

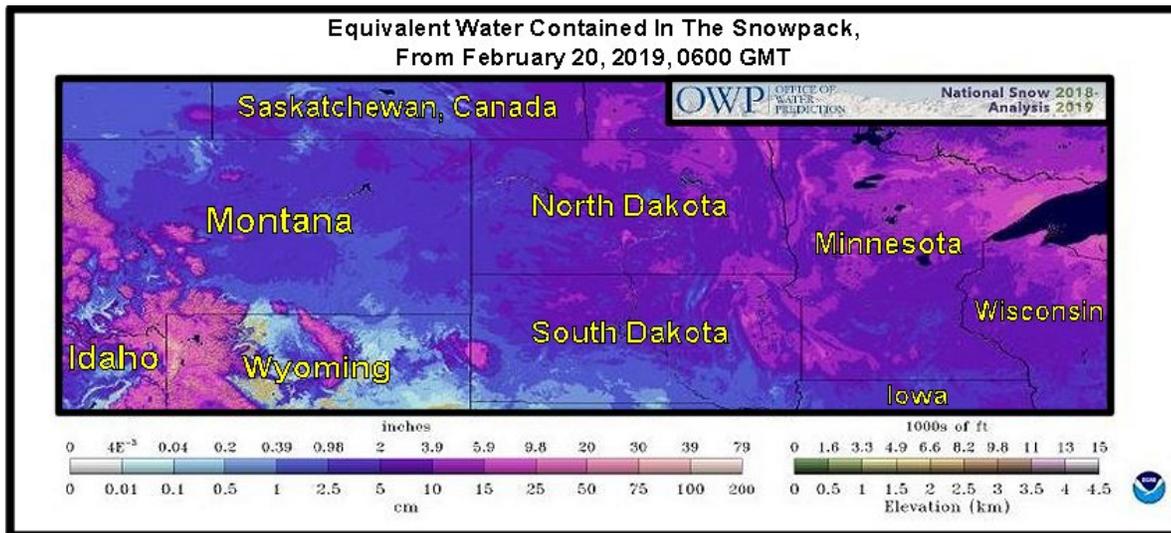
Deepening Snow In North-Central U.S. Raising Flood Threat

By Brad Luchen, Andrew Owen and Drew Lerner

Kansas City, February 22 (World Weather Inc.) – There is deepening snowpack across the Northern U.S. Plains and upper Midwest. Unusually cold temperatures and frequent small weather disturbances in the next two weeks will lead to the snowpack becoming deeper and *this scenario raises concern of spring flooding as the snow melts.* The snow has been good for protecting winter crops from the below zero temperatures. However, water equivalencies in the snowpack are 2.00 to more than 4.00 inches in the eastern half of the Northern Plains and upper Midwest where a wet weather pattern is expected this spring. *Significant runoff will be possible when seasonal warming occurs to melt the snow at the same time frequent bouts of rain fall. Topsoil conditions are already saturated beneath the snow which will also contribute to significant runoff since the moisture will be unable to soak into the ground.*

The U.S. northern Plains are generally covered in several inches of snow. Snowpack as of Thursday morning ranged from 4 to 10 inches with portions of Minnesota and eastern fringes of the Dakotas having 20 inches or more of snow on the ground. The topsoil beneath the snow was rated adequately to abundantly in much of Minnesota and the eastern Dakotas. Montana and western North Dakota topsoil moisture was rated short. Wisconsin and much of Michigan are also blanketed by snow with accumulations of 2 to 10 inches. These areas were also abundantly wet beneath the snow.

Moisture tied up in the snow cover varies from 2.00 to 6.00 inches across Minnesota, Wisconsin and much of the Dakotas with local amounts surpassing 6.00 inches. Montana, western North Dakota and much of Michigan (outside the extreme south) had 0.50 to 2.00 inches of moisture tied up in the snow cover.



