



NATIONAL WEATHER SERVICE, LAS VEGAS NEVADA

The Desert Sun

SKYWARN Spotter
Newsletter

Winter 2009

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This newsletter serves the following counties:

Nevada: Clark, Lincoln, Nye, Esmeralda

Arizona: Mohave

California: Inyo,
San Bernardino

Contacts:

NWS Las Vegas Admin Line
(702) 263-9744

Web Address:
www.wrh.noaa.gov/lasvegas

Forecast Line:
(702) 736-3854

It All Adds Up!

Properly measuring snow is as much of an art as it is a science...

Chris Stachelski, Journeyman Forecaster

At first, measuring snowfall sounds simple – get a ruler, go outside, stick it in the ground and there you have it – a snowfall measurement! Not really. Unlike a lot of other meteorological phenomena that are measured or observed by high-tech equipment, proper snowfall measurements are taken

with relatively simple equipment that has not changed all that much in over a century. Snowfall is one of the few meteorological variables that's more subjective than quantitative in nature. Two people could go to the very same area, with the very same equipment and get two completely different (but somewhat close) snowfall amounts. Given the subjective aspect to snowfall measurements, there are

some general 'best practice' guidelines that can help you to take a more accurate snowfall measurement.

Why are precise snowfall measurements important?

Accurate measurements of weather parameters are always important, no matter what weather parameter is being reported. Despite an increasing automated weather observing network, accurate ground measurements of snowfall confirm values from automated sensors such as the SNOTEL network and satellite images. Snowfall is a primary source of water, thus accurate snowfall measurements help keep track of this precious commodity. Accurate snowfall measurements also provide verification for warnings and advisories, inform outdoor enthusiasts about how much snow has fallen, and assist in compiling climate records. (Cont. on page 2)

We GREATLY appreciate your snowfall reports, so when you call us please provide the following information...

How much snow did you get so far from this storm?

What time did the snowfall start?

When did the snowfall stop? And what is your elevation (if you know it)?



What sorts of instruments are needed to measure snowfall properly?

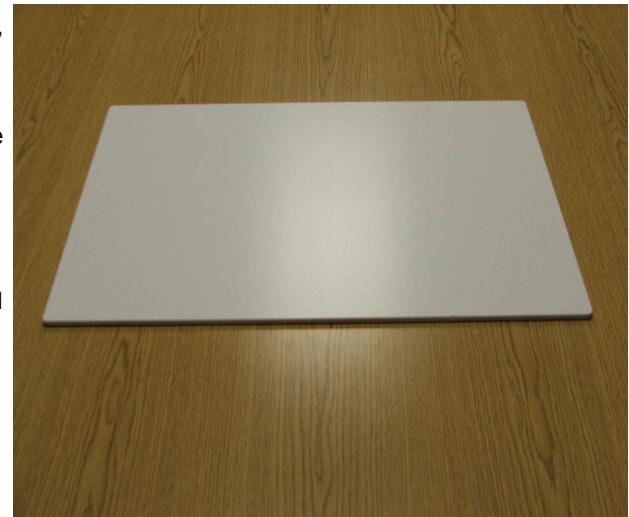
The first piece of equipment necessary for measuring snow accurately is a snowboard. A snowboard is a piece of plywood or flat plastic board painted white (as shown below). This board should be white in order to minimize radiation and melting effects and where observations of snowfall should be taken. Ideally, a snowboard should be about 2 feet wide by 2 feet long and about a half of an inch thick. One alternative that can be used as a snowboard is a white, plastic cutting board. Snowboards should be cleaned off after each observation of snowfall is taken and set level on top of the existing snow surface. A small flag may be needed to locate the snow board if more than a foot of snow is expected.

Next, you'll need a measuring tool. A metal ruler or yardstick is best since it can be pushed into the snow easier. If you live in an area that gets snowfall totals over a foot frequently, a yardstick is a better way to go. At some official cooperative weather stations, observers are provided with a snow measuring stick, which is essentially a ruler with each inch divided into tenths rather than quarters, eights or sixteenths.

How do you measure snow?

Once you have the necessary equipment, and some snow to measure, it's time to take a measurement. It is important to remember to measure only the amount of **new** snow that has fallen on the ground. This can be at a set time once a day or since the start time of the snow event. Snow does settle or compact and melt with time, so at best take a measurement once every six hours. If you measure all the snow on the ground, including old snow, this is **not** snowfall but rather snow depth. Your measurements should be taken on a snowboard. If you don't have a snowboard, use a level surface of dirt or grass. However, air pockets lurking in the grass can cause an inaccurate measurement of snow. Do not measure snow on paved surfaces, sidewalks or gravel surfaces. These are sources of heat and will cause snow to be under measured. Snow should be measured in an area as far away from obstructions such as buildings, trees and fences, at least 20 feet. These obstructions can create localized wind patterns that cause snow to blow and drift. Watch for areas where snow has drifted. In events where drifting took place, measure the snow in several spots to obtain an average reading. Several measurements should be taken anyway in your area and then averaged to get your snowfall total.

