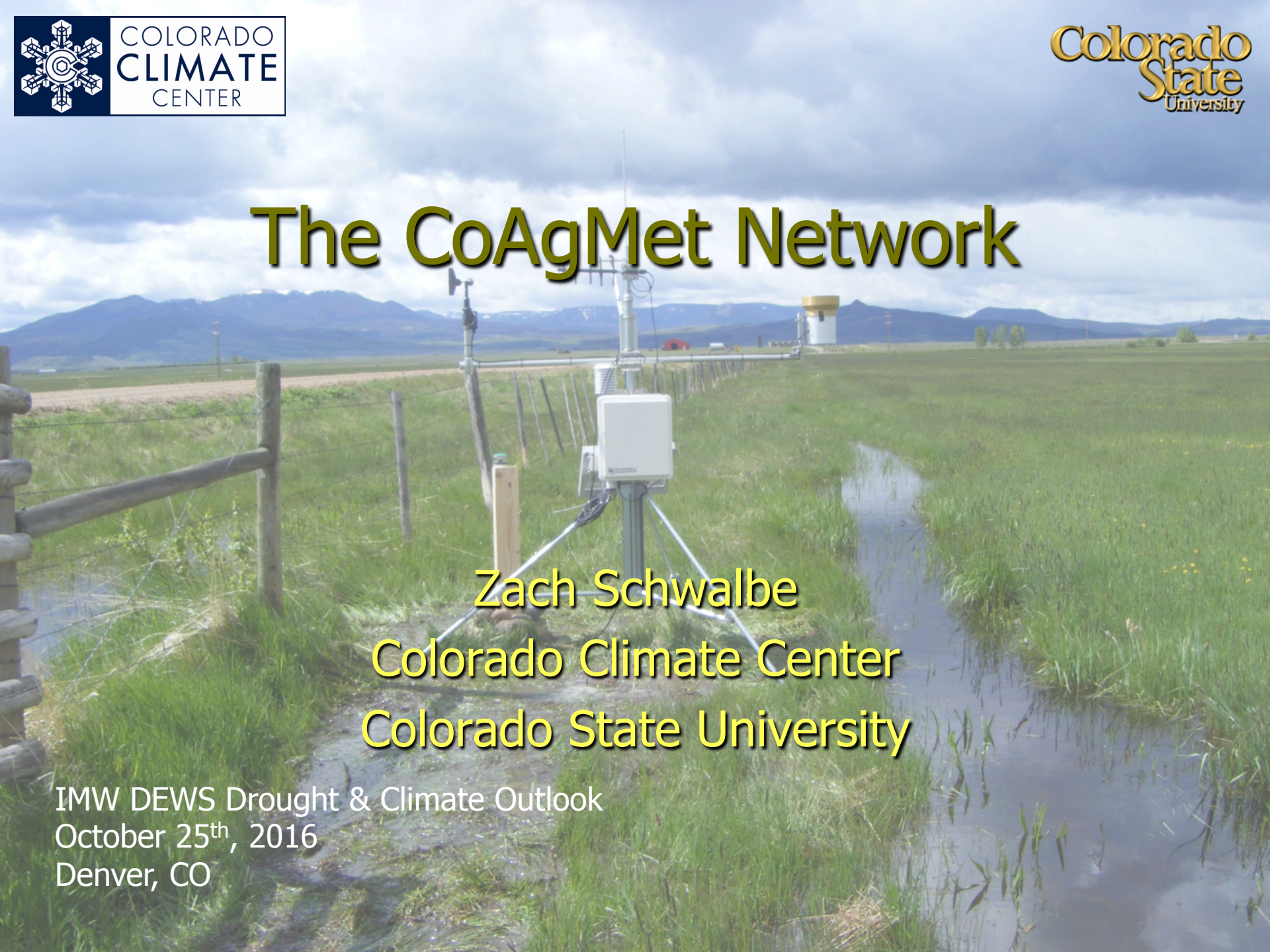


The CoAgMet Network

Zach Schwalbe
Colorado Climate Center
Colorado State University

IMW DEWS Drought & Climate Outlook
October 25th, 2016
Denver, CO

CoAgMet =

Colorado Agricultural Meteorological Network

http://coagmet.colostate.edu/

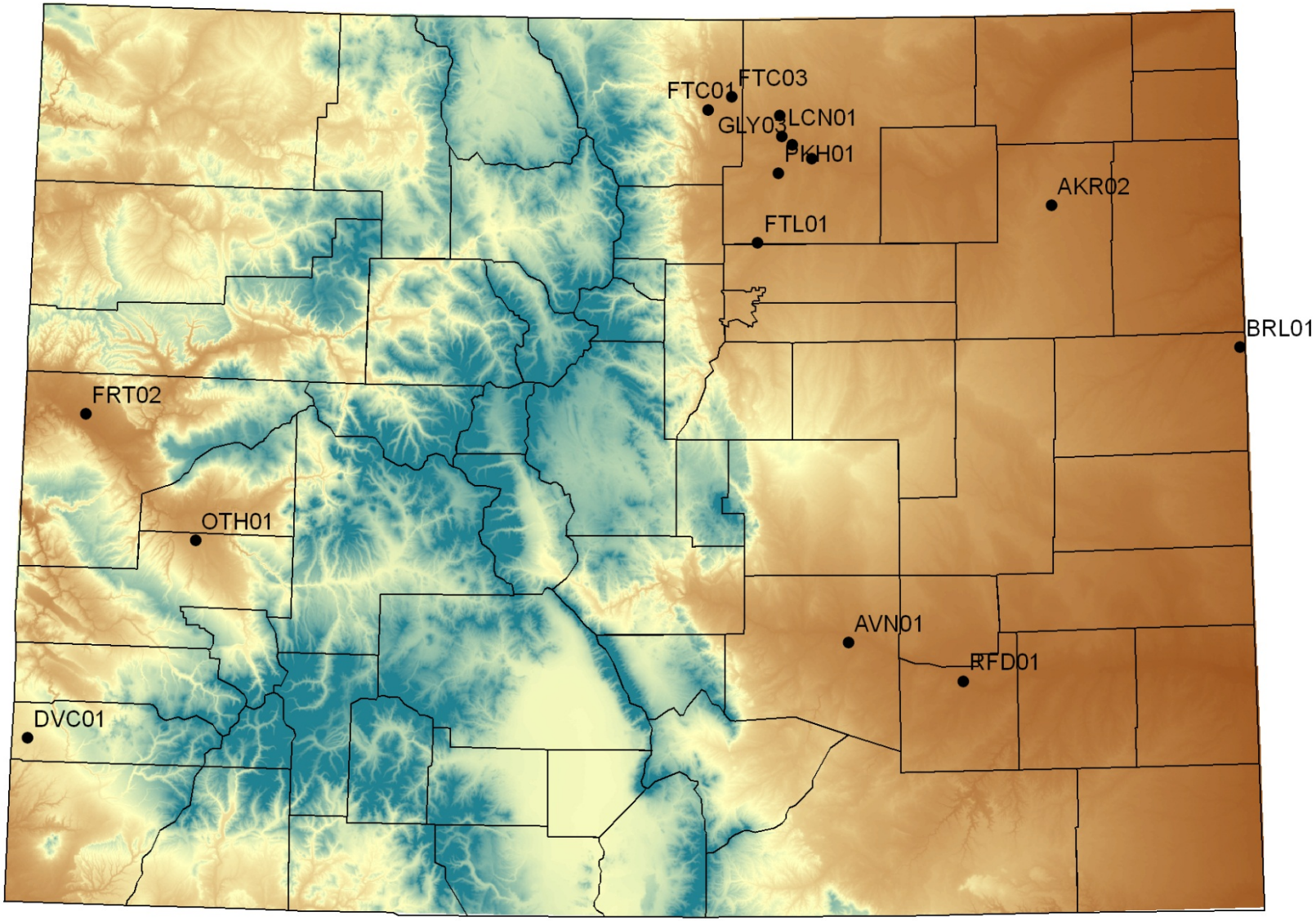
History

- In the early 1990's, CSU extension plant pathologists and ARS scientists decided to collaborate efforts to collect detailed agricultural weather data.
- Standard instruments and data collection platform were selected and a small network of stations were deployed in fully irrigated agriculture.
- As the network grew, the Colorado Climate Center became increasingly interested in using the data, began daily data collection, quality control and built a web interface to distribute data and products to users across the state.

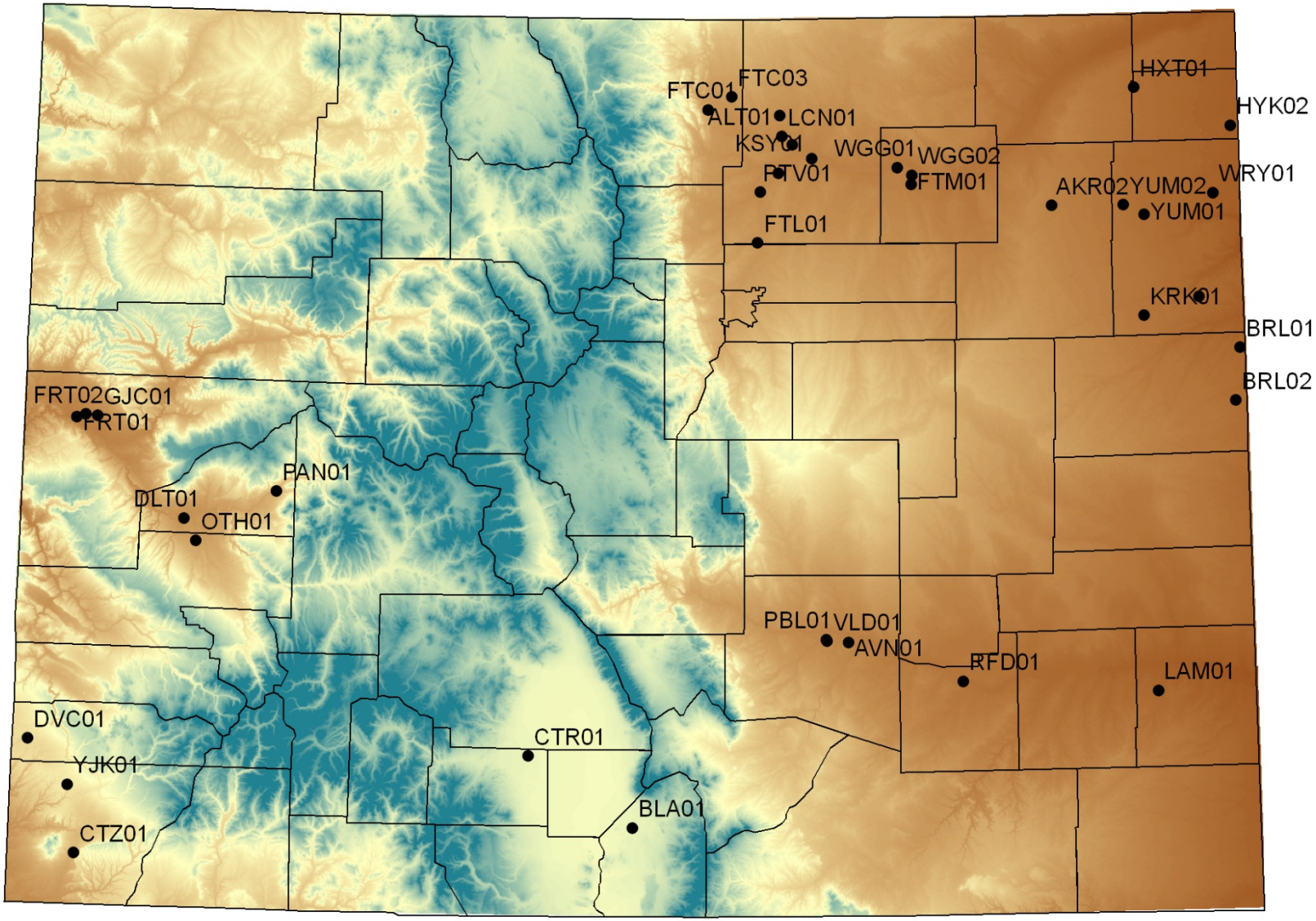
Colorado Climate Center's role

- Coodination, data management, web support
- We hosted annual meetings of key partners and data users – set priorities, secure commitments, prepare proposals (rarely funded but we persisted)
- We now run the network including station maintenance, product development, funding, etc.

