

Polar vortex, El Nino at center stage of weird weather show

By **SETH BORENSTEIN**
AP Science Writer

WASHINGTON — Get ready for weather whiplash as powerful climatic forces elbow each other for starring roles in a weird winter show.

The spine-chilling polar vortex is taking center stage in Europe and bringing persistent cold to much of North America — except in Hollywood, where soggy El Nino won't give up the spotlight.

After El Nino delivered a balmy Christmas Eve to the eastern U.S. and shattered national records with a warm, wet and wild December, Minnesota may host one of the coldest NFL playoff games in history this Sunday, with wind chills around 20 below, meteorologists predict.

"The biggest thing is this whiplash," said University of Oklahoma meteorology professor Jason Furtado. "It's going to be a shock for people."

The center of the cold blast starts this weekend in the U.S. in the upper Midwest, and then moves to the Hudson Bay area next week, while in Europe it starts in the east and north and then spreads, Furtado said. Europe may have to get used to temperatures 20 or so degrees below normal.

"Temperature will be dominated by the impact of the polar vortex," said Judah Cohen, seasonal forecast chief for the private Atmospheric and Environmental Research company outside Boston. It will feel similar to 2013 and 2014, he said.

Americans became painfully familiar with the polar vortex during those winters. This time, America's winter temperatures will depend on when the wet and warm El Nino pushes itself back to prominence, Furtado said.

"We have all of these large and unusual events happening all at the same time and I don't think it has ever happened before," said Rutgers University climate scientist Jennifer Francis.

For a winter this dramatic, it may help to consult the program:

The cast

The star is El Nino, a veteran of this stage for a few decades now. This natural warming of the central tropical Pacific occurs every two to seven years or so, and changes



In this photo taken in 2014, the United States side of Niagara Falls in New York had begun to thaw after a "polar vortex" that affected millions in the U.S. and Canada.

weather worldwide, especially in the Americas and Asia. It is closely associated with heavy rain in California, and general warming. It has less effect in Europe because that's further away. With its flipside, La Nina, it is known as the El Nino Southern Oscillation, and it lasts about a year.

Playing off against El Nino is the Arctic Oscillation, and its index measures differences in atmospheric pressure between the Arctic and mid-latitudes. When the AO is positive in the winter, polar air stays trapped up north and the weather is relatively mild further south. When the AO is negative, the cold Arctic air escapes and plunges into lower latitudes, treating the United States and Europe to the polar vortex — a swirling air mass that carries spine-chilling temperatures.

The North Atlantic Oscillation is a bit player with a big influence over Europe's weather. As with its Arctic cousin, the more negative its index, the colder the continent becomes.

The jet streams also are important to watch. These rivers of air heavily influence local weather everywhere, carrying storms and clearing skies around the planet. Usually in the winter, the jet stream that affects most people in the United States and Europe moves relatively straight from west to east. But when it weakens, it can plunge south and north and even get stuck at times, creating odd extremes.

Another air pattern playing a small but key role is the Madden-Julian Oscillation, which travels in the warm parts of the Indian and Pacific oceans, and may have triggered changes that "flipped the switch" in December, Furtado said.

Still other characters may be a factor in making the jet streams oscillate more wildly: A huge blob of warm water in the northern Pacific, unusually low sea ice levels in the Arctic's Barents Kara sea area; a cool patch of water off Greenland, likely from melting ice sheets and glaciers; winter storm Frank that hit England; and of course man-made climate change.

Act one

This was last month. El Nino appeared in classic form, tying 1997-1998 for the strongest on record. The Arctic Oscillation was very positive, trapping cold air in northern latitudes. With so many warm, wet days further south, spring flowers popped up and trees bloomed in December.

"It's not surprising we were 70 degrees on Christmas Day," said Mike Halpert of the National Oceanic and Atmospheric Administration's Climate Prediction Center in College Park, Maryland.

El Nino often spawns winter tornadoes in the southern U.S. and they appeared on cue, killing two dozen people in just four days. The heavy rain that flooded the Missis-

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— Jennifer Francis, Rutgers University climate scientist

issippi River Valley isn't usually an El Nino signature though, Cohen said.

Act two

The switch flipped: The Arctic Oscillation and its North Atlantic sidekick went negative big time.

