### Volume 2, Issue 1

# Fall/Winter 2013/2014



# The Montana Meso

Welcome Message

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Thank you for your interest and participation in the CoCoRaHS program and for taking the time to read through the third edition of the Montana CoCoRaHS newsletter! The contents here will provide Montana residents and weather observers with information surrounding the latest weather events across the state. In addition, training tips are included in order to help you make better measurements and observations for the program. This newsletter will continue to be issued seasonally under a collaborative effort among all of the Montana CoCoRaHS coordinators.

It is hoped that you find this newsletter both enjoyable and educational. If you have any questions, comments, or if you have a suggestion for future editions, please e-mail <u>Richard.Maliawco@noaa.gov</u>. Thank you again for your continuing commitment to be the best weather observers that you can be!

## CoCoRaHS: How You Make A Difference By Richard Maliawco, NWS Glasgow, General Forecaster

Remember that one of the true benefits of volunteering in CoCoRaHS is that it allows you to make an important difference in the lives of others. Your daily observations are used for a number of purposes by many different users: meteorologists, emergency managers, city utilities, insurance adjusters, insect control, those with agricultural interests, those involved in the education sector, and many others. Volunteering enables you the opportunity to interact with others and make new acquaintances, affords you the opportunity to learn some fun things in your experiences, and participate in a number of trainings and other activities. Because your involvement matters, it is important to take a step back at take a look at all of the opportunities that are available with the CoCoRaHS program and to remember all of the benefits your commitment brings to others. If you are interested in learning more about the program or how your observations matter, check out the "About Us" section from the main CoCoRaHS page: <a href="http://www.cocorahs.org/Content.aspx?page=aboutus">http://www.cocorahs.org/Content.aspx?page=aboutus</a>. If you know anyone who may be interested in joining, there is important sign up information that you can share with others at the bottom of that page. Be sure to click the link and check it out to learn more!



# To Go or Not to Go?

By Tanja Fransen, NWS Glasgow, Warning Coordination Meteorologist

To go or not to go? That is a frequent question we hear at the NWS offices during winter. And we always cringe a bit because we don't know your vehicle type or your skill level (and your confidence!) with winter driving. We know people who will brave any blizzard out there to get to a state wrestling tournament in Billings, and others who won't travel 20 miles in winter to go to town if the wind is more than 20 mph. That is why the travel forecast page was developed; we give you the tools you need to make the final decision for yourself.

From the front pages of the NWS office Missoula and Glasgow websites, there is a series of tabs. One of them is called "Travel" or "Travel Forecast." Click on this link and it will take you to a statewide map. For Billings and Great Falls, it is on the blue left hand side menu on the website. Below is what the travel forecast page looks like. You'll find links to road conditions in Montana and surrounding states, current weather observations, and the forecast. If you look at the bottom of the map, there are time increments. You can get a forecast for the weather impacting the roads every 6 hours out to 36 hours in advance. In this example, we had snowfall and high winds that caused the road segments to be minor, major and extreme.



Transportation forecast page links:

NWS Glasgow/Northeast Montana: <u>http://www.wrh.noaa.gov/byz/state/transportation/index.php?wfo=ggw</u> NWS Billings/Southeast/South-central Montana: <u>http://www.wrh.noaa.gov/byz/state/transportation/index.php?wfo=byz</u> NWS Great Falls/Central Montana and Rocky Mountain Front: <u>http://www.wrh.noaa.gov/byz/state/transportation/index.php?wfo=tfx</u> NWS Missoula/Montana west of the divide: <u>http://www.wrh.noaa.gov/mso/transportation/</u>

# Winter Survival Kit: Got Yours?

By Tanja Fransen, NWS Glasgow, Warning Coordination Meteorologist

Many people have some sort of a "kit" thrown together for traveling in Montana in the winter, but do you really have what you need in it? How long have those old granola bars been in there? Did your teenagers take things out while needing something and "forget" to tell you it's now gone? Check out your kit and make sure it's ready to go for the winter season. I will admit that my kit for my personal vehicle is much more compact than the one we carry in our office SUV. The top two below show my personal kit for my car laid out on my desk, including the small shovel/spade for snow. The bottom picture shows our office vehicle's winter survival kit.



