

# The 4

# Winds

“  
*Blow winds, and crack  
your cheeks! blow!  
rage!*  
”  
— William Shakespeare,  
*King Lear*



*A grain elevator near Brockton hit by microburst winds, July 13, 2005. National Weather Service photo*

## Montana breezes, fresh and diverse

It can be an illusive topic, wind. Or it can be an all too real, gritty bane of days howling and herding trash cans and grain bins across the prairie.

Four variations on the winds of Montana:

### 1 The Prevailing Westerlies

The relatively benign thermal winds from the west. Retired Glasgow weather chief James Rea says the westerlies blow because . . .

First, the heat differential between the polar region and the equator causes a flow to the south, which . . .

Second, the rotation of the earth deflects so wind blows from the west to east.

### 2 The Chinook Wind

Everybody on the Front knows the chill-busters. The Chinooks hug the lee side of the Rockies, rarely blowing past Malta with much force.

West winds ride across the Rockies and descend warming up from simple compression of the air.

Strong and dry, the normal

Chinook melts the snow and relieves the crush of winter.

Usually. One variety of Chinook is an exception.

“The Klondike comes in with such cold air that the warming doesn’t amount to much,” Rea says.

### 3 The Alberta Clipper

These north winds live in the cold fronts from Canada.

“They result from a shallow dome of cold air with tight pressure gradients,” Rea says. “It’s a mass of cold air, one layer after another almost falling over itself in the frontal zone.”

Such frontal passages are often dramatic, with blizzards followed by long cold snaps, as Arctic air settles in over Montana.

### 4 The Microburst

A Phyllis Diller wind, coming on a bit too strong.

The microburst forms inside a thunderstorm cell as warm, often moist, air rises vertically to form the familiar thunderhead. Air can climb to six miles, cooling and becoming more dense as it

rockets heavenward.

After the storm spends its energy near the ground, often with rain or hail, gusty winds and lightning, the base of the cell dissipates.

No longer standing supported in a tall column of up-drafts, the cell collapses, sending colder, denser air into free-fall.

“It’s like a fire hose squirting down on the ground,” Rea says. Often violently.

Gusts of 85 mph are not uncommon, he says, with peak gusts of more than 100.

The mass of air rolls eastward across the prairie as depicted above, with cyclone-like winds at the ends of the formation, vortices like those behind a jet landing.

One cell after another forms and repeats the pattern.

“It can make the damage look erratic,” Rea says. “One farmer gets his barn flattened, while his neighbor gets missed. It seems fickle, but if you live around here long enough, sooner or later it’ll get around to you too.”

Rea finds more weather enthusiasts in Montana than elsewhere. “Here the weather’s not a matter of entertainment. Here it’ll kill you.”

