

# MONTANA HIGHGROUND

March 2020

Missoula  
By Olivia Valentine

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Keep updated on all things  
Highground by visiting  
[floodplain.mt.gov/news](https://floodplain.mt.gov/news)

## MT SILVER JACKETS

Montana Silver Jackets Team of the Year!  
More information in the next Highground

Coming Soon

## AMFM RECAP

Coming in the next  
Highground newsletter

Stay tuned!



# MACO MIDWINTER

By Worby McNamee



Did you  
know?

The population of Great Falls is 58,876.

## 2020 MACO MIDWINTER CONFERENCE RECAP

Great Falls once again played host to the Montana Association of Counties meeting. From February 10-13th Montana County Commissioners, State and Federal Officials, as well as, a variety of speakers and vendors gathered in the Best Western Heritage Inn for the Midwinter Conference.

In the afternoon of day one of the conference, various committee meetings dominated. Attendees were encouraged to participate as in the committee meetings that ranged from health and human services to land use planning and development. Speakers for Energy Committee and Transportation Committee touched on various topics before the conference was adjourned for the day.

Day two offered attendees a chance to attend several different Disaster and Emergency Services sessions. Topics included a mitigation group discussion, a recovery group discussion and response group discussion. The DES sessions continued in the afternoon while a few different sessions were folded into the agenda. Montana DNRC presented on the role of Commissioners and Fire Warden in wildfire scenarios. Finally, the Montana Oil, Gas and Coal Counties held their meeting in the late afternoon to close out a busy day.

The Wednesday agenda for the conference saw another opportunity for attendees to listen and participate in the MACo general session. Energy Procurement and the keynote speaker, Attorney General Tim Fox, rounded out the lunch time. Cyber security for elected officials drew a big crowd of Commissioners as they learned how to reduce county's exposure cyber security threats. The last item on the agenda was a brief on workers compensation.

The final day for the Commissioners was themed Military Day. Speakers included Colonel Buel Dickson, Commander of the 120th Airlift Wing and Colonel Russel Williford, Vice Commander of the 341st Missile Wing. The midwinter conference closed after a tour of the Montana Air National Guard Facilities at Gore Hall.

To keep up-to-date on MACo events and for more information on conferences, news, and contact information, please visit <https://www.mtcounties.org/>

## ICE JAMS IN MONTANA

By Arin Peters, Senior Hydrologist, NWS Great Falls & Shawn Carter, Physical Scientist, National Weather Center



Ice jams are extremely unpredictable and can be quite destructive and dangerous as well. Some of the highest recorded water levels on Montana rivers are from ice jam flooding rather than open water warm season floods. Montana has the highest number of reported ice jams in the United States. With over 4500 total reported ice jams, Montana accounts for 17% of all ice jams across the country. Montana also has the highest number of ice jam-related deaths in the country.

Most ice jams occur between November and March but have been reported as early as October and as late as June. There are two main types of ice jams and they are often associated with time of year. Freeze up jams tend to occur earlier in the season when temperatures cool quickly, flash freeze the river, and back up water behind the jam. Water level rises associated with freeze up jams are generally more gradual and occur on the order of hours rather than minutes.

Break up jams tend to occur later in the season as thick river ice that has been building up over the course of weeks to months starts to break apart either by temperatures warming up in the spring, by increased river flow due to runoff or a reservoir release that breaks it up, or a combination of both. Often, large ice chunks begin to flow downstream and build up at constrictions in the river such as bends or on bridge piers. Initially as the ice jam forms, water can back up upstream of the jam and cause flooding similar to freeze up jam. Then when the ice jam itself breaks up, it can act as if a dam broke and send a wave of water downstream causing rapid water level rises and potentially more flooding.

The flow characteristics of a river can greatly influence the type of ice jams experienced on that reach. Rivers that move slowly and do not experience a lot of wind tend to get surface ice cover that freezes in place and creates a semi smooth, continuous surface. If temperatures remain cold, the ice keeps getting thicker over time. These rivers tend to experience more break up ice jams rather than freeze up jams. Rivers that have more velocity or wind and wave action tend to freeze up in moving chunks that collide and freeze together (frazil ice) to form a rougher, more unstable surface. These rivers tend to experience both freeze up and break up jams due to the nature of ice formation.

All river ice can be unstable and venturing out onto a frozen river of any kind, ice jammed or not, is extremely dangerous. River ice is inherently more dangerous than lake ice because of the current of a river and variable temperature profiles that can affect ice thickness drastically in a matter of feet.