#### Additional Items to consider taking: Blankets/Sleeping Bags

Flashlights with Extra Batteries Portable Shovel Tow Rope (chains are dangerous) Battery booster cables or battery booster Compass/Maps Small Metal Can with waterproof matches to melt snow Gel Fuel Cans Small garbage bags and ties Small bag of cat litter or sand



## Winter Survival Kit: Got yours? (Cont'd) By Tanja Fransen, NWS Glasgow, Warning Coordination Meteorologist

by Tunju Fransen, NWS Glusyow, Warning Coor anation Meleorologist

When traveling the northern plains or northern Rockies in wintertime, run through this checklist:

- $\Rightarrow$  Fuel up and stay above a half tank throughout your trip.
- $\Rightarrow$  Check the road conditions: <u>http://www.mdt.mt.gov/travinfo/</u> or call 511
- ⇒ Check the forecast before leaving. Sometimes the roads are good in the location you are leaving from, but conditions may worsen as you get closer to your destination. We have a travel forecast page to assist with that:: <u>http://www.wrh.noaa.gov/byz/state/transportation/index.php?wfo=ggw</u>
  - Tell someone where you are going, what time you leave, and the route you take to get there. Use the better traveled roads. Then call them when you arrive safely. Otherwise, they can alert officials that you are late and perhaps there is a problem.
  - Don't use cruise control on icy roads!

#### If you run into problems, keep the following items in mind:

- ⇒ Use a tow rope, not a chain to pull a vehicle that is stuck. Make sure it is no longer than 6 feet. Chains can backlash, and cause serious injuries or death.
- ⇒ If a chain is the only available item, throw a heavy jacket or blanket over it before attempting to tow a vehicle out.
- $\Rightarrow$  If you do get stuck, and it looks like you may be in the vehicle for a while:
  - Stay with the vehicle, unless you can clearly see sturdier/warmer shelter
  - Run the engine 10 minutes each hour for heat, and crack the window just a bit
  - Keep the tailpipe clear
  - A hubcap or visor can be used as a shovel
  - Burning oil in a hubcap may allow rescuers to find you if conditions have improved
  - Distress Signal is: Honk your horn for three long blasts, 10 seconds apart. Repeat every 30 seconds.

## Seasonal Outlook (December—February) By Richard Maliawco, NWS Glasgow, General Forecaster

The Climate Prediction Center released its seasonal outlook for the months of December, January, and February on 21 November 2013. Much of Montana can expect to see increased chances for below average temperatures during this period. Meanwhile, above average precipitation chances are also in the cards according to the outlook. Should this hold true, above average seasonal snowfall may result. The southern U.S. and Northeast may see above average temperatures. Arizona and



New Mexico and portions of the Southeast may see below average precipitation this winter. Remaining portions of the country have equal chances for above or below average temperatures and precipitation. The latest seasonal outlook can always be found here: <u>http://www.cpc.ncep.noaa.gov/</u>.

## Wind Chill...Be Prepared!

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Temperature (°F)																			
	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
Wind (mph)	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
				1	Frostb	ite Tin	nes	3	) minut	es	10	) minut	es [	5 m	inutes				
			w	ind C	Chill	(°F) =	- 35.	74 +	0.62	15T ·	35.	75(V	0.16) .	+ 0.4	275	r(V <sup>0.1</sup>	16)		
						Whe	re, T=	Air Ter	nperat	ture (°	F) V=	Wind S	peed	(mph)			Effe	ctive 1	1/01/01

#### How can I calculate the Wind Chill?

Below is the mathematical formula for computing wind chill using wind speed (MPH) and temperature (Fahrenheit):

Wind Chill = 35.74 + 0.6215T - 35.75(V^0.16) + 0.4275(V^0.16)

Online Wind Chill Calculator here (and other Meteorological Conversions and Calculations)

## Hypothermia Can Kill!

http://www.crh.noaa.gov/bis/wintertips.php#Trapped

When the body begins to lose heat faster than it can produce it, a condition called hypothermia begins to develop. The symptoms are similar to those of a person under the influence of alcohol.

- Uncontrollable shivering
- ♦ Vague, slow, slurred speech
- ♦ Memory lapses, incoherence
- ◊ Immobile
- ♦ Exhaustion
- ♦ The "umbles," mumbles, stumbles, grumbles, fumbles

If a person shows any signs of hypothermia, take the following measures, even if the person claims to be fine. Often the person affected will not realize the seriousness of the situation until it is too late.

- ♦ Call 911 if necessary
- ♦ Get the person into dry clothing and into a warm bed
- ♦ If possible, get the person into a warm (not hot) bath
- ♦ Give the person warm (not hot) drinks NO ALCOHOL

## **Recreation Safety Page** By Megan VanDenHeuvel, NWS Great Falls. , CoCoRaHS Coordinator



Have you ever planned a weekend camping trip to Glacier National Park only to encounter cold temperatures, heavy rain and snow? Perhaps, you wanted a weather forecast to plan a trip to your favorite fishing location along the Madison River? Which winter recreation and ski area will receive the powder that you are hoping for? In Montana, weather changes rapidly and being in an outdoor environment presents a new set of challenges with more exposure to various and extreme weather. These rapidly changing and extreme weather conditions make it necessary to plan and prepare for weather that you may encounter when venturing to your favorite outdoor location and to help you better plan and prepare for outdoor weather, hazards and impacts, the National Weather Service has developed a new Recreation Safety Page.

