**Supplementary Digital Content 2:**

# Calculation of average individual Wet-Bulb Globe Temperature (aiWBGT)

Environmental data were collected hourly from 5 automated weather stations of the South African Weather Services along the race route between 6AM and 5PM on race day. Using the hourly information from these 5 weather stations, WBGTs that a participant was exposed to at 5 geographical locations along the route was calculated and then averaged.

For each cyclist, an aiWBGT was calculated based on the following assumptions:

1. The cyclist kept a constant cycling speed, allowing for the use of their overall average race speed to determine the time they presented at each weather station (Table S1)
2. When the cyclist presented to a weather station, the WBGT for that hour period during which they presented, was taken (Table S2)

**Table S1: Geographical location of weather stations, distance and time**

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| --- | --- | --- |
| **Geographical location of weather station** | **Distance of the weather station from the start (km)** | **Calculation of the estimated time of a cyclist at a weather station using distance (km from the start) and each cyclists average speed (km/hr)** |
| Cape Town Royal Yacht Club | 0km (start) | Start time (crossing mat, or batch time if no mat time) |
| Kirstenbosch | 10km | Start time + (**10**/speed) |
| Cape Point | 48km | Start time + (**48**/speed) |
| Slangkop | 67km | Start time + (**67**/speed) |
| Molteno Reservoir | 107km (finish) | Start time + (**107**/speed) |

An example of a calculation of aiWBGT for a cyclist (Rider A) on race day in 2012 (started at 07h30 and had an average cycling speed of 24.9km/h) (Table S2).

**Table S2: Geographical location of weather stations, distance, and WBGT at each station for Rider A** in 2012 (started at 07h30 and had an average cycling speed of 24.9km/h)

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| **Geographical location of weather Station** | **Distance of the weather station from the start (km)** | **Calculation of the estimated time of the cyclist at a weather station using distance (km from the start) and each cyclists average speed (km/hr)** | **WBGT of the cyclist at that time point at each weather station (in the year 2012)** |
| Cape Town Royal Yacht Club | 0km (start) | 7:30 | 18.8 |
| Kirstenbosch | 10km | 7:54 | 17.3 |
| Cape Point | 48km | 9:24 | 17.6 |
| Slangkop | 67km | 10:12 | 15.6 |
| Molteno Reservoir | 107km (finish) | 11:48 | 18.9 |
| **WBGT Average for Rider A in 2012** | | | **17.6** |