An Overview of NCDC, NCAR and Other Sources of Weather Products.

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University of Missouri
Columbia, MO 65211

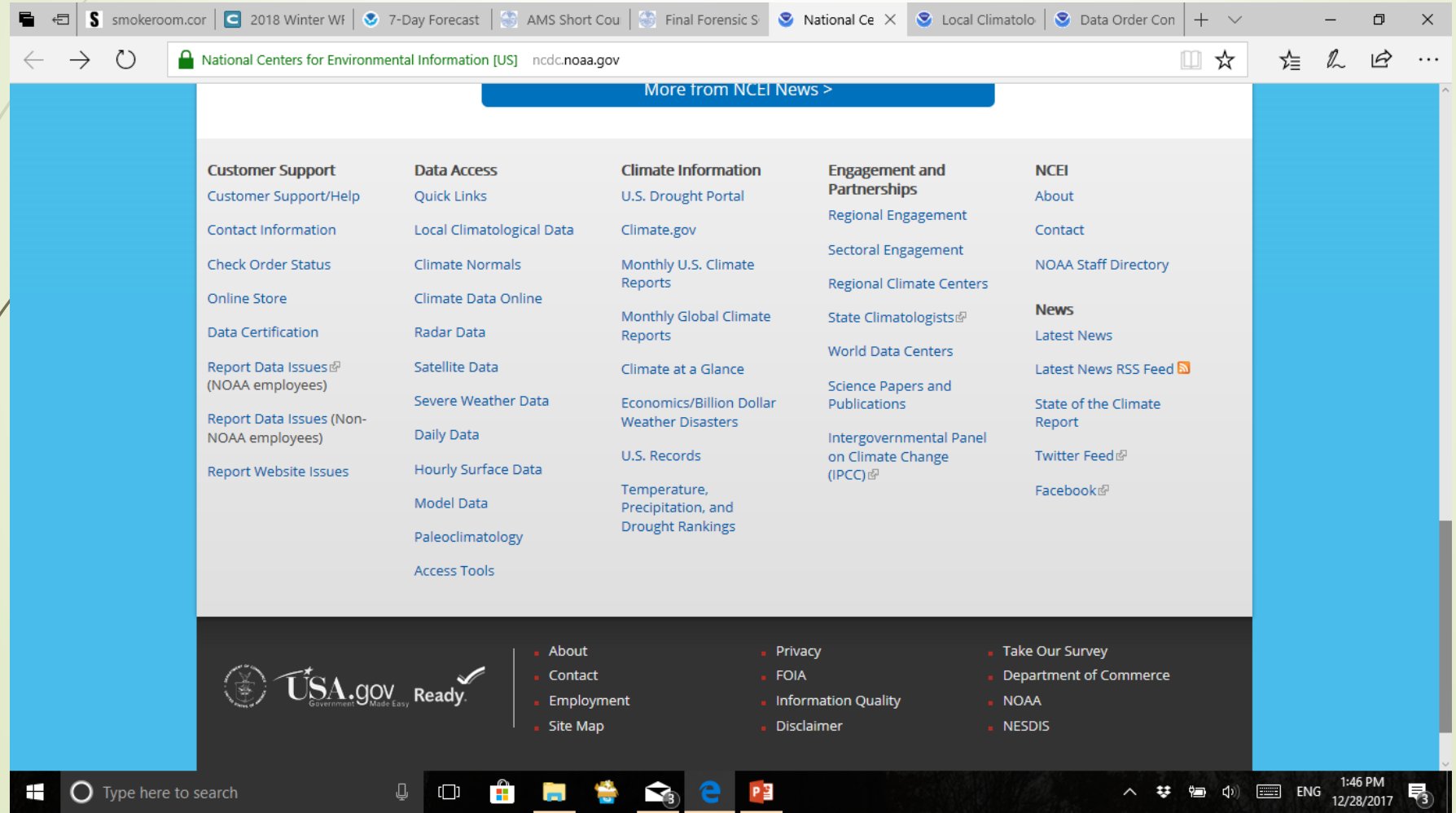
AMS Short Course: The Art and Science of Forensic Meteorology
7 January 2018

National Climatic Data Center

- For the majority of the reports I've prepared, station data is needed for a particular day, or set of days.
- This information is available from the National Weather Service (http://weather.gov)
- Click on the CWA for the area you are interested in and you can retrieve the Daily Climate Report (CLI) or Monthly Climate Report (CF-6). However, these data are available for 60 days or five years, respectively. Also, you may need to 'certify' the data.

National Climatic Data Center

- The main website (https://www.ncdc.noaa.gov/)



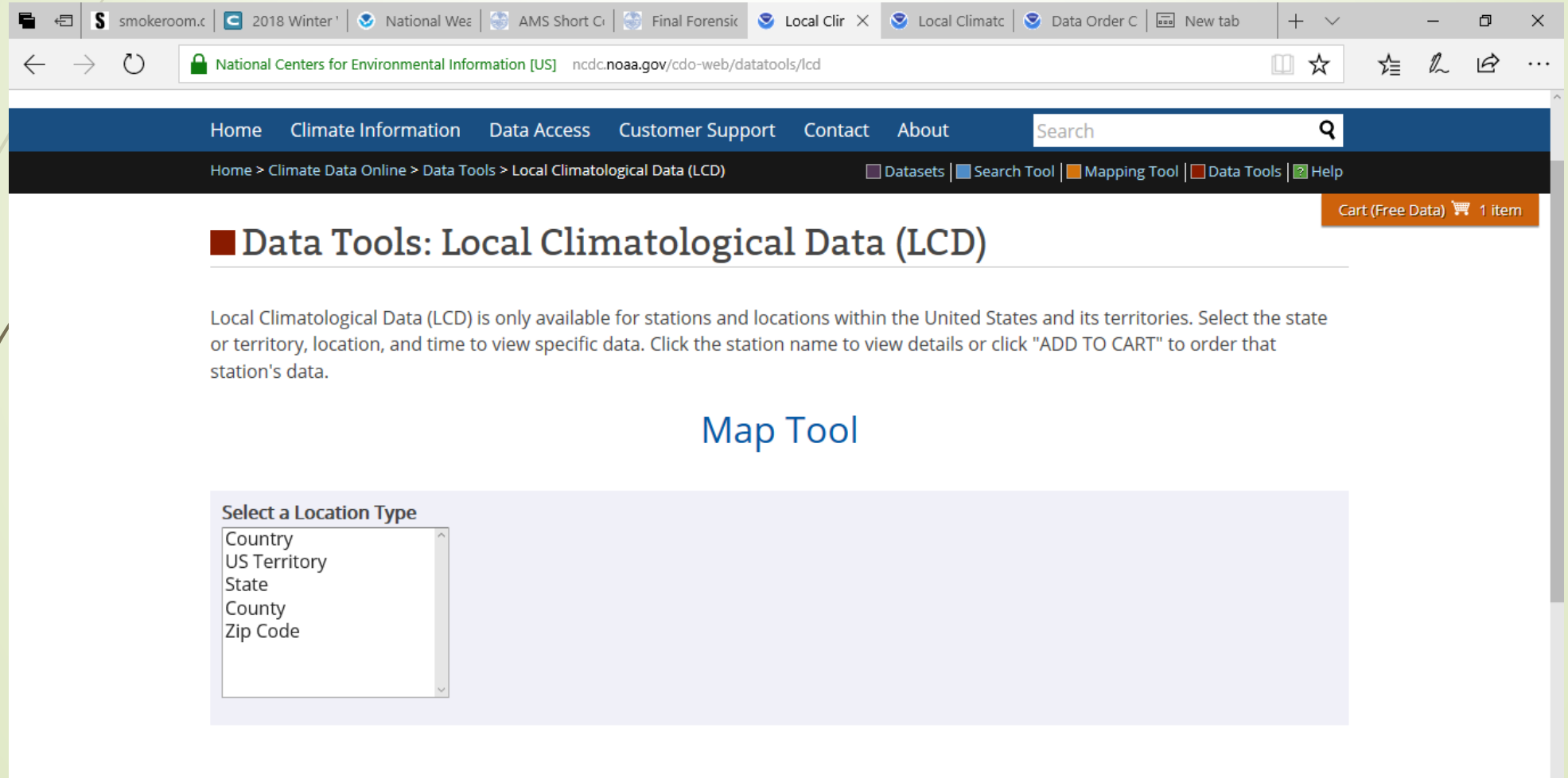
National Climatic Data Center

- Let's click on 'climate data online', then 'browse data' and finally 'Local Climatological Data'. Then use the search tool:

- https://www.ncdc.noaa.gov/cdo-web/datatools/lcd

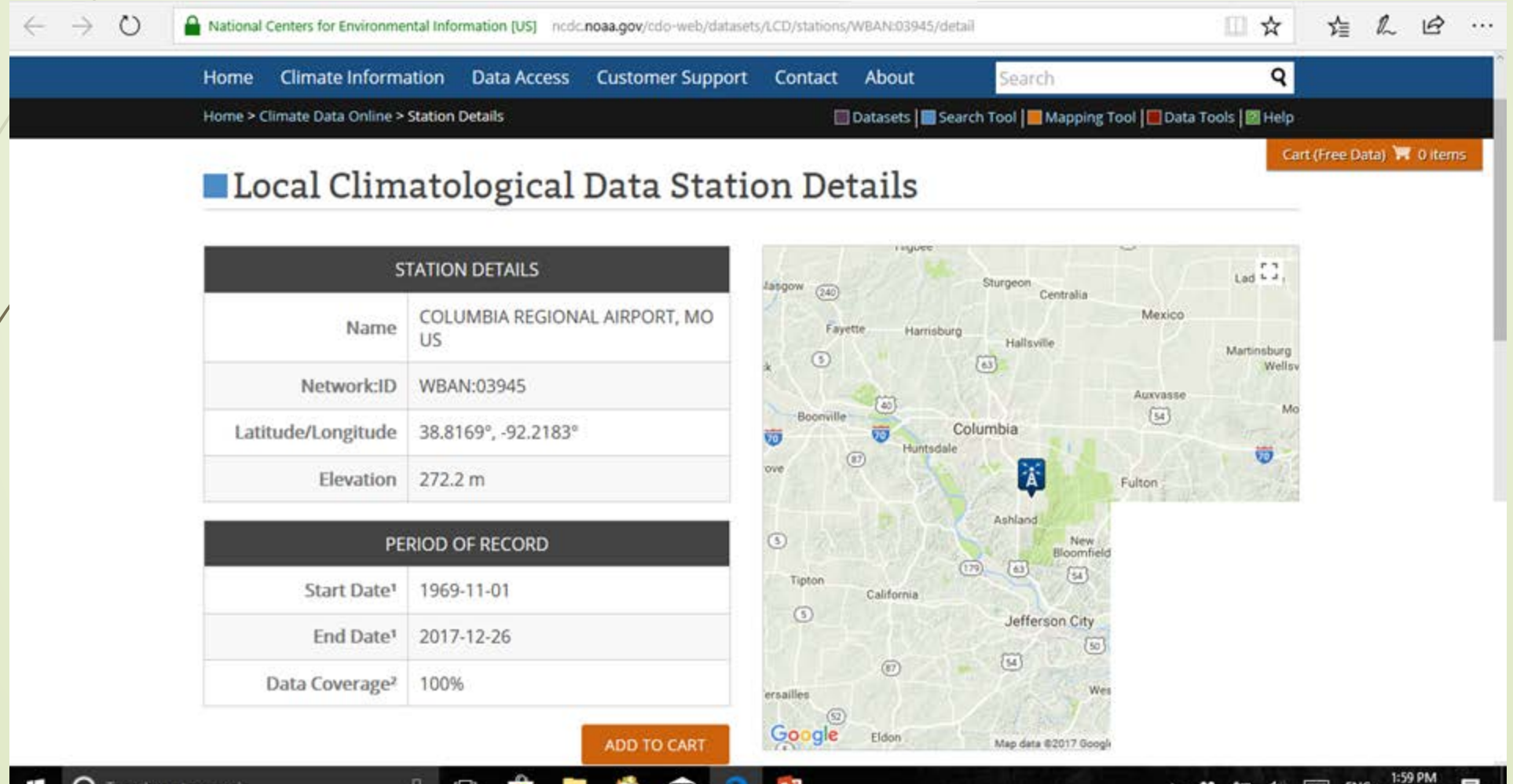
National Climatic Data Center

- Then you can select your station:



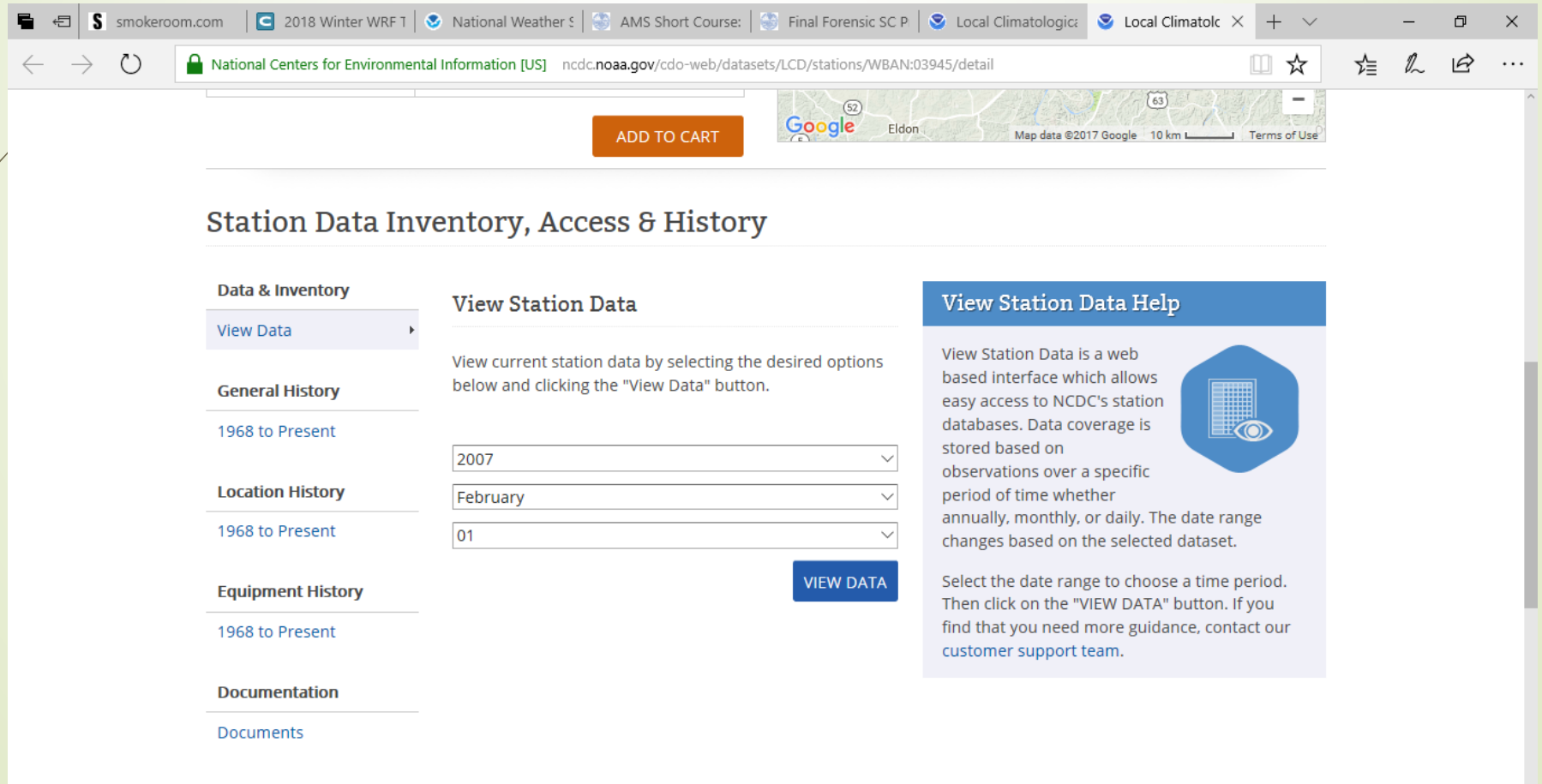
National Climatic Data Center

- Let's choose Columbia, MO:



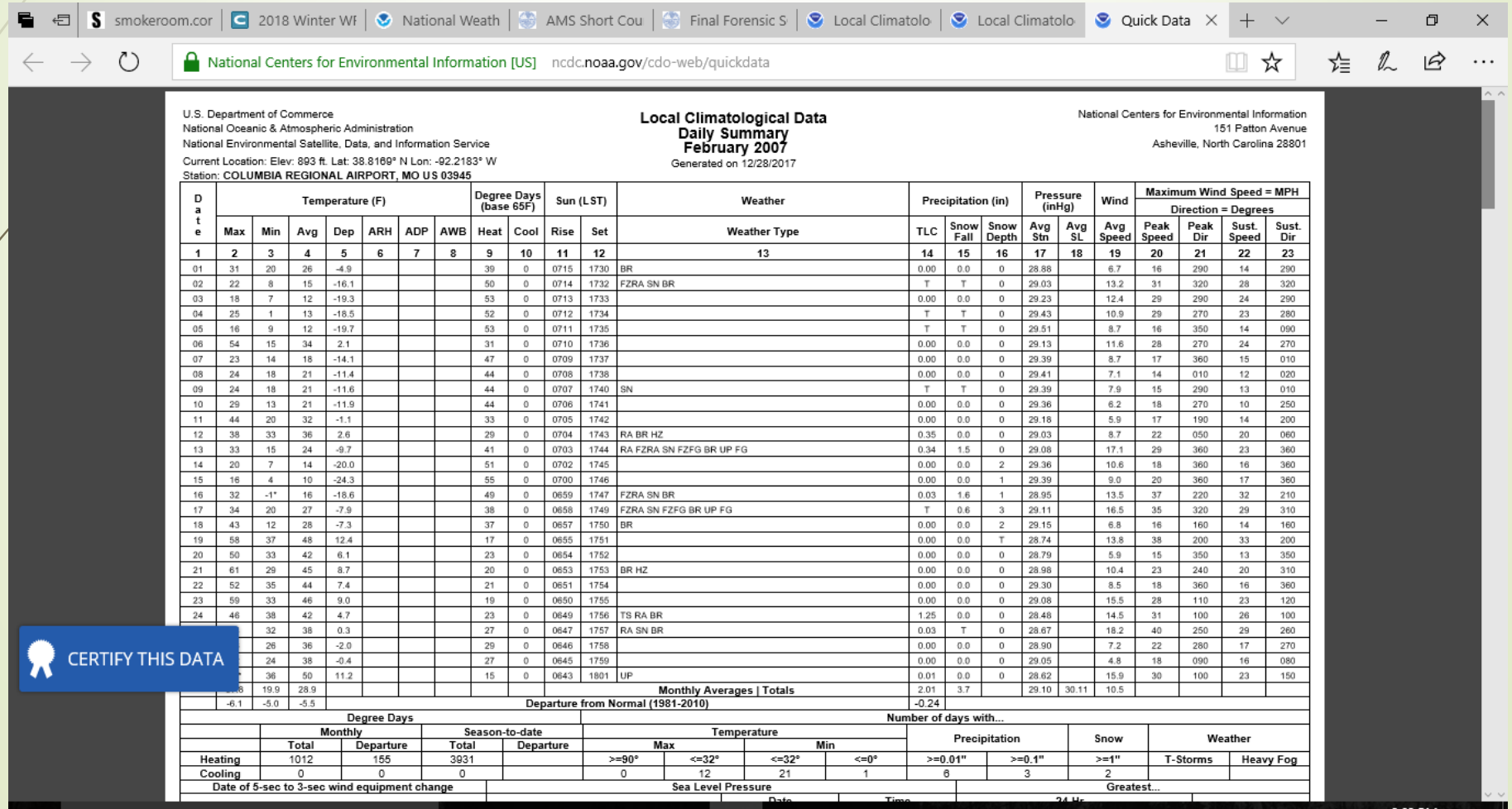
National Climatic Data Center

- This information is now free, don't be fooled by "add to cart". Now let's choose: 1 February 2007:



National Climatic Data Center

- You are given the monthly information (note you can certify the data).



