

INTEGRATED DECISION SUPPORT CONSUMPTIVE USE MODEL (IDSCU)

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IDSCU

- The IDSCU was developed as part of a unique project that was initially funded by the Colorado Water Institute, Colorado Agricultural Experiment Station, Colorado Cooperative Extension and several water users (Northern Colorado Water Conservancy has contributed the most to this effort).
- The purpose of the project was to ask water users what their needs were and develop tools to meet those needs.

Consumptive Use Modeling

As a result of that effort the Integrated Decision Support Group (IDS) has developed a model that is widely used to calculate ET called IDSCU.

IDSCU

IDSCU is distributed through the web and maintained with funding from NCWCD, CAES and Cooperative Extension.

Model can be downloaded at:

www.ids.colostate.edu/projects/idscu



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THE
CAMPAIGN
FOR
Colorado
State
University

Colorado
State
University
Knowledge to Go Places



Visualizing Engineering and

Management Solutions.

Click here for
information about the
IDSCU Training
workshop being offered
April 9, 2010

IDSCU Model

New: Support for CDSS Hydrobase should now be working. Choose "Use SQL Hydrobase" from the "Model Options" menu.

Together with water managers in the South Platte River Basin, the State of Colorado, and the United States Bureau of Reclamation, the [IDS Group](#) is developing an efficient model for computing field and farm consumptive use (CU).

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IDSCU Model Download Files

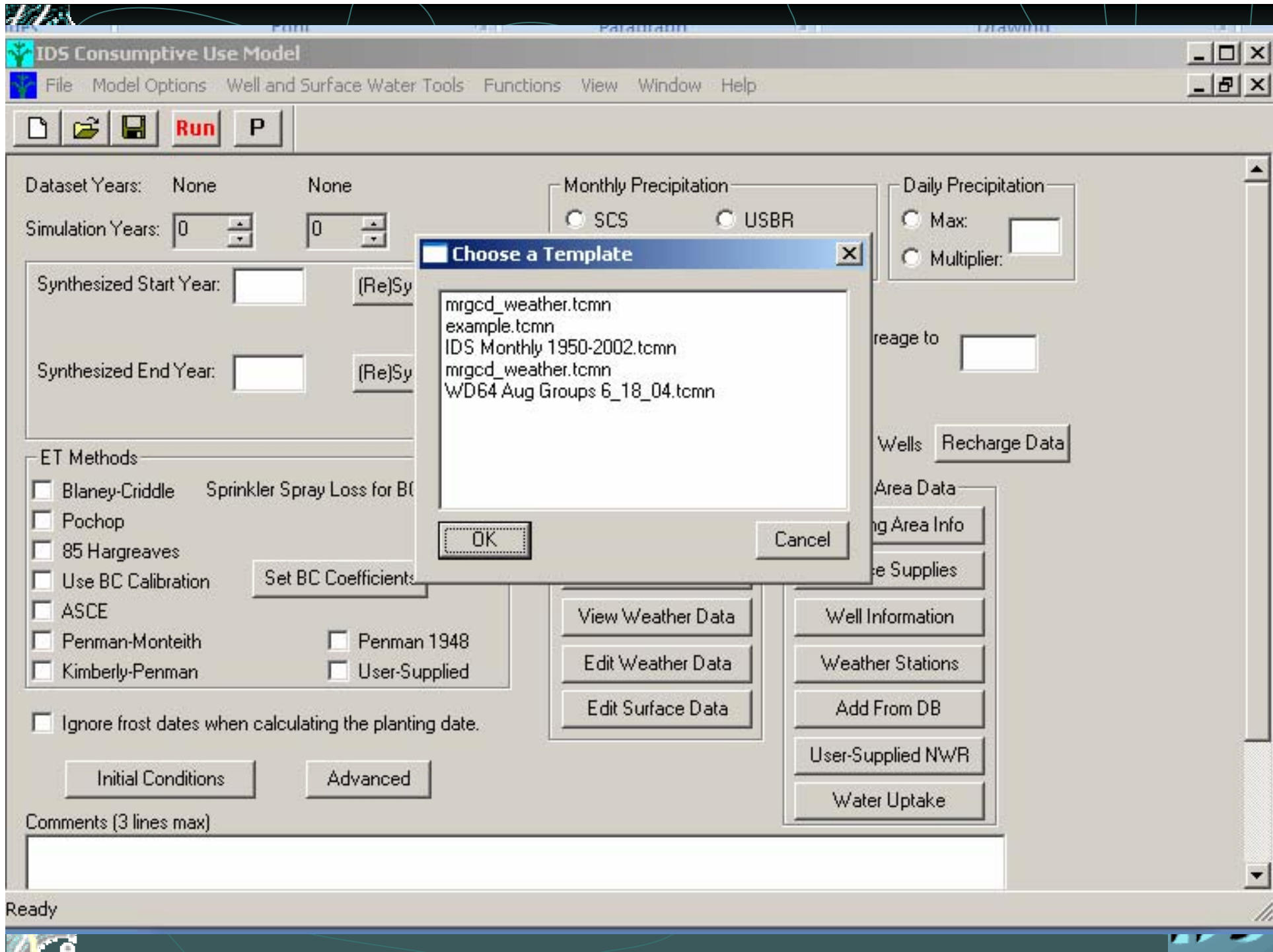
<u>File Name</u>	<u>Version #</u>	<u>Date</u>	<u>Description</u>
2008 vcredist_x86.exe		12/3/2009	Additional Microsoft Windows libraries needed by IDSCU version 3.3.112 and above. Install this if you have a problem running IDSCU or if you are not sure your computer already has this installed.
cumodel_v3_3_125.zip	3.3.125	3/2/2010	Latest version of IDSCU. If IDSCU doesn't run after installation, be sure to install vcredist_x86.exe as well.
Changelog.txt	-	3/2/2010	Listing of changes in each version.
Pochop.pdf	-	10/03/2008	Description of Kentucky bluegrass crop coefficients.
idscu_awas_training_2005.pdf	-	5/25/2005	Training manual for 2005 IDSCU and AWAS workshop.
idscu_training.zip	-	5/23/2005	Sample database for use as a frontend for IDSCU. See 2004 training manual for help on using it.
2004_training_manual.zip	-	5/23/2005	Training manuals for IDSCU.
			Additional Microsoft Windows libraries needed by IDSCU.



