

Appendix B. Regional Information

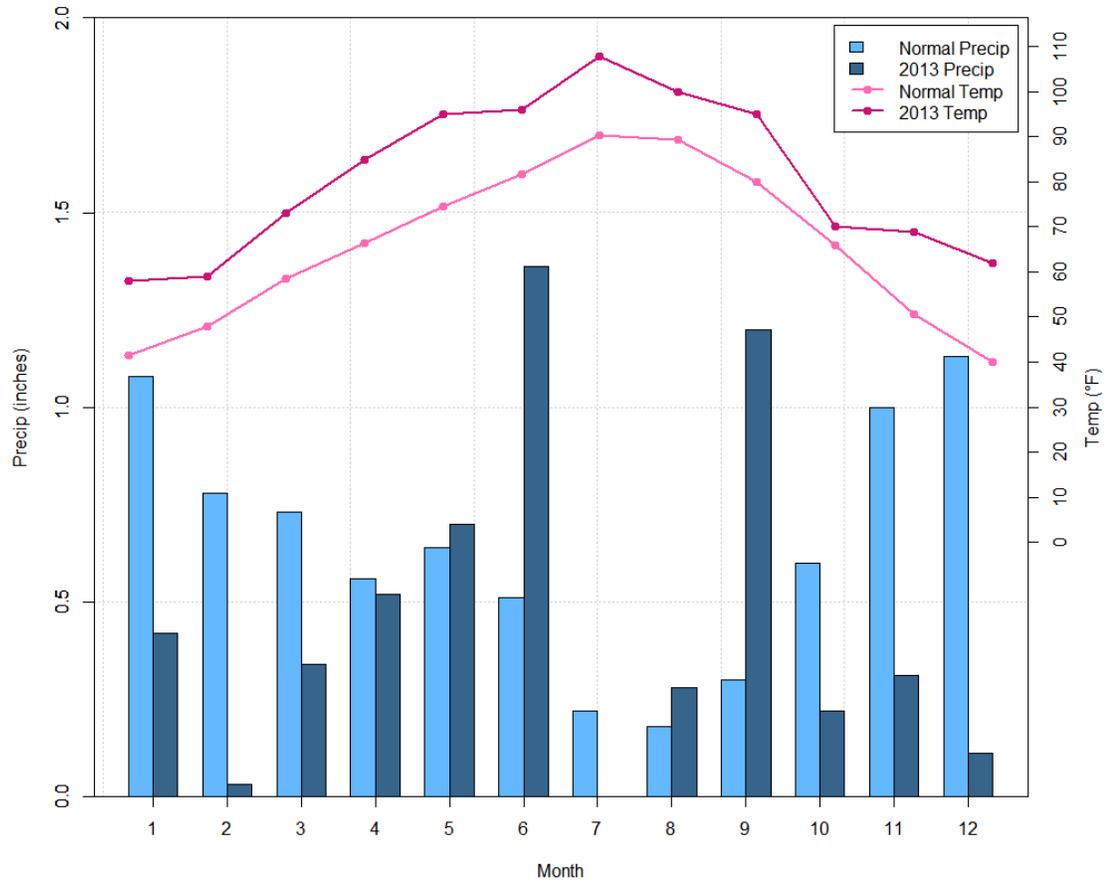
Meteorology, Emissions, Warnings

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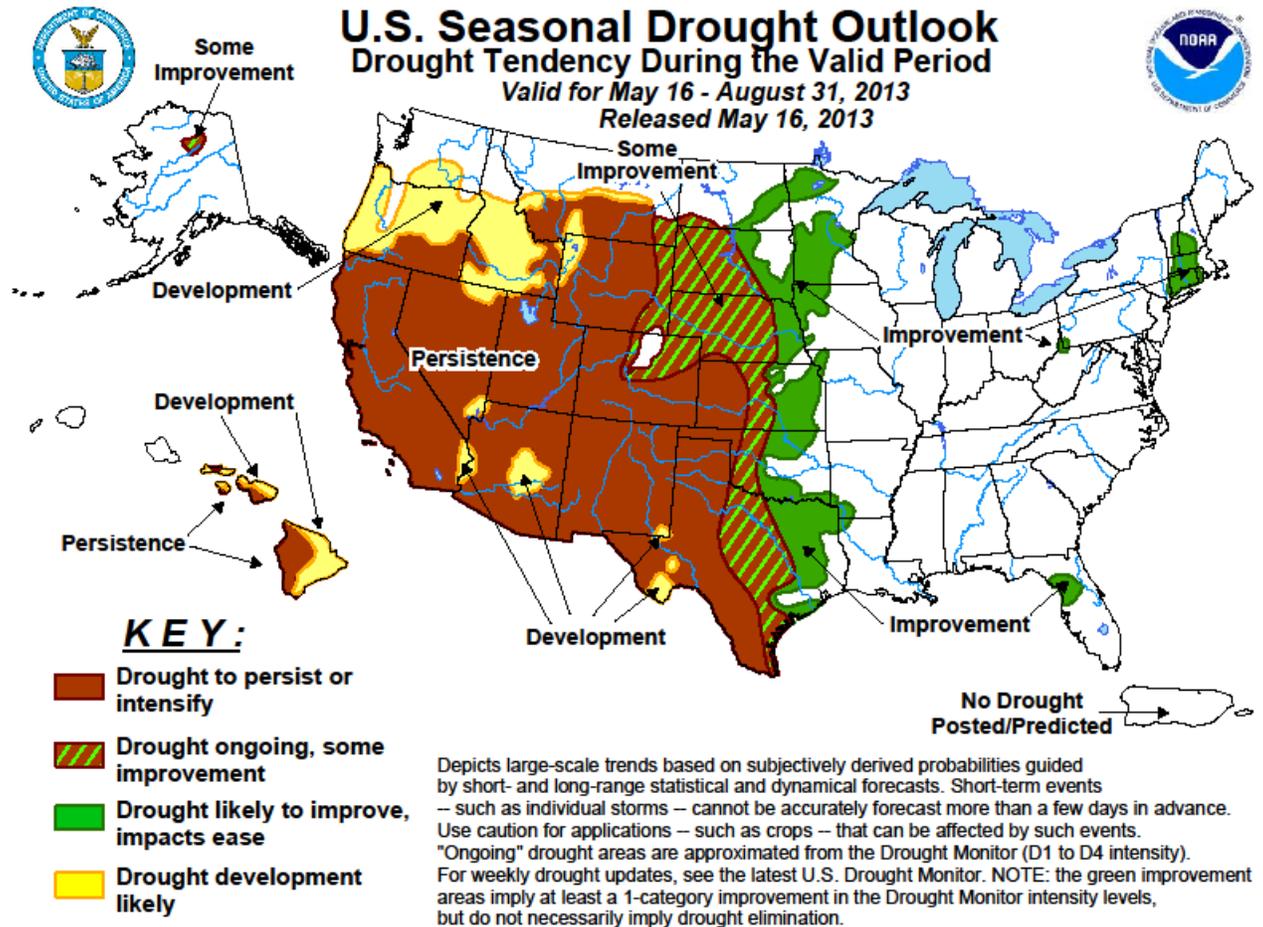
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Temperature and Precipitation, Kennewick, 2013 vs normal

Kennewick (NWS) Temperature and Precipitation: 2013 vs Normal (1980-2010)



