



TRIAXYS™ DIRECTIONAL WAVE BUOY

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?

The TRIAXYS™ Directional Wave Buoy is a precision instrument incorporating new technologies that increase the accuracy of measurement of wave height, wave period and wave direction. The TRIAXYS™ buoy is the result of a collaborative program between AXYS International Inc. of Sidney, British Columbia and the Canadian Hydraulics Centre of the National Research Council of Canada. This directional wave buoy has been deployed in addition to the WatchKeeper™ buoy south of the Toronto Islands.

What's new about the technology?

Unlike standard Meteorological Service of Canada (MSC) lake buoys, the TRIAXYS™ Directional Wave Buoy reports specialized

wave information but not weather observations. At less than 200 kg this buoy can respond quickly to waves, including the smaller waves which do not register on our heavier buoys (weighing nearer 540 kg). The light weight of the TRIAXYS™ gives it an extraordinary resolution of near 1 centimetre in light winds while retaining a wave height measurement range of ± 20 metres in storm conditions. A unique mooring permits the TRIAXYS™ Directional Wave Buoy to report accurate motion data for roll and pitch angles up to 60 degrees, well beyond the norm for heavier buoys.

How is the new technology better?

This buoy will report data to the Canadian Meteorological Centre (CMC) every 30 minutes by cellphone. This data will inform the new high-resolution wave models



being developed by the CMC staff while also giving weather forecasters more frequent, higher resolution, wind, wave, and weather information. Its small size (0.9 metre diameter) and light weight permit the use of small craft for deployment, a significant cost saving.

What is the legacy for Canadians?

This TRIAXYS™ Directional Wave Buoy will be deployed into the Environment Canada operational network post Games for ongoing support of the CMC wave modelling program. The buoy is expected to provide new insights into near-shore wave conditions and a surer response to wave conditions that affect small craft.

The efficacy of the wave measurement by the buoy will permit marine services to consider its utility for reporting under-keel clearances in active weather. Accurate wave height measurement allows the safe transit of deep draft ships or ships in heavy weather especially when navigating a harbour entrance.



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