IDSCU Capabilities

- Calculate ET based on multiple methods.
- Ability to compare ET from different methods.
- Ability to calculate ET for any size area from a single field to whole canal/river systems.
- Ability to access weather data from the web.
- Ability to import historical data (acreage, crops).
- Ability to allow user to enter user derived ET.
- Ability to handle multiple water supplies.
- Ability to create templates for different areas.

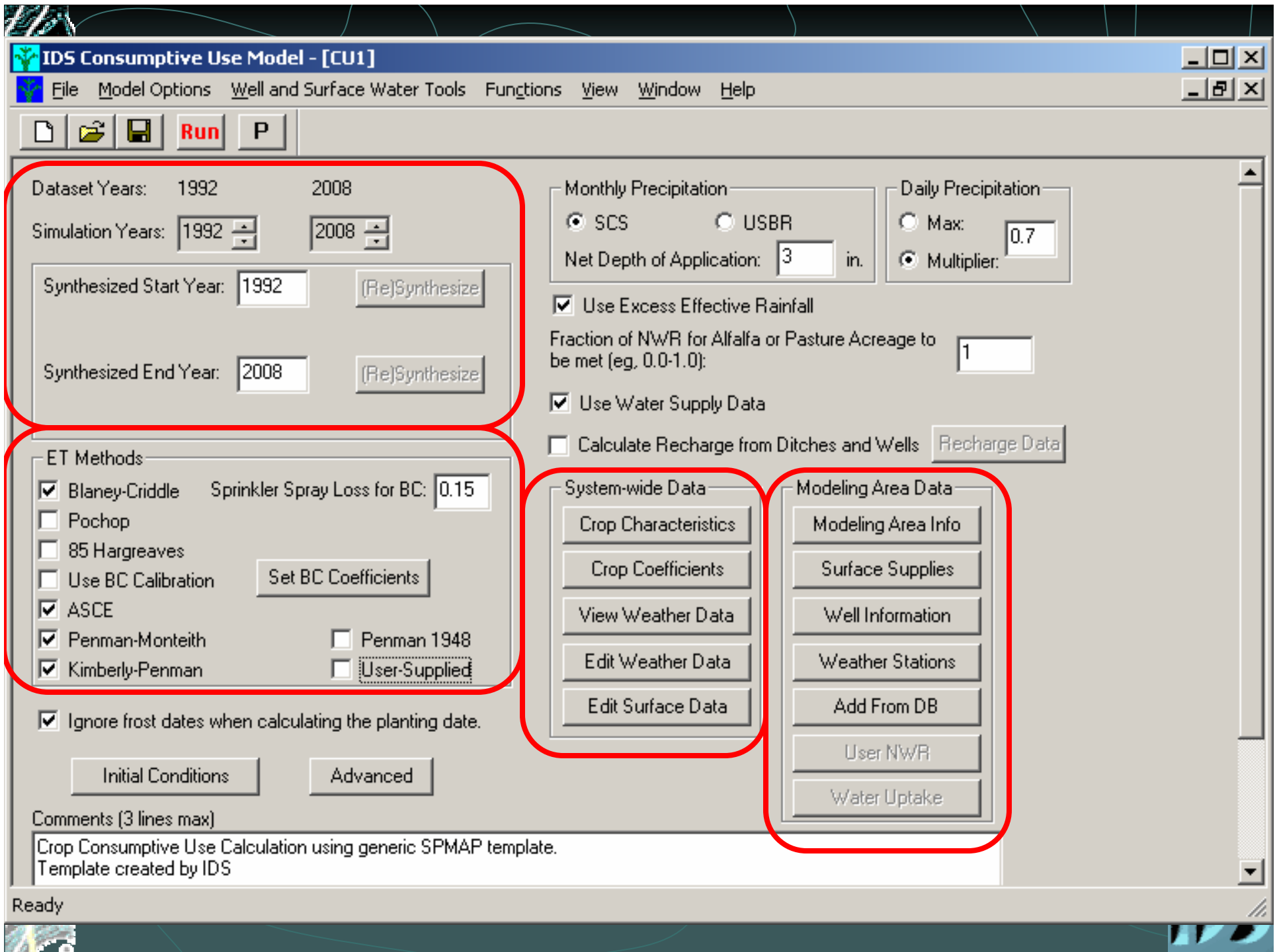




IDSCU Template Information

Templates provide the following information:

- Crop Characteristics
- Crop Coefficients
- Weather Data
- Water Supply Data



Dataset Years: 1992 2008

Simulation Years: 1992 2008

Monthly Precipitation
 SCS USBR
Net Depth of Application: 3 in.

