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Damage Surveying Methods for Canadian Severe Wind Events

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Historically, tornadoes in Canada have been significantly underreported, primarily due to a low population density away from the southern border of the country. Since shortly after its inception in 2017, the Northern Tornadoes Project (NTP), now part of the Canadian Severe Storms Laboratory (CSSL), at Western University, has been the authority on the documentation and study of tornadoes and other damaging wind events caused by severe convective storms in Canada. Methodical and thorough documentation of these severe wind events has been crucial to the NTP and CSSL's success. Since 2017, Canada averages over 100 recorded tornadoes per year, second most of any country in the world.

There are many ways that the NTP documents and analyzes severe wind events, including through radar data, satellite and aircraft aerial imagery, and social media reports. However, the most crucial elements of the analysis of notable severe wind events are the ground and remotely piloted aircraft (i.e. drone) damage surveys that are conducted on-site following these events. During the summer months in Canada that are prone to severe convective storms, the CSSL has three teams located across the country that are equipped to conduct damage surveys located in London, Ontario; Winnipeg, Manitoba; and Olds, Alberta. These teams are composed of CSSL staff, graduate students, and undergraduate interns. All members of the CSSL that make up the damage survey teams undergo rigorous training at the start of the summer, covering topics such as safety, documenting wind damage, drone flying, and interacting with homeowners. The NTP also creates severe weather outlooks prior to storms, and preliminary event maps of social media and other damage reports after damaging winds occur, to prepare and assist the field teams.

There is an abundance of preparation and effort to ensure that the NTP's ground and drone damage surveys of severe wind events are conducted effectively and safely, while collecting high-quality data. This presentation will detail the NTP's organization, preparation, and execution of these surveys, and how other research groups could implement similar tactics to survey severe wind damage in various regions of the world.