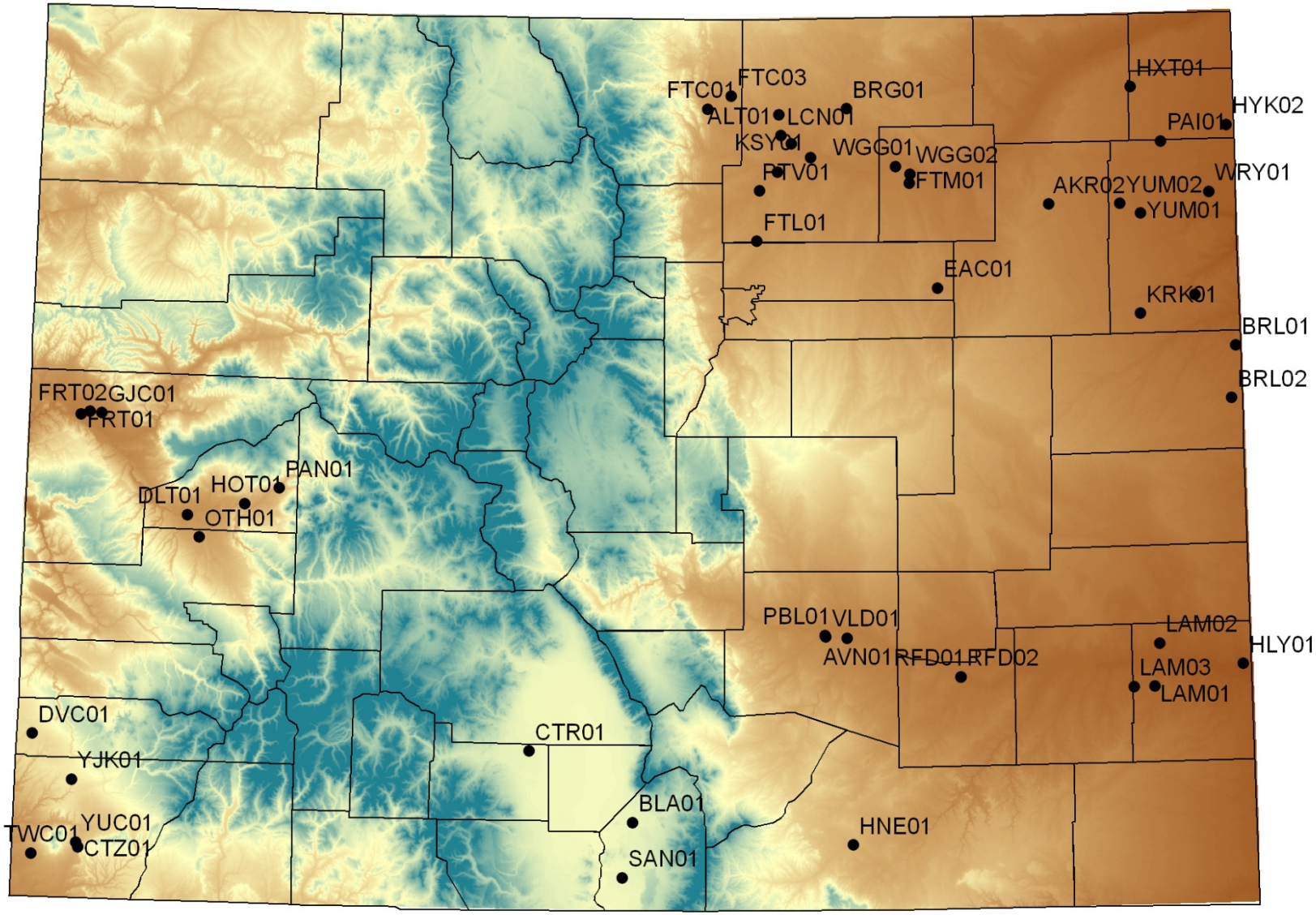
CoAgMet 1992



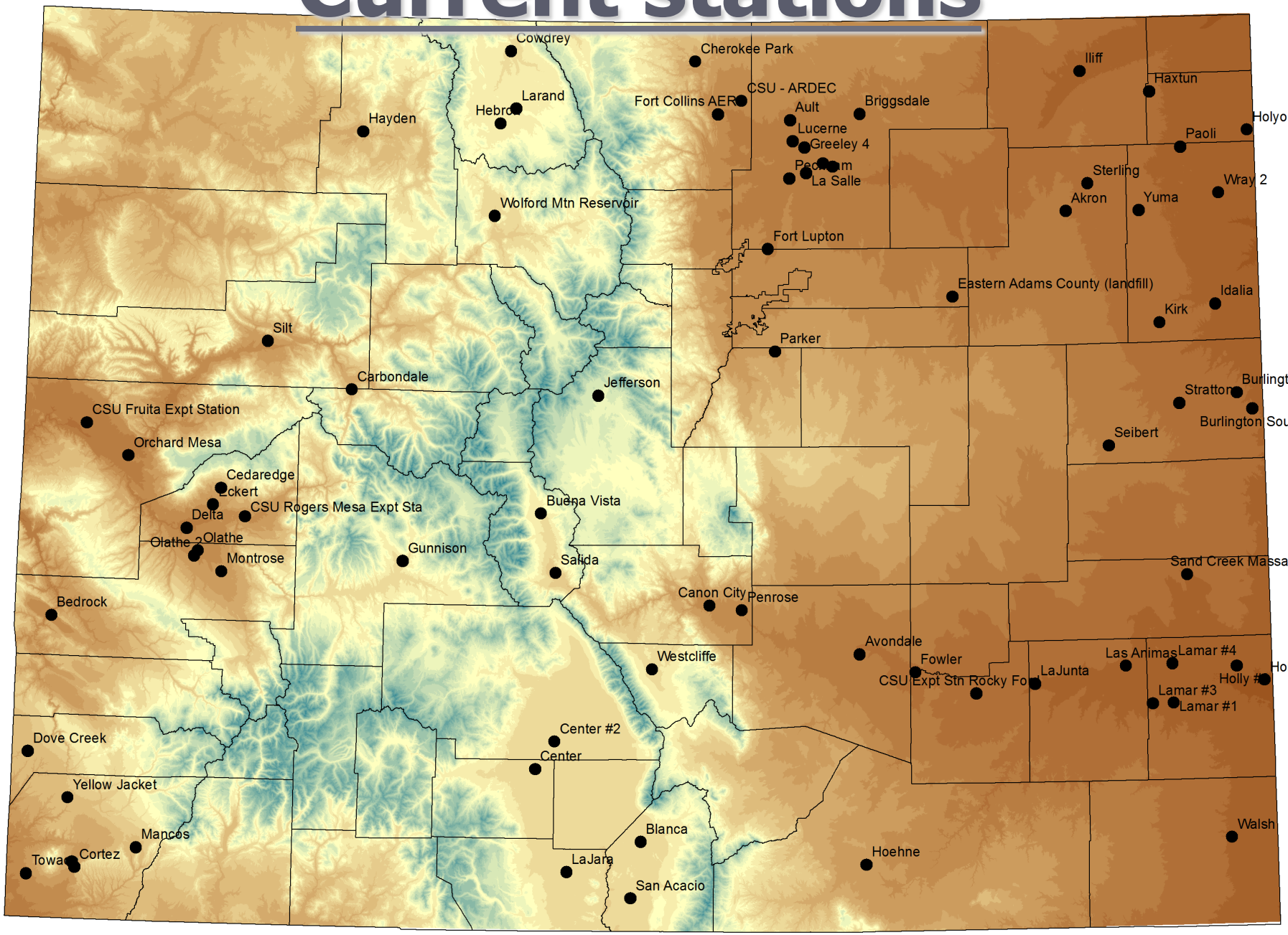
CoAgMet 1997



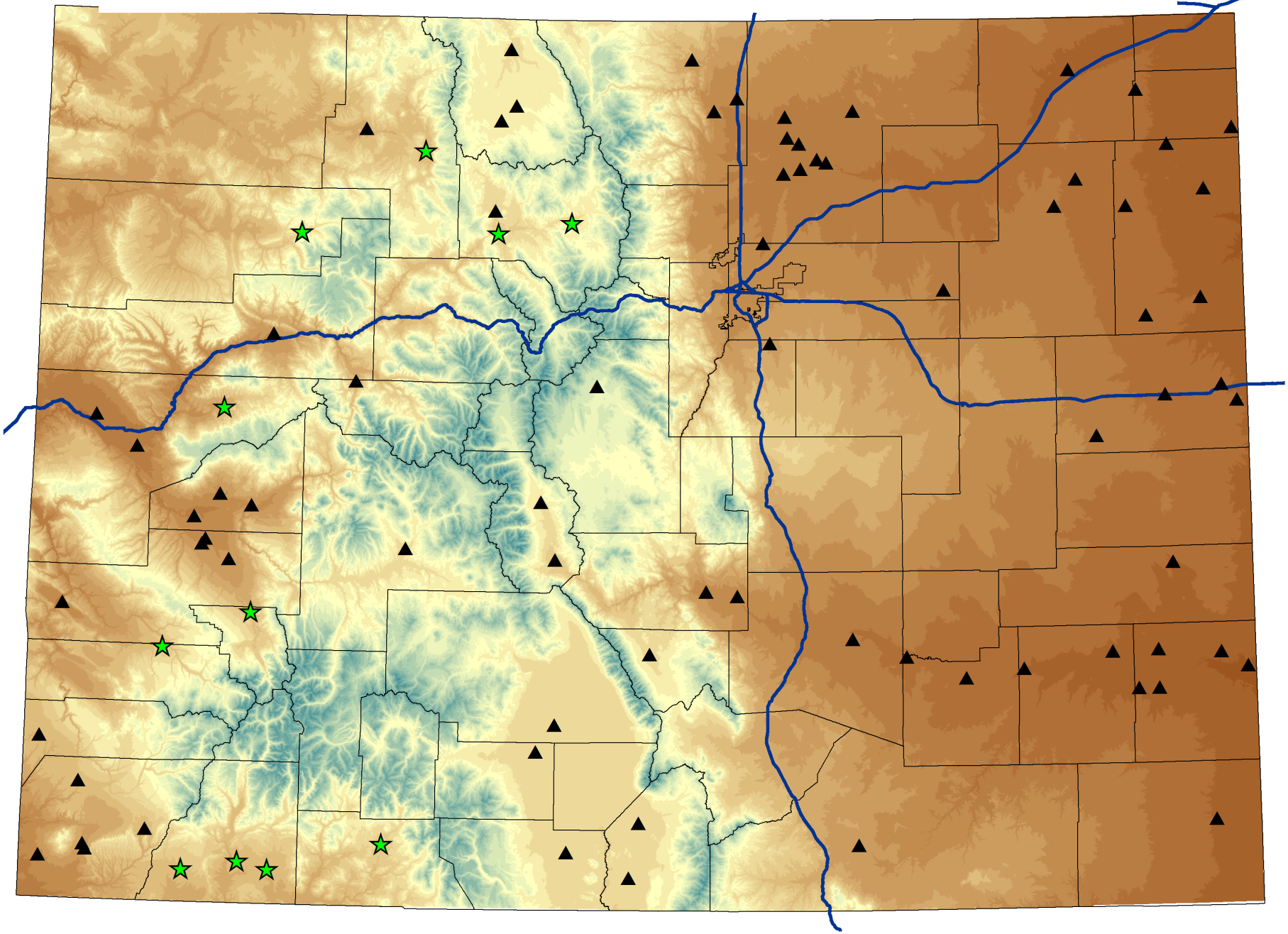
CoAgMet 2002



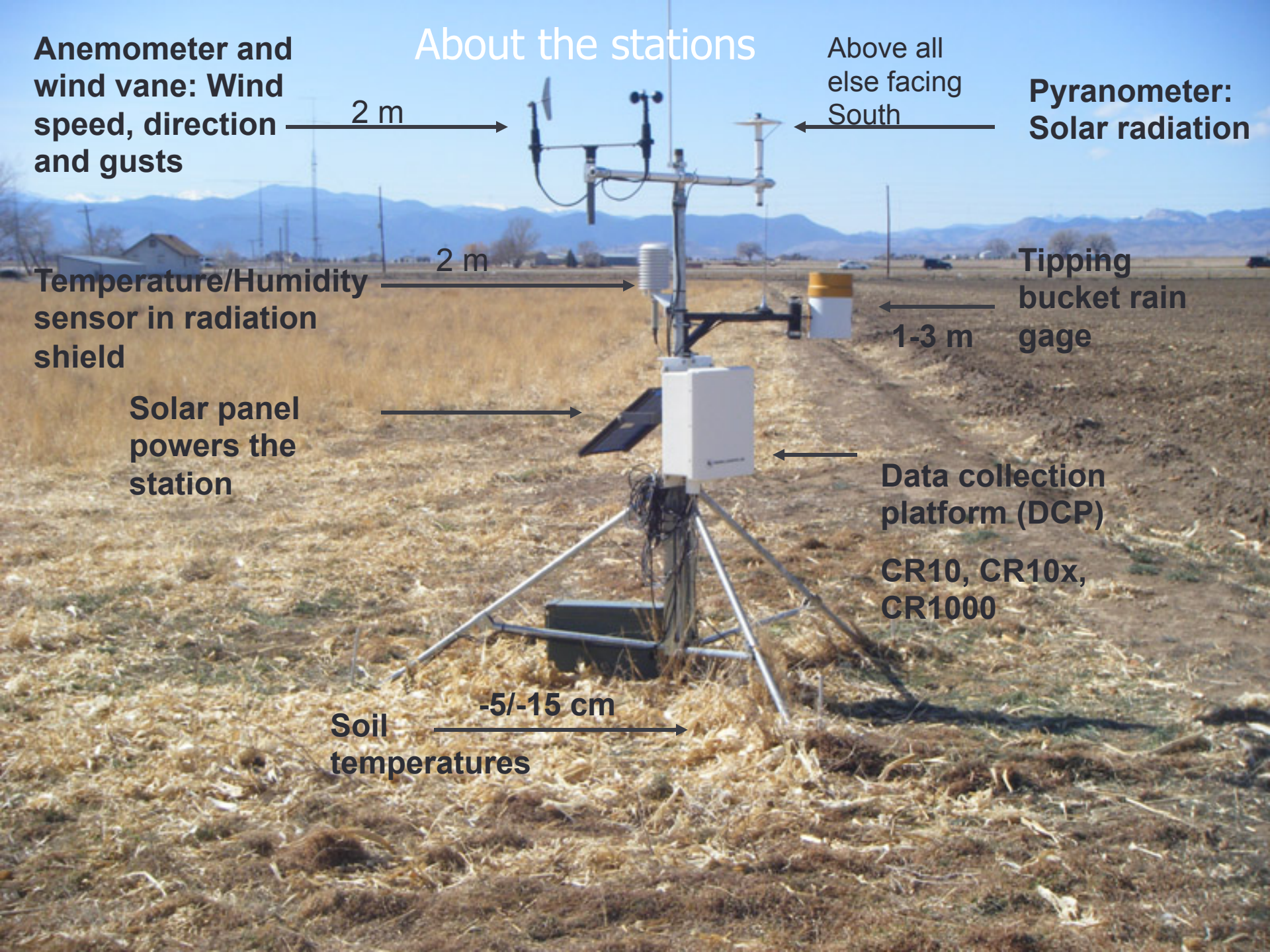
Current stations



Current stations and stations to be installed in 2016



About the stations



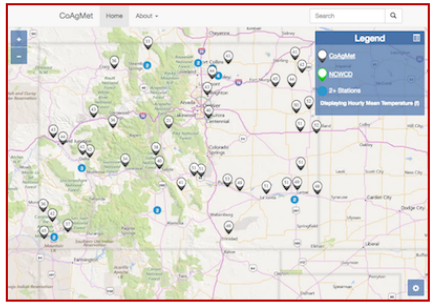
CoAgMet web access:

http://coagmet.colostate.edu/

Data are free and available to the public

- About CoAgMet
  A brief history of how CoAgMet came to be.
- CoAgMet factsheet has useful information on using this page.
- CoAgMet Crop Water Use (ET) Access
  Page for obtaining crop and turf water use information (ET).
- CoAgMet Text Message Service.
  Sign up for our SMS/email message service. You will be able to customize the messages sent to your cell phone (or email address).
- Evapotranspiration Reports
  ETRs are daily reports for selected stations by region.
- Station Description
  A description of a typical CoAgMet station.
- Station Index
  Metadata on all of the stations on the CoAgMet network.
- Monthly Summaries
  Interactive access to the daily data set for a particular station and selected months.
- Daily Summaries (all stations)
  Daily summary files are formatted to display selected parameters for all stations.
- Hourly Data Access
  Interactive access to the hourly data set for a particular station and selected days.
- Hourly Data Plots
  Plots of temperature, humidity and wind for all CoAgMet stations.
- Raw Data Access
  Direct access to the raw data. Select hourly or daily data from our archives.
- Web Services
  Access to a variety of data including CoAgMet. Web Services are especially useful to those who are using scripts to access data.
- Map of CoAgMet Stations
  A Google Maps based map showing CoAgMet station locations. Access current data, metadata and images.
- Miscellaneous Tools
  Miscellaneous tools and analyses.
- Other Climatic Data
  The Colorado Climate Center maintains a database of historical climatic data for many weather stations throughout Colorado.