"When it's a negative AO, that's when people start mentioning the words 'polar vortex,'" Halpert said.

This time, there's cold air, but it's mostly dry so far, despite El Nino, which still spawns a series of rainstorms hitting California. Meteorologists say wetter weather could bring heavy snowstorms, but that's not likely for another week or more, although cities along the Great Lakes may get lake effect snow.

So far the east-moving moisture from El Nino is staying south of the Arctic plunge, but that may change.

For now, the AO is dominating in its fight with El Nino, especially in Europe, Cohen said. NFL players and fans will likely brave temperatures around one below zero in Minneapolis.

Act three

No spoilers here. Will the polar vortex hold the stage for weeks or months? Will the cold AO and wet El Nino combine for whopper snowstorms?

Rutgers' Francis doesn't think the moisture and the cold can keep avoiding each other, saying "we're going to have major major dumps of snow. We just don't know where."

Furtado predicts El Nino will push aside the cold in America, but not in Europe, where it has less of an influence. Cohen is less certain about what will happen as these forces morph and interact over time.

"There's a lot going on; the weather has been crazy," Cohen said. "Expect the unexpected."



Medford Police Department via AP
A surveillance photo provided by the Medford Police Department shows a bank robber who demanded cash from a Chase Bank branch in Medford on Monday. Medford police shared photos of the robbery suspect on social media, leading many to comment that the suspect looked a lot like "Dirty Jobs" television host Mike Rowe.

Medford robbery suspect resembles 'Dirty Jobs' star

MEDFORD (AP) — This is a dirty job one Discovery Channel star would not do.

Fans of the TV show "Dirty Jobs" noticed that photos of an Oregon bank robbery suspect resembled host Mike Rowe. The attention prompted a bemused Rowe to mention that he was in Kansas at the time.

Police in the city of Medford released surveillance photos of the suspect on social media, leading many people to comment that the man looked a lot like Rowe, the Mail Tribune reported Wednesday.

The police department joked on its verified Facebook page that all the tips led it to issue an arrest warrant for the TV host. After Rowe revealed that he was across the country, police posted that they were "now looking for a suspect wearing a Mike Rowe mask."

Rowe — whose show chronicles jobs considered icky, such as road kill collectors — told the newspaper that he agreed the man was his doppelganger.

"I just laughed out loud," Rowe said in a phone interview Wednesday. "It does look like me."

The Rowe lookalike is accused of demanding cash from a Chase Bank branch on Monday. Police are still looking for the real suspect.

Corrections

The East Oregonian works hard to be accurate and sincerely regrets any errors. If you notice a mistake in the paper, please call 541-966-0818.

EAST OREGONIAN

— Founded Oct. 16, 1875 —

211 S.E. Byers Ave., Pendleton 541-276-2211
333 E. Main St., Hermiston 541-567-6211
Office hours: Monday through Friday, 8 a.m. to 5 p.m.
Closed major holidays

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East Oregonian (USPS 164-980) is published daily except Sunday, Monday and Dec. 25, by the EO Media Group, 211 S.E. Byers Ave., Pendleton, OR 97801. Periodicals postage paid at Pendleton, OR. Postmaster: send address changes to East Oregonian, 211 S.E. Byers Ave., Pendleton, OR 97801. Copyright © 2015, EO Media Group

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Single copy price:

\$1 Tuesday through Friday, \$1.50 Saturday

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To submit a Letter to the Editor: mail to Managing Editor Daniel Wattenburger, 211 S.E. Byers Ave., Pendleton, OR 97801 or email editor@eastoregonian.com.

To submit sports or outdoors information or tips: 541-966-0838 • sports@eastoregonian.com

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AccuWeather.com Forecast

TODAY	SATURDAY	SUNDAY	MONDAY	TUESDAY
Mostly cloudy	Mainly cloudy; ice at night	Partly sunny and chilly	Low clouds and freezing fog	Chilly with some sun

PENDLETON TEMPERATURE FORECAST

Today	Hi	Lo	W	Hi	Lo	W			
35°	24°	33°	27°	34°	20°	33°	20°	34°	22°

HERMISTON TEMPERATURE FORECAST

Today	Hi	Lo	W	Hi	Lo	W			
36°	28°	35°	27°	36°	24°	34°	23°	35°	25°

ALMANAC

PENDLETON

through 3 p.m. yesterday

TEMPERATURE

HIGH LOW

Yesterday 33° 27°

Normals 40° 26°

Records 68° (1902) -7° (1937)