Daily Precipitation
 Max: 0.7
 Multiplier:

Synthesized Start Year: 1992 (Re)Synthesize

Synthesized End Year: 2008

Use Excess Effective Rainfall

Advanced Options

End month and day if the last year of record is incomplete:

12 / 31

Model Crop Stress. This will reduce crop consumptive use when the field is water-short.

User-Supplied Data Represents:

Net Water Requirement

Model Groundwater Uptake.

OK

Cancel

Increase to 1

and Wells Recharge Data

ing Area Data

eling Area Info

face Supplies

ell Information

ather Stations

dd From DB

User NWR

Water Uptake

ET Methods

Blaney-Criddle Sprinkler Spr

Pochop

85 Hargreaves

Use BC Calibration

Set B

ASCE

Penman-Monteith

Kimberly-Penman

Ignore frost dates when calculating the planting date.

Initial Conditions

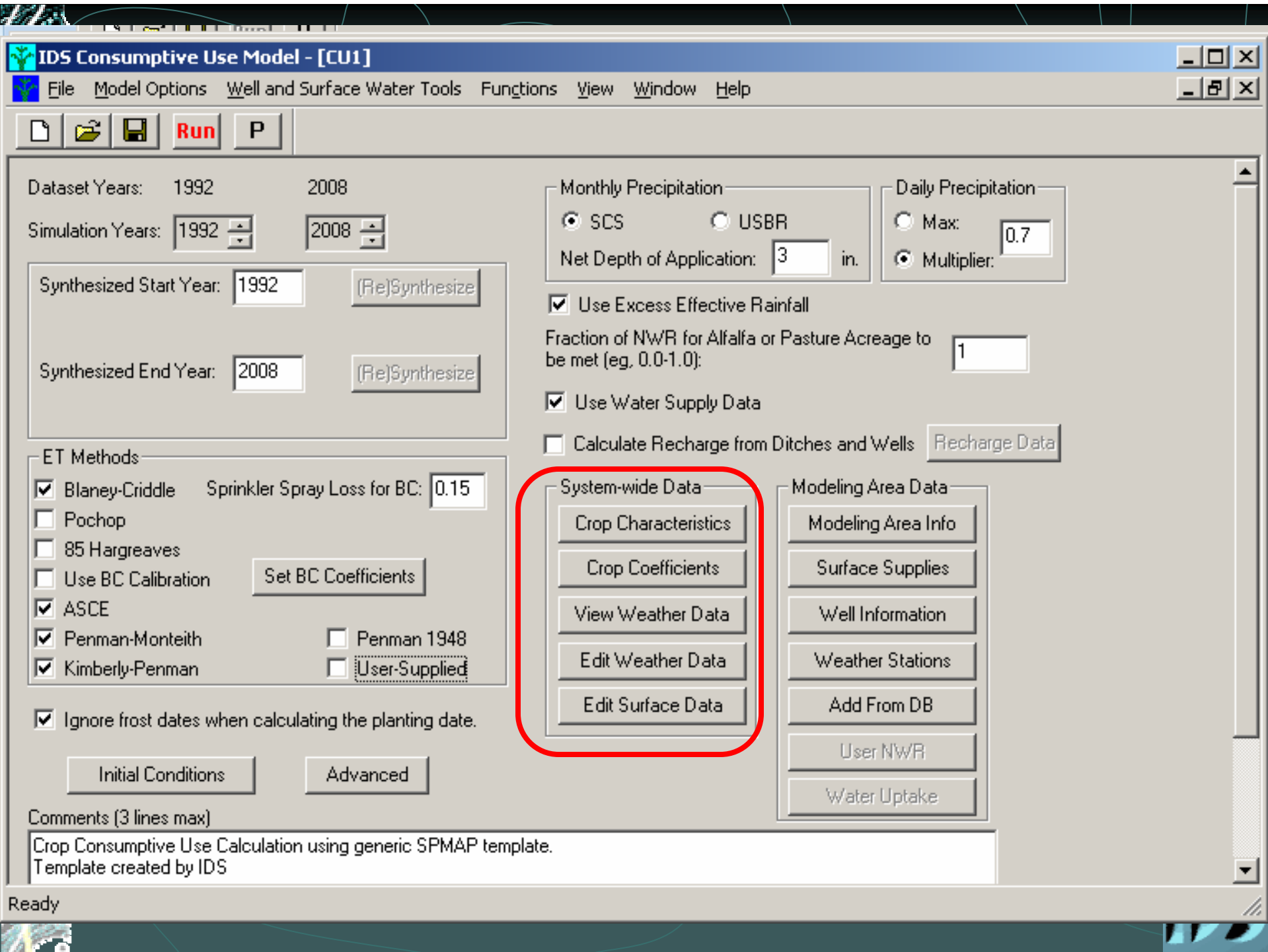
Advanced

Comments (3 lines max)

