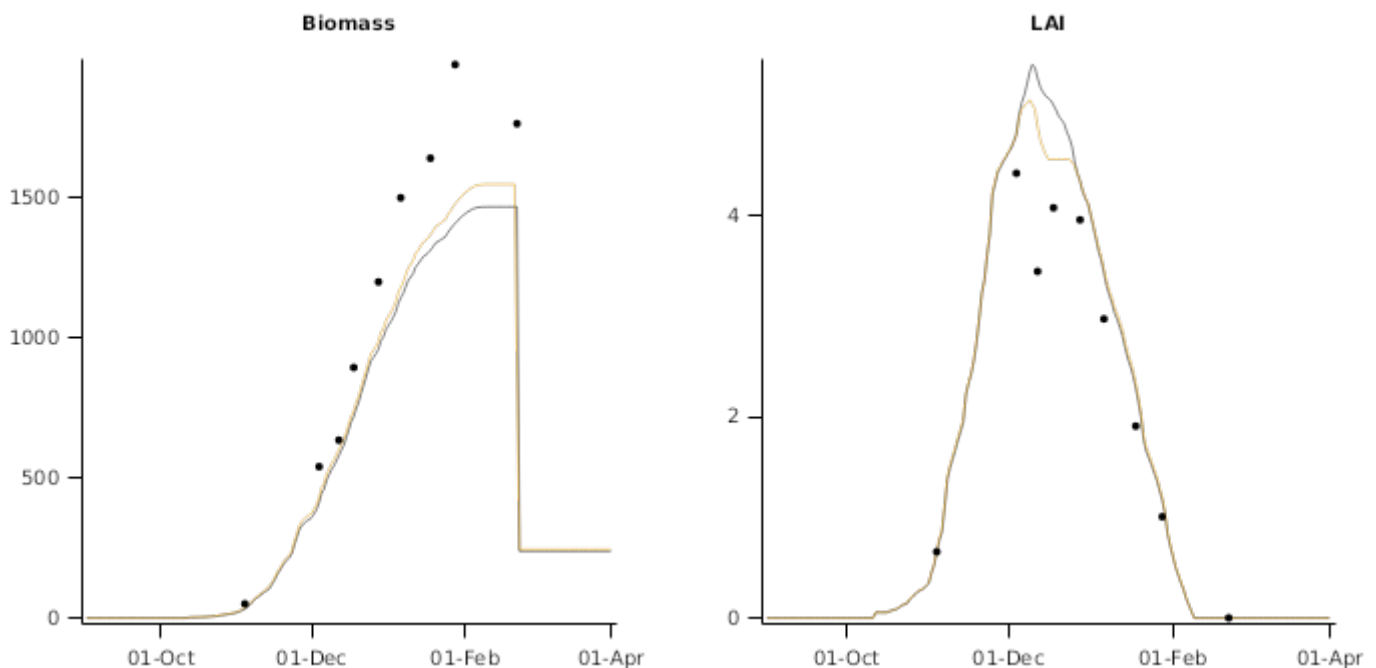
## 2 Importing data from spreadsheet

APSIM is capable of importing observed data from an Excel spreadsheet and adding the data to graphs.

To import data from a spreadsheet, add an ExcelInput model (under AddModel, PostSimulationTools) to the DataStore and rename it 'Observed'. You can then specify the name of the xlsx file and the worksheet name to import. When the simulation is run (or when the DataStore is refreshed - right click on DataStore), the data will be imported into a data table inside the .db file. Graphs can then be created with series that point to the data table and you can choose x and y field names to plot. The time series graphs below show the biomass and LAI columns plotted. Each graph has a predicted series and an observed series.

### NOTE:

For this to work, it is important to ensure the simulation names in the spreadsheet (column A) **exactly** match the simulation names produced by the experiment. To see the expected names, click on the experiment and the simulation names will be shown on the right. If the names don't match, no observed data will be shown on the graphs.



