
Command Reference:

fillCropPatternTSProrateAgStats()

Fill crop pattern time series values by prorating agricultural statistics

StateCU Command

Version 02.14.00, 2007-07-03, Color, Acrobat Distiller

This command was used with Río Grande Phase 4 work and is no longer used with standard procedures. It can be used for evaluating agricultural statistics data for data filling.

The `fillCropPatternTSProrateAgStats()` command fills crop pattern time series data for a CU Location, by prorating agricultural statistics time series. Filling can occur forward or backward in time, but not both. Therefore, it may be necessary to use two similar commands, one filling forward, and one filling backward, in order to completely fill the ends of time series. The following criteria are used to match a crop pattern time series with an agricultural statistics time series:

- The county for the CU Location (e.g., RIO GRANDE) is matched with the location part of the time series identifier for agricultural statistics time series. Note that if the lands for a CU location span several counties, the county associated with the most area should typically be assigned for the CU location.
- The crop type in the crop pattern time series (e.g., ALFALFA) is matched against the data type in the agricultural statistics time series.

Because agricultural statistics may not have data for each year, it may be necessary to use a different fill command (e.g., `fillCropPatternTSInterpolate()` or `fillCropPatternTSRepeat()`) after filling with agricultural statistics.

For simple proration (`NormalizeTotals=False`), the ratio is recomputed each time that a value is found in the crop pattern time series and agricultural statistics time series, and the ratio is then applied to years for which acreage is estimated. The ratios computed for years with observed values are computed using the nearest year with available data. For example, if filling forward and 1998 and 2003 have observations, then 1998's observations will be used for filling 1999-2002, and 2003's observations will be used for filling 2004 and forward.

If the `NormalizeTotals` parameter is `True`, then the prorated agricultural statistics use ratios that reflect the overall crop totals in a county (not just a single crop), and will be computed using the equation discussed below, which was applied during Río Grande modeling (see RGDSS Memorandum: "Río Grande Historic Consumptive Use – Annual Time Series Parameters," LRCWE, Erin Wilson, June 18, 2002). Similar to simple proration, the ratios computed for years with observed values are computed using the nearest year with available data.

In the Río Grande, use `CropType=ALFALFA, POTATOES, SMALL_GRAINS` to fill acreage for these three crops in one command, where the county totals for all of these crops is used in the following equation (see *AgStatsAllCrop* terms below). Note that if a CU Location does not have observed acreage for a crop type, that crop type's county acreage is still included in county acreage totals. In other words, the list of crop types given by the `CropType` parameter is considered for county data, even if a CU location did not have acreage for a crop type.

$$ProratedCrop_i = AgstatsCrop_i * \left(\frac{ObservedCrop_i_{obs}}{AgstatsCrop_i_{obs}} \right) * \left(\frac{ObservedAllCrops_i_{obs}}{ProratedAllCrops_i_{obs}} \right) * \left(\frac{AgStatsAllCrops_i}{AgStatsAllCrops_i_{obs}} \right)$$

where:

i = year where crops are being estimated (e.g., 1997)

i_{obs} = year where crops are observed (e.g., 1998)

$ProratedCrop_i$ = acreage for a single crop type (e.g., ALFALFA) for any year that is estimated (e.g., 1997) by prorating AgStats and observed data

$AgstatsCrop_i$ = AgStats acreage for a single crop type (e.g., ALFALFA) for an estimated year (e.g., 1997)

$ObservedCrop_{i_{obs}}$ = observed acreage for a single crop type (e.g., ALFALFA) for an observed year (e.g., 1998)

$AgstatsCrop_{i_{obs}}$ = AgStats acreage for a single crop (e.g., ALFALFA) for an observed year (e.g., 1998)

$ObservedAllCrops$ = observed acreage for all crops (e.g., ALFALFA, POTATOES, SMALL_GRAINS) being filled for an observed year (e.g., 1998)

$ProratedAllCrops_{i_{obs}}$ = sum of $ObservedCrop_{i_{obs}} * (AgStatsCrop_i / AgstatsCrop_{i_{obs}})$ for all crop types

$AgStatsAllCrops_i$ = AgStats acreage for all crop types (e.g., ALFALFA, POTATOES, SMALL_GRAINS) for an estimated year (e.g., 1997)