Crop Consumptive Use Calculation using generic SPMAP template.
Template created by IDS

Close

Help



Crop Coefficients

Blaney-Cridle Pochop
 Coefficient Values Represent $K_t * K_c$

Hargreaves, ASCE, PM, KP
 Grass/Alfalfa Reference
 Growing Degree Days

Crop	Use GDD	Ref Crop	Base Temp [C]	Min Temp [C]	Max Temp [C]	C	C'
ALFALFA (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
ALFALFA (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
KENTUCKY BLUEGRASS (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
KENTUCKY BLUEGRASS (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
SPRING WHEAT (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
SPRING WHEAT (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
TOMATOES (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
TOMATOES (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
ONIONS (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
ONIONS (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
SMALL VEGETABLES (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
SMALL VEGETABLES (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
WINTER WHEAT (SPRING) (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
WINTER WHEAT (SPRING) (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
WINTER WHEAT (FALL) (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
WINTER WHEAT (FALL) (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0
POTATOES (ALFALFA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	44	86	0	0
POTATOES (GRASS)	<input type="checkbox"/>	<input type="checkbox"/>	50	44	86	0	0

Plot

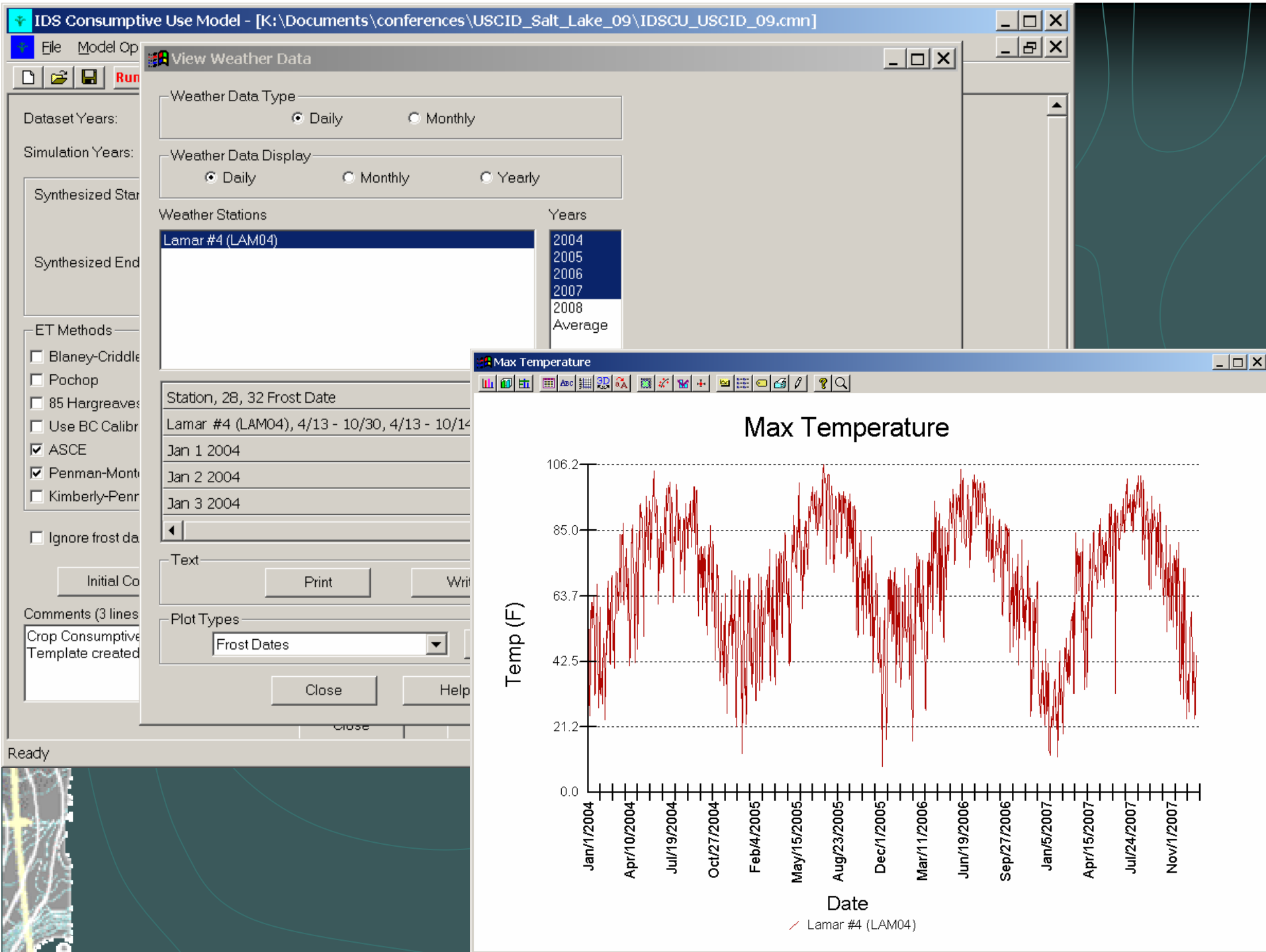
Print

OK

Apply

Cancel

Help



Edit Weather Data

HydroBase Functions

Name Filter:

Mask Stations that do not have data for the period of record.