U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Current Location: Elev: 893 ft. Lat: 38.8169° N Lon: -92.2183° W
Station: COLUMBIA REGIONAL AIRPORT, MO US 03945

Local Climatological Data
Daily Summary
February 2007
Generated on 12/28/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Temperature (F)							Degree Days (base 65F)		Sun (LST)		Weather	Precipitation (in)			Pressure (inHg)		Wind	Maximum Wind Speed = MPH / Direction = Degrees			
	Max	Min	Avg	Dep	ARH	ADP	AWB	Heat	Cool	Rise	Set	Weather Type	TLC	Snow Fall	Snow Depth	Avg Stn	Avg SL	Avg Speed	Peak Speed	Peak Dir	Sust. Speed	Sust. Dir
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	31	20	26	-4.9				39	0	0715	1730	BR	0.00	0.0	0	28.88		6.7	16	290	14	290
02	22	8	15	-16.1				50	0	0714	1732	FZRA SN BR	T	T	0	29.03		13.2	31	320	28	320
03	18	7	12	-19.3				53	0	0713	1733		0.00	0.0	0	29.23		12.4	29	290	24	290
04	25	1	13	-18.5				52	0	0712	1734		T	T	0	29.43		10.9	29	270	23	280
05	16	9	12	-19.7				53	0	0711	1735		T	T	0	29.51		8.7	16	350	14	090
06	54	15	34	2.1				31	0	0710	1736		0.00	0.0	0	29.13		11.6	28	270	24	270
07	23	14	18	-14.1				47	0	0709	1737		0.00	0.0	0	29.39		8.7	17	360	15	010
08	24	18	21	-11.4				44	0	0708	1738		0.00	0.0	0	29.41		7.1	14	010	12	020
09	24	18	21	-11.6				44	0	0707	1740	SN	T	T	0	29.39		7.9	15	290	13	010
10	29	13	21	-11.9				44	0	0706	1741		0.00	0.0	0	29.36		6.2	18	270	10	250
11	44	20	32	-1.1				33	0	0705	1742		0.00	0.0	0	29.18		5.9	17	190	14	200
12	38	33	36	2.6				29	0	0704	1743	RA BR HZ	0.35	0.0	0	29.03		8.7	22	050	20	060
13	33	15	24	-9.7				41	0	0703	1744	RA FZRA SN FZFG BR UP FG	0.34	1.5	0	29.08		17.1	29	360	23	360
14	20	7	14	-20.0				51	0	0702	1745		0.00	0.0	2	29.36		10.6	18	360	16	360
15	16	4	10	-24.3				55	0	0700	1746		0.00	0.0	1	29.39		9.0	20	360	17	360
16	32	-1*	16	-18.6				49	0	0659	1747	FZRA SN BR	0.03	1.6	1	28.95		13.5	37	220	32	210
17	34	20	27	-7.9				38	0	0658	1749	FZRA SN FZFG BR UP FG	T	0.6	3	29.11		16.5	35	320	29	310
18	43	12	28	-7.3				37	0	0657	1750	BR	0.00	0.0	2	29.15		6.8	16	160	14	160
19	58	37	48	12.4				17	0	0655	1751		0.00	0.0	T	28.74		13.8	38	200	33	200
20	50	33	42	6.1				23	0	0654	1752		0.00	0.0	0	28.79		5.9	15	350	13	350
21	61	29	45	8.7				20	0	0653	1753	BR HZ	0.00	0.0	0	28.98		10.4	23	240	20	310
22	52	35	44	7.4				21	0	0651	1754		0.00	0.0	0	29.30		8.5	18	360	16	360
23	59	33	46	9.0				19	0	0650	1755		0.00	0.0	0	29.08		15.5	28	110	23	120
24	46	38	42	4.7				23	0	0649	1756	TS RA BR	1.25	0.0	0	28.48		14.5	31	100	26	100
		32	38	0.3				27	0	0647	1757	RA SN BR	0.03	T	0	28.67		18.2	40	250	29	260
		26	36	-2.0				29	0	0646	1758		0.00	0.0	0	28.90		7.2	22	280	17	270
		24	38	-0.4				27	0	0645	1759		0.00	0.0	0	29.05		4.8	18	090	16	080
		36	50	11.2				15	0	0643	1801	UP	0.01	0.0	0	28.62		15.9	30	100	23	150
	19.9	28.9										Monthly Averages | Totals	2.01	3.7		29.10	30.11	10.5				
	-5.0	-5.5										Departure from Normal (1981-2010)	-0.24									

Degree Days

	Monthly		Season-to-date	
	Total	Departure	Total	Departure
Heating	1012	155	3931	
Cooling	0	0	0	

Number of days with...

Temperature				Precipitation		Snow	Weather	
Max		Min						
>=90°	<=32°	<=32°	<=0°	>=0.01"	>=0.1"	>=1"	T-Storms	Heavy Fog
0	12	21	1	6	3	2		

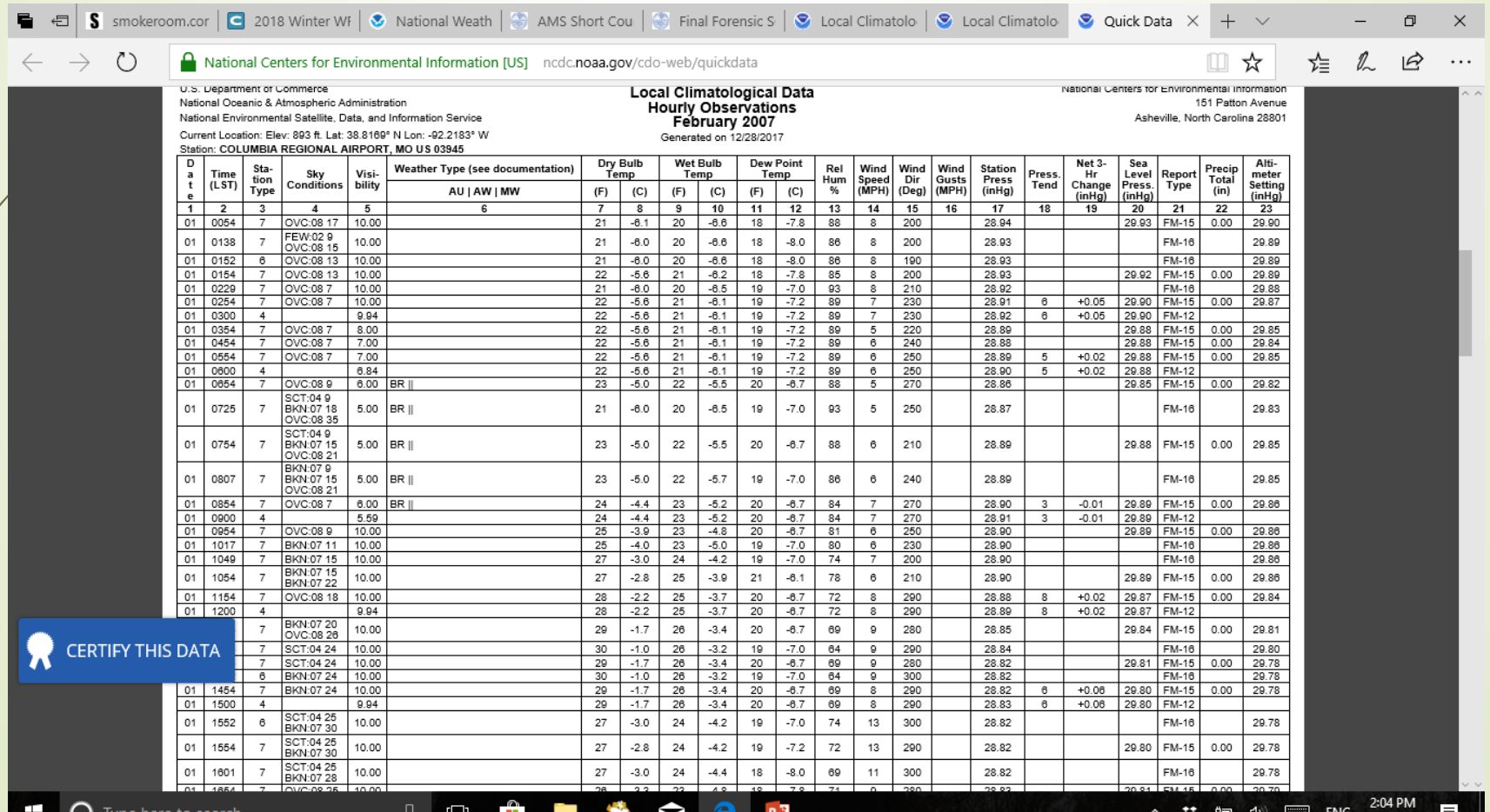
Date of 5-sec to 3-sec wind equipment change

Sea Level Pressure

Greatest...