CoAgMet Mapping and Metadata by eRAMS



Daily data for a month

Station:Cortez
Location:9 mi SW Cortez
Elevation:6015
Longitude:108.673
Latitude:37.2248

Summary for Cortez - 09/2016

Station	Mon	Day	Tmax Temp degF	Tmin Temp degF	Vapor Press mb	Solar Rad Lngly	Prec in.	Wind Gust mph	Wind Run mi.	Soil Temp degF	Min RH Pct	Grow DgDy F.	P-Kim ET in.	ASCE HLY ET in.
ctz01	9	1	85.1	58.3	13.66	463	0.16	16.3	70	61.3	28.1	2472	0.187	0.212
ctz01	9	2	81.4	58.3	15.30	429	0.00	15.3	49	62.8	33.9	2492	0.162	0.162
ctz01	9	3	79.4	58.3	13.26	428	0.00	16.2	88	62.1	33.2	2511	0.190	0.202
ctz01	9	4	78.4	52.1	8.82	507	0.00	19.7	103	61.1	12.6	2526	0.236	0.259
ctz01	9	5	80.3	45.0	6.90	530	0.00	16.3	79	57.7	15.0	2541	0.230	0.241
ctz01	9	6	81.6	46.7	7.60	419	0.00	13.0	49	57.3	16.9	2557	0.173	0.175
ctz01	9	7	78.2	49.5	8.29	439	0.00	12.8	54	57.8	19.4	2571	0.170	0.176
ctz01	9	8	83.5	43.0	7.01	519	0.00	13.7	72	56.7	12.3	2588	0.215	0.223
ctz01	9	9	84.9	49.5	5.87	513	0.00	17.8	115	56.8	11.5	2605	0.256	0.297
ctz01	9	10	83.9	41.3	7.18	504	0.00	17.0	60	55.8	16.0	2622	0.203	0.210
ctz01	9	11	82.6	50.8	8.40	412	0.00	15.5	47	56.6	19.6	2639	0.159	0.177
ctz01	9	12	75.6	50.0	9.88	367	0.19	24.0	127	57.0	28.5	2652	0.195	0.185
ctz01	9	13	75.9	58.1	9.82	401	0.04	26.4	153	58.1	26.9	2669	0.215	0.233
ctz01	9	14	74.9	51.7	9.06	362	0.01	19.3	128	58.0	26.4	2682	0.198	0.201
ctz01	9	15	74.7	39.1	6.14	505	0.00	16.5	69	54.5	11.7	2694	0.195	0.194
ctz01	9	16	75.9	37.9	5.22	498	0.00	11.3	65	52.7	12.3	2707	0.191	0.198
ctz01	9	17	77.1	37.8	5.44	495	0.00	15.2	57	52.3	11.2	2721	0.176	0.188
ctz01	9	18	80.2	38.0	5.64	493	0.00	11.2	72	51.6	10.8	2736	0.188	0.212
ctz01	9	19	82.1	44.0	5.37	482	0.00	15.3	59	51.7	10.9	2752	0.171	0.208
ctz01	9	20	77.0	49.0	7.37	202	0.00	21.9	89	53.9	15.9	2765	0.132	0.158
ctz01	9	21	76.5	54.2	14.11	238	0.10	19.3	71	56.3	47.3	2781	0.098	0.104
ctz01	9	22	80.7	62.5	11.63	410	0.00	27.9	201	58.3	20.7	2802	0.244	0.266
ctz01	9	23	67.8	37.0	8.60	235	0.13	25.5	92	52.7	29.6	2811	0.134	0.089
ctz01	9	24	63.8	39.8	7.84	308	0.00	12.5	58	52.2	33.0	2818	0.124	0.109
ctz01	9	25	72.6	35.8	6.90	464	0.00	12.2	73	51.6	22.7	2829	0.165	0.170
ctz01	9	26	76.2	40.9	7.79	452	0.00	14.0	47	51.4	24.8	2843	0.131	0.155
ctz01	9	27	75.7	43.2	7.84	454	0.00	9.8	52	51.3	23.3	2855	0.136	0.157
ctz01	9	28	78.8	43.2	8.96	430	0.00	16.2	77	52.6	20.5	2870	0.154	0.193
ctz01	9	29	65.2	51.3	12.41	116	0.13	23.2	95	56.1	45.1	2878	0.065	0.076
ctz01	9	30	69.9	46.2	12.24	376	0.00	13.2	54	54.4	50.4	2888	0.113	0.133

Daily Data

CoAgMet Daily Summary - 07/01/2016

Daily Summary

Sta	Mon	Day	Tmax Temp degF	Tmin Temp degF	Vapor Press mb	Solar Rad Lngly	Prec in.	Wind Gust mph	Wind Run mi.	Soil Temp degF	Min RH Pct	Grow DgDy F.	P-Kim ET in.	ASCE HLY ET in.
akr02	7	1	73.1	59.7	17.75	248	0.64	***	229	***	66.2	1270	0.161	0.123
alt01	7	1	78.5	60.4	17.62	391	0.04	27.9	127	70.0	49.0	1157	0.193	0.162
avn01	7	1	81.8	62.6	19.95	345	0.06	18.3	51	70.6	51.5	1510	0.163	0.132
bla01	7	1	74.4	53.5	12.93	373	0.00	30.4	117	62.1	36.3	957	0.190	0.168
bnv01	7	1	69.4	52.1	13.14	264	0.05	17.3	66	56.0	44.4	882	0.120	0.107
brg01	7	1	80.6	58.2	18.03	336	0.14	22.7	162	68.0	52.1	1243	0.200	0.140
brk01	7	1	72.8	62.3	16.63	224	0.05	13.5	58	74.2	50.9	1486	0.140	0.106
brl02	7	1	72.9	61.5	20.64	298	0.07	16.2	149	65.2	77.1	1342	0.131	0.103
brl03	7	1	72.2	61.5	20.18	325	0.31	15.8	153	67.7	78.6	1035	0.135	0.109
cbl01	7	1	68.5	57.8	17.07	251	0.01	9.7	38	59.8	68.1	1044	0.102	0.091
ckp01	7	1	76.9	56.4	15.70	370	0.76	17.2	72	64.8	49.2	997	0.166	0.140
cnn01	7	1	80.5	61.6	17.69	384	0.56	24.4	68	66.9	45.0	1420	0.185	0.161
cow01	7	1	69.5	50.0	12.71	415	0.00	17.2	49	60.5	43.0	589	0.148	0.149
ctr01	7	1	71.1	52.5	13.83	326	0.36	14.7	55	60.7	50.7	887	0.135	0.114
ctr02	7	1	73.9	53.4	13.60	378	0.12	21.0	94	67.1	43.2	943	0.171	0.145
ctz01	7	1	68.3	59.3	15.91	198	0.09	10.1	50	65.7	59.9	1261	0.111	0.081
dlt01	7	1	72.4	60.5	17.68	262	0.09	10.1	55	64.1	59.3	1400	0.132	0.106
dvc01	7	1	67.9	55.9	14.93	226	0.09	13.3	79	66.7	60.8	981	0.126	0.093
eac01	7	1	75.5	57.6	17.92	351	1.08	32.7	237	64.1	61.7	1250	0.198	0.138
ekt01	7	1	71.2	60.0	16.75	243	0.08	10.5	35	63.0	56.0	1241	0.121	0.097
frt02	7	1	72.6	61.3	18.92	223	0.07	11.7	78	67.1	63.3	812	0.094	0.090
ftc01	7	1	76.4	58.9	17.84	294	0.02	12.2	42	66.0	58.7	1087	0.130	0.112
ftc03	7	1	76.7	59.3	17.54	247	0.02	15.1	102	68.7	57.4	1126	0.138	0.111
ftl01	7	1	79.6	60.9	17.27	411	0.02	23.5	92	70.6	41.0	1176	0.198	0.176
fwl01	7	1	82.3	63.9	18.78	341	0.09	25.2	95	76.1	47.0	1526	0.191	0.156
gly04	7	1	80.6	60.5	18.19	415	0.20	17.8	111	69.2	47.6	1191	0.201	0.167
gun01	7	1	64.7	52.0	13.62	243	0.25	9.6	26	57.5	61.7	755	0.090	0.078
heb01	7	1	66.0	49.9	12.67	397	0.03	16.5	127	57.2	50.1	561	0.151	0.140
hly01	7	1	76.5	61.9	20.97	299	1.06	31.2	206	68.1	73.4	1596	0.158	0.121
hly02	7	1	78.5	61.8	21.07	318	0.49	21.9	124	71.4	68.4	1577	0.073	0.126
hne01	7	1	86.0	56.7	15.92	417	0.00	22.0	70	70.8	33.5	1373	0.218	0.198
hot01	7	1	70.5	59.6	16.89	209	0.12	8.1	33	57.4	57.7	1337	0.116	0.076
hxt01	7	1	70.9	57.3	18.77	148	0.44	18.3	137	67.4	75.1	676	0.086	0.056
hyd01	7	1	74.2	52.8	14.28	426	0.02	13.3	45	61.9	44.5	848	0.171	0.158
hyk02	7	1	71.5	59.5	19.20	126	0.36	18.3	145	69.7	75.6	1308	0.083	0.056
idl01	7	1	74.5	60.2	19.23	251	0.27	14.2	139	68.8	68.3	1366	0.134	0.108
ilf01	7	1	71.9	59.7	18.50	148	0.32	24.7	123	69.2	70.0	1365	0.100	0.083

Hourly Data

Station ID: MNC01 **Station Name:** Mancos

Latitude: 37.322 **Longitude:** 108.338

Elevation: 6730 ft **Location:** 3.5 Mi SW Mancos

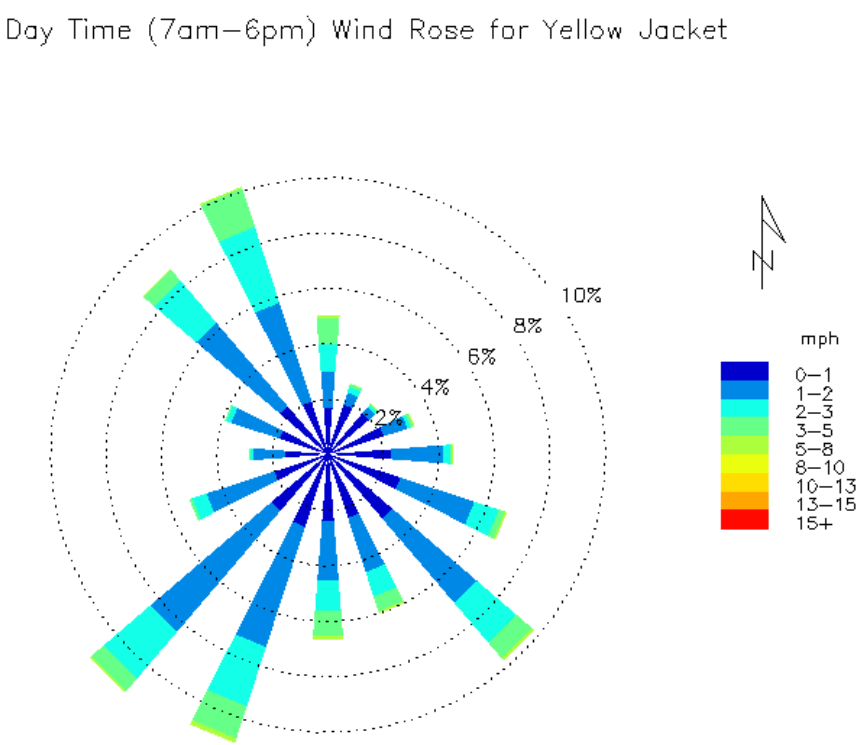
Owner: Mancos Conservation District

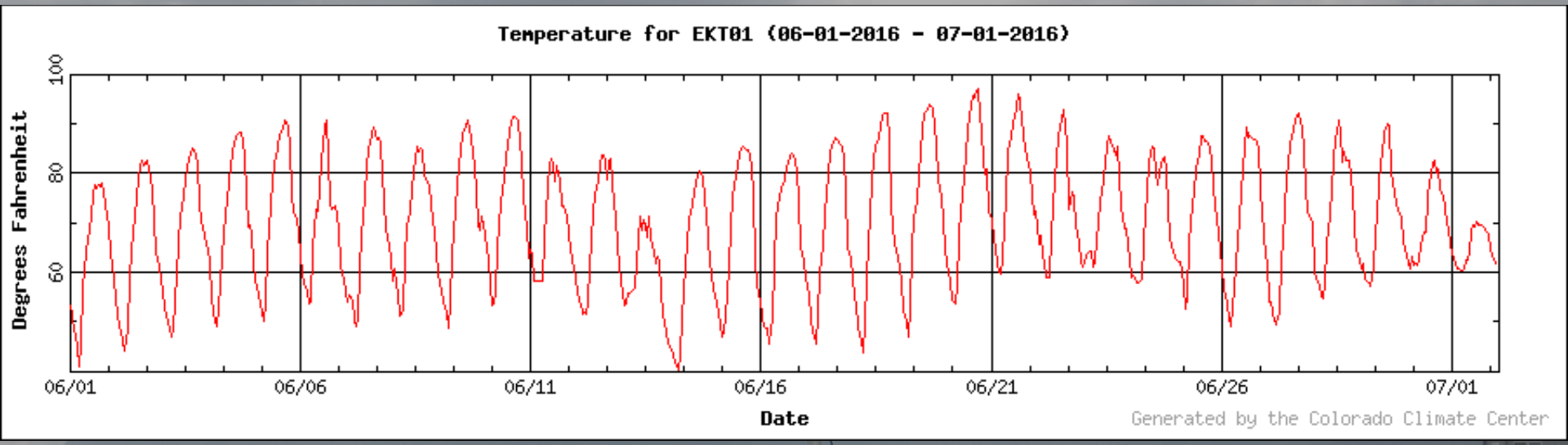
Sponsors: Dick White (landowner)