PRECIPITATION

24 hours ending 3 p.m. 0.00"

Month to date 0.01"

Normal month to date 0.40"

Year to date 0.01"

Last year to date 0.18"

Normal year to date 0.40"

HERMISTON

through 3 p.m. yesterday

TEMPERATURE

HIGH LOW

Yesterday 37° 32°

Normals 40° 28°

Records 67° (2002) -13° (1937)

PRECIPITATION

24 hours ending 3 p.m. 0.00"

Month to date 0.01"

Normal month to date 0.28"

Year to date 0.01"

Last year to date 0.10"

Normal year to date 0.28"

SUN AND MOON

Sunrise today 7:35 a.m.

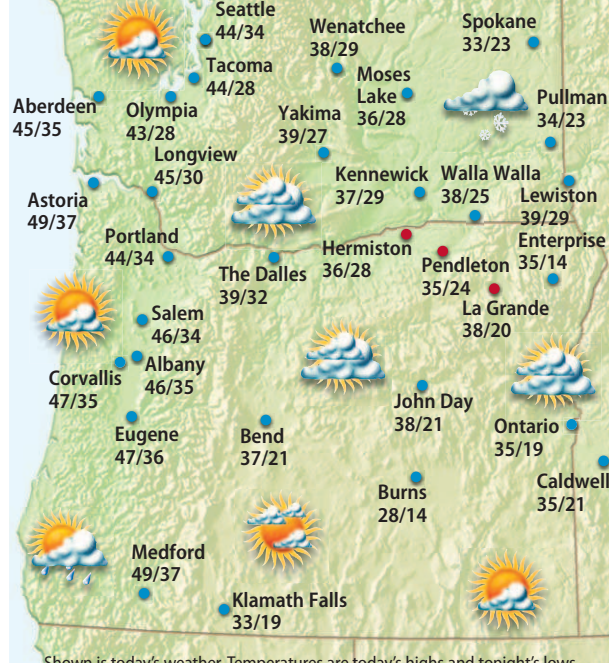
Sunset tonight 4:28 p.m.

Moonrise today 6:03 a.m.

Moonset today 3:43 p.m.



Jan 9 Jan 16 Jan 23 Jan 31



REGIONAL FORECAST

Coastal Oregon: Fog today; some sun, then clouds in the south.
Eastern Washington: Mostly cloudy today; a couple of morning flurries near the Idaho border.
Cascades: Times of clouds and sun today.
Eastern and Central Oregon: Clouds and breaks of sun today. Mostly cloudy tonight; cold near the Cascades.
Western Washington: Areas of fog in the morning; otherwise, partly sunny today.
Northern California: A little rain at the coast today; partly sunny elsewhere.

REGIONAL CITIES

	Today			Sat.		
	Hi	Lo	W	Hi	Lo	W
Astoria	49	37	pc	46	38	r
Baker City	34	19	c	31	19	pc
Bend	37	21	pc	36	23	sn
Brookings	51	44	pc	50	39	r
Burns	28	14	c	28	17	sn
Enterprise	35	14	c	31	16	pc
Eugene	47	36	pc	45	33	r
Heppner	35	23	c	33	23	c
Hermiston	36	28	c	35	27	c
John Day	38	21	c	36	23	c
Klamath Falls	33	19	pc	34	17	sn
La Grande	38	20	c	34	23	pc
Meacham	36	17	c	33	22	pc
Medford	49	37	c	49	32	r
Newport	50	39	pc	47	38	r
North Bend	54	44	pc	53	39	r
Ontario	35	19	c	34	21	pc
Pasco	39	28	c	36	25	c
Pendleton	35	24	c	33	27	c
Portland	44	34	pc	42	36	r
Redmond	38	19	pc	36	21	sn
Salem	46	34	pc	44	35	r
Spokane	33	23	sf	32	20	c
Ukiah	35	17	c	32	18	c
Vancouver	44	33	pc	42	35	r
Walla Walla	38	25	c	33	27	c
Yakima	39	27	c	38	24	c