US Seasonal Drought Outlook, May 16 – August 31, 2013



Washington State County 2011 PM₁₀ Emission Information, Select Counties

PM10 Emissions by County in tons per year																						
2011 Comprehensive Emissions Inventory										Added Klickitat, Yakima, Spokane												
Adams, Grant, Benton, Franklin, Douglas, Walla Walla and Lincoln are the seven Washington counties most susceptible to wind erosion.																						
County	AIR	BOAT	CONST	F COMM	F_RES	FIRE	FOOD	MISC	NRM	OB nonRES	OB RES	ORM	PT	ROADS	RR	RWC	SHIP	TILL HARV	Totals	TILL HARV, %	CONST	ROADS
ADAMS	2	1	23	1	0	43	8	0	56	72	5	58		2,628	35	14		10,571	13,518	78%	0.17%	19%
BENTON	5	9	658	12	0	32	54	4	87	47	6	179	44	853	34	162	1	6,817	9,008	76%	7.31%	9%
DOUGLAS	3	2	142	1	0	107	9	1	38	12	11	42	6	4,942	4	101	0	5,777	11,197	52%	1.27%	44%
FRANKLIN	4	3	468	3	0	102	15	1	63	338	13	78		1,490	26	58	1	4,470	7,134	63%	6.57%	21%
GRANT	17	5	542	4	0	52	24	1	104	137	25	123		5,045	10	74	0	7,288	13,452	54%	4.03%	38%
KLICKITAT	3	1	103	1	0	750	6	0	32	187	12	28	110	1,191	47	61	1	1,676	4,208	40%	2.45%	28%
LINCOLN	1	1	26	0	0	21	4	0	73	49	3	35		3,206	21	11	0	12,564	16,017	78%	0.16%	20%
SPOKANE	14	16	4,810	36	7	14	173	6	164	99	101	469	180	6,712	42	1,353	0	4,156	18,354	23%	26.2%	37%
WALLA WALLA	2	1	186	4	1	472	19	1	62	1,022	13	56	127	983	11	157	1	5,798	8,917	65%	2.09%	11%
YAKIMA	4	5	960	13	2	53	85	6	95	60	55	245	29	4,398	3	583		1,540	8,137	19%	11.8%	54%

Abbreviation	Source Category Description
AIR	Aircraft: military, commercial, general aviation
BOAT	Recreational boats
CONS	Commercial and consumer solvents
CONST	Construction
F_COMM	Commercial fuel use: natural gas, oil, LPG
F_RES	Residential fuel use: natural gas, oil, LPG
FERT	Fertilizer application
FIRE	Wildfires
FOOD	Food and Kindred Products
GAS_TRANS	Aviation gas storage and transport, petroleum gas cans, bulk plants, and truck transport
GASSTN	Gasoline stations
LIVE	Livestock wastes
MISC	Structure and motor vehicle fires, Cremation, Dental alloy production, Bench scale reagents, Fluorescent lamps
NAT	Natural emissions from soil and vegetation
NRM	Nonroad mobile except locomotives
OB_nonRES	Agricultural and silvicultural burning
OB_Res	Residential outdoor burning: yard waste, trash
ORM	Onroad mobile sources
POTW	Publicly owned treatment works
PT	Point sources
ROADS	Paved and unpaved road dust
RR	Locomotives
RWC	Woodstoves, fireplaces, inserts
SHIP	Commercial marine vessels
SOLV	Dry cleaning, graphic arts, surface coating: industrial
TILL_HARV	Agricultural tilling and harvesting