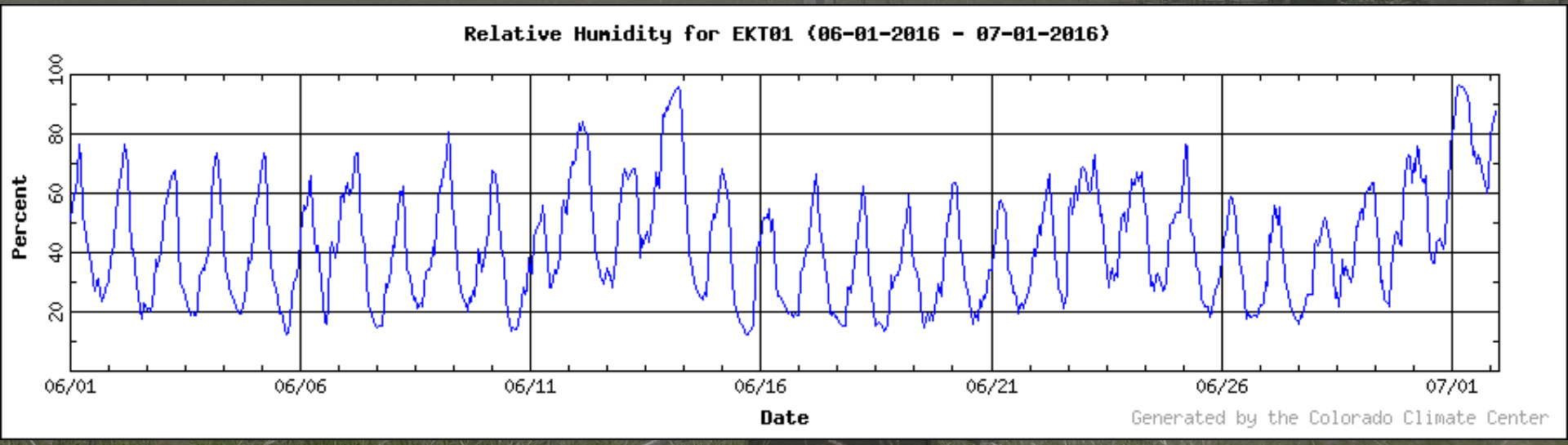
Colorado Climate Center

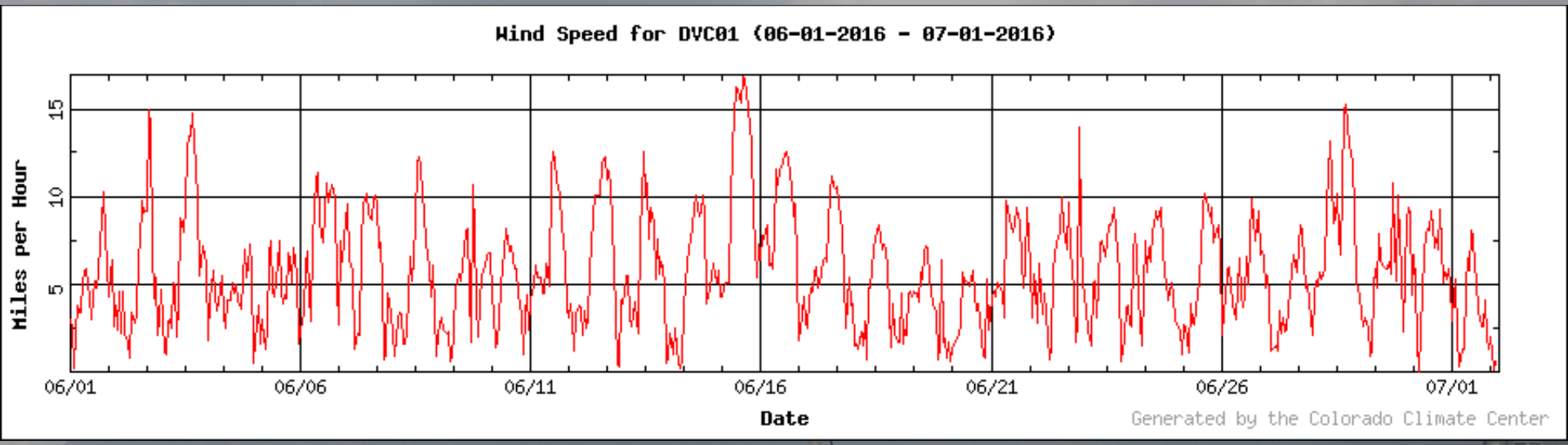
Timestamp	Mean Temp degF	RH %	Vapor Press mb	Solar Rad Lgly	Wind Spd mph	Wind Dir deg	Wind Dir Stdd	Precip in	5cm Soil degF	15cm Soil degF	Wind Gust mph	Wind Gust Time	Wind Gust Dir°
07-05-16 00:00	51.2	83.4	10.69	0	2	30	11	0.00	64.1	64.3	4.8	23:50	5.6
07-05-16 01:00	51.7	79.0	10.34	0	1	16	19	0.00	63.4	64.0	4.1	00:12	29.6
07-05-16 02:00	51.0	80.9	10.29	0	0	18	18	0.00	62.7	63.8	3.0	01:21	5.0
07-05-16 03:00	50.4	85.2	10.61	0	1	46	19	0.00	62.1	63.6	4.6	02:48	45.2
07-05-16 04:00	49.9	82.8	10.09	0	2	16	17	0.00	61.6	63.3	4.3	03:16	30.2
07-05-16 05:00	48.7	83.1	9.71	0	1	34	16	0.00	61.1	63.0	4.0	04:05	35.9
07-05-16 06:00	48.2	86.7	9.94	4	2	33	20	0.00	60.6	62.8	4.0	05:25	33.7
07-05-16 07:00	59.7	66.2	11.50	20	0	303	5	0.00	60.2	62.5	2.8	06:58	259.1
07-05-16 08:00	65.4	52.4	11.12	35	0	233	11	0.00	60.3	62.3	3.0	07:09	254.9
07-05-16 09:00	73.5	39.2	10.93	50	0	219	6	0.00	60.7	62.1	3.0	08:17	240.5
07-05-16 10:00	76.0	28.7	8.79	63	4	274	20	0.00	61.5	62.0	14.9	09:50	267.3
07-05-16 11:00	76.2	28.7	8.85	73	6	281	24	0.00	62.9	62.0	13.7	10:31	279.8
07-05-16 12:00	77.2	28.5	9.09	79	7	273	26	0.00	64.5	62.2	17.0	11:59	271.9
07-05-16 13:00	78.2	28.0	9.23	80	6	251	33	0.00	66.2	62.4	15.2	12:43	284.1
07-05-16 14:00	79.3	25.7	8.79	75	6	257	41	0.00	68.3	62.8	15.7	13:19	253.1
07-05-16 15:00	80.8	24.9	8.95	70	6	218	27	0.00	69.9	63.4	14.0	14:48	278.1
07-05-16 16:00	81.7	23.2	8.58	58	6	222	39	0.00	71.0	64.0	15.0	15:35	288.2
07-05-16 17:00	81.4	25.2	9.23	46	6	219	31	0.00	71.3	64.6	15.2	16:25	212.3
07-05-16 18:00	80.4	25.8	9.13	28	5	227	22	0.00	71.0	65.1	16.0	17:01	266.9
07-05-16 19:00	77.7	29.2	9.47	12	3	249	15	0.00	70.2	65.5	9.3	18:20	273.1
07-05-16 20:00	72.2	34.1	9.12	1	2	264	17	0.00	69.3	65.8	6.3	19:18	254.3
07-05-16 21:00	61.3	58.8	10.85	0	2	16	17	0.00	68.3	65.8	4.6	20:25	23.6
07-05-16 22:00	61.5	52.9	9.83	0	1	30	16	0.00	67.2	65.8	5.5	21:07	65.0
07-05-16 23:00	55.5	70.5	10.53	0	2	24	14	0.00	66.1	65.7	4.1	22:00	23.1
Timestamp	Mean Temp degF	RH %	Vapor Press mb	Solar Rad Lgly	Wind Spd mph	Wind Dir deg	Wind Dir Stdd	Precip in	5cm Soil degF	15cm Soil degF	Wind Gust mph	Wind Gust Time	Wind Gust Dir°

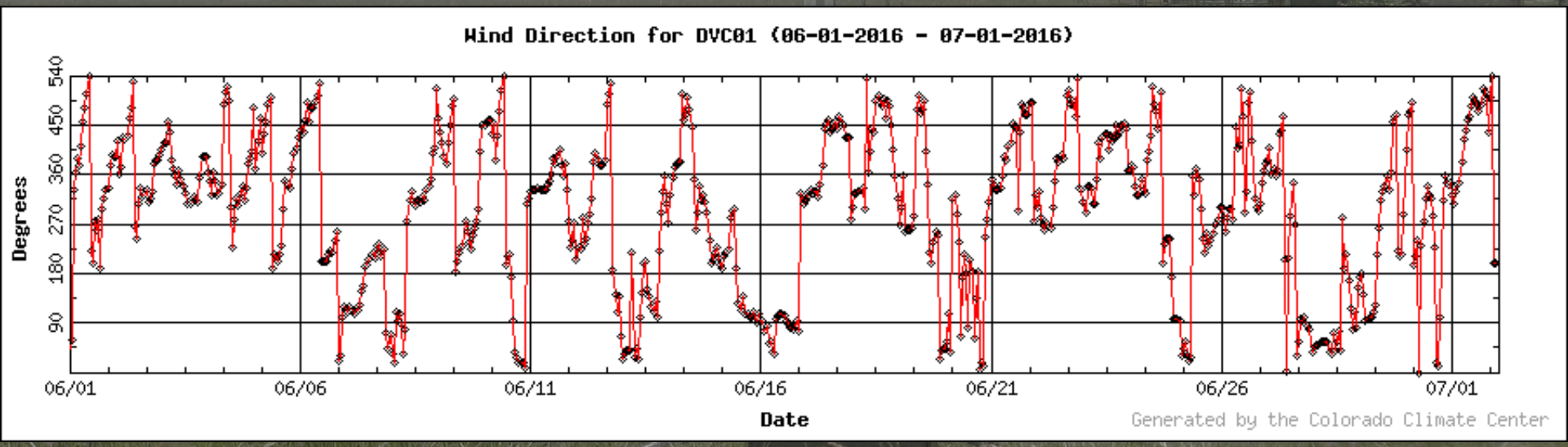
Wind summaries



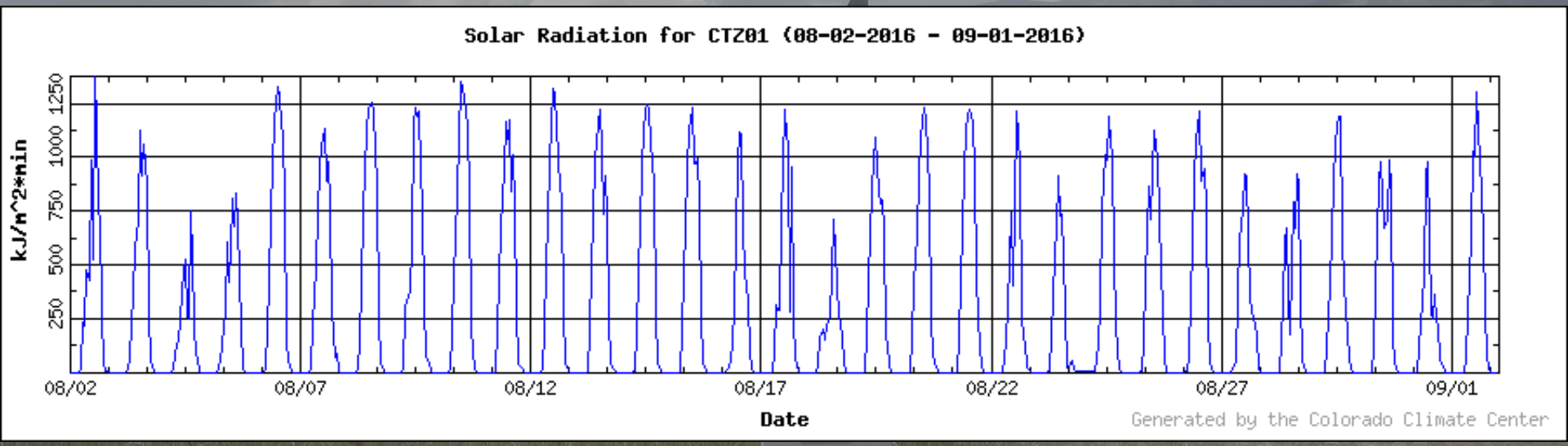

Temperature for EKT01 (06-01-2016 - 07-01-2016)
Degrees Fahrenheit
100
80
60
06/01
06/06
06/11
06/16
06/21
06/26
07/01
Date
Generated by the Colorado Climate Center


Relative Humidity for EKT01 (06-01-2016 - 07-01-2016)
Percent
100
80
60
40
20
06/01
06/06
06/11
06/16
06/21
06/26
07/01
Date
Generated by the Colorado Climate Center