# ICE JAMS IN MONTANA (continued)

Some challenges in the detection and reporting of ice jams is the sparse population and large land area we have in Montana. Knowing where river ice is accumulating and where ice jams may be present is critical for the National Weather Service to communicate these risks to our partners. We rely on spotter reports, river surveys, and remote sensing from the Joint Polar Satellite System (JPSS) Visible Infrared Imaging System (VIIRS) to provide river ice maps to accomplish this task. The JPSS images the entire earth every day, but during winter, North America tends to be very cloudy with large mid-latitude cyclones trekking across the country every few days. Also, because JPSS images so much area every day, its spatial resolution is fairly coarse limiting observations to the largest rivers.

National Weather Service scientists at the National Water Center (NWC) have been developing an experimental river ice surveillance program to complement the river spotters and JPSS imagery by using the European Space Agency's (ESA) Sentinel-1 Synthetic Aperture Radar (SAR) satellites. These satellites image the earth at a much higher spatial resolution than JPSS VIIRS and because they image the earth using active C-Band Radar, they can collect images during the night and through clouds. Working with local National Weather Service Weather Forecast Offices in Great Falls, MT and Albany, NY, the NWC has been improving techniques for this method over the past year. The NWC will soon release a prototype that will map every Sentinel-1 SAR scene collected over the northern tier of the United States and Alaska, hopefully before river ice break-up season is upon us.

## NATIONAL WEATHER SERVICE MEET AND GREET

Get to know National Weather Service (NWS) team members from around the state. This edition highlights Dan Borsum from the NWS Billings office. If you live in the Billings area and have a weather question for him, email him at [dan.borsum@noaa.gov](mailto:dan.borsum@noaa.gov).



**Title:** Senior Forecaster, Incident Meteorologist and Fire Weather Program Leader.

**Favorite Part of the Job:** Supporting the hardworking firefighters and first responders with critical information to help them.

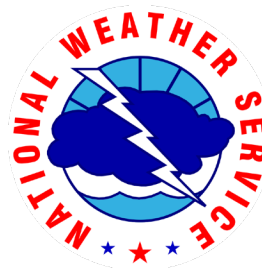
**Favorite weather term:** Klondike Chinook

**Must-have food/drink:** Coffee

**Favorite Outdoor Activity:** Walking, even better with my beagle

**Favorite Sports Team:** Las Vegas Golden Knights

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In the next Highground edition the NWS-Glasgow office will be highlighted!

## TRAININGS AND MEETINGS



ASSOCIATION OF  
*Montana*  
FLOODPLAIN  
MANAGERS

### 2020 AMFM ANNUAL CONFERENCE

March 10-13, 2020 | Kalispell, MT

Hilton Garden Inn, Kalispell. For more information visit the Association of Montana Floodplain Managers website <https://mtfloods.wildapricot.org>



### 2020 MACO FRAUD PREVENTION TRAINING

March 25, 2020 | Butte, MT

Butte Best Western Plus, Plaza Inn Butte. For more information visit the Montana Association of Counties website [www.mtcounties.org](http://www.mtcounties.org)



### 2020 MONTANA ASSOCIATION OF PLANNERS CONFERENCE

October 20-22, 2020 | Missoula, MT

Holiday Inn Downtown Missoula. Registration opens in March, visit the Montana Association of Planners conference website [www.mtplannercon.com](http://www.mtplannercon.com)

## UPCOMING CFM EXAM DATES



### NEXT CFM EXAM

MARCH 10, 2020 FROM 5:00PM TO 9:00PM

2020 AMFM Annual Conference | Kalispell, MT

Must be pre-registered in order to take the exam





Sun River  
Photo by: Arin Peters

ALWAYS REMEMBER  
TURN AROUND, DON'T DROWN!

## ABOUT THE MONTANA HIGHGROUND

We are always accepting articles and ideas for this newsletter! Please email your contributions at anytime to [worby.mcnamee@mt.gov](mailto:worby.mcnamee@mt.gov).

The Highground Newsletter is a quarterly publication of the Montana DNRC Floodplain Program. This newsletter & other DNRC Floodplain Program activities are funded, in part, through grants from FEMA.

Persons with disabilities who need an alternative accessible format of this document should contact the DNRC Public Information Officer at 406-444-0465.

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