$AgStatsAllCrops_{i_{obs}}$ = AgStats acreage for all crop types (e.g., ALFALFA, POTATOES, SMALL_GRAINS) for an observed year (e.g., 1998)

The following dialog is used to edit the command and illustrates the syntax of the command:

Edit fillCropPatternTSProrateAgStats() Command

This command fills missing data in crop pattern time series, using the CU Location ID, crop type, and year to uniquely identify time series. Missing values are replaced by prorating known agricultural statistics values. **This command was used with Rio Grande Phase 4 work but is no longer used with standard procedures.** If NormalizeTotals=True, the prorated value will additionally be adjusted by ratios of the total acres for the crop types (see the documentation for more information). The CU Location ID and crop type can contain a * wildcard pattern to match one or more time series. The fill period can optionally be specified. Only years in the output period can be filled.

CU Location ID: Specify the CU Location(s) to fill (use * for wildcard)

Include surface water supply?: Include locations with surface water supply? (default=true).

Include groundwater only supply?: Include locations with only groundwater supply? (default=true).

Crop type: Specify the crops to fill (use * for wildcard, or separate by commas).

Normalize totals?: Default is True for multiple crops, False for one crop.

Fill start (year): Start year as 4-digits or blank to fill all.

Fill end (year): End year as 4-digits or blank to fill all.

Fill Direction: Direction to process data.

Command:

```
fillCropPatternTSProrateAgStats (ID="*",CropType="ALFALFA",FillDirection="Backward")
```

OK Cancel

fillCropPatternTSProrateAgStats

fillCropPatternTSProrateAgStats() Command Editor

The command syntax is as follows:

```
fillCropPatternTSProrateAgStats (param=value, ...)
```

Command Parameters

Parameter	Description	Default
ID	A single CU Location identifier to match or a pattern using wildcards (e.g., 20*).	None – must be specified.
IncludeGroundwaterOnlySupply	If True, then locations with groundwater only supply will be included in filling. These locations are identified as aggregates or systems that have parts specified as parcels (not ditches).	True
IncludeSurfaceWaterSupply	If True, then locations with surface water supply (those other than locations with groundwater only supply) will be included in filling.	True
CropType	A single crop type to match, a pattern using wildcards (e.g., *), or a comma-separated list of crop types. When NormalizeTotals=True, the list of crops should include all crops that are to be considered as a group to indicate trends in county agriculture patterns. For example, in the Rio Grande, ALFALFA,POTATOES,SMALL_GRAINS can be specified to prorate any one of these crops using the total of these crops.	None – must be specified.
NormalizeTotals	Indicates whether crop totals should be normalized using total acreages of all crops. If a location does not have a crop type, the county acreage for the crop type will still be considered in the totals.	True for multiple crops, False for one crop.
FillStart	The first year to fill.	If not specified, fill the full period.
FillEnd	The last year to fill.	If not specified, fill the full period.
FillDirection	The direction to fill, either Forward or Backward.	Forward

The following example illustrates how to use a DateValue time series file to prorate crop acreages using agricultural statistics:

```
setOutputPeriod(1950,2002)
readCULocationsFromStateCU("../StateCU\rg2004.str")
createCropPatternTSForCULocations(ID="*",Units="ACRE")
readCropPatternTSFromHydroBase(ID="*")
readAgStatsTSFromDateValue(InputFile="../StateCU_SupportingFiles\county_ags.dv")
# Fill each crop separately. For the Rio Grande, agstats are only used
# for ALFALFA, POTATOES, and SMALL_GRAINS. The other crop types are filled
# by repeating the same value.
fillCropPatternTSProrateAgStats(ID="*",CropType="ALFALFA,POTATOES,SMALL_GRAINS",
FillDirection="Backward")
fillCropPatternTSProrateAgStats(ID="*",CropType="ALFALFA,POTATOES,SMALL_GRAINS",
FillDirection="Forward")
fillCropPatternTSRepeat(ID="*",CropType="VEGETABLES",FillDirection="Backward")
fillCropPatternTSRepeat(ID="*",CropType="VEGETABLES",FillDirection="Forward")
fillCropPatternTSRepeat(ID="*",CropType="GRASS_PASTURE",FillDirection="Backward")
fillCropPatternTSRepeat(ID="*",CropType="GRASS_PASTURE",FillDirection="Forward")
#
# Step 5 - write the StateCU CDS file
#
writeCropPatternTSToStateCU(OutputFile="../StateCU\rg2004_cds.CDS")
```