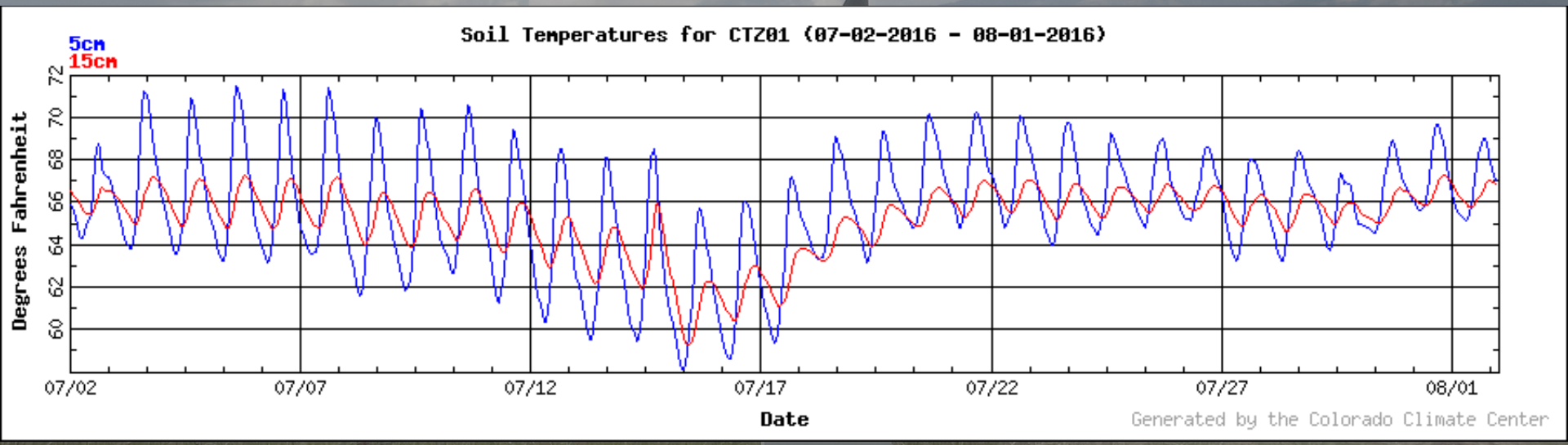

Wind Speed for DVC01 (06-01-2016 - 07-01-2016)
Miles per Hour
5
10
15
06/01
06/06
06/11
06/16
06/21
06/26
07/01
Date
Generated by the Colorado Climate Center


Wind Direction for DVC01 (06-01-2016 - 07-01-2016)
Degrees
90
180
270
360
450
540
06/01
06/06
06/11
06/16
06/21
06/26
07/01
Date
Generated by the Colorado Climate Center

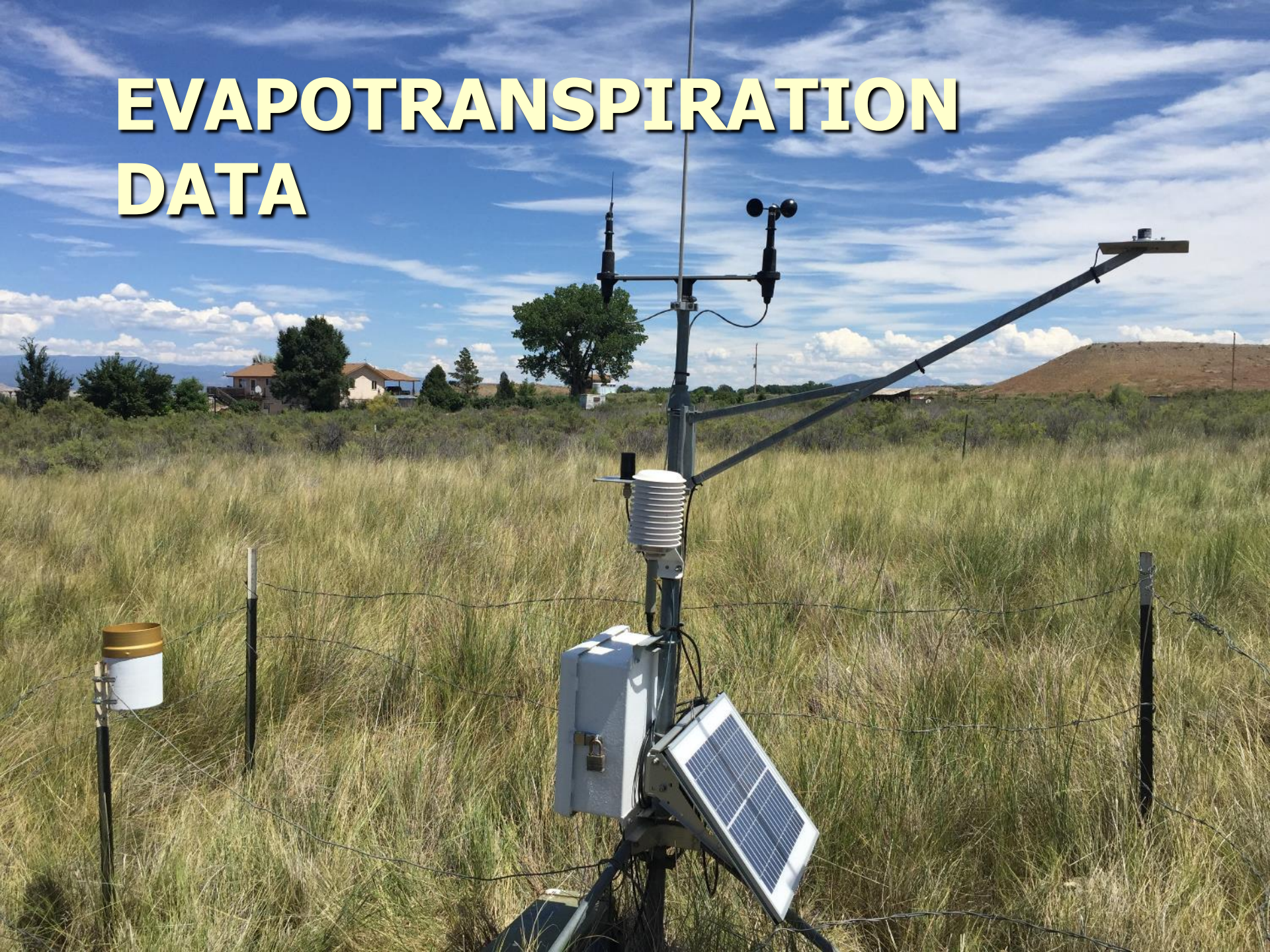
Solar Radiation



Soil Temperatures



EVAPOTRANSPIRATION DATA



CoAgMet Homepage

News

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  `http://coagmet.colostate.edu/cgi-bin/web_services.pl?type=five_minute&sids=ftc03&sdate=2015-06-01&edate=2015-08-31&elems=tmean,pp`

  For more information, see the Web Services page.

Find older posts here.

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  A brief history of how CoAgMet came to be.
- CoAgMet factsheet has useful information on using this page.
- CoAgMet Crop Water Use (ET) Access
  Page for obtaining crop and turf water use information (ET).
- CoAgMet Text Message Service.
  Sign up for our SMS/email message service. You will be able to customize the messages sent to your cell phone (or email address).
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  ETRs are daily reports for selected stations by region.
- Station Description
  A description of a typical CoAgMet station.
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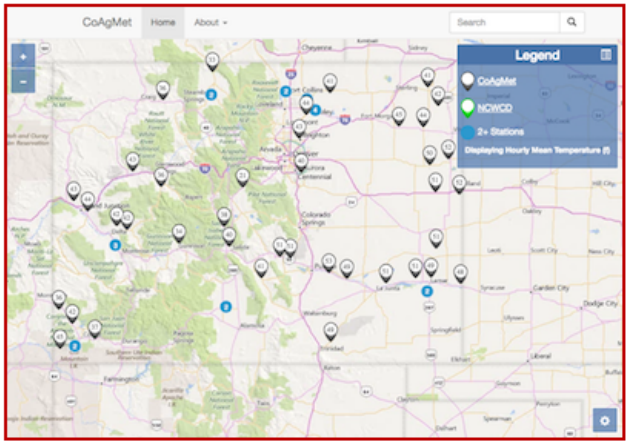
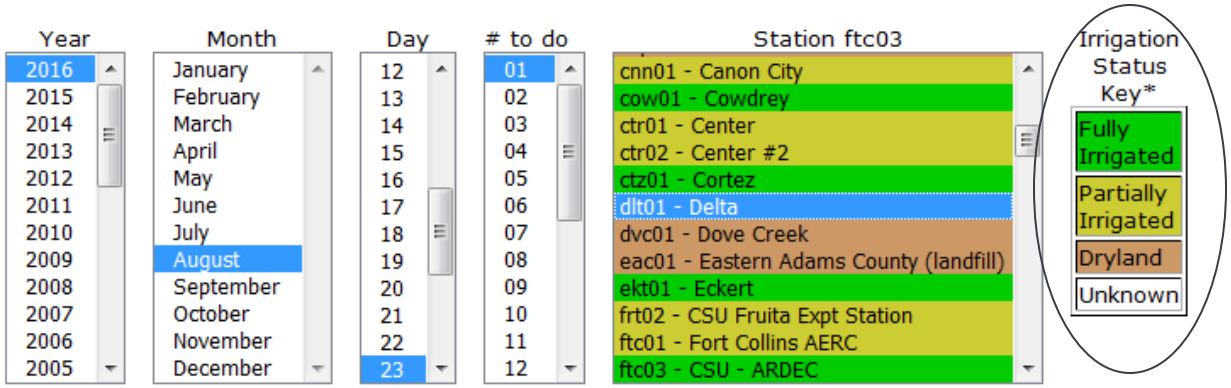
CoAgMet Mapping and Metadata by eRAMS



Select from a number of crop types.



Select Crops and Planting Date:

Check All None

☑ Alfalfa *(Green Up Date)*	m 04	d 24
☑ Corn *(Plant Date)*	m 04	d 20
☑ Drybeans *(Plant Date)*	m 05	d 31
☑ Smallgrn *(Plant Date)*	m 03	d 23
☑ Sgrbeets *(Plant Date)*	m 04	d 08
☑ Potatoes *(Plant Date)*	m 06	d 03
☑ Onion/sd *(Plant Date)*	m 03	d 22
☑ WntrWheat *(Green Up Date)*	m 03	d 01
☑ Cool Season Turf		

Reference ET Model

- ◉ Penman-Kimberly
- ○ ASCE Standardized (daily data)
- ○ ASCE Standardized (hourly data)

The crop coefficients used to generate crop ET reports were developed for the Penman-Kimberly model. Selection of another model is only appropriate to obtain reference ET.

Submit Reset

Station:Delta

Location:3 mi W Delta

Elevation:5010

Longitude:108.118

Latitude:38.7342

Crop Evapotranspiration in Inches

Date	Alfalfa	Corn	Drybeans	Smallgrn	Sgrbeets	Potatoes	Onion/sd	WntrWheat	Turf	RefET	Precip
06/25/2016	0.38	0.32	0.25	0.22	0.29	0.15	0.29	0.08	0.26	0.38	0.00
06/26/2016	0.38	0.33	0.26	0.21	0.29	0.16	0.29	0.08	0.25	0.38	0.00
06/27/2016	0.38	0.33	0.28	0.19	0.30	0.17	0.29	0.08	0.26	0.38	0.00
06/28/2016	0.30	0.27	0.23	0.14	0.24	0.14	0.23	0.07	0.20	0.30	0.00
06/29/2016	0.31	0.28	0.24	0.14	0.26	0.15	0.24	0.07	0.21	0.31	0.00
06/30/2016	0.30	0.28	0.25	0.13	0.26	0.15	0.24	0.07	0.21	0.30	0.00
07/01/2016	0.13	0.12	0.11	0.05	0.11	0.07	0.10	0.03	0.09	0.13	0.09
07/02/2016	0.17	0.15	0.14	0.06	0.14	0.08	0.13	0.04	0.11	0.17	0.16
07/03/2016	0.24	0.22	0.20	0.09	0.21	0.12	0.19	0.05	0.16	0.24	0.00
07/04/2016	0.31	0.29	0.28	0.10	0.28	0.17	0.25	0.07	0.21	0.31	0.00
07/05/2016	0.33	0.31	0.30	0.10	0.30	0.19	0.27	0.07	0.23	0.33	0.00
07/06/2016	0.40	0.38	0.38	0.10	0.38	0.23	0.32	0.09	0.27	0.40	0.00
07/07/2016	0.36	0.35	0.35	0.08	0.35	0.22	0.29	0.08	0.25	0.36	0.00
07/08/2016	0.34	0.33	0.34	0.08	0.33	0.21	0.27	0.08	0.23	0.34	0.00
07/09/2016	0.35	0.34	0.35	0.08	0.35	0.22	0.28	0.08	0.24	0.35	0.00
07/10/2016	0.40	0.39	0.40	0.09	0.40	0.27	0.32	0.09	0.27	0.40	0.00
07/11/2016	0.41	0.39	0.41	0.09	0.41	0.28	0.33	0.09	0.28	0.41	0.00
07/12/2016	0.37	0.36	0.37	0.08	0.37	0.26	0.30	0.08	0.25	0.37	0.00
07/13/2016	0.37	0.35	0.37	0.08	0.37	0.27	0.29	0.08	0.25	0.37	0.00
07/14/2016	0.34	0.33	0.34	0.07	0.34	0.25	0.27	0.07	0.23	0.34	0.00
07/15/2016	0.32	0.30	0.32	0.07	0.32	0.24	0.25	0.07	0.21	0.32	0.00
07/16/2016	0.40	0.38	0.40	0.09	0.40	0.31	0.32	0.09	0.27	0.40	0.00
07/17/2016	0.34	0.33	0.34	0.07	0.34	0.27	0.27	0.07	0.23	0.34	0.00
07/18/2016	0.31	0.30	0.31	0.07	0.31	0.25	0.25	0.07	0.21	0.31	0.00
07/19/2016	0.23	0.22	0.23	0.05	0.23	0.19	0.19	0.05	0.16	0.23	0.05
07/20/2016	0.27	0.26	0.27	0.06	0.27	0.23	0.22	0.06	0.18	0.27	0.02
07/21/2016	0.24	0.23	0.24	0.05	0.24	0.20	0.19	0.05	0.16	0.24	0.00
07/22/2016	0.26	0.25	0.26	0.06	0.26	0.22	0.21	0.06	0.17	0.26	0.02
07/23/2016	0.30	0.28	0.30	0.06	0.30	0.26	0.24	0.06	0.20	0.30	0.00
07/24/2016	0.30	0.28	0.30	0.07	0.30	0.26	0.24	0.07	0.20	0.30	0.00
07/25/2016	0.28	0.27	0.28	0.06	0.28	0.25	0.23	0.06	0.19	0.28	0.00
07/26/2016	0.26	0.25	0.26	0.06	0.26	0.23	0.21	0.06	0.18	0.26	0.00

