DAMAGE PATH INVESTIGATION OF THE AUGUST 3, 2018 ALONSA, MANITOBA TORNADO

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The tornado that hit the Rural Municipality of Alonsa, Manitoba and Margaret Bruce Provincial Park on August 3, 2018 was the strongest event recorded in Canada since the Elie, Manitoba F5 tornado of 2007, and the first to cause a fatality since the Goderich, Ontario F3 tornado of 2011. It is the first tornado in Canada to be rated at least EF4 under the new Enhanced Fujita Scale. The tornado's damage path was approximately 12 km (7.5 mi) long and 800 m (0.5 mi) wide at the location of the worst damage. The majority of the affected areas was covered in poplar forests and prairie grasslands, while some agricultural fields and five private homesteads were also damaged, including two residential structures - with varying levels of hold-down capacity - removed from their foundations, and another suffering major wall collapse. The EF4 rating of this event is a preliminary rating, pending a full engineering analysis of the damaged structures.

This talk will present observations from the forensic damage survey carried out by the Northern Tornado Project team and staff from Environment and Climate Change Canada in the days following the Alonsa event. The overall investigation makes use of ground survey observations, high-resolution satellite imagery, contracted aerial photography, and review of social media and other public reports for assessment of the Alonsa event. Preliminary findings from the engineering analysis of damaged structures and vegetation will be presented. The Alonsa tornado path is both visible from satellite imagery and easily accessible for ground surveys, providing the opportunity for damage assessment and correlation of visible damage markers between ground-level observations, drone and aerial photography, and the available satellite imagery.

This study contributes to the objectives of the Northern Tornadoes Project at Western, to obtain high resolution, research-quality data for as many events in Canada as possible. There are large regions in Canada where tornadoes are expected to occur, but there is a gap in tornado-observation data. These regions represent remote areas with very low population density, so events that do occur are likely to go unreported. To understand the occurrence of tornadoes in remote areas, the Northern Tornadoes Project relies heavily on radar data analysis for storm detection, and aerial photography for tornado path identification. This work hopes to aid the development of new Damage Indicators for sparsely-populated regions that can be seen from the satellite or aerial imagery so that remote tornadoes can be more reliably assessed.