THE
ATMOSPHERICRESERVOIR
Examining the Atmosphere and Atmospheric Resource Management

2022-23 SNOWFALL SEASON:
TEMPERATURES, PRECIPITATION & FLOODING

By Mark D. Schneider

The 2022-23 snowfall season set records both nationally and here in North Dakota. Through May 1, Dickinson (Experimental Station Site) sailed past its snowiest season on record with 96.4 inches compared to the previous record of 74.8 inches during the 2010-11 season. Bismarck only needed one-half inch of additional snowfall to break its seasonal snowfall record of 101.6 inches set back in 1996-97. The prolonged snowpack kept temperatures on the cold side. On April 12 Grand Forks (UND Site) reached 120 consecutive days with a snow depth of more than 12 inches and this was a record since 1893. Bismarck broke its record of consecutive days with at least one inch of snow on the ground and finished with 155 days for the season on April 14. Dickinson had its longest consecutive period with daytime temperatures colder than 50 degrees from November 6 to April 8 or 154 days straight! Temperatures in the month of March were well below normal with Bismarck at 15.4 degrees and Minot at 14.1 degrees below average. In fact, it was the first time in recorded history that Bismarck and Jamestown failed to reach 40 degrees or above in the month of March.

"Despite a snowpack that rivaled the worst winters in memory, this spring's runoff has generally been very mild in comparison to the snow-water equivalent of the snowpack," said Allen Schlag, Hydrologist for the National Weather Service (NWS) Bismarck. “The early November snowstorm insulated the very dry and unfrozen soils which helped most of the meltwater turn into soil moisture instead of runoff across the James, Souris, and Missouri River basins of North Dakota. Even the mildly problematic flooding along the Knife, Heart, and Cannonball rivers would have been much less if it were not for the flash melt brought on by near 90-degree heat in western North Dakota."

"Although much of eastern North Dakota received well above average snowfall throughout the winter, a record dry fall prior to freeze up provided plenty of room for meltwater to infiltrate the soils during this spring's snowmelt period," said Amanda Lee, Hydrologist for the NWS Grand Forks. “While there were concerns of a rapid melt as we entered early April without a hint of the spring snowmelt beginning, below normal temperatures persisted allowing for an ideal thaw cycle which slowed down runoff into the river system. Mother Nature did provide a fair amount of precipitation leading up to and during the beginning stages of this spring's flood but most of the precipitation fell as snow rather than rain. A significant warm up in conjunction with any sort of decent rainfall would likely have changed the spring flood outcome significantly."

Considering all the temperature and precipitation records that were set, North Dakota is in relatively good shape starting the growing season. Now if the rains can just be timely and plentiful...

Atmospheric Resource Board | North Dakota Department of Water Resources | 1200 Memorial Highway, Bismarck, ND 58504
(701) 328-2788 | dwr.nd.gov

ND Weather Modification Association | PO Box 2599 | Bismarck, ND 58502 | (701) 223-4232