ET reports by region

CoAgMet/NCWCD Meteorological Data for 8/23/2016

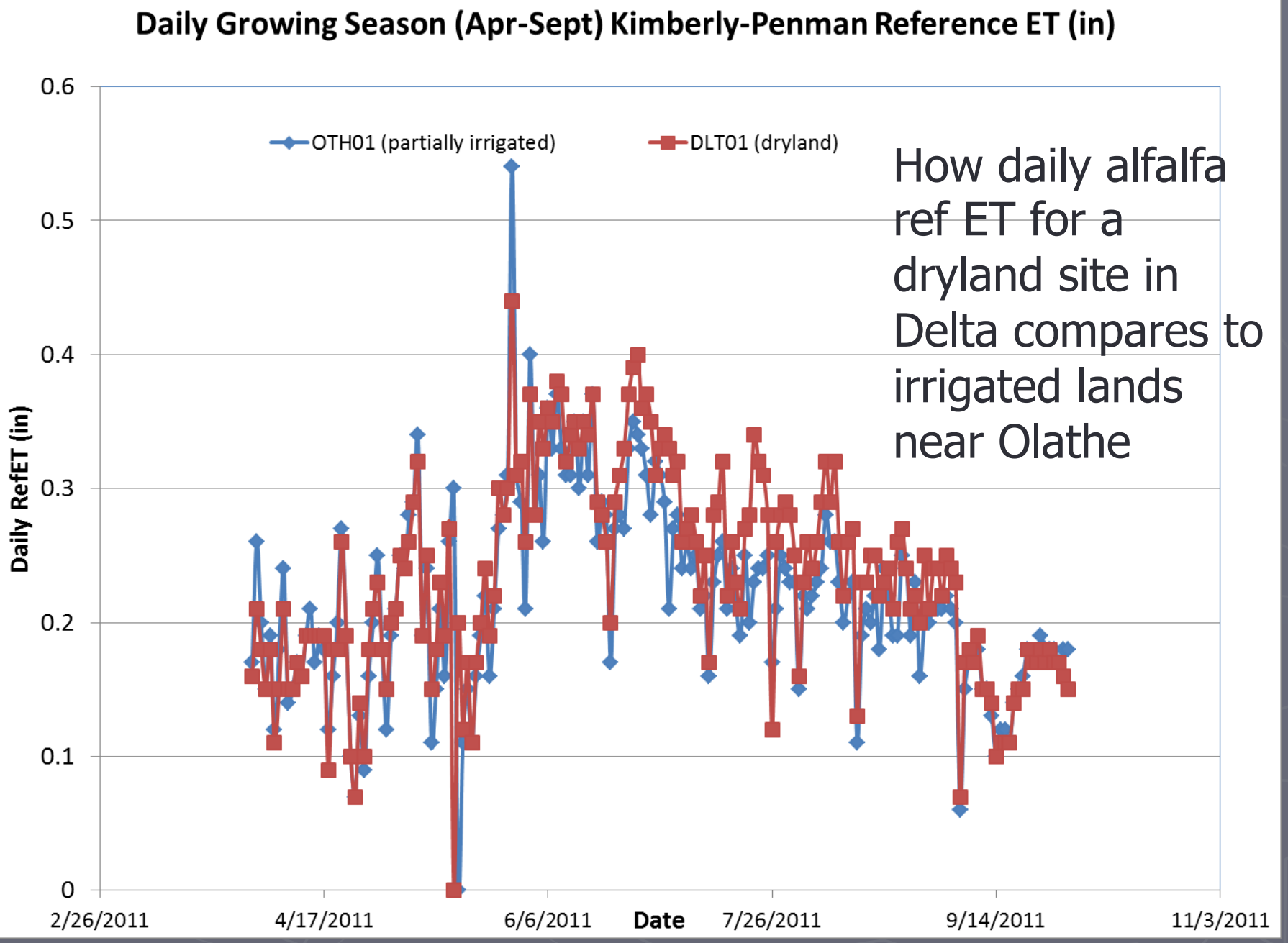
North Front Range

	FtColl	ARDEC	HortFm	Lovlnd	Cherpk	Lngmnt	Parker	
HiTemp	90	86	87	86	83	87	84	degF
LoTemp	50	52	49	53	54	53	56	degF
Precip	0.00	0.00	0.00	0.00	0.00	0.00	0.00	in
P/Month	0.28	0.84	0.39	0.26	0.54	0.21	0.06	in
P/Year	7.31	6.52	5.71	7.61	8.68	6.79	6.81	in
WindGst	25.0	18.8	52.4	22.3	22.0	30.9	24.2	mph
Ref ET	0.30	0.23	0.26	0.15	0.24	0.22	0.25	in
GrowDD	2108	2188	2180	2433	2006	2212	2376	degF
5cm Soil	61.0	63.4	m	m	59.7	m	67.6	degF
Crop Evapotranspiration								
Alfalfa	0.30	0.23	0.26	0.15	0.25	0.22	0.25	in
Corn	0.29	0.21	0.06	0.14	0.20	0.19	0.07	in
Drybeans	0.30	0.23	0.26	0.15	0.25	0.22	0.25	in
Smallgrn	0.07	0.05	0.06	0.03	0.05	0.05	0.06	in
Sgrbeets	0.30	0.23	0.21	0.15	0.24	0.22	0.21	in
Potatoes	0.27	0.21	0.24	0.13	0.22	0.20	0.23	in
Onion/sd	0.24	0.18	0.12	0.12	0.19	0.18	0.11	in
WntrWheat	0.07	0.05	0.26	0.03	0.05	0.05	0.25	in

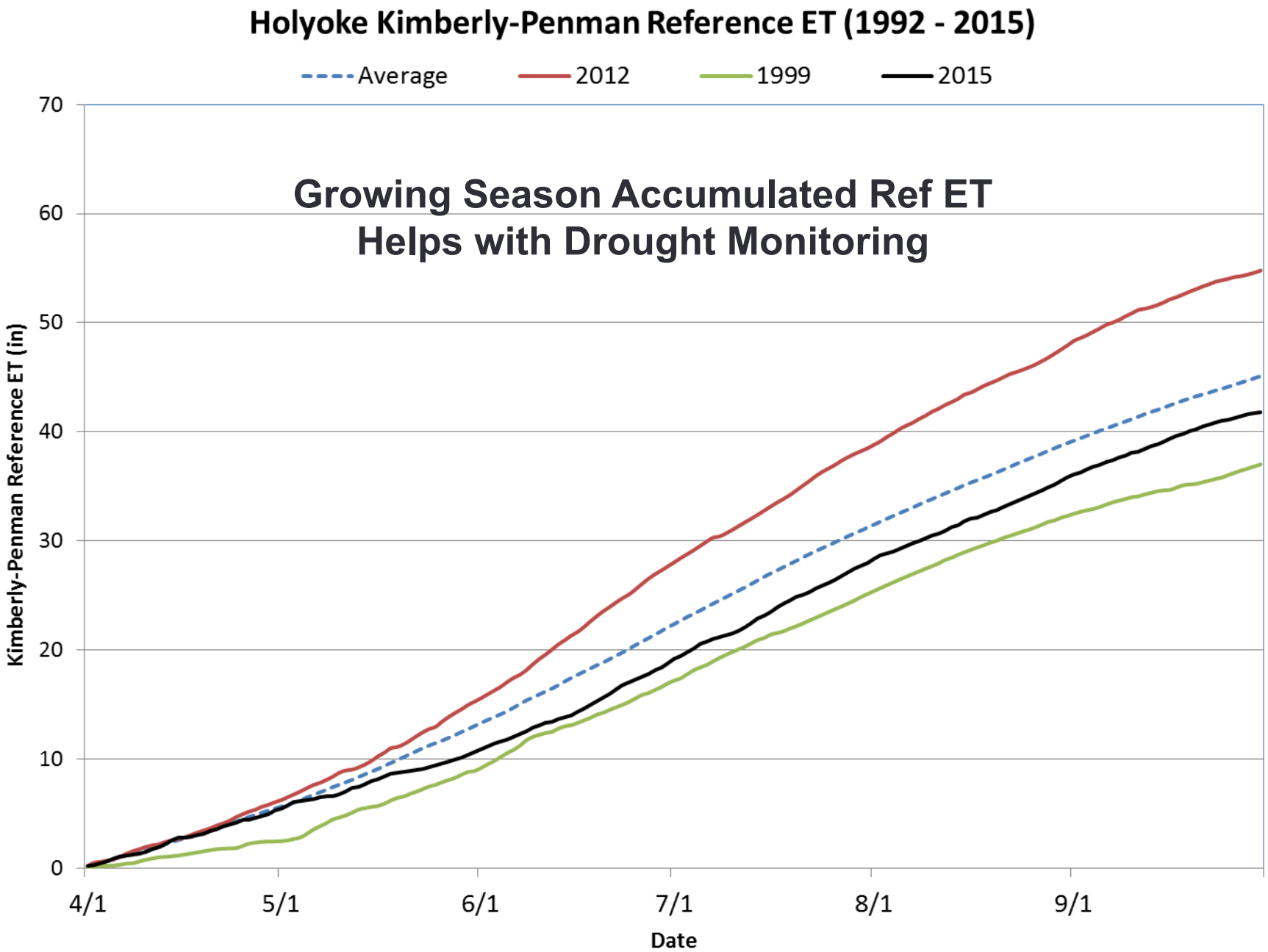
CoAgMet/NCWCD Meteorological Data for 8/23/2016

North Central

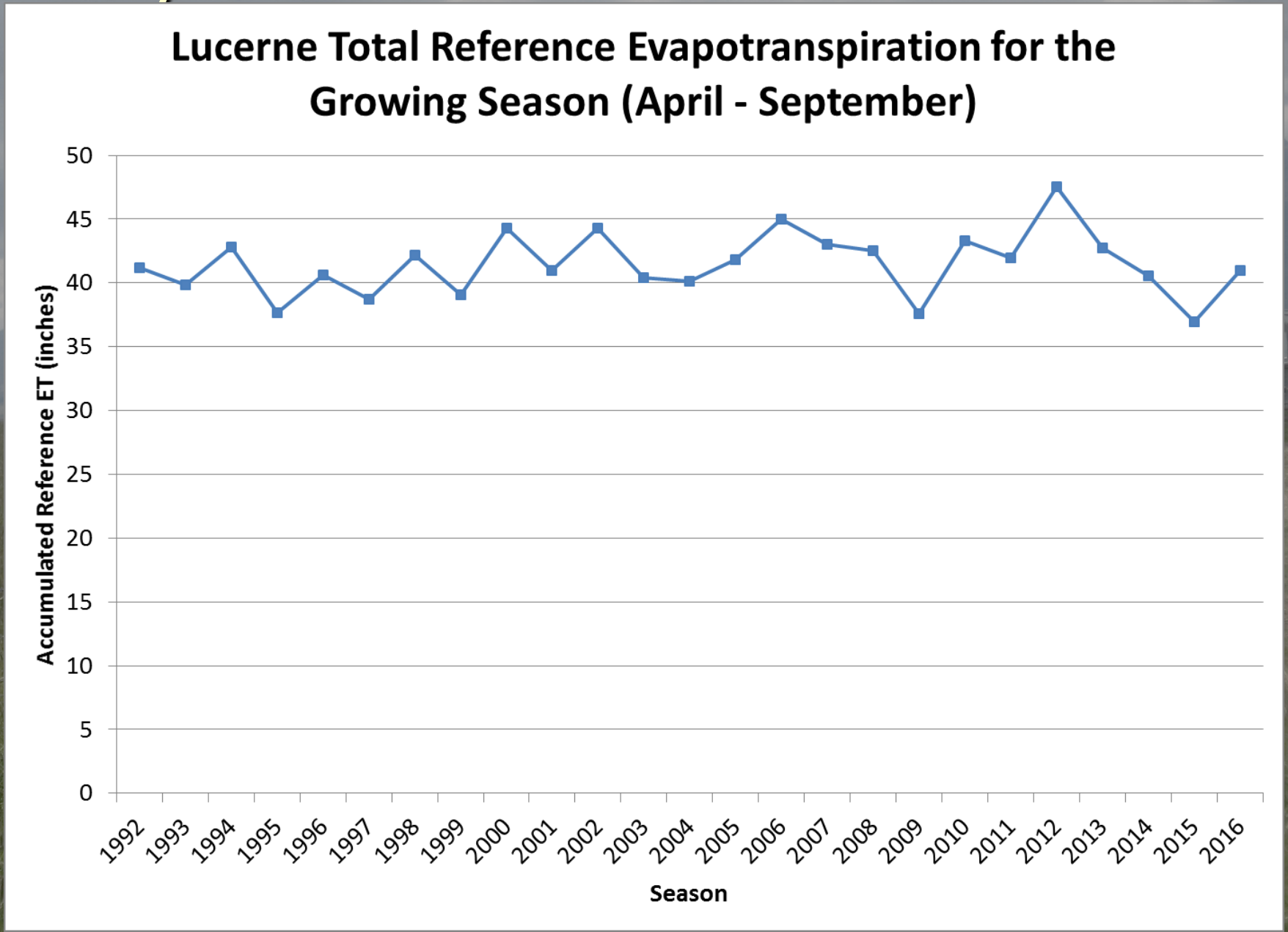
	Peckhm	Kersey	Kersey	Lucern	Greely	Gilcrs	FtLptn	Ault	Brigsd	
HiTemp	90	86	88	86	85	87	86	84	94	degF
LoTemp	49	45	46	48	47	47	58	51	46	degF
Precip	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	in
P/Month	1.42	0.65	0.75	1.21	1.14i	1.49	7.20i	0.25	0.52	in
P/Year	9.28	11.48	10.23	9.83	8.24i	10.06	12.07i	7.09i	7.85	in
WindGst	19.3	21.7	26.5	19.2	15.0	33.2	26.4	24.7	17.5	mph
Ref ET	0.19	0.22	0.25	0.19	0.18	0.21	0.28	0.23	0.29	in
GrowDD	2358	2256	2321	2283	2245	2381	2201	1965	2294	degF
5cm Soil	66.6	63.8	66.8	64.9	62.6	m	73.3	61.9	63.9	degF
Crop Evapotranspiration										
Alfalfa	0.19	0.22	0.25	0.19	0.18	0.21	0.28	0.23	0.29	in
Corn	0.15	0.19	0.20	0.16	0.16	0.16	0.19	0.21	0.14	in
Drybeans	0.19	0.22	0.25	0.19	0.18	0.21	0.28	0.23	0.29	in
Smallgrn	0.04	0.05	0.06	0.04	0.04	0.05	0.06	0.05	0.06	in
Sgrbeets	0.19	0.22	0.25	0.19	0.18	0.20	0.27	0.23	0.26	in
Potatoes	0.17	0.20	0.23	0.17	0.16	0.19	0.25	0.20	0.26	in
Onion/sd	0.13	0.17	0.18	0.15	0.15	0.15	0.15	0.18	0.13	in
WntrWheat	0.04	0.05	0.06	0.04	0.04	0.05	0.06	0.05	0.16	in



