

THE NORTHERN TORNADOES PROJECT – OVERVIEW AND 2017/2018 RESULTS

David Sills^{1*}, Gregory A. Kopp², Emilio Hong², Joanne Kennell², Aaron Jaffe², Lesley Elliott²

¹Environment and Climate Change Canada, King City, ON, Canada; ²Faculty of Engineering, University of Western Ontario, London, ON, Canada

*David.Sills@canada.ca

An ambitious new initiative – the Northern Tornadoes Project – has been undertaken with the primary goals of studying tornado occurrence in Canada, assessing true tornado risk and better characterizing tornado damage. The collaborative study involving the University of Western Ontario and Environment and Climate Change Canada employs new high-resolution satellite imagery resources, high-resolution geo-referenced aerial imagery, and – where possible – thorough ground surveys. Extensive use is also made of public reports of severe weather via social media channels.

The first ‘pilot’ season during summer 2017 focused on the detection of tornadoes in sparsely populated, mostly forested regions of Ontario and Quebec. Nine tornadoes were identified that would otherwise not have been verified by ECCC meteorological operations, and tornado data were improved in another nine cases, with one tornado upgraded from EF2 to EF3 on the Enhanced Fujita Scale. Included in these totals are 11 supercell tornadoes from a single day in Quebec, now the Province’s largest recorded tornado outbreak and one of the most significant recorded outbreaks in Canadian history.

A second, expanded pilot season during summer 2018 aimed to capture every EF1 or higher tornado that occurred in Ontario, and increased the study domain for surveying significant tornadoes to all of Canada. Investigations were conducted in the provinces of Saskatchewan, Manitoba, Ontario, Quebec and New Brunswick. This included Canada’s highest-rated tornado damage since the Elie, Manitoba F5 tornado event of 2007. Though across the continent it was a relatively quiet year for tornadoes, preliminary results suggest that 11 tornadoes were identified (nine in Ontario) that would otherwise not have been verified by ECCC meteorological operations, and tornado data were improved in another four cases.

Future plans for the Northern Tornadoes Project will also be discussed.