Avoid measuring snow in areas where human or animal activity has disturbed the snowpack.



Words of Winter

Snowfall The amount of new snow that has fallen since the last observation. This is measured to the nearest tenth of an inch (0.1 inches).

Snow Depth The combined total of old and new snow (and ice) on the ground from a representative location. Usually taken only once a day around 7 AM. Measured to the nearest whole inch.

Snowpack Same as snow depth.

Staff Update

Rosalin Cianflocca, Admin. Support Asst.

In November 2008, Meteorologist in Charge, Kim Runk transferred to the Central Region Headquarters in Kansas City, MO to head the Integrated Services Branch. Kim worked at WFO Las Vegas for over a decade first as the Science Operations Officer then as the MIC. He brought great leadership to the Western Region and to WFO Las Vegas. He will be missed. Michael Staudenmaier has been selected for the MIC position at WFO Las Vegas, and will arrive in mid-February 2009. He currently serves as the Science Operations Officer at WFO Flagstaff, AZ. Michael's previous NWS assignments included a stint at the Western Region Headquarters in the Scientific Services Division, and as a operational forecaster at WFOs Salt Lake City, UT and Sacramento, CA. He has a strong desire to enhance public service and outreach, and to promote the agency's value and image to the community, key stakeholders, and partners. We look forward to having him bring these qualities along with his innovation, and leadership to WFO Las Vegas.

Yearly Climate Totals for Selected Cities - 2008

Andy Gorelow, Forecaster

Las Vegas, NV				
	High (Dep.)	Low (Dep.)	Avg. (Dep.)	Notes
Temperature	80.7 (+0.8)	59.3 (+3.0)	70.0 (+1.9)	4th warmest year on record
	Total	Departure	Snow Total	
Precipitation	2.64 inches	-1.85 inches	3.9 inches	
Hottest Temperature of the Year: 111 degrees on 06/29 and 07/08				
Lowest Temperature of the Year: 28 degrees on 01/17 and 12/28				

Mt. Charleston, NV				
	High	Low	Avg.	
Temperature	59.7	33.5	46.5	
	Total	Snow Total		
Precipitation	27.55 inches	123.3 inches		
Hottest Temperature of the Year: 86 degrees on 07/09				
Lowest Temperature of the Year: -1 degrees on 12/27				

Bishop, CA				
	High (Dep.)	Low (Dep.)	Avg. (Dep.)	
Temperature	75.0 (+0.9)	37.3 (-0.4)	56.2 (+0.3)	
	Total	Departure		
Precipitation	7.95 inches	+3.04 inches		
Hottest Temperature of the Year: 106 degrees on 07/08				
Lowest Temperature of the Year: 7 degrees on 12/14 and 12/18				

Daggett, CA				
	High (Dep.)	Low (Dep.)	Avg. (Dep.)	
Temperature	82.3 (+0.6)	54.3 (-0.1)	68.3 (+0.2)	
	Total	Departure		
Precipitation	4.18 inches	+0.06 inches		
Hottest Temperature of the Year: 113 degrees on 07/08				
Lowest Temperature of the Year: 25 degrees on 1/1...1/17...1/20...12/19				

Web Sites of Interest

www.srh.noaa.gov/ridge — National Doppler radar sites

www.spc.noaa.gov — Storm Prediction Center for the NWS

www.srh.noaa.gov/srh/jetstream — Online School for Weather

www.aviationweather.gov — Aviation Weather Center for NWS

Death Valley NP, CA				
	High (Dep.)	Low (Dep.)	Avg. (Dep.)	
Temperature	92.8 (+2.2)	64.8 (+2.9)	78.8 (+2.5)	
	Total	Departure		
Precipitation	1.23	-1.07		
Hottest Temperature of the Year: 127 degrees on 07/09				
Lowest Temperature of the Year: 29 degrees on 12/28				

Kingman, AZ				
	High	Low	Avg.	
Temperature	76.3	47.9	62.1	
	Total			
Precipitation	7.45			
Hottest Temperature of the Year: 107 degrees on 07/08				
Lowest Temperature of the Year: 19 degrees on 01/17				