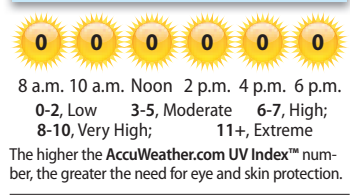
WORLD CITIES

	Today			Sat.		
	Hi	Lo	W	Hi	Lo	W
Beijing	34	11	s	38	16	s
Hong Kong	69	63	s	70	65	c
Jerusalem	49	44	sh	54	41	pc
London	49	42	pc	50	41	r
Mexico City	70	39	s	72	43	s
Moscow	9	6	c	8	3	sn
Paris	47	38	c	50	43	sh
Rome	61	53	c	62	53	sh
Seoul	35	20	s	36	26	pc
Sydney	76	65	pc	78	67	pc
Tokyo	51	40	c	51	40	pc

WINDS

(in mph)	Today	Saturday
Boardman	VAR 3-6	NE 3-6
Pendleton	NNE 3-6	VAR 3-6

UV INDEX TODAY

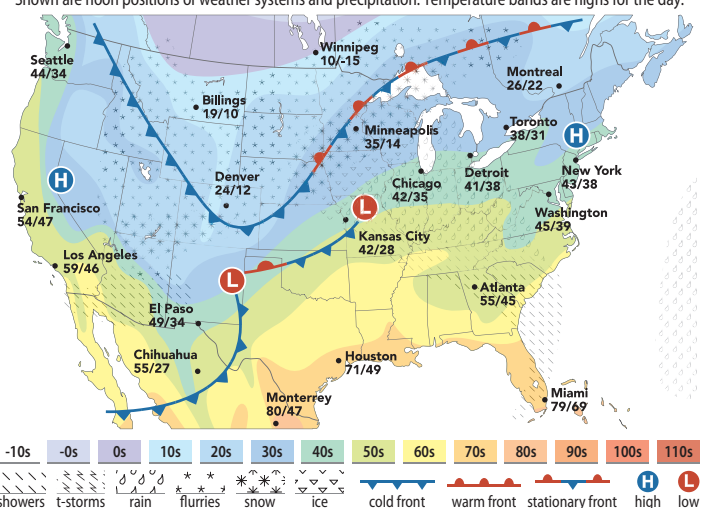


8 a.m. 10 a.m. Noon 2 p.m. 4 p.m. 6 p.m.
0-2, Low; 3-5, Moderate; 6-7, High; 8-10, Very High; 11+, Extreme
The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

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NATIONAL WEATHER TODAY

Shown are noon positions of weather systems and precipitation. Temperature bands are highs for the day.



National Summary: Rain will dampen areas from the southern Atlantic coast to the Ohio Valley and central Great Lakes today. Snow will fall from the central Plains to the Upper Midwest and on part of the Four Corners region.

Yesterday's National Extremes: (for the 48 contiguous states)
High 78° in Naples, Fla. Low -3° in Berlin, N.H.

NATIONAL CITIES

	Today			Sat.				Today			Sat.		
	Hi	Lo	W	Hi	Lo	W		Hi	Lo	W	Hi	Lo	W
Albuquerque	36	24	sf	37	21	s	Louisville	56	48	c	55	35	r
Atlanta	55	45	pc	55	44	r	Memphis	62	51	pc	55	30	r
Atlanta City	50	43	c	55	49	c	Miami	79	69	sh	82	71	sh
Baltimore	45	36	r	50	46	sh	Millwaukee	39	33	r	38	22	sn
Billings	19	10	sn	18	10	sf	Minneapolis	35	14	sn	15	-4	c
Birmingham	59	50	pc	59	40	r	Nashville	60	48	sh	58	35	r
Boise	36	26	c	34	24	c	New Orleans	71	58	pc	69	45	pc
Boston	41	36	sh	43	40	r	New York City	43	38	pc	49	46	c
Charleston, SC	60	51	sh	69	56	sh	Oklahoma City	50	31	pc	37	21	pc
Chicago, IL	53	40	r	56	45	sh	Omaha	35	19	sn	20	-1	c
Cleveland	43	40	r	50	42	c	Philadelphia	46	39	c	54	48	c
Dallas	67	40	pc	49	30	pc	Phoenix	55	42	r	57	43	pc
Denver	24	12	sn	27	10	pc	Portland, ME	35	27	pc	39	36	c