Add from HydroBase

Refresh All

Use '_' for a single character wildcard and '%' to match multiple characters

Weather Station Information:

Weather station name	Latitude	Longitude	Elevation (ft)	Height of Te
NCWCD FORT COLLINS EAST 101	40.6167	105.133	5003.94	4.92
NCWCD LONGMONT SOUTH 103	40.07	105.1	5034	4.92
NCWCD EATON 104	40.56	104.76	4902	4.92
NCWCD WIGGINS 106	40.32	104.06	4464	4.92
NCWCD BRUSH 107	40.27	103.59	4273	4.92
NCWCD STERLING 108	40.59	103.24	3877	4.92

Add Station

Delete Stations

Missing Data

Calc Frost Dates

Refresh From Web

Build Monthly From Daily

Edit: Frost Dates

Import weather for NCWCD FORT COLLINS EAST

CoAgMet

Import

for weather station NCWCD FORT COLLINS EAST 101

Year	Spring 28 D...	Spring 28 D...	Fall 28 Deq ...	Fall 28 Deq ...	Spring	32 De
1992	1	1	12	31	1	
1993	1	1	12	31	1	12
1994	1	1	12	31	1	12
1995	4	27	9	22	5	9
1996	4	29	9	27	4	9
1997	5	9	10	9	5	10
1998	4	29	10	6	6	10

