

CENTER FOR REGIONAL CLIMATE STUDIES (CRCS) develops new, more accurate, computational model for predicting flooding

Outcome: A new, more accurate, computational model for predicting flooding was developed for the area around Devils Lake. While multiple studies were done on the hydrology of the Devils Lake (DL) basin and future flood risks under current climate, this is the first study based on an industry-standard model of a complex watershed which explored climate change impacts on hydrology of the region.

Impact/Benefits: The research has large potential impact on flood mitigation planning. Flooding in the Devils Lake area has caused significant economic hardship; more accurate planning could assist homeowners, farmers and businesses prepare for the next flood better.

Explanation: CRCS developed a hydrological model of the Devils Lake (DL) basin using the Soil and Water Assessment Tool (SWAT) and analyzed DL's overspill probability using an ensemble of statistically downscaled Global Climate Model (GCM) projections of the future climate. The results indicate a significant likelihood (7.3%–20.0%) of overspill in the next few decades in the absence of outlets. Full-capacity outlets radically reduce the probability of DL overspill and are able to partially mitigate the problem by decreasing the average lake level by approximately 1.9 m and 1.5 m in the 2020s and 2050s, respectively.



Buoy used in data collection on Devils Lake.