## 3 Matching predicted and observed data

Once observed data has been imported, you can add a 'PredictedObserved' model to the DataStore. You can then specify the name of the predicted table (usually the name of your report model e.g. DailyReport in our example) and observed table. You then need to specify one or more 'match fields' (column names) from the observed table to match on. Generally, this is SimulationID and Clock.Today. When the simulation is run (or when the DataStore is refreshed - right click on DataStore), the 'PredictedObserved' model will iterate through each value in the observed table and try and find a matching predicted value using the values of the 'match fields' (SimulationID and Clock.Today in our example).

### NOTE:

For this to work though, it is important to ensure the column names in the spreadsheet **exactly** match the column names in the predicted (report) table. The simulation names also need to **exactly** match.

## Observed

SimulationName	Clock.Today	Barley.Leaf.LAI	Barley.AboveGround.Wt
Exp1CultDashNit150IrrFull	2009-11-04	0.656616929	50.3
Exp1CultDashNit150IrrFull	2009-12-04	4.41514711	539.8
Exp1CultDashNit150IrrFull	2009-12-12	3.440717908	635.2
Exp1CultDashNit150IrrFull	2009-12-18	4.073343028	894.3920252
Exp1CultDashNit150IrrFull	2009-12-28	3.955549595	1200.893247
Exp1CultDashNit150IrrFull	2010-01-06	2.970872691	1501.331529
Exp1CultDashNit150IrrFull	2010-01-18	1.90868461	1642.126875
Exp1CultDashNit150IrrFull	2010-01-28	1.006077046	1976.175649
Exp1CultDashNit150IrrFull	2010-02-22	0	1765.717327

## Predicted

SimulationName	Clock.Today	Barley.AboveGroundLive.Wt g/m <sup>2</sup>	Barley.Leaf.LAI m <sup>2</sup> /m <sup>2</sup>
Exp1CultDashNit150IrrFull	2009-10-30	16.126	0.292
Exp1CultDashNit150IrrFull	2009-10-31	17.963	0.315
Exp1CultDashNit150IrrFull	2009-11-01	19.959	0.343
Exp1CultDashNit150IrrFull	2009-11-02	24.194	0.450
Exp1CultDashNit150IrrFull	2009-11-03	28.246	0.529
Exp1CultDashNit150IrrFull	2009-11-04	32.621	0.659
Exp1CultDashNit150IrrFull	2009-11-05	40.399	0.780
Exp1CultDashNit150IrrFull	2009-11-06	46.521	0.867
Exp1CultDashNit150IrrFull	2009-11-07	56.520	1.121
Exp1CultDashNit150IrrFull	2009-11-08	68.427	1.398

## Predicted Observed

SimulationName	Clock.Today	Observed.Barley.Leaf.LAI m <sup>2</sup> /m <sup>2</sup>	Predicted.Barley.Leaf.LAI m <sup>2</sup> /m <sup>2</sup>	Pred-Obs.Barley.Leaf.LAI
Exp1CultDashNit150IrrFull	2009-11-04	0.657	0.659	0.002
Exp1CultDashNit150IrrFull	2009-12-04	4.415	4.872	0.457
Exp1CultDashNit150IrrFull	2009-12-12	3.441	5.414	1.973
Exp1CultDashNit150IrrFull	2009-12-18	4.073	5.147	1.073
Exp1CultDashNit150IrrFull	2009-12-28	3.956	4.394	0.438
Exp1CultDashNit150IrrFull	2010-01-06	2.971	3.476	0.505
Exp1CultDashNit150IrrFull	2010-01-18	1.909	2.319	0.410
Exp1CultDashNit150IrrFull	2010-01-28	1.006	1.100	0.103

In the figure above, you can see the value of Barley.Leaf.LAI from the observed table was matched to the predicted value where the simulation name and Clock.Today values matched.

You might also notice that the Predicted Observed table doesn't include above ground biomass. This is because the column name in the observed table (Barley.AboveGround.Wt) doesn't match the column name in the predicted table ((Barley.AboveGroundLive.Wt).

The graph below was created with a series that points to the 'PredictedObserved' table and plots Predicted.Barley.Leaf.LAI against Observed.Barley.Leaf.LAI. This would not have been possible without the PredictedObserved model matching fields between 2 tables. The graph series also has a child 'Regression' model under it that displays the regression line.