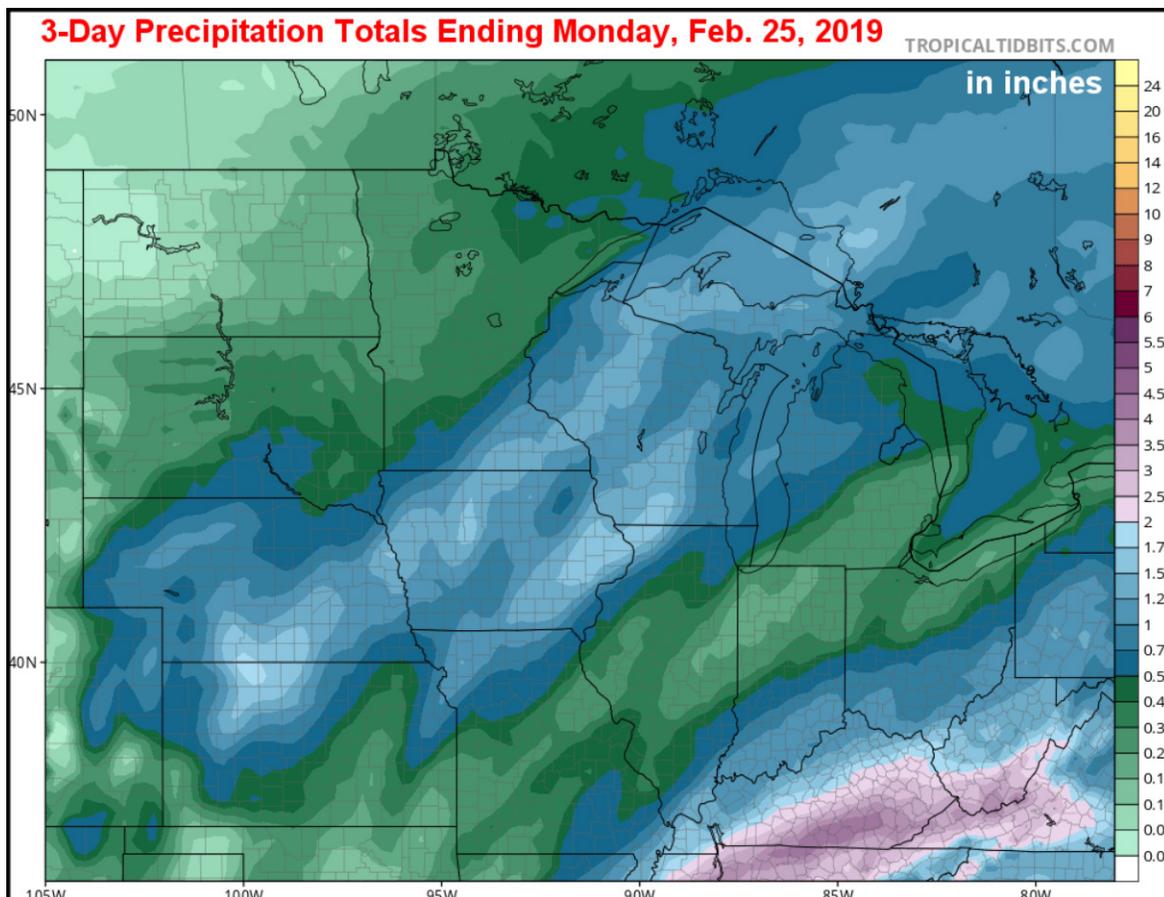
Flood concerns this spring are greatest in Wisconsin, Minnesota, the eastern Dakotas and Michigan due to abundant topsoil moisture and several inches of snow on the ground. Flood potentials will also rise in neighboring areas of Iowa and possibly northeastern Nebraska as time moves along in the next few weeks. Flooding will likely

Deepening Snow In North-Central U.S. Raising Flood Threat

delay winter wheat development in Michigan while delaying the onset of spring planting for most of the Upper Midwest. Field progress will be slow and some livestock areas will become extremely wet and muddy for a while as the seasons change. Drier and warmer biased weather is needed in coming weeks to help mitigate some of the flooding and promote a better environment for winter crops and spring planting.

In the **northwestern Plains**, the risk of flooding is much less than that in the Upper Midwest because of lower soil moisture and lighter snow depths with lower snow water equivalencies in the snow. The soil will be able to absorb some of the moisture as the snow melts, although the ground will gradually become saturated. Much like the Upper Midwest, spring crop planting may get off to a sluggish start, but much of that will be determined by the significance and frequency of spring precipitation. Ample moisture will be beneficial for long-term grain and oilseed conditions.

Most of the greatest snow depths are found from the Missouri River Valley in the Dakotas eastward to the Great Lakes region. The lack of deep snow to the west will leave Montana and the westernmost Dakotas out of the flood threat. Melting snow in the Missouri River Valley will not likely create much of a flood threat in the Dakotas, but the additional runoff downstream into the lower Missouri River Valley will raise the potential for flooding in Missouri and eastern Nebraska because of a more frequent spring precipitation pattern in those areas.



A mixture of precipitation and sunshine are slated for portions of the northern Plains and Upper Midwest during the coming week. The most widespread precipitation will

Deepening Snow In North-Central U.S. Raising Flood Threat

evolve today and last through the weekend as a strong low-pressure center advances across the Plains and Midwest. Snowfall will be greatest from Nebraska and northwestern Kansas through Iowa to southeastern Minnesota, Wisconsin and upper Michigan where 4 to 10 inches and local totals over 16 inches will be possible.