National Climatic Data Center

- and the data from 1 February 2007



U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Current Location: Elev: 893 ft. Lat: 38.8169° N Lon: -92.2183° W
Station: **COLUMBIA REGIONAL AIRPORT, MO US 03945**

Local Climatological Data
Hourly Observations
February 2007
Generated on 12/28/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation) AU | AW | MW	Dry Bulb Temp (F)	Dry Bulb Temp (C)	Wet Bulb Temp (F)	Wet Bulb Temp (C)	Dew Point Temp (F)	Dew Point Temp (C)	Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	0054	7	OVC:08 17	10.00		21	-6.1	20	-6.6	18	-7.8	88	8	200		28.94			29.93	FM-15	0.00	29.90
01	0138	7	FEW:02 9 OVC:08 15	10.00		21	-6.0	20	-6.6	18	-8.0	86	8	200		28.93				FM-16		29.89
01	0152	6	OVC:08 13	10.00		21	-6.0	20	-6.6	18	-8.0	86	8	190		28.93				FM-16		29.89
01	0154	7	OVC:08 13	10.00		22	-5.6	21	-6.2	18	-7.8	85	8	200		28.93			29.92	FM-15	0.00	29.89
01	0229	7	OVC:08 7	10.00		21	-6.0	20	-6.5	19	-7.0	93	8	210		28.92				FM-16		29.88
01	0254	7	OVC:08 7	10.00		22	-5.6	21	-6.1	19	-7.2	89	7	230		28.91	6	+0.05	29.90	FM-15	0.00	29.87
01	0300	4		9.94		22	-5.6	21	-6.1	19	-7.2	89	7	230		28.92	6	+0.05	29.90	FM-12		
01	0354	7	OVC:08 7	8.00		22	-5.6	21	-6.1	19	-7.2	89	5	220		28.89			29.88	FM-15	0.00	29.85
01	0454	7	OVC:08 7	7.00		22	-5.6	21	-6.1	19	-7.2	89	6	240		28.88			29.88	FM-15	0.00	29.84
01	0554	7	OVC:08 7	7.00		22	-5.6	21	-6.1	19	-7.2	89	6	250		28.89	5	+0.02	29.88	FM-15	0.00	29.85
01	0600	4		6.84		22	-5.6	21	-6.1	19	-7.2	89	6	250		28.90	5	+0.02	29.88	FM-12		
01	0654	7	OVC:08 9	6.00	BR ||	23	-5.0	22	-5.5	20	-6.7	88	5	270		28.86			29.85	FM-15	0.00	29.82
01	0725	7	SCT:04 9 BKN:07 18 OVC:08 35	5.00	BR ||	21	-6.0	20	-6.5	19	-7.0	93	5	250		28.87				FM-16		29.83
01	0754	7	SCT:04 9 BKN:07 15 OVC:08 21	5.00	BR ||	23	-5.0	22	-5.5	20	-6.7	88	6	210		28.89			29.88	FM-15	0.00	29.85
01	0807	7	BKN:07 9 BKN:07 15 OVC:08 21	5.00	BR ||	23	-5.0	22	-5.7	19	-7.0	86	6	240		28.89				FM-16		29.85
01	0854	7	OVC:08 7	6.00	BR ||	24	-4.4	23	-5.2	20	-6.7	84	7	270		28.90	3	-0.01	29.89	FM-15	0.00	29.86
01	0900	4		5.59		24	-4.4	23	-5.2	20	-6.7	84	7	270		28.91	3	-0.01	29.89	FM-12		
01	0954	7	OVC:08 9	10.00		25	-3.9	23	-4.8	20	-6.7	81	6	250		28.90			29.89	FM-15	0.00	29.86
01	1017	7	BKN:07 11	10.00		25	-4.0	23	-5.0	19	-7.0	80	6	230		28.90				FM-16		29.86
01	1049	7	BKN:07 15	10.00		27	-3.0	24	-4.2	19	-7.0	74	7	200		28.90				FM-16		29.86
01	1054	7	BKN:07 15 BKN:07 22	10.00		27	-2.8	25	-3.9	21	-6.1	78	6	210		28.90			29.89	FM-15	0.00	29.86
01	1154	7	OVC:08 18	10.00		28	-2.2	25	-3.7	20	-6.7	72	8	290		28.88	8	+0.02	29.87	FM-15	0.00	29.84
01	1200	4		9.94		28	-2.2	25	-3.7	20	-6.7	72	8	290		28.89	8	+0.02	29.87	FM-12		
		7	BKN:07 20 OVC:08 26	10.00		29	-1.7	26	-3.4	20	-6.7	69	9	280		28.85			29.84	FM-15	0.00	29.81
		7	SCT:04 24	10.00		30	-1.0	26	-3.2	19	-7.0	64	9	290		28.84				FM-16		29.80
		7	SCT:04 24	10.00		29	-1.7	26	-3.4	20	-6.7	69	9	280		28.82			29.81	FM-15	0.00	29.78
		6	BKN:07 24	10.00		30	-1.0	26	-3.2	19	-7.0	64	9	300		28.82				FM-16		29.78
01	1454	7	BKN:07 24	10.00		29	-1.7	26	-3.4	20	-6.7	69	8	290		28.82	6	+0.06	29.80	FM-15	0.00	29.78
01	1500	4		9.94		29	-1.7	26	-3.4	20	-6.7	69	8	290		28.83	6	+0.06	29.80	FM-12		
01	1552	6	SCT:04 25 BKN:07 30	10.00		27	-3.0	24	-4.2	19	-7.0	74	13	300		28.82				FM-16		29.78
01	1554	7	SCT:04 25 BKN:07 30	10.00		27	-2.8	24	-4.2	19	-7.2	72	13	290		28.82			29.80	FM-15	0.00	29.78
01	1601	7	SCT:04 25 BKN:07 28	10.00		27	-3.0	24	-4.4	18	-8.0	69	11	300		28.82				FM-16		29.78

CERTIFY THIS DATA

National Climatic Data Center

- To certify the data:

1. Click on the certification button, you will receive e-mail that your order is processed.

2. You will receive a second e-mail stating your order is ready. In the e-mail, click on ‘start certification process’

3. You will be taken to a website to process your order. Certification still requires funds ($8.00 for the order $116 for certification).

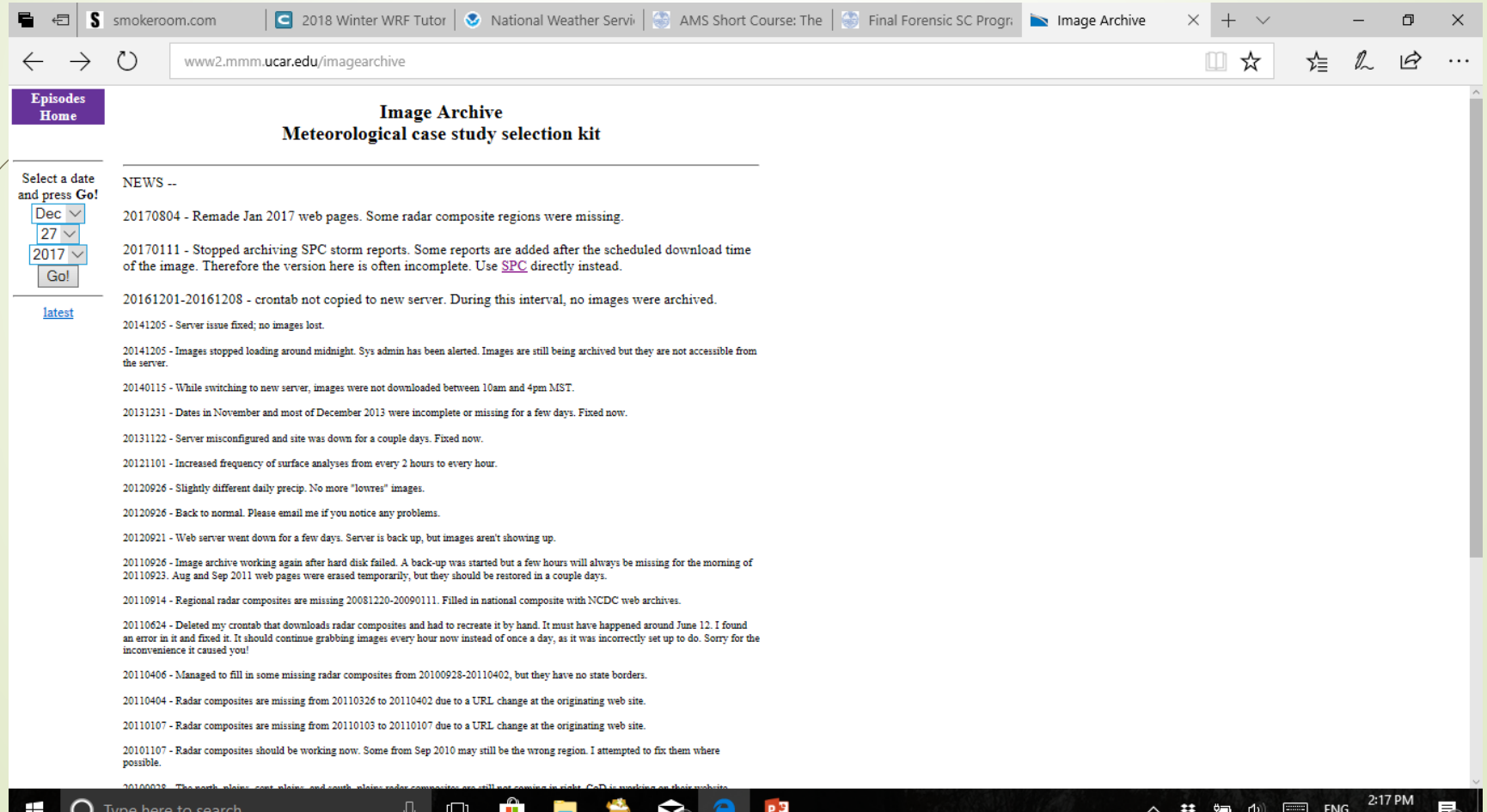
University Corporation for Atmospheric Research

- Occasionally, I've needed RADAR images or satellite photos. A good place to retrieve this information (available since 1 January 1996) is from:

- http://www2.mmm.ucar.edu/imagearchive/

University Corporation for Atmospheric Research

- Looks like this:



University Corporation for Atmospheric Research

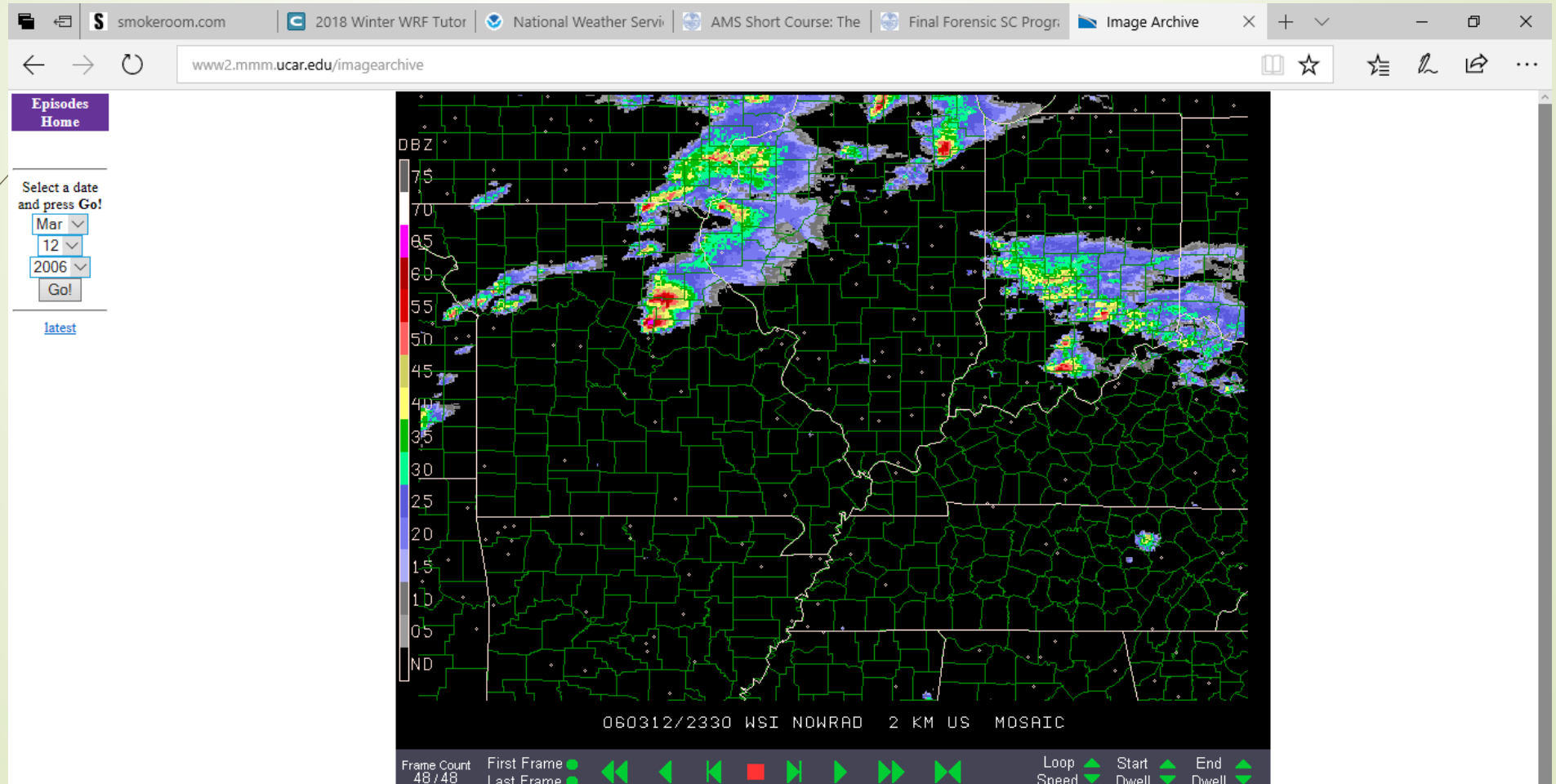
- Let's try 12 March 2006 for Missouri, after choosing your date, go to your region:

- http://www2.mmm.ucar.edu/imagearchive1/RadarComposites/cent_missvly/20060312/cent_missvly_200603122330.gif

- Of course storm reports can be retrieved from the Storm Prediction Center: http://www.spc.noaa.gov

University Corporation for Atmospheric Research

- The RADAR map



National Centers for Environmental Prediction

- Synoptic maps and thermodynamic profiles can be retrieved from many sources. Among these are:

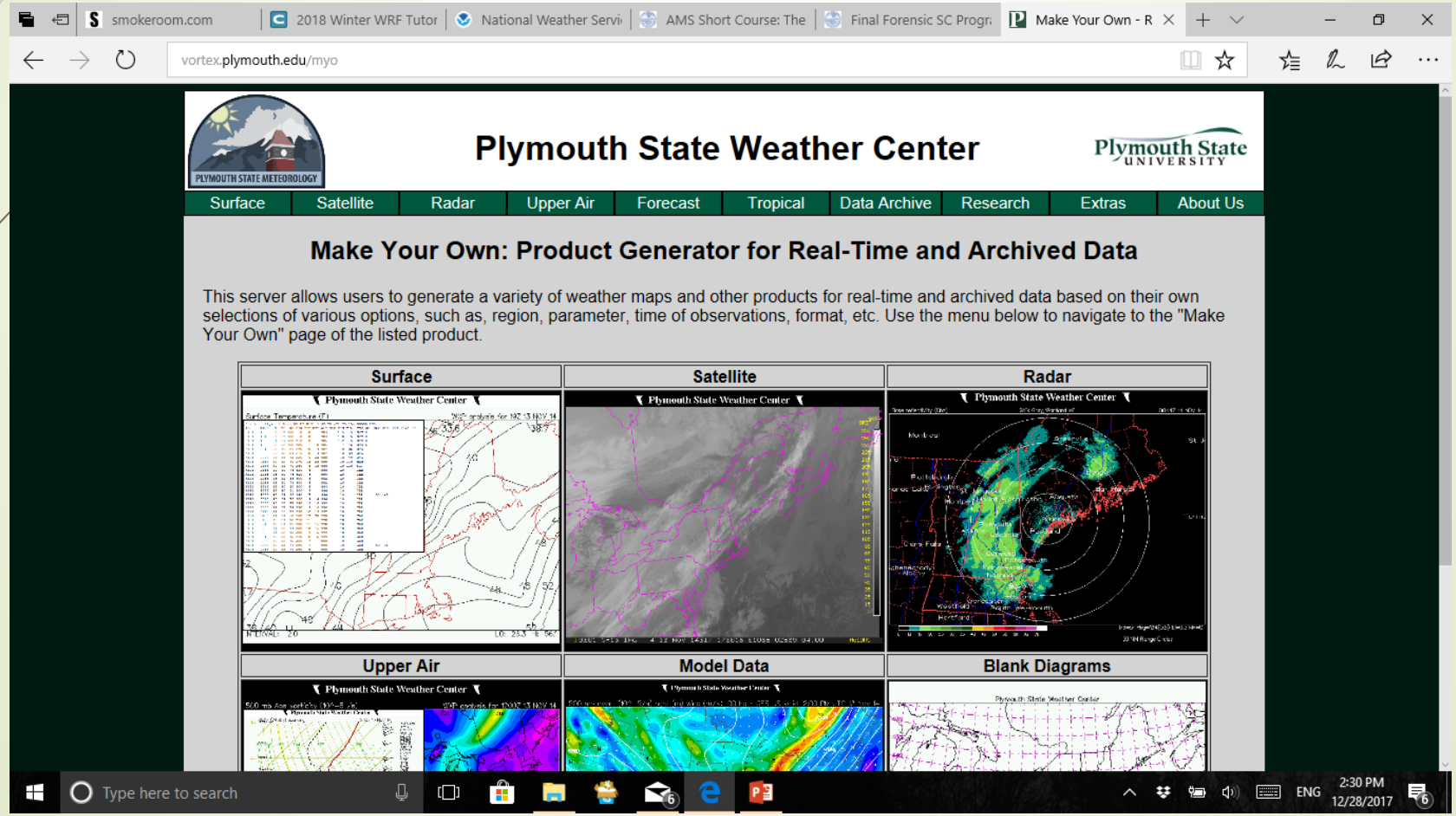
- University of Wyoming Weather (http://weather.uwyo.edu/)

- UNISYS (http://weather.Unisys.com) – archive of images

- Plymouth State University Weather - (http://http://vortex.plymouth.edu/myo/)

National Centers for Environmental Prediction

- Plymouth State site:



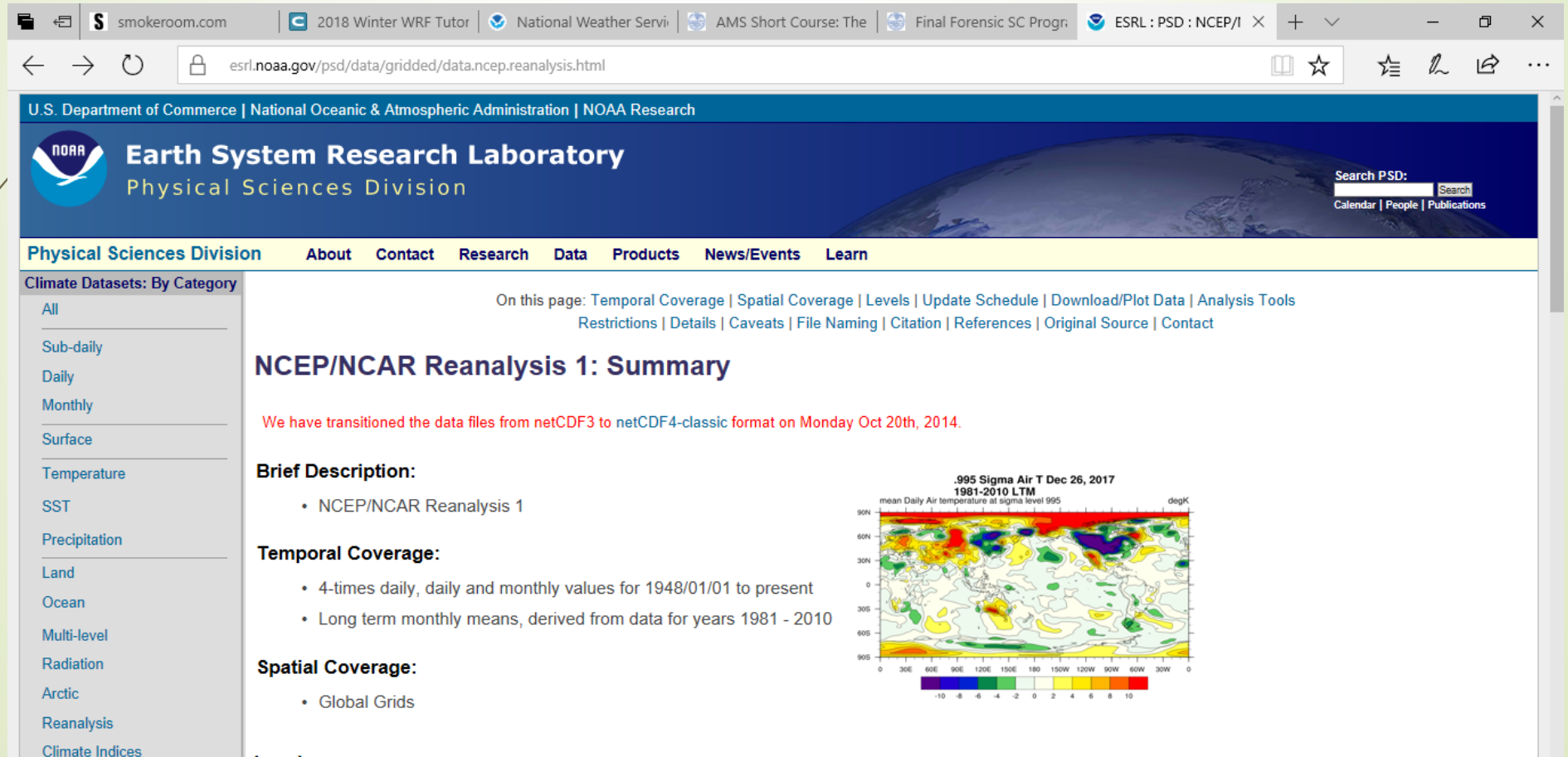
National Centers for Environmental Prediction

- Of course, you may need to construct maps for a larger region than the USA and for a particular set of days or months.

- The NCEP re-analyses not only provide observational data, but derived data as well.

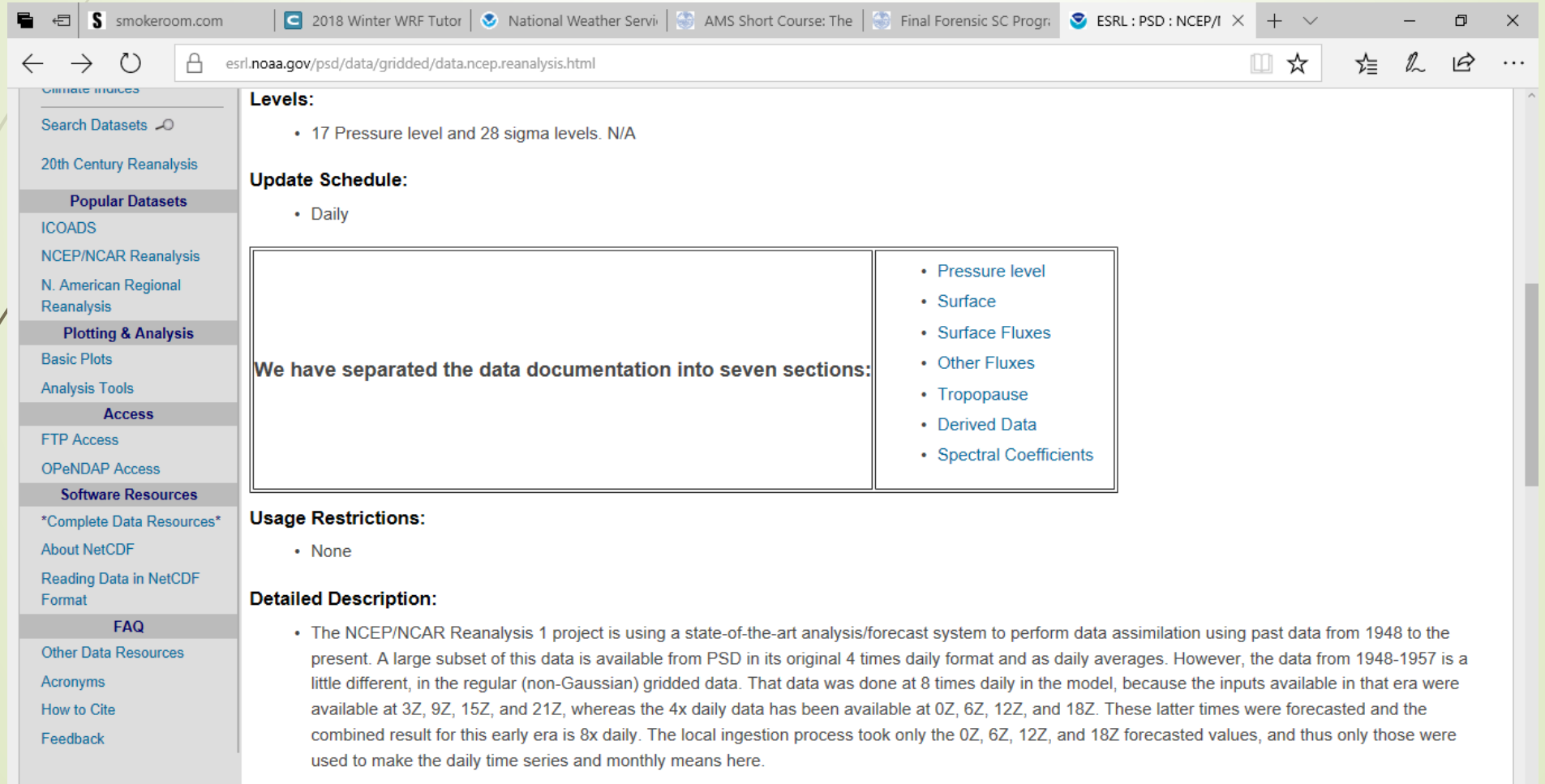
National Centers for Environmental Prediction

- The reanalysis site: (https://www.esrl.noaa.gov/psd/data/gridded/data.ncep.reanalysis.html)



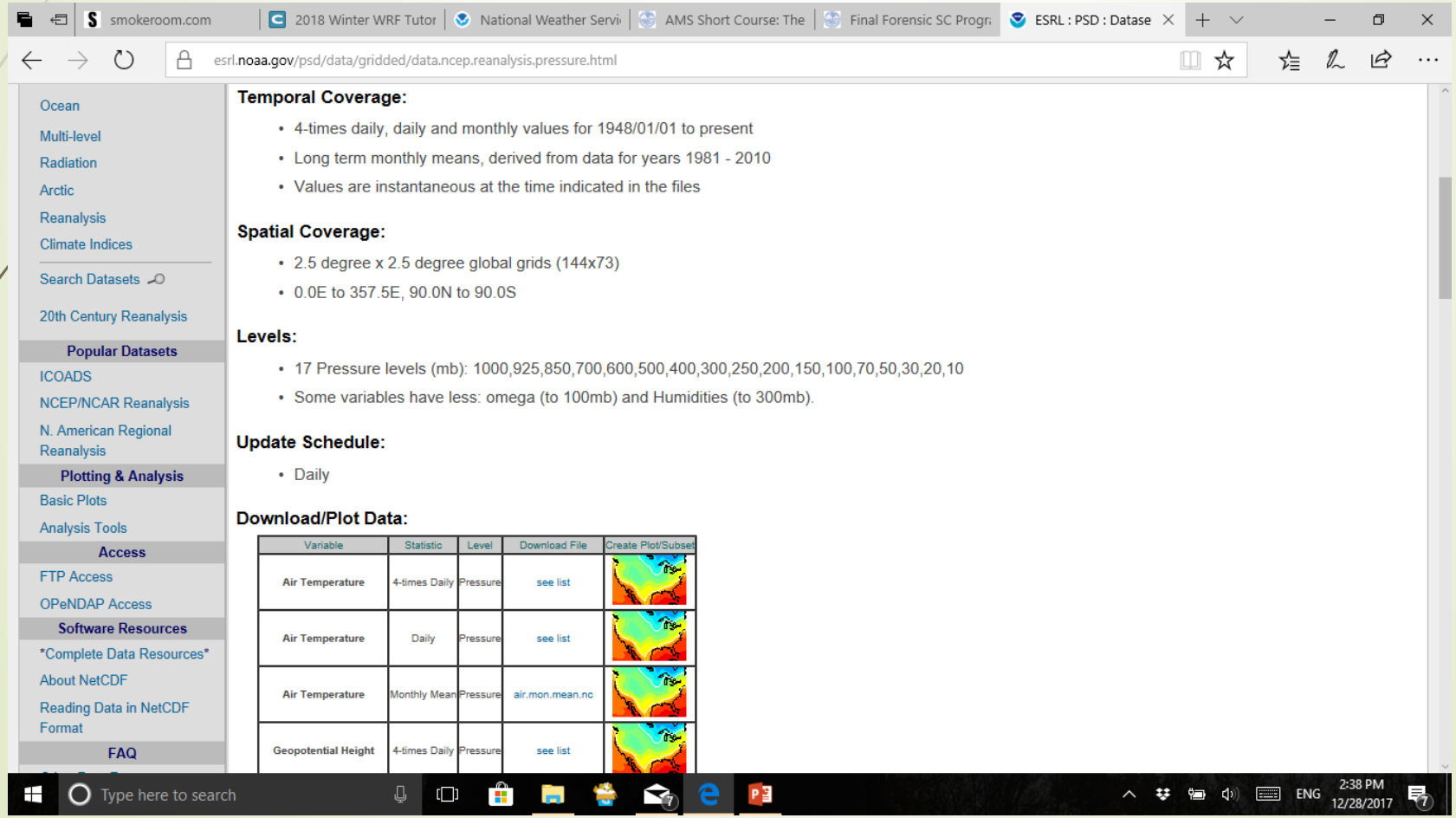
National Centers for Environmental Prediction