How daily alfalfa ref ET for a dryland site in Delta compares to irrigated lands near Olathe


Holyoke Kimberly-Penman Reference ET (1992 - 2015)
Average
2012
1999
2015
Growing Season Accumulated Ref ET
Helps with Drought Monitoring
Kimberly-Penman Reference ET (in)
70
60
50
40
30
20
10
0
4/1
5/1
6/1
7/1
8/1
9/1
Date

25 years of Ref ET Data now available



New features

- Interactive data mapping, data and station information system.
- QC Application
- Supported by funds from the State of Colorado!

http://coagmet.colostate.edu/

CoAgMet Homepage

News

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```

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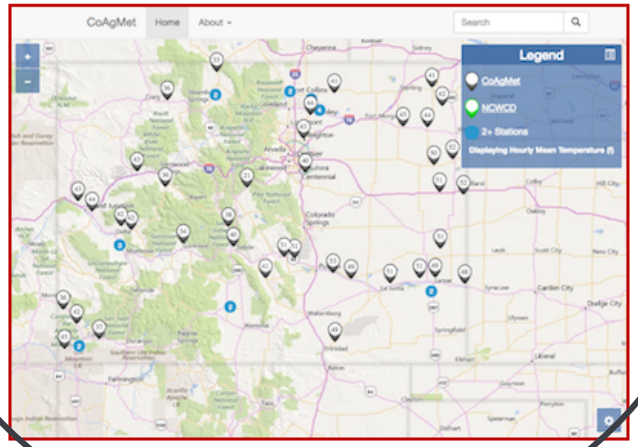
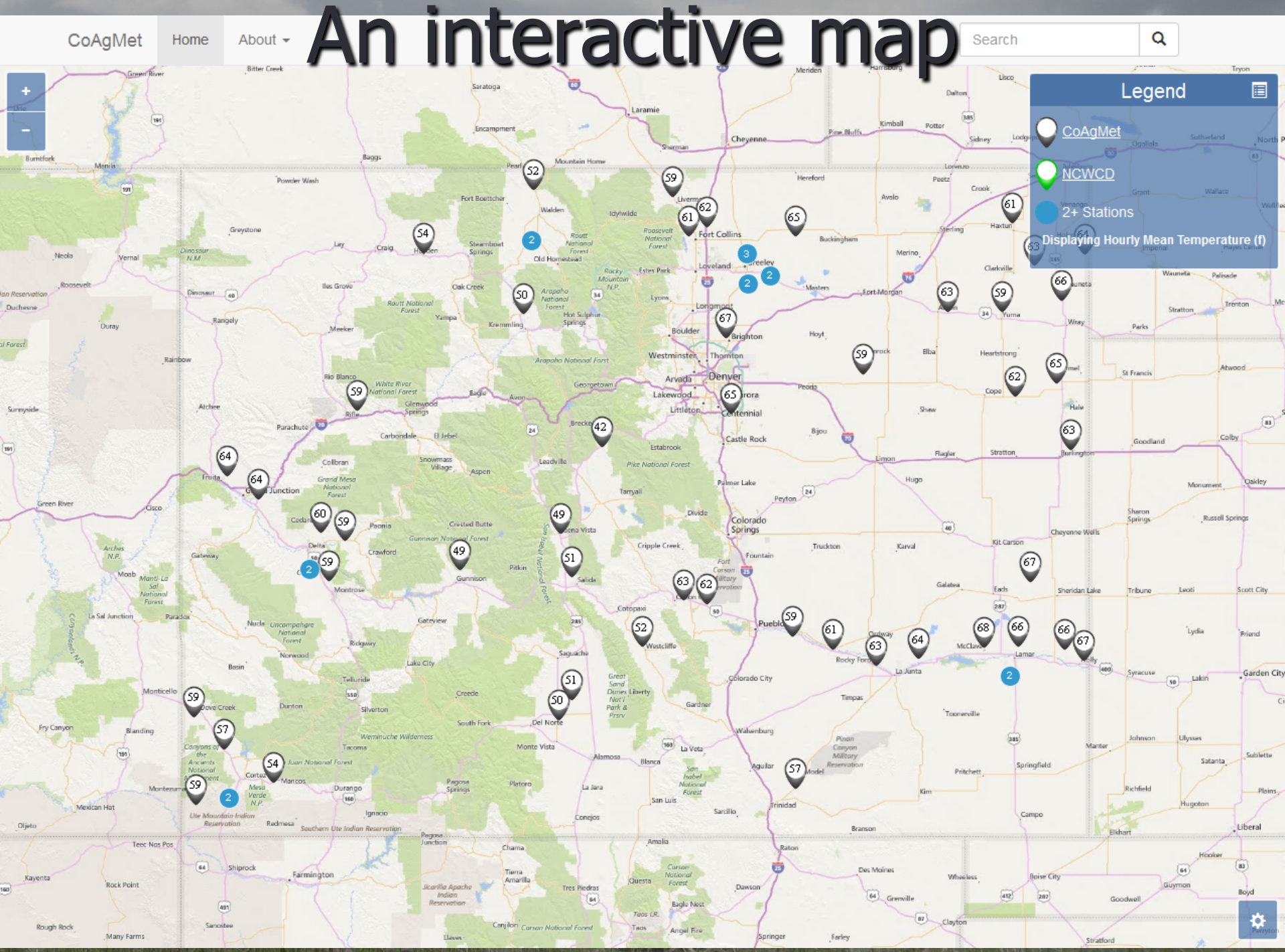
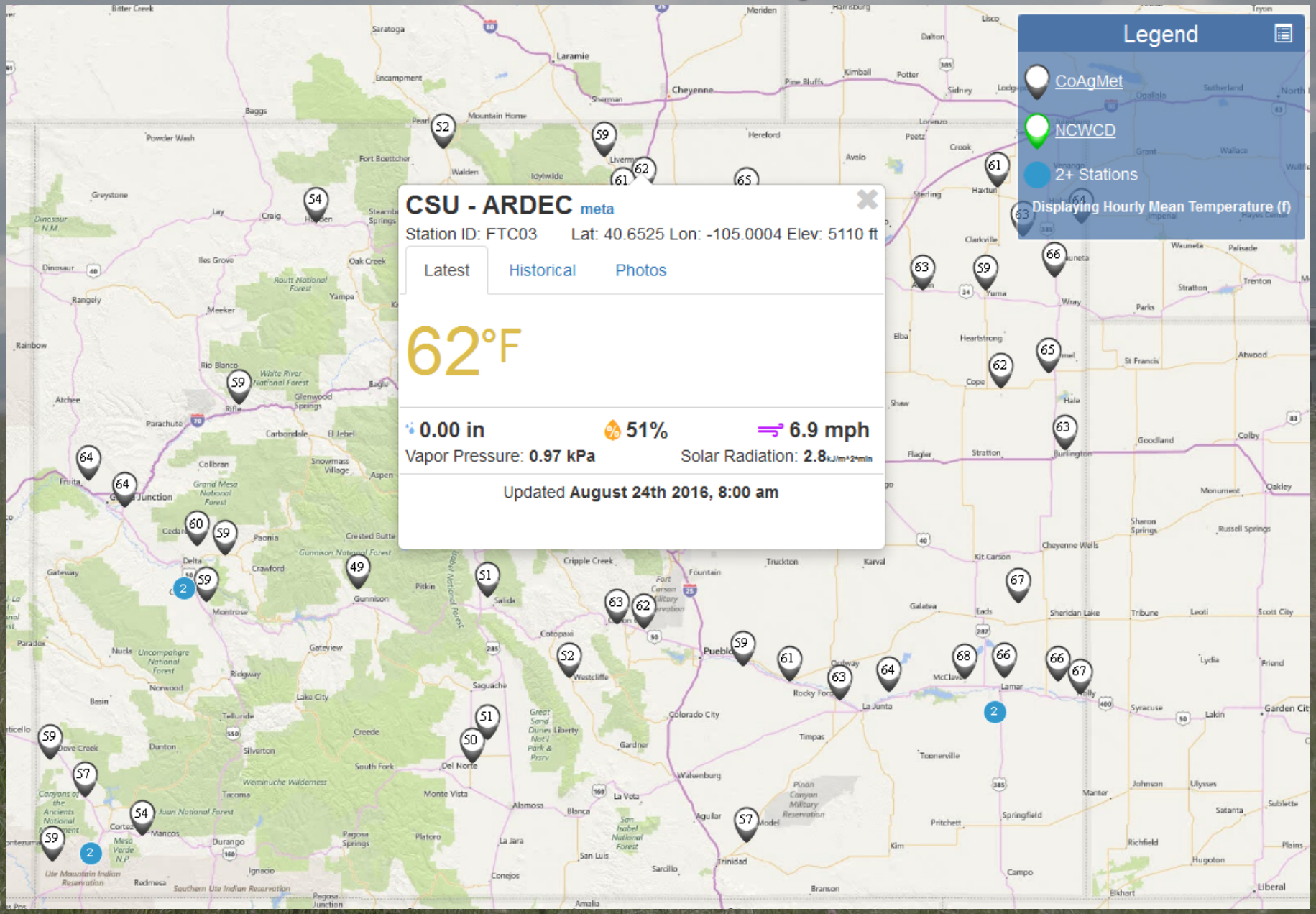