- NCWCD
- CoAgMet
- ET Toolbox -- Middle Rio Grand
- AzMet
- CIMIS

OK

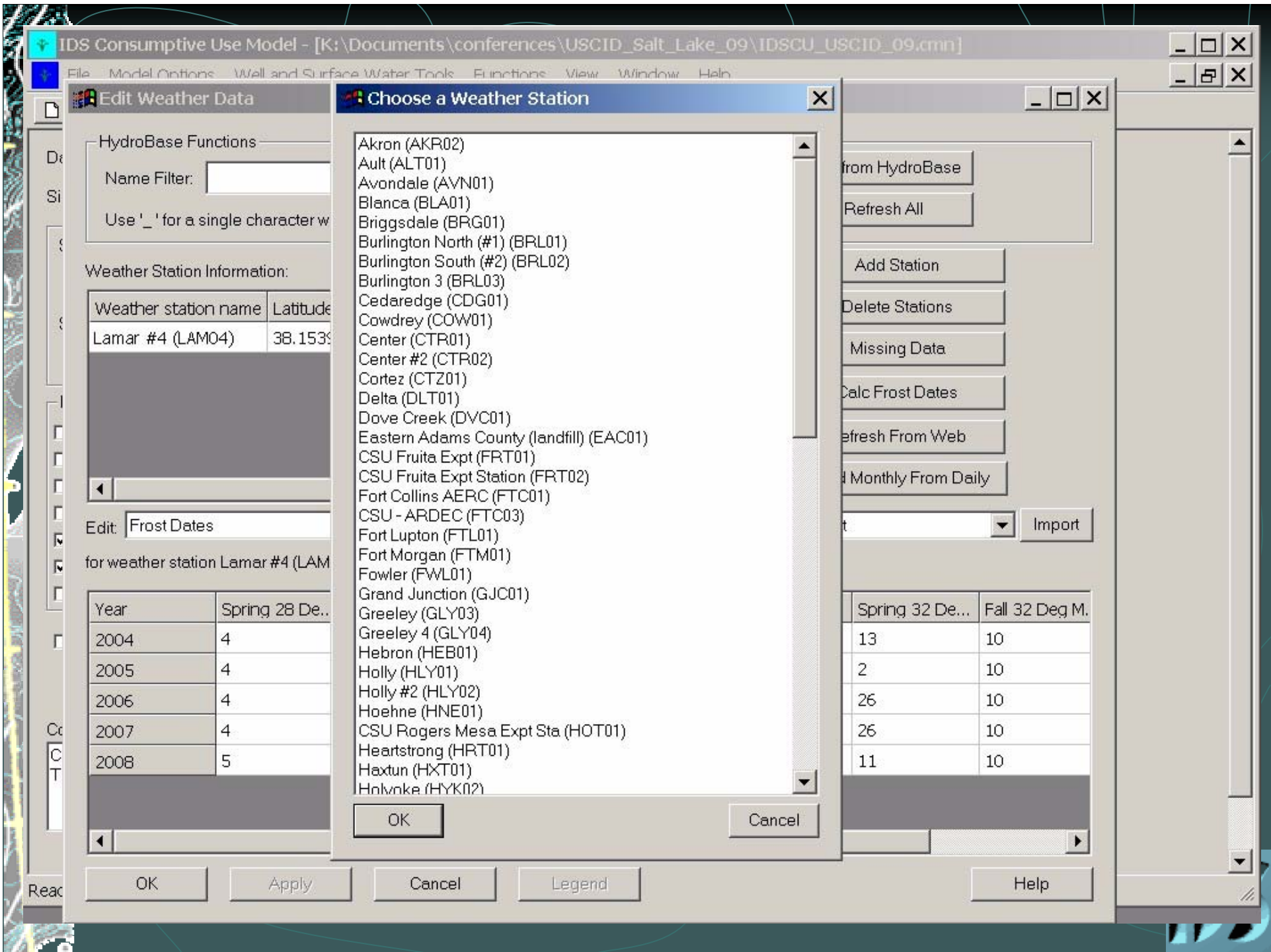
Apply

Cancel

Legend

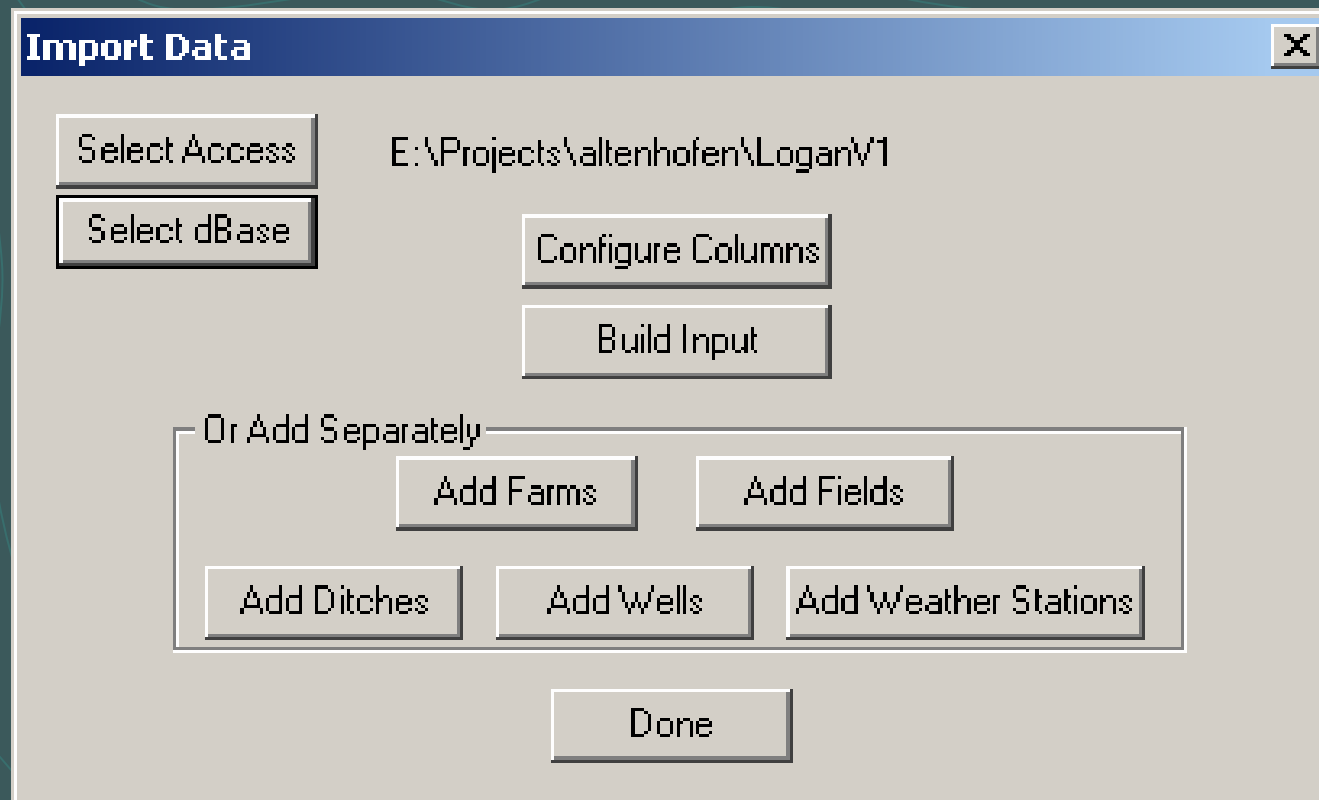
Help





Preparing a CU Input File from a Database

- The user can use either Access or dBase.
- The user maps the fields in the database to corresponding model data.



IDS Consumptive Use Model - [C:\tmp\IDSCU\IDSCU_USCID_09_w_upflux.cmn]

File Functions View Window Help

Run P

ET Method

Blaney-Criddle
 Pochop
 85 Hargreaves
 ASCE
 Penman-Monteith
 Kimberly-Penman
 Penman 1948
 Calibrated Blaney-Criddle
 User-Supplied ET

Without Soil Moisture
 With Soil Moisture

Scale

Yearly
 Monthly
 Daily

Modeling Areas

DS01
Project Total

Years

2005
2006
2007
Average

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
DS01													
Total Depletion of Water Supplies (acre-ft)													
ASCE Standardized Ref. ET													
2005	0	0	0	0	0	0.53	1.57	0.54	0	0	0	0	2.63

 XY Graph
 Bar Chart



Water Budget Comparison with Soil Moisture

First ET Method: Second ET Method:

Compare:

Units Conversion
 Acre-Feet Inches

Scale
 Yearly
 Monthly
 Daily

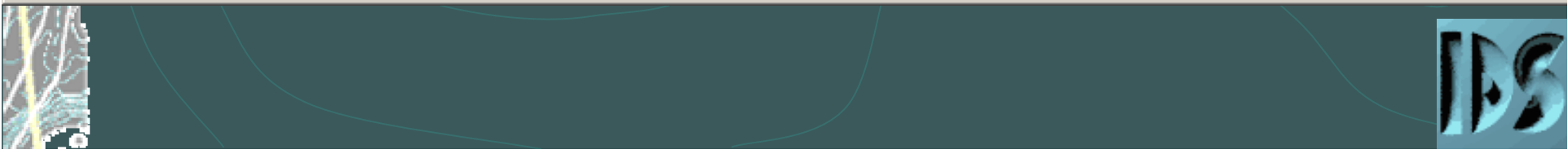
Modeling Areas

Years

Show Penman-Monteith
 Show ASCE Standarized Ref. ET
 Ratio (First Method / Second Method)

Year	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
DS01											
NWR for Penman-Monteith (Ac-Ft)											
2006	0	0.72	8.04	9.24	2.28	1.68	4.56	1.92	0	0	28.56
NWR for ASCE Standarized Ref. ET (Ac-Ft)											
2006	0	0.72	7.68	9.36	2.4	1.68	4.44	1.8	0	0	28.08
Ratio											
2006	1	1.00	1.05	0.99	0.95	1.00	1.03	1.07	1	1	1.02
Average for selected years and basins for Penman-Monteith	0	0.72	8.04	9.24	2.28	1.68	4.56	1.92	0	0	28.44
Average for selected years and basins for ASCE Standarized Ref. ET	0	0.72	7.68	9.36	2.4	1.68	4.44	1.8	0	0	28.08
Ratio for selected years and basins	1	1	1.04688	0.987179	0.95	1	1.02703	1.06667	1	1	1.01282

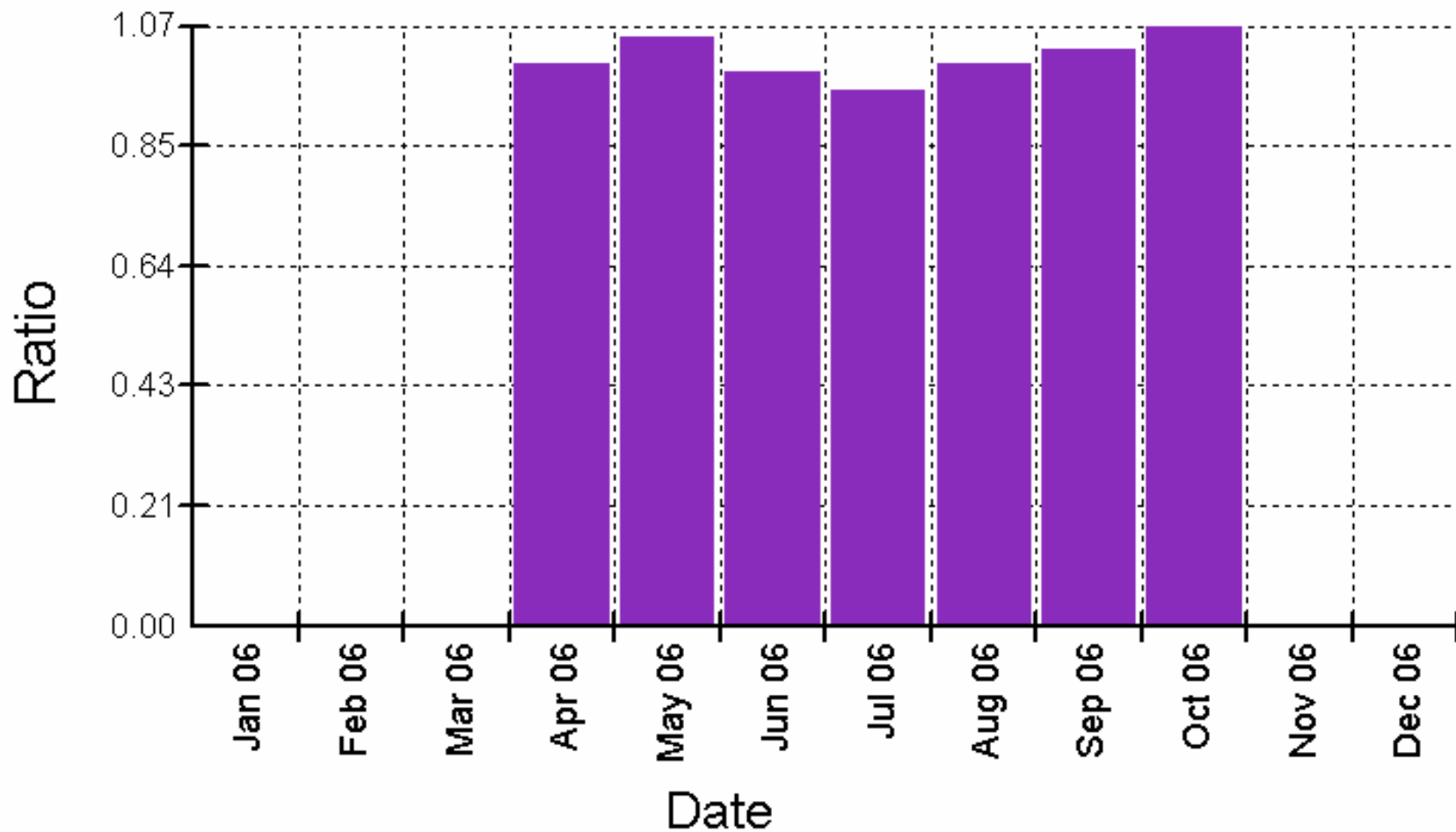
Navigation arrows:



Ratio (Penman-Monteith / ASCE Standardized Ref. ET)



Ratio (Penman-Monteith / ASCE Standardized Ref. ET) -- DS01



ASCE Water Budget with

Water Budget Data

Time Scale

- Yearly
- Monthly
- Daily

Model

DS01
Total

Format Annually

Toggle Selection

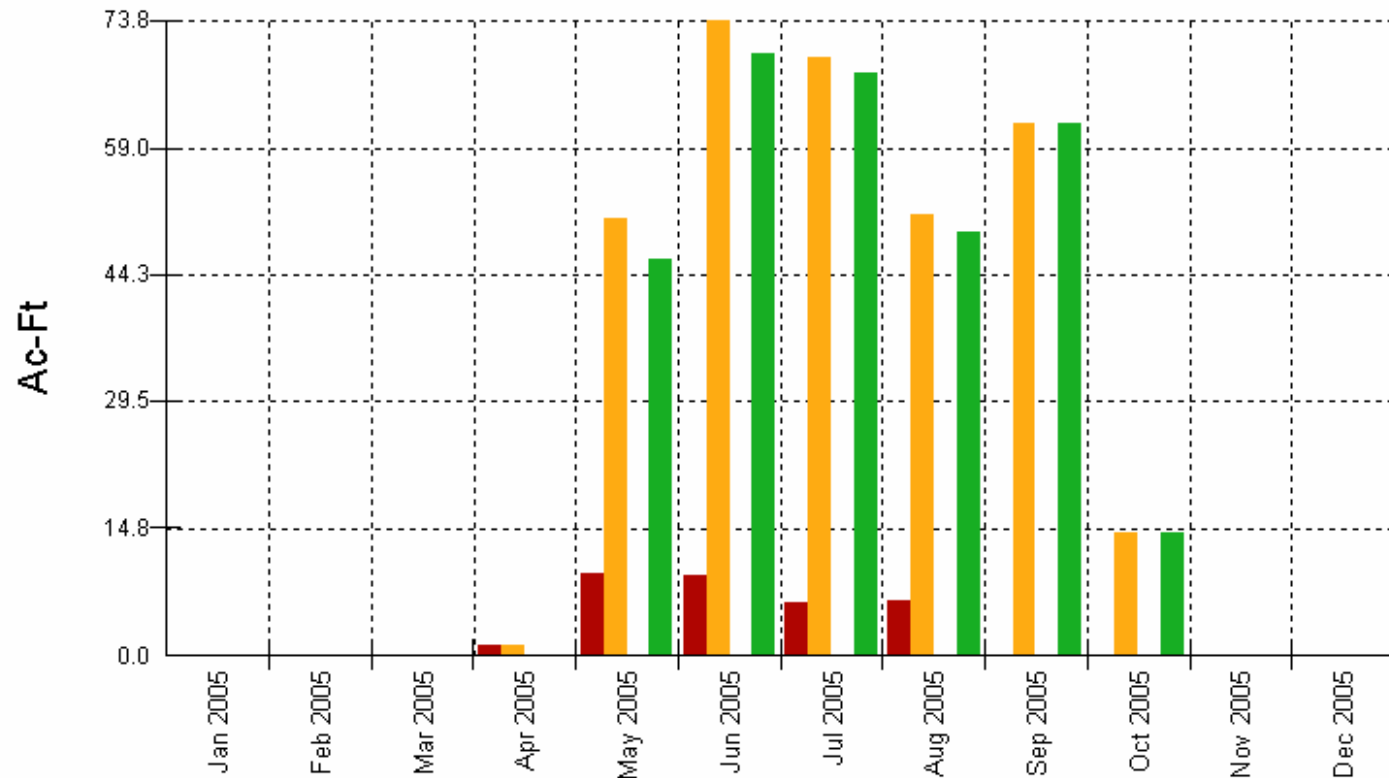
Set All

Show Parcel Data

Month	Total Water Supplies Ava for CU
Mar	0.00
Apr	0.00
May	20.40
Jun	0.00
Jul	0.00
Aug	15.88
Sep	0.00
Oct	0.00
Nov	0.00
Dec	0.00
Year Total	36.28



DS01



Effective Rain to CU Crop CU Shortage Due to Sprinkler Loss NWR

Print

Print via Wordpad

Save To File

Plot

Close



Thank You!

Questions?

www.ids.colostate.edu