- The reanalysis site:



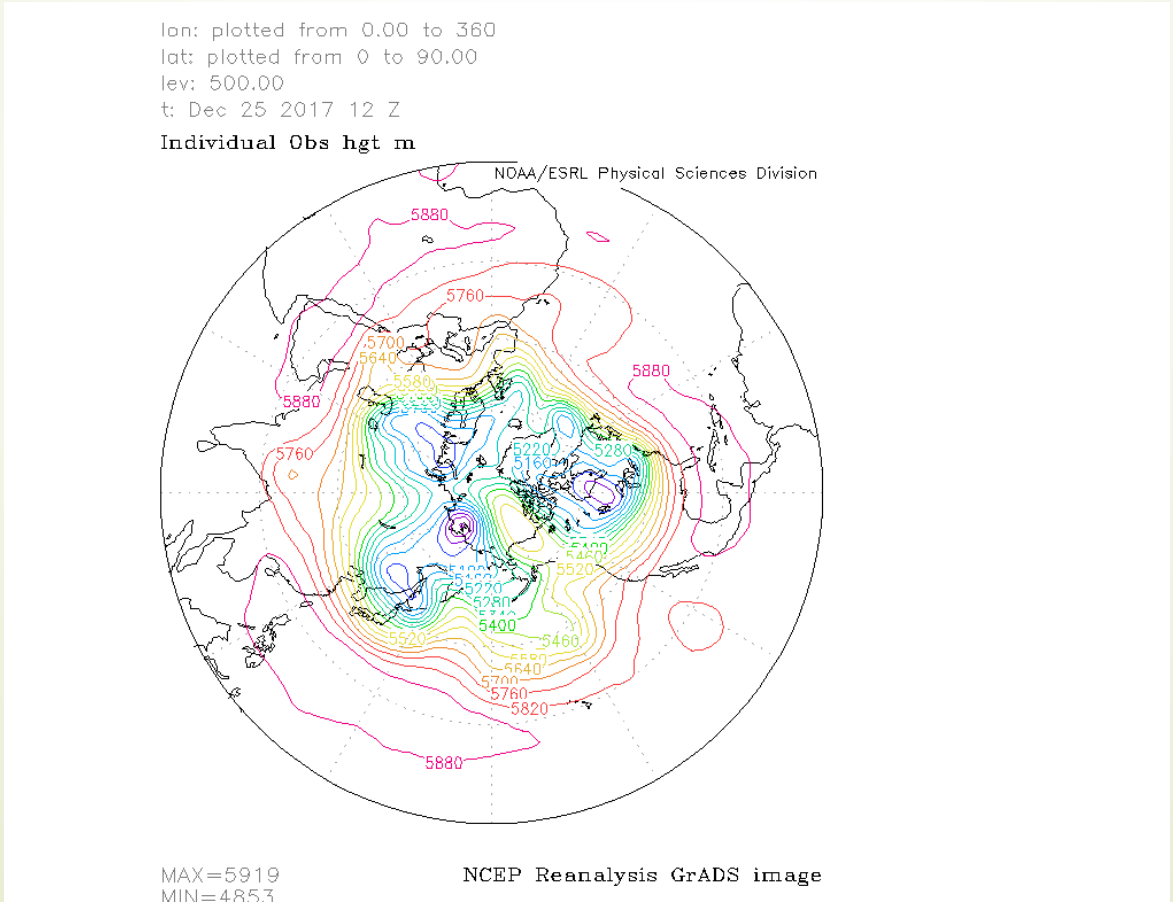
National Centers for Environmental Prediction

- Click on pressure level data:



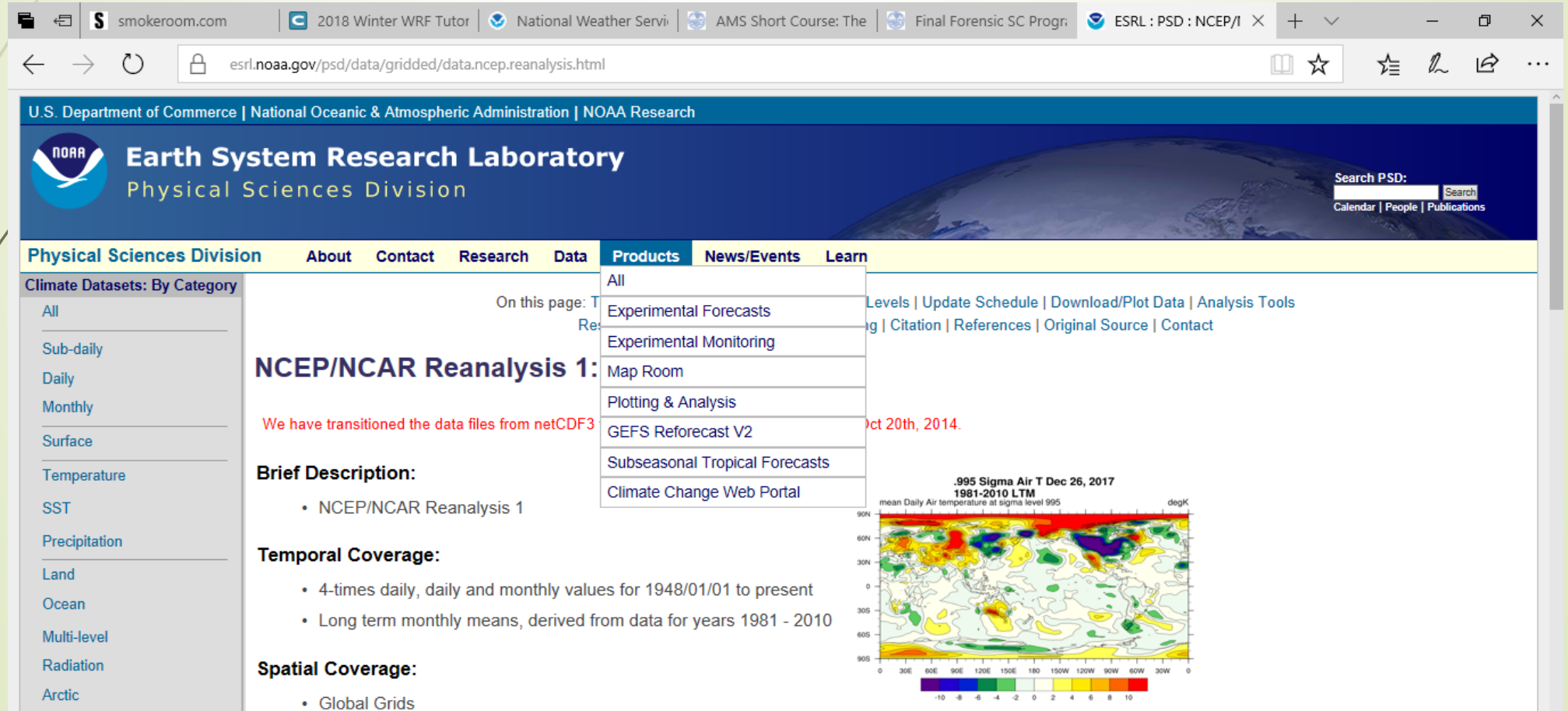
National Centers for Environmental Prediction

- Let's get a 500 hPa map: (click on geopotential height – 4 times daily and create map. The site allows you to set your parameters)



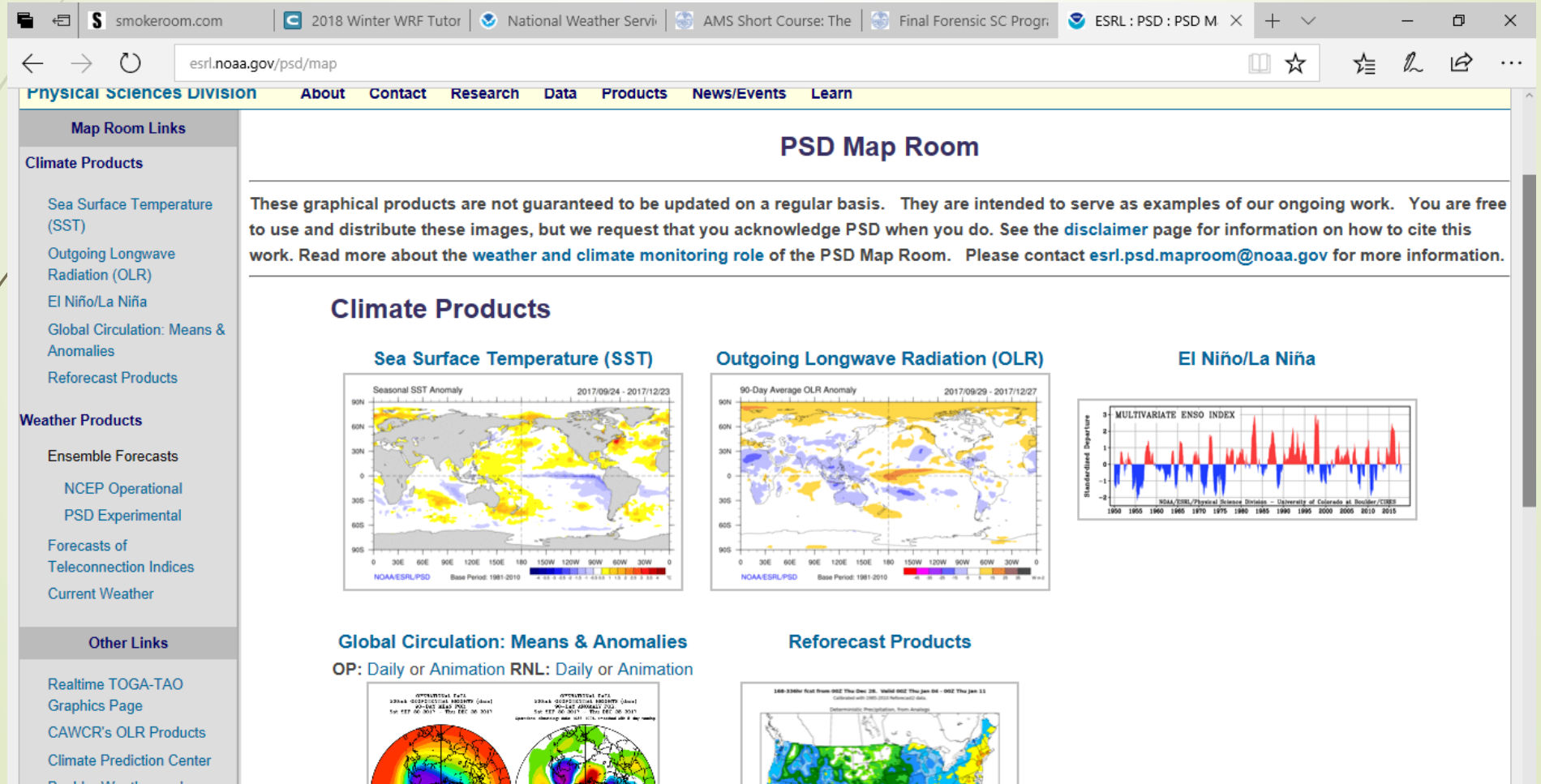
National Centers for Environmental Prediction

