

# CWSF 2014 - Windsor, Ontario



## Candace Brooks-Da Silva

### Greening the Blue Skies: Reducing Induced Drag From Trailing Vortices

**Challenge:** Innovation

**Category:** Intermediate

**Region:** Windsor

**City:** Windsor, ON

**School:** Academie Ste. Cecile International

**Abstract:** A novel multi-winglet concept was tested on a semi-span wing in various configurations (V-Shaped Dihedral, V-Shaped Anhedral, Downward Sloping, Upward Sloping, Horizontal, Vertical, Staggered High, Staggered Low), angle proportions (Large, Medium, Small) and angles of attack (0°, 3°, 6°, 9°, 12°, 15°, 18°) in a custom-built subsonic wind tunnel. Mathematical analyses showed significant performance improvements over controls suggesting weaker trailing vortices and reduced induced drag.

#### Biography

Candace is a dreamer whose unique way of seeing the world often leads to surprising connections and unusual solutions. She believes the possibilities for positive change are limitless and absolutely within her reach if she works wholeheartedly to pursue her goals with dedication and determination. Candace brings this enthusiasm and commitment to everything she becomes involved with. At 12, her first CWSF project tested her unusual idea of using frequency to rescue submerged objects from a non-Newtonian fluid. This year's CWSF project, inspired by Candace's concern for the environment and love of flying, tested her innovative solution for lowering aircraft greenhouse gases by reducing induced drag from trailing vortices. Once committed, she is tenacious. Since she first won her school's spelling/science fairs at age 10, perseverance (and hard work) have led her to provincial/national levels and many accolades. She is a committed member of Guiding (10th year), dance (11th year), the Royal Canadian Air Cadets (Flight Corporal), concert band (trumpet/cornet), mathematics club and the debate team. In addition to science, Candace loves flying, kayaking, learning languages, wilderness camping, snorkeling, hiking, playwriting and new experiences. She is honoured to represent the Wi...

#### Awards

#### Value

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| The Actuarial Foundation of Canada Award - Intermediate   | \$750          |
| Excellence Award - Intermediate - Gold Medal<br>Sponsor: Youth Science Canada                                 | \$700          |
| Western University Scholarship<br>Gold Medallist - \$4000 Entrance Scholarship<br>Sponsor: Western University | \$4 000        |
| <b>Total</b>  | <b>\$5 450</b> |

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