Needles, CA				
	High (Dep.)	Low (Dep.)	Avg. (Dep.)	
Temperature	86.9 (+0.4)	62.3 (+1.3)	74.6 (+0.9)	
	Total	Departure		
Precipitation	5.85	+0.82		
Hottest Temperature of the Year: 117 degrees on 06/21 and 07/08				
Lowest Temperature of the Year: 32 degrees on 01/20				

Sharing Weather Photos... A big "Thanks" to those of you who have shared your weather photos with us via email and snail mail. It is greatly appreciated. Some of the pictures we received this year will be used in future storm spotter training sessions, class talks and possibly included in the revised Storm Spotter's Guide that is due out later this year. However, due to privacy regulations and policies it is necessary that you include a brief statement that we have your permission to use your photos. Also when you send your photos please include a brief caption with each picture or a brief statement of what occurred.

NOAA Weather Radio Frequencies & Coverage

KXI-83 Kingman, AZ and vicinity 162.425 MHz

KXI-84 Lake Havasu City, AZ/Needles, CA and vicinity 162.400 MHz

KQC-45 Laughlin, NV/Bullhead City and Lake Mohave, AZ 162.500 MHz

WNG-634 Pahrump, Jean, & Primm, NV/Mountain Pass, CA 162.400 MHz

Word Search for Clouds — Katherine LaBelle

C	L	H	O	P	L	Q	U	Y	N	H	S	C	R	U	S	C	J	O	E
U	I	V	R	J	L	N	W	F	Q	F	S	M	E	B	M	J	D	C	R
M	G	X	T	A	D	A	K	U	I	E	J	T	K	K	K	S	A	U	H
U	J	O	I	H	L	L	B	H	I	R	I	R	M	I	C	H	M	D	
L	E	Y	D	T	U	U	R	K	A	S	K	B	S	A	V	R	Q	U	Z
U	J	S	R	P	K	A	C	C	O	B	D	E	U	M	T	Q	Z	L	S
S	T	I	Y	T	T	V	N	I	Y	G	K	P	T	M	Z	U	F	O	U
F	H	J	P	U	I	Y	W	B	T	Z	Y	X	A	A	K	F	S	N	L
A	O	S	S	E	U	R	V	I	V	N	D	O	R	T	S	P	E	I	U
Y	T	S	T	K	D	S	P	E	C	I	E	A	T	U	Q	V	B	M	M
F	Y	H	U	Y	G	U	F	S	F	X	D	L	S	S	I	T	I	B	U
H	F	L	O	W	O	T	H	Y	R	I	Y	O	O	U	W	T	B	U	C
H	O	W	Y	P	G	A	D	Y	A	S	Y	U	B	P	K	R	E	S	O
D	G	F	A	N	Z	I	R	C	C	U	O	Z	M	Z	G	V	J	K	T
V	I	C	F	E	C	D	H	W	T	R	N	P	I	O	Q	V	L	W	L
P	U	J	L	D	J	A	U	J	U	R	F	R	N	R	U	H	X	H	A
S	V	I	R	G	A	R	H	I	S	I	R	U	S	T	H	I	T	A	F
H	N	L	P	B	Y	A	L	T	K	C	K	H	R	S	X	F	Z	I	V
K	Q	K	K	J	V	V	J	B	N	M	F	F	Q	V	V	N	J	O	D
S	M	R	O	F	I	T	A	R	T	S	V	N	P	T	I	Z	G	V	O

ALTOCUMULUS

CIRRUS

CUMULONIBUS

CUMULUS

FOG

FRACTUS

FIBRATUS

HAZE

LENTICULAR

MAMMATUS

NIMBOSTRATUS

OPACUS

RADIATUS

STRATIFORM

STRATUS

VIRGA

Do You Remember the Beaufort Scale? Katherine LaBelle, Intern

- | Force | Description | Match the description with the Force value |
|---------------|-------------|--|
| 1, 1-4 mph | _____ | A) Strong gale, slight structural damage occurs, slate blows off roofs |
| 2, 5-7 mph | _____ | B) Strong breeze, Larger tree branches moving, whistling in wires |
| 3, 8-12 mph | _____ | C) Storm, Trees broken or uprooted, considerable structural damage. |
| 4, 13-18 mph | _____ | D) Near gale, whole trees moving, resistance felt walking against wind |
| 5, 19-24 mph | _____ | E) Moderate breeze, dust, leaves, loose paper lifted, small tree branches move |
| 6, 25-31 mph | _____ | F) Light breeze, wind felt on face, vanes begin to move |
| 7, 32-38 mph | _____ | G) Light air, smoke drift indicates wind direction, still wind vanes |
| 8, 39-46 mph | _____ | H) Gentle breeze, leaves and small twigs constantly moving, light flags extended |
| 9, 47-54 mph | _____ | I) Gale, whole trees in motion, severe resistance felt walking against wind |
| 10, 55-63 mph | _____ | J) Fresh breeze, small trees in leave begin to sway |