- I also like the ‘products’ header. Particularly “Map room” and “plotting and analysis”



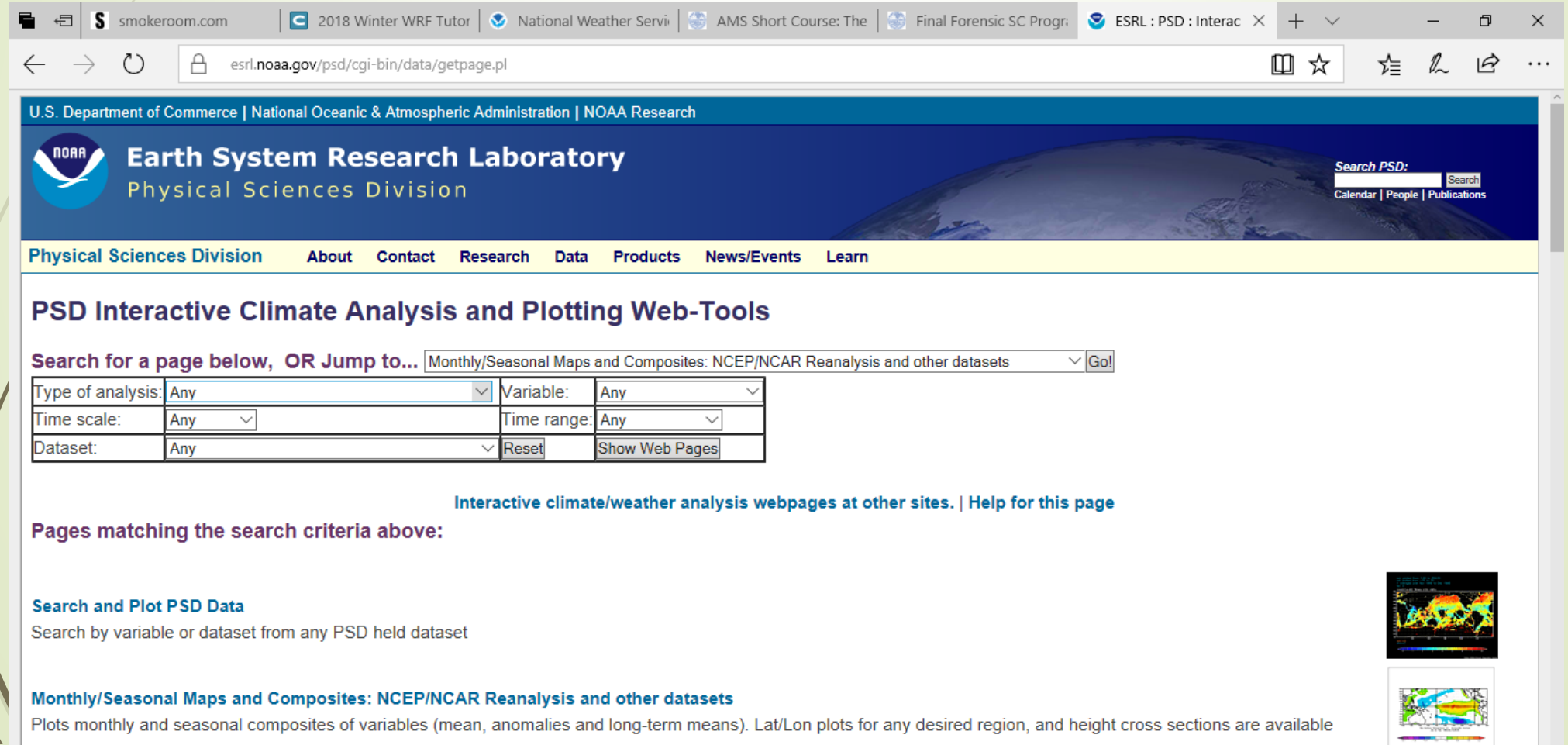
National Centers for Environmental Prediction

- Map Room



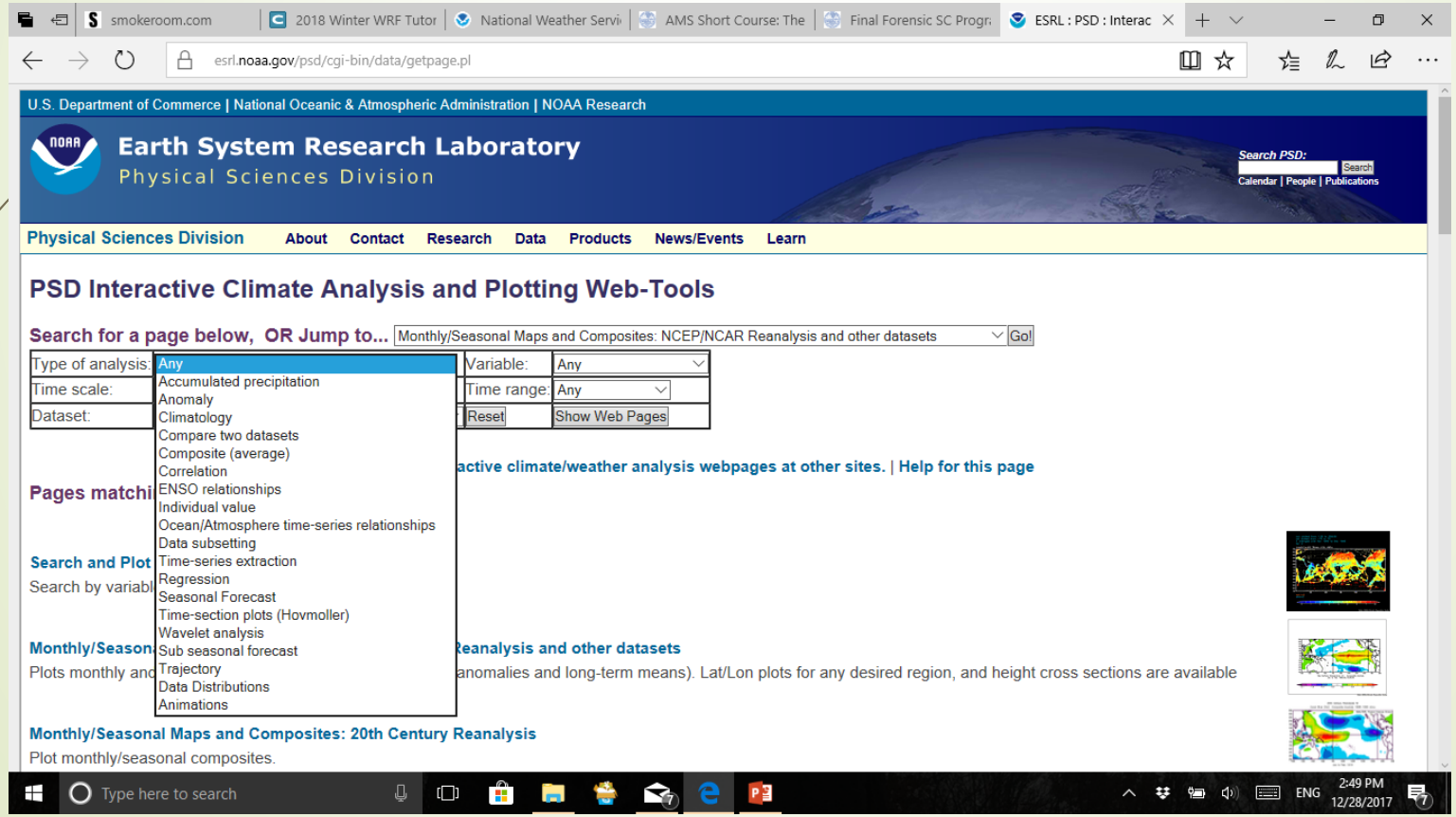
National Centers for Environmental Prediction

- Plotting and Analysis – this page is very versatile



National Centers for Environmental Prediction

- Example of the type of things you can do:



The end

- Questions?
- Comments?
- Criticisms?
- Lupoa@Missouri.edu