Hanford Monthly and Annual Precipitation, 1990-2013

<http://www.hanford.gov/page.cfm/hms/products/totprcp>

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1990	0.77	0.09	0.10	0.40	0.86	0.36	0.14	0.83	T	0.78	0.02	0.72	5.07
1991	0.33	0.19	1.12	0.45	0.49	1.44	0.29	0.07	0	0.53	1.44	0.40	6.75
1992	0.44	0.94	0.09	0.94	T	1.14	0.38	0.20	0.27	0.61	1.07	1.82	7.90
1993	1.30	1.17	0.67	0.71	0.60	0.12	1.76	0.24	0.04	0.09	0.19	0.94	7.83
1994	0.44	0.11	0.03	0.61	1.27	0.38	0.15	0.08	0.08	0.93	0.68	1.36	6.12
1995	2.14	0.69	0.95	1.54	0.79	0.77	0.34	0.07	0.79	0.87	1.04	2.32	12.31
1996	1.42	1.22	0.83	0.43	0.62	0.05	0.14	0.02	0.22	0.88	2.67	3.69	12.19
1997	1.51	0.25	0.70	0.33	0.33	0.46	0.19	0.06	0.32	0.92	1.01	0.31	6.39
1998	1.24	1.15	0.50	0.07	0.52	0.48	0.34	0.04	0.10	0.28	1.29	0.44	6.45
1999	0.89	0.70	0.06	T	0.34	0.31	0.07	0.57	0	0.48	0.26	0.07	3.75
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2000	1.09	1.12	0.94	0.57	0.77	0.25	0.46	T	0.56	0.57	1.08	0.67	8.08
2001	0.29	0.42	0.67	0.83	0.08	1.27	0.05	0.08	0.13	0.37	1.67	0.80	6.66
2002	0.42	0.67	0.19	0.29	0.16	0.65	0.16	0.01	T	0.12	0.38	2.36	5.41
2003	1.87	0.82	0.26	2.23	0.08	T	0	0.46	0.24	0.07	0.15	1.96	8.14
2004	2.12	0.92	0.36	0.21	0.89	0.82	0.03	0.95	0.14	0.86	0.29	0.37	7.96
2005	0.93	0.04	0.31	0.26	0.79	0.06	0.09	0.06	0.66	0.29	0.89	2.01	6.39
2006	1.18	0.41	0.24	1.30	0.57	1.33	T	T	0.21	0.76	0.71	1.75	8.46
2007	0.14	0.76	0.74	0.26	0.30	0.45	0.07	0.32	0.57	0.21	1.13	0.53	5.48
2008	1.28	0.55	0.20	0.08	0.56	0.39	T	0.48	0.04	0.22	0.74	0.95	5.49
2009	1.15	0.64	0.80	0.39	0.18	0.16	T	0.04	0.06	0.78	0.56	0.71	5.47
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2010	1.24	0.56	0.20	0.59	1.33	1.15	0.46	0.13	0.95	0.62	1.14	1.82	10.19
2011	0.53	0.03	0.87	0.25	1.22	0.39	0.12	T	0.05	0.77	0.12	0.10	4.45
2012	1.09	0.67	0.64	0.61	0.22	1.51	0.15	T	0.03	1.05	0.80	1.41	8.18
2013	0.16	0.09	0.39	0.30	1.60	1.36	0.01	0.24	0.42	0.38	0.36	0.07	5.38
AVERAGE	0.93	0.62	0.50	0.47	0.54	0.56	0.20	0.23	0.30	0.54	0.86	1.03	6.78

Ecology Spring 2013 Dust Warning

Spring 2013 News Release, May 3, 2013

[Ecology home](#) > [News](#) > News Release

Washington State Department of Ecology - May 3, 2013 13-121

Take precautions – dust season is here

OLYMPIA – It's dust storm season when wind speeds pick up and the air can turn gritty with dirt particles from dry farming areas, construction sites, and unpaved roads.

When inhaled, dust particles settle deeply into lungs and can irritate or damage sensitive tissues in the respiratory system. People with respiratory illnesses, the elderly, young children, pregnant women, and anyone engaged in strenuous physical activity outdoors are most at risk.

After a windstorm, fine dust remains suspended in the air or is kicked up by vehicles. In some low-lying areas where the air is stagnant, particles may settle out of the air slowly. Sensitive people who want to prepare for dust storms should pay attention to local weather forecasts and check with their doctors.

Drive more slowly to reduce airborne dust and postpone projects at home that stir up dust when conditions are dusty. Here's how you can protect yourself and your family during a dust storm:

- Stay indoors as much as possible. Wear a mask designed to block small particles. Watch for sudden changes in visibility while driving. Avoid driving during windy conditions when windblown dust is likely. Turn on headlights as a safety precaution.
- Construction project managers can take a variety of steps to control dust stirred up at work sites. Control measures include:
- Clearing no more land than necessary. Working in phases to minimize the amount of exposed land area. Using a commercial dust suppressant to replace or reduce the use of water. Covering bare ground with gravel. Curtailing activities on windy days.

You can find more information on Ecology's [updated dust web page](#).

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For more information:

[Ecology's outdoor dust web page](http://www.ecy.wa.gov/programs/air/other/Windblown_dust_information.htm) (www.ecy.wa.gov/programs/air/other/Windblown_dust_information.htm)

[Ecology's social media](http://www.ecy.wa.gov/about/newmedia.html) (www.ecy.wa.gov/about/newmedia.html)

Ecology's Webpage 2013 – Outdoor Dust

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Outdoor Dust

[Air Quality](#) > [Other Air Quality Page Links](#) > Windblown & Construction Dust Information

Outdoor dust is common where soil has been disturbed. Weather conditions, the natural environment, and human activities can cause windblown, construction, or fugitive dust which contributes to air pollution. High winds can raise large amounts of dust from areas of dry, loose, or disturbed soil.