This page uses a Google Map interface that is easy to navigate with icons that allow you to quickly find current weather hazards and forecast information for the area that you will be recreating as well as for the type of outdoor activity that you will be pursuing. There are different ways of navigating this page. One way is to enter your search location in the search location box at the top of the page. This box allows you to enter a specific location, such as a town or city, and then will direct you to recreation sites near that location. You can also search for recreation sites by type by clicking within the blue box and selecting your type of recreation activity. The plus sign (+) next to each type of recreation activity will display an alphabetical list of recreation sites.





The National Weather Service in Great Falls, Montana also partnered with Glacier National Park and the National Weather Service in Missoula, Montana to develop a specific Recreation Safety Forecast Page for Glacier National Park. The Glacier National Park Recreation Safety Forecast page contains weather hazard and forecast information for specific landmarks, passes and front country campgrounds within Glacier National Park. This page can also be found on Glacier National Park's website at <a href="http://www.nps.gov/glac/planyourvisit/conditions.htm">http://www.nps.gov/glac/planyourvisit/conditions.htm</a>. In addition to weather hazard and forecast information, a downloadable Outdoor Weather Safety brochure is also available. This brochure highlights how you can identify weather hazards whether you are trekking through the wilderness, fishing at your favorite lake or stream or scaling a steep mountain.

This Recreation Safety Forecast Page remains a work in progress with changes and new additions expected in the future. If your favorite recreation site is not listed, please feel free to contact us and let us know. You can access this page at <u>http://www.wrh.noaa.gov/wrh/rec/index.php?wfo=tfx</u> for recreation areas in north-central and southwest Montana or <u>http://www.wrh.noaa.gov/wrh/rec/index.php?wfo=GNP</u> for Glacier National Park.

## Every Drop Counts

By Megan VanDenHeuvel, NWS Great Falls. , NWS Meteorologist, CoCoRaHS Coordinator

Here is an example of why "Every Drop Counts" in Montana. Widespread heavy rainfall and flooding occurred over much of central and eastern Montana at the end of May 2013. The image below depicts rainfall observations from CoCoRaHS observers in Lewis & Clark and Cascade counties. Note the widely varying precipitation amounts in the boxed area on each map. These observations were collected on May 30, 2013.

Here is another recent example using snowfall. On October 27 – 28, 2013, a snowstorm impacted much of north-central and central Montana. CoCoRaHS observers in the Helena area reported just under an inch of snowfall on October 28. However, less than 10 miles south of Helena in Montana City, an observer measured 7.4 inches of snow within that same day.



The image to the right depicts the concept of upslope and downslope precipitation. To determine if you are in a favorable location for upslope precipitation, it is necessary to know your location relative to surrounding terrain as well as the surface wind speed and direction. Along the Continental Divide, a westerly wind will promote upslope precipitation west of the Continental Divide while dry, mild and windy conditions persist east of the Continental Divide. If you are located on the northern aspect of a mountain range, upslope precipitation will occur when winds are from the north.



What causes precipitation to vary? In this scenario, a contributing factor for the higher snowfall amount is terrain. The elevation in Helena is approximately 4,000 feet above sea level, while the station southeast of Montana City is at 4700 feet above sea level. When moist air is forced to rise up and over higher terrain, the moist air cools, condenses, and then precipitation develops on the upwind side of the terrain.





http://www.weather.gov/billings

http://www.weather.gov/glasgow http://www.weather.gov/greatfalls http://www.weather.gov/missoula



#### National Weather Service Mission Statement:

The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

#### **CoCoRaHS Mission Statement:**

CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow). By using low-cost measurement tools, stressing training and education, and utilizing an interactive Web-site, our aim is to provide the highest quality data for natural resource, education and research applications.

# Training Corner: Measuring Snow Water Content

There are several important steps to remember when trying to measure the water content of snow. The first relates to calibration. Begin by weighing your empty outer-tube. Next, have an inner-tube with 1.00" of water and pour into the larger tube. Weight this result. Find the difference in these two measurements to determine the weight of 1.00" of water. After this is done, you can weigh a snow core from your outer-tube and subtract the weight from the outertube to get the weight of the snow core. Next, divide the weight of the snow core by the weight of 1.00" of water. The result will be the depth of water that would result from the snow sample if it were completely melted. For more details on this training, as well as an example, please check out the following resource: http://www.cocorahs.org/media/docs/Training SnowByWeight.pdf