The DateValue time series file in this case can be created manually, with TSTool, or other software, and has contents similar to the following (note that the time series in this file may have themselves been filled in some way (e.g., in the Río Grande some missing harvested crop totals were estimated by prorating planted acreage):

```
# DateValue file for agricultural statistics
# Created by SAM from "county_ags.csv" 2005-07-17
# Erin provided the spreadsheet and SAM saved as a CSV and added the DateValue
# time series header information so that TSTool and StateDMI can read the file.
Delimiter = ","
NumTS = 18
TSID = Alamosa.Agro.Alfalfa.Year Alamosa.Agro.Potatoes.Year Alamosa.Agro.Small_Grains.Year Conejos.Agro.Alfalfa.Year ...trimmed...
# REVISIT SAM 2005-07-17
# Add "Agro" to the alias to allow TSTool to differentiate between time
# series when processing. Replace with the commented line if that causes
# problems for some reason
#Alias = Alamosa_Alfalfa Alamosa_Potatoes Alamosa_Small_Grains Conejos_Alfalfa Conejos_Potatoes Conejos_Small_Grains ... trimmed ...
Alias = Alamosa_Alfalfa_Agro Alamosa_Potatoes_Agro Alamosa_Small_Grains_Agro Conejos_Alfalfa_Agro Conejos_Potatoes_Agro ... trimmed ...
DataType = Alfalfa Potatoes Small_Grains Alfalfa Potatoes Small_Grains Alfalfa Potatoes Small_Grains Alfalfa Potatoes Small_Grains ...trimmed...
Units = "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE" "ACRE"
MissingVal = -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
Start = 1950
End = 2002
# EndHeader
Date,Alamosa_Alfalfa,Alamosa_Potatoes,Alamosa_Small_Grains,Conejos_Alfalfa,Conejos_Potatoes,Conejos_Small_Grains,Costilla_Alfalfa,... trimmed ...
1950,11042.51,3562.10,21016.39,16713.84,4051.84,29882.32,4400.78,2021.98,5471.24,0,0,0,22611.36,17956.08,25936.56,15964.08,4837.60,27574.32
1951,10127.92,3276.68,16383.40,14366.02,2957.71,24929.27,4266.10,1153.00,6110.90,0,0,0,24441.48,16294.32,27157.20,11461.32,5730.66,27330.84
1952,12745.50,4248.50,25491.00,14261.86,2760.36,28523.72,5152.00,1771.00,9177.00,0,0,0,24253.68,15434.16,33808.16,14665.56,8460.90,33279.54
1953,16954.51,4582.30,24286.19,16217.92,3040.86,31929.03,5912.60,1739.00,9738.40,0,0,0,33706.10,18086.20,31239.80,17277.78,8130.72,24900.33
1954,15215.88,4630.92,13231.20,20514.28,3881.08,31603.08,5254.47,3892.20,10314.33,550,0,0,22662.13,17762.21,20824.66,15176.70,6504.30,14454.00
1955,13390.60,4572.40,14697.00,18272.68,3846.88,25966.44,5772.00,3774.00,12654.00,500,0,0,23649.21,15159.75,21830.04,21819.28,6963.60,17641.12
1956,17820.00,4860.00,17820.00,21793.00,4014.50,31542.50,4739.80,4010.60,9479.60,520,0,0,32181.60,15391.20,21687.60,23363.20,6675.20,17641.60
1957,18254.80,4272.40,16312.80,26151.00,3979.50,26719.50,6073.20,3904.20,11712.60,0,0,0,38478.00,18364.50,29733.00,23544.50,7207.50,17778.50
...omitted...
2001,30240.00,22680.00,22680.00,42529.00,1198.00,16173.00,22848.00,4896.00,12648.00,0,0,0,31006.00,22626.00,30168.00,40180.00,17220.00,25420.00
2002,24975.00,24975.00,17550.00,31350.00,950.00,15200.00,15860.00,5185.00,9455.00,0,0,0,25678.00,22902.00,20820.00,36662.00,18331.00,24707.00
```

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