Outdoor dust can come from:

- Windblown dust
 - Tilled, harvested, and fallow farm fields
 - Natural areas during highest winds
- Construction dust
 - While work is underway
 - Cleared and vacant land
- Fugitive dust
 - Paved and unpaved roads
 - Activities on vacant land or disturbed areas
 - Unpaved parking lots and equipment yards
 - Military training exercises

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- [Your health and outdoor dust](#)
- [What we are doing about outdoor dust issues](#)
- [What is an "Exceptional Event"?](#)
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Your Health and Outdoor Dust

Why is outdoor dust a health issue?

Dust is made up of tiny particles (particulate matter.) The smallest particles, known as PM₁₀ and PM_{2.5} depending on their size, are too small to be filtered out by your nose and your body's other natural defense systems. The dust can be breathed deep into your lungs where they cause increased problems with:

- lung irritation
- emphysema
- asthma
- chronic bronchitis
- cancer
- heart disease
- allergic reactions
- other serious conditions that can lead to death

Who should take special precautions?

Breathing too much dust can potentially harm anyone. However, the following groups are at the highest risk:

- Infants, children, teens, the elderly, and pregnant women
- People with asthma, bronchitis, emphysema, or other respiratory conditions
- People with heart disease
- Healthy adults working or exercising outdoors (for example, agricultural workers, construction workers, and runners)

What can I do to protect myself and others?

Since the small dust particles are the most harmful, the best precaution is simply to avoid going outside when there is a lot of dust in the air. If you must go out, spend as little time outside as possible, and avoid hard exercise. Wearing some type of covering over your nose and mouth can provide some protection from larger particles. If you see a lot of dust, staying out of it is the best protection.

QUICK LINKS

- [Frequently Asked Questions About Dust Storms](#)
- [Local Clean Air Agencies](#) for dust complaints and information about your area
- Check [your air quality](#)
- [National Weather Service](#)

What we are doing about outdoor dust issues:

- Air quality is monitored for dust in many areas of Washington.
- The National Weather Service announces high wind warnings.
- Local Air Agencies enforce rules that require dust control.
- Farmers help by using practices that stabilize their fields to preserve soil and keep dirt from leaving their farms.

Throughout Washington monitors track air quality to find out if areas meet national ambient air quality standards (NAAQS.) The federal Clean Air Act requires EPA to review NAAQS every 5 years to make sure the standards protect human health and the environment. The standards must protect groups of people who are most at risk from the pollution.

Outdoor dust occurs throughout Washington State, but in dry areas like eastern Washington, dust is a significant air pollution problem. If you live in eastern Washington, you have probably experienced windblown dust storms. From spring through fall, high winds in the Columbia Plateau region can combine with dry weather conditions to disturb farm fields, resulting in dust storms. These dust storms can lead to extremely high levels of particle air pollution. These dust storms are an example of when an "exception event" can be called.

What is an 'Exceptional Event' (also called a 'Natural Event')?

An exceptional event is an unusual or naturally occurring event that can affect air quality but is not reasonably controllable. Under air pollution laws, exceptional events are regulated differently than other sources of air pollution. For example, if a storm causes monitor readings to go over the federal limit and EPA agrees the reading was beyond our control, the high reading may be considered an exceptional event. The high reading then would not count when determining if an area meets the NAAQS standard.

Other Information:

- Dust storm information for news media
- [Windblown Dust Brochure - Health Effects of Windblown Dust](#)
- [Dust Control Measures](#)
- [Controlling Air Pollution - Aggregate Industry](#)
- [Techniques for Dust Prevention and Suppression](#)

For further information on Dust Control please contact your [Local Clean Air Agency](#)

Webpage: http://www.ecy.wa.gov/programs/air/other/Windblown_dust_information.htm

Note the National Weather Service link on the Quick Links bar.