

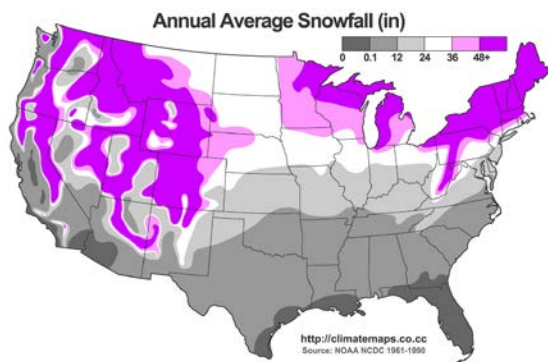
NEXTracker Design Bulletin

Snow Stowing

Systems built in areas with significant annual snowfall may require the installation of snow depth sensors and, in some cases, greater than normal above-grade pier height in order to ensure proper tracker operation. This document provides a brief overview of design considerations for such situations.

Design Recommendations based on Site Characteristics

Annual snow loads per ASCE 7-10 will determine which design elements are advised. NEXTracker’s design services team will evaluate this for customers on a project-specific basis. General guidelines are shown in the table below; these may also vary in conjunction with wind loads.



Category	Annual Snow Load	Approx. Equivalent Snowfall*	NEXTracker Recommendation
A	< 30 psf	< 24"	No changes to standard design
B	30 – 45 psf	24" – 36"	Add snow sensor(s)
C	> 45 psf	> 36"	Add snow sensor(s) AND increase above-grade pier height

* based on 15 lb/cubic ft snow weight

Figure 1 – US snowfall coverage map

Snow Depth Measuring Equipment & Operation

NEXTracker recommends (and provides) ultrasonic sensors for measuring snow depth. The device consists of an ultrasonic transducer mounted parallel to the ground. The sensor sends periodic ultrasonic pulses downward and measures the amount of time required for the reflected signal to return. This, when coupled with appropriate temperature adjustments provides an accurate reading of snow depth. The sensor head features automatic de-icing to maintain accuracy within 0.1%.

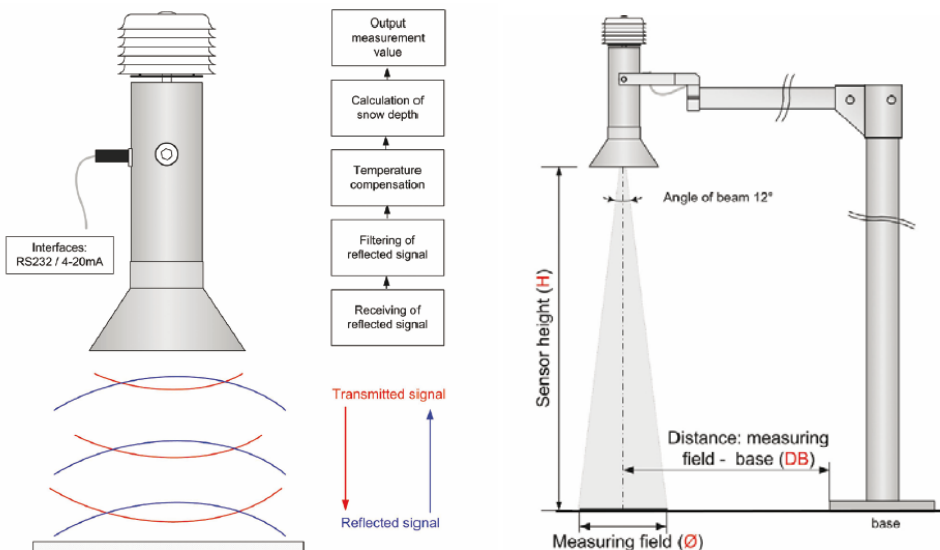


Figure 2 – Typical ultrasonic snow sensor operation

Snow Stowing Algorithm

Tracker behavior in response to snow detection is determined by a pre-programmed algorithm in the central tracker control units (NCUs). The algorithm is triggered when the snow sensor(s) detect a minimum snow accumulation rate. NEXTracker's default recommended algorithm is as follows:

Initial trigger point: 2.0" snow accumulation per hour

Accumulation Rate per Hour	Tracker Operation
0.0 to 0.5"	Resume normal operation
> 0.5" to 2.0"	Oscillating stow mode - tracker will rotate from 60° east to 60° west every two hours
> 2.0"	Fixed stow at 60° away from prevailing wind direction

Note: Wind stowing will supersede snow stowing commands. The tracker will stow to the horizontal position upon detection of 60mph or greater wind speed regardless of snow conditions.

Sensor Placement on Site

Snow accumulation in a given area is influenced by a large number of variables including wind patterns, terrain, ambient temperatures, shading, soil type, surface composition, etc. As such, care should be taken to select a measuring location that will be as representative as possible of the entire site. For larger projects or sites with significant terrain variations it may be advisable to install multiple sensors in different locations to ensure applicable readings.

NEXTracker recommends a vertical height of at least 3 meters from the ground to the sensor head. An area with at least one meter radius should be kept clear directly below the sensor. Actual height and clear ground area requirements depend on local conditions and will be determined based on detailed specifications from the sensor manufacturer.

Additional Measures for High Snowfall Locations

For locations with more than 36 inches (30cm) of snowfall per year NEXTracker recommends extending above-grade pier height. Snow shedding off the tracker may accumulate on top of existing snow on the ground, creating a possible obstruction to tracker movement. Increasing the pier height will provide additional clearance in this situation.