Top Weather Events of 2008

Chris Stachelski, Journeyman Forecaster

From wild winds to persistent warmth to strange snows, 2008 featured a variety of extreme weather across the Mojave Desert and southern Great Basin. Here is a quick look back at 10 of the top weather events for 2008:

- 1. January 4th-5th Winter Storm.** A strong Pacific storm produced heavy rain in the Owens Valley with Bishop recording a storm total of 4.29" of precipitation, with 4.00" of it falling on the 4th alone, which resulted in an all-time daily precipitation record. The two day storm total represented 85% of the normal annual precipitation for Bishop which is 5.02". In the eastern Sierra heavy snow fell in Aspendell with 34" inches recorded. The storm also created wind gusts of at least 60 mph which affected the Owens Valley and later the west side of the Las Vegas Valley.
- 2. February 13th Wind Event.** A strong cold front brought strong winds to a widespread portion of the area during the afternoon and evening hours of the 13th. Wind gusts of 127 mph were clocked at Yucca Mountain and 67 mph at the McCarran International Airport. Strong winds knocked out power to 18,000 customers in Las Vegas and caused minor property damage in the Las Vegas Valley. In addition, planes were diverted or delayed for up to two hours at McCarran.
- 3. From the Frying Pan to the Freezer, mid-May.** A strong upper-level ridge of high pressure brought record heat to the area from the 17th to the 20th, and Death Valley recording its earliest 120 degree reading on the 19th. A strong cold front crossed the area on May 21st dropping highs into the 50s and 60s. Las Vegas recorded back to back record low maximum temperatures on the 23rd and 24th of 67 degrees and 65 degrees respectively. In addition, the deep trough that settled in across the region was accompanied by a strong area of low pressure that dropped the sea level pressure at Las Vegas to a May record of 29.27 inches and dropped 3.5 inches of snow on Mt. Charleston.
- 4. Inyo County Debris Flow, July 12th.** Thunderstorms unleashed heavy rain on a steep, barren slope (that was burned from a previous fire) triggering a mudslide. The slide caused one person to suffer minor injuries when they were swept downstream, and damaged 50 structures half of which suffered significant damage. Two hours after the mudslide began the flow of mud and debris crossed Highway 395 north of Independence, covering the road which prompted its closure.
- 5. Morongo Basin Thunderstorms, August 4th.** Heavy rains from thunderstorms flooded roads and some first floor apartments in 29 Palms. The rains also required a swift water rescue. In nearby Johnson Valley, an F0 tornado touched down tearing off the roof of a building and bent a couple of flag poles at the base.
- 6. Thunderstorm Wind Damage in Mohave Valley, August 25th.** During the evening hours, thunderstorms produced wind gusts estimated between 80 and 100 mph in Mohave Valley. The storm damaged 40 of the 50 hangars at the Eagle Airfield and also dropped golf ball size hail.
- 7. Persistent Warmth in the Summer and Fall in Las Vegas.** June, July, August and September each ranked as one of the 10 warmest months on record. Las Vegas also saw its second latest (in the year) high temperature of 80 degrees or better on November 17th with a high of 81 and its latest occurrence of the first low temperature below 40 degrees on December 10th.
- 8. Cold October Upper Low, October 11th-12th.** An unseasonably deep trough over the West set record low maximum temperatures on the 11th and 12th. In Las Vegas, the drop in temperature from 90 degrees on the 9th to 60 degrees on the 11th was the greatest two day temperature drop in over 30 years. Bishop saw snow flurries on the 11th, making it the earliest (on record) snow occurrence ever to be observed there.
- 9. December 15th-16th Snow Event.** Heavy snow blanketed the mountains of southern Nevada with over 20 inches falling in the Spring Mountains. Due to the extremely cold air associated with this storm, snow fell on portions of the lower desert valley floor. Between 2 to 5 inches of snow fell in Summerlin and the northwest part of Las Vegas.
- 10. December 17th-18th Snow Event.** Just two days after a significant winter storm, a second storm brought snow to just about all areas of the Mojave Desert. Las Vegas saw its greatest snowstorm in nearly 30 years, and greatest December snowstorm ever in official records with 3.6" recorded. Between 8 to 10 inches of snow fell in Henderson and 6 to 16 inches was recorded in the Morongo Valley of California.

Beaufort Scale Match Game Answers: 1G, 2F, 3H, 4E, 5J, 6B, 7D, 8I, 9A, 10C