



## COMPACT MONITORING STATIONS

*The 2015 Pan American and Parapan American Games will take place this year in Toronto and surrounding areas from July 10-26 and August 7-15, respectively. The Toronto 2015 Games is the largest multi-sport event Canada has ever hosted, involving 7,600 athletes competing in 51 sports (36 Pan Am and 15 Parapan) in 30 different venues located in the Greater Golden Horseshoe Area. Environment Canada is providing state-of-the-art, 24/7 dedicated, venue-specific weather alerting services and environmental emergency support for the Toronto 2015 Games. The TO2015 Games are also a catalyst for enhancing existing weather services through research and demonstration projects that will benefit future generations of Canadians.*

### What does the technology do?

Environment Canada has added 40 compact stations and 15 other automated weather stations to existing networks to form a high-resolution monitoring system across the Greater Golden Horseshoe Area (GGHA) called the Pan Am Mesonet. These stations will measure standard meteorological variables such as wind speed, wind direction, air temperature, humidity, atmospheric pressure, precipitation amounts and intensity, as well as new heat stress variables. The stations have been strategically sited and installed to sense and detect the state of the atmosphere in the GGHA. The data will inform the dedicated forecast and briefing operations teams that Environment Canada will have in place to ensure the safety and security of all involved.

### What's new about the technology?

These stations use solar cells for power and a cell modem for communication. The standalone design allows for an easy installation at temporary locations and for a simple decommissioning process after the Games. For the first time, Environment Canada will be collecting weather conditions minutely, in contrast to the hourly reports provided from standard network stations. All stations will include a new heat-stress monitoring device called a Black Globe.

### How is the new technology better?

As with so many technologies, weather instrumentation has



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decreased in size and cost rather quickly, while maintaining much of its robustness and measurement accuracy. While these stations can't replace a standard Meteorological Service of Canada automatic station at this time, they can provide affordable and dependable measurements from locations previously beyond consideration. These stations have low power consumption, allowing Environment Canada to use solar panels and batteries. They are compact and light-weight allowing for easy installation. With no moving parts, station maintenance can be extended with a calibration visit every two years. With the TO2015 Games, the timing was right for Environment Canada to use these compact stations to measure weather conditions at the venue sites while evaluating their utility as a measurement platform for the provision of high-resolution data for dense urban areas.

### What is the legacy for Canadians?

These stations will be used in conjunction with research based weather observing platforms to complete the high-resolution Pan Am Mesonet. The goal becomes increasing our understanding of the weather and heat conditions across a dense urban environment in summer. The stations in the Mesonet make it possible to measure conditions on a finer scale in order to validate the high-resolution urban modelling work being done at Environment Canada's Canadian Meteorological Centre.

Environment Canada will evaluate the utility of minutely or high-frequency weather observations. The minutely scale should allow for unique post-event analysis of active and severe weather events at a scale never before available.