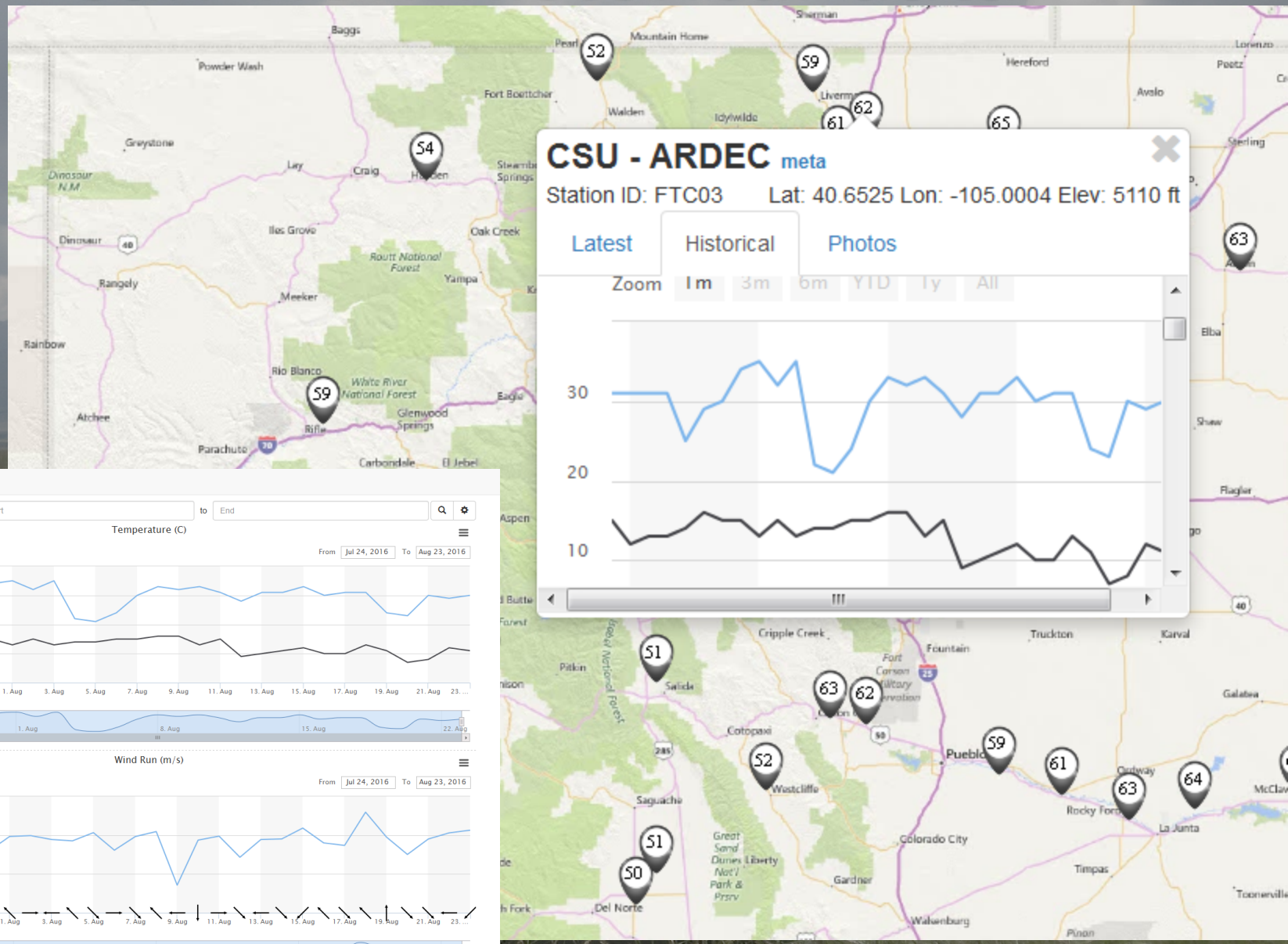
An interactive map



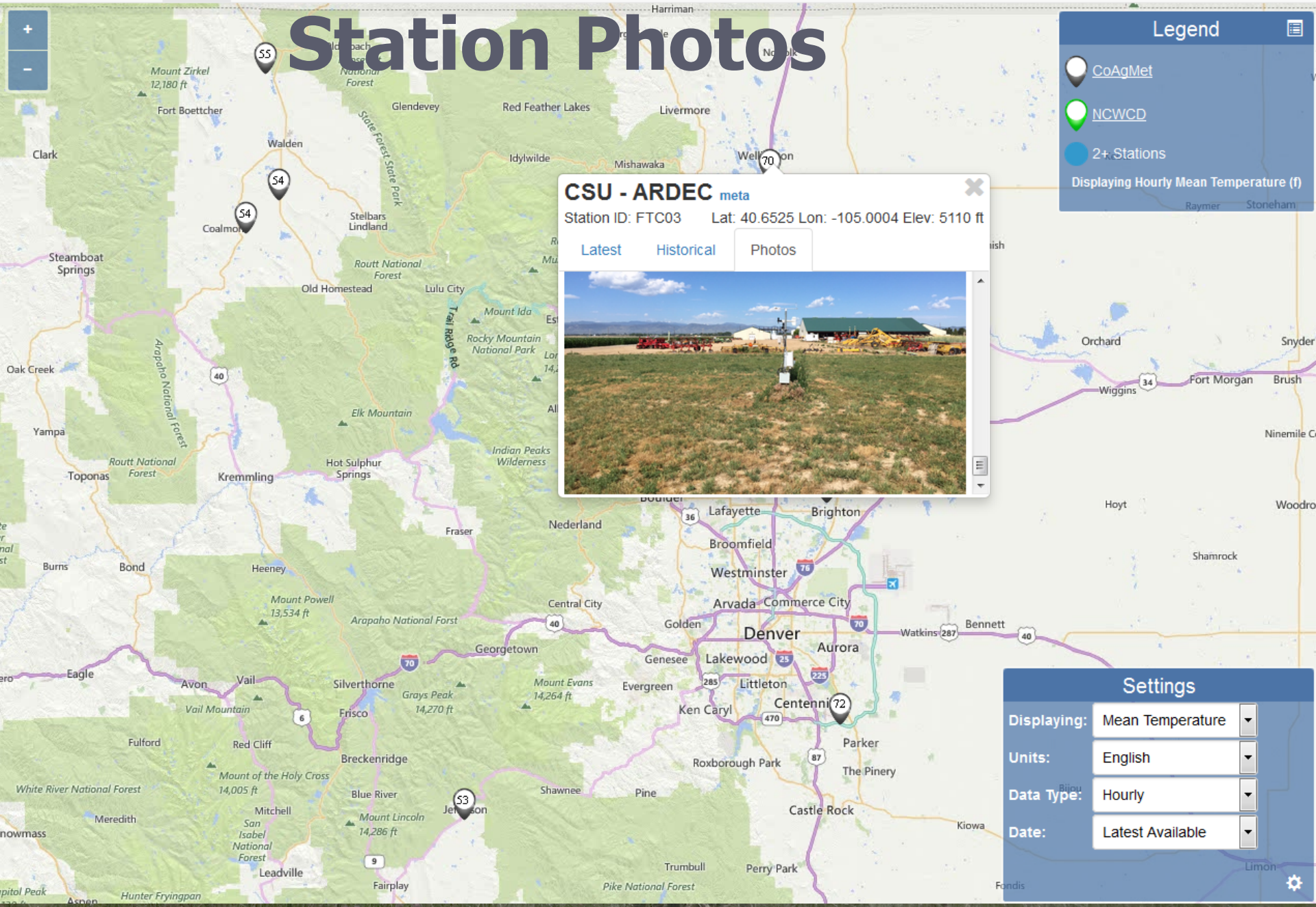
Most recent data for specific station



Can view historical data



Station Photos



All 4 directions plus the ground, and past photos

CoAgMet Home About

July 17th 2015

Facing north on July 17th, 2015

Facing west on July 17th, 2015

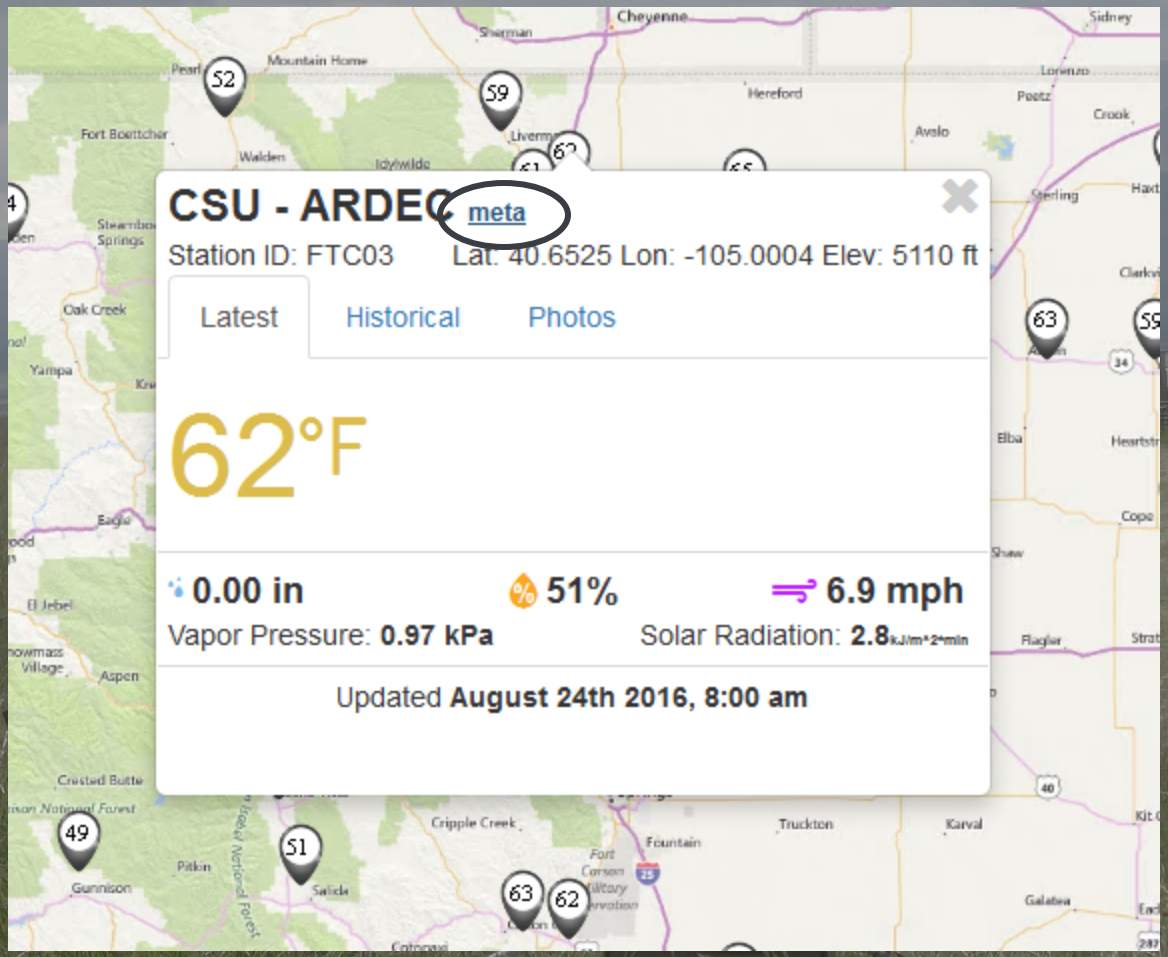
Facing east on July 17th, 2015

Facing south on July 17th, 2015

Facing down on July 17th, 2015

Helps with condition monitoring, being able to compare year to year

Station metadata



CoAgMet Home About

2016-08-09

Edit Delete New Report

Station Information

Time Service Started
15:00:00

Reason For Visit
Annual Service

Serviced By
Schwalbe

Phone Type
Cell Modem

Modem
Raven XT

Msn

Modem Esn Hex

Modem Esn Dec

Modem Ip

Battery Setup
Internal/External

Antenna
Yagi

Data Logger
CR1000

Wiring Panel
CR1000

Power Supply
PS100

Sensors

	Temp/RH Sensor	Pyranometer
Model	HMP45	LI200x
SN	E1320079	PY72955
Installed	2016-08-09	2016-08-09

Previous Serial Numbers and Removal Dates

Service Work

Anemometer Bearings
OK-need replacing soon

Wind Vane Bearings
OK

Wind Vane Direction
OK

Wind Sentry Level
OK

Temp Rh
Replaced

Pyranometer
Replaced

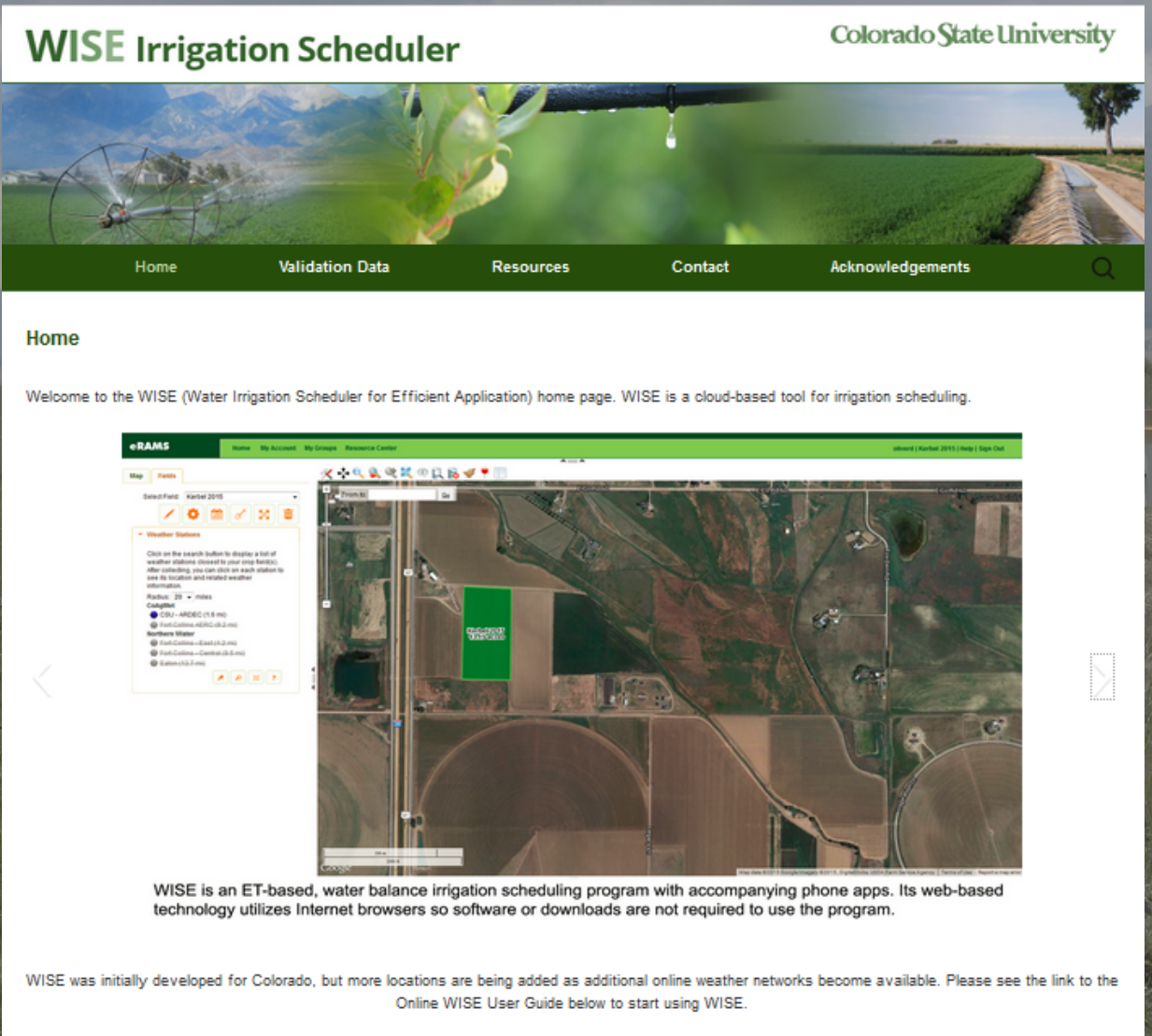
Pyranometer Clean
Cleaned/Replaced

Pyranometer Level

WISE Irrigation Scheduler

- Water Irrigation Scheduler for Effective Application
- Developed by eRAMS group at CSU.
- An online tool developed to maximize crop yield while minimizing excess irrigation.
- User draws field and selects crop, tool selects soils and nearest ET weather station, usually CoAgMET station.

WISE



- A summary of crop fields irrigation needs as well as a table and graph of irrigation scheduling.

wise.colostate.edu

Maintaining the data

- Our goal is to visit each station at least once a year to make sure the station is operating properly.
  - Sensor are swapped out once every 2 years.
  - Emergency visits to stations when there is a problem with the station causing bad data or an interruption of data.
- Data are quality controlled daily to catch data errors and catch issues with stations before it becomes a problem.

Tools to come

- Thanks to support from CWCB, we plan to develop tools and features to help monitor drought and climate change better.
- With long-term stations, develop a climate summary with season/monthly/annual averages, trends, extremes, etc.
- Develop tools to monitor plant water stress

Tools

- New web interface
- Continue to expand to "Colorado Mesonet" to have real-time (5-minute) data.
- All season rain gauges to help measure frozen precip

Questions?

Zach Schwalbe
CoAgMet Manager
zach.schwalbe@colostate.edu
970-491-8140

COLORADO CLIMATE CENTER

Colorado State University