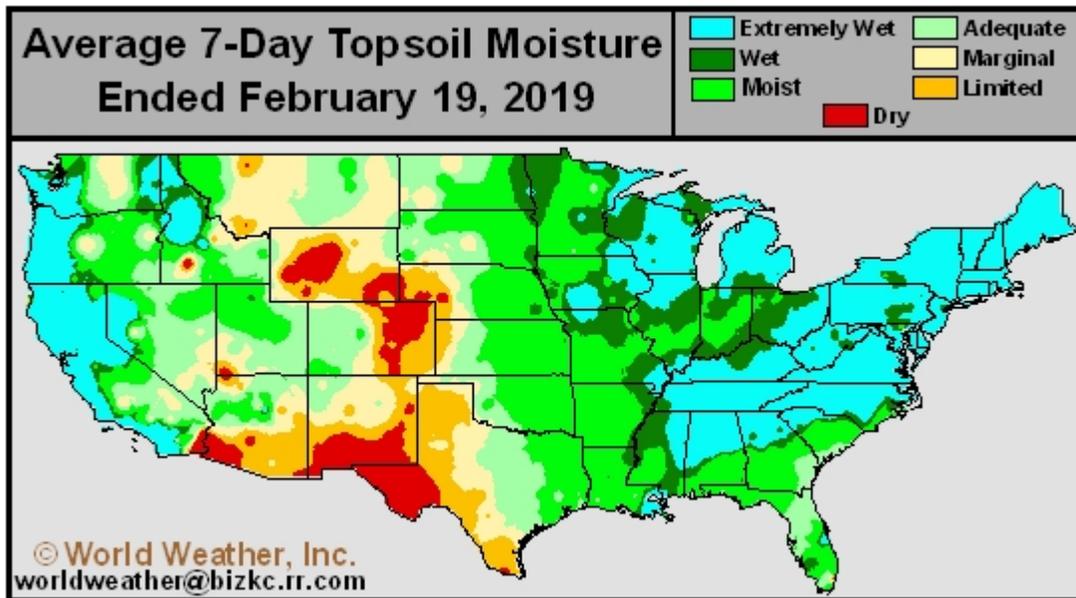
Wisconsin will be hardest hit. High wind speeds are also expected to induce some blizzard and near blizzard conditions. Other portions of the Midwest will see precipitation occur as rain before changing over to light snow. Another disturbance will promote periods of erratic snow for the northern Plains and Upper Midwest next week as well. Moisture totals by next Thursday morning will range from 0.50 to 1.50 inches from Nebraska, northern Kansas and eastern South Dakota through Wisconsin, Minnesota and neighboring areas to parts of Michigan. A few moisture totals may surpass 2.00 inches in a part of Wisconsin and eastern Iowa. Other areas in the Midwest and northern Plains will receive 0.15 to 1.00 inch of moisture with locally greater amounts. Snowfall outside of the areas mentioned above will vary from 1 to 4 inches with a few amounts close to 6 inches with the greatest amounts surrounding the heavy snow band described above.

Temperatures will generally trend below to well below normal across the northern Plains and a part of the Upper Midwest during the next two weeks. The cold will prevent much snow melt from occurring and that raises the potential for flooding later in March or April when the region finally begins to warm. However, a frequent precipitation pattern will be back in place by that time raising the potential for significant flooding as fresh precipitation falls while runoff is increasing from melting snow.

Spring planting is still several weeks away and if sufficient warming can occur in March or early April there is a good chance that flooding will be abating when the normal planting season begins. However, there is some concern that rain may be falling frequently in the spring and that may perpetuate the wet conditions limiting fieldwork for a while.

Other portions of the Corn and Soybean Belt, Delta and southeastern states are also abundantly to excessively wet due to frequent precipitation in recent weeks. Some flooding has occurred recently in the lower Midwest and is under way now in the Tennessee River Basin and parts of the U.S. Delta. Flooding is likely to come and go through these areas for the next few weeks and there is a good chance that some planting delay will evolve because of the wet conditions. The Gulf of Mexico Coast states often plant spring and summer crops in the middle to latter part of March with some producers in their fields during the last days of February and early March. This year's early season fieldwork will be slow in getting started because of an expected active weather pattern.

Deepening Snow In North-Central U.S. Raising Flood Threat



World Weather, Inc. forecasts and comments pertaining to present, past and future weather conditions included in this report constitute the corporation's judgment as of the date of this report and are subject to change without notice. Comments regarding damage or the impact of weather on agricultural and energy as well as comments made regarding the impact of weather on the commodity and financial markets are the explicit opinions of World Weather, Inc. World Weather, Inc. cannot be held responsible for decisions made by users of the Corporation's information in any business, trade or investment decision.

©2019 World Weather, Inc. Any unauthorized redistribution, duplication or disclosure is prohibited by law and will result in prosecution.