

Dorado AUV Survey Design for the September 2012 CANON Experiment

(Preliminary Plan)

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Dorado AUV objectives:

- 1) Conducting yo-yo transects around the ESP drifter (ESP at 10 m depth) using the Dorado's augmented sensing capabilities, to provide environmental data for ESP.
- 2) Also transecting through "history water" marked by the Stella drifters (drogue at 10 m depth).

Timeline:

Day 1 (09/10): R/V Zephyr (with Dorado AUV on deck) transits to experiment area.

Day 2 (09/11): See Figure.

Yo-yoing on the sides of a triangle circumscribing a 3-km radius circle, centered on the ESP, while LRAUVs yo-yoing on a 2-km radius circle. Since only Stella #1 is in water, Dorado does not track "history water" yet.

Day 3 (09/12): See Figure.

Yo-yoing through a line defined by locations of Stella #1 & #2, followed by yo-yo transects on the sides of a triangle circumscribing a 3-km radius circle, centered on the ESP.

Day 4 (09/13): See Figure.

Yo-yoing through a line defined by locations of Stella #1, #2 & #3, followed by yo-yo transects on the sides of a triangle circumscribing a 3-km radius circle, centered on the ESP.

Day 5 (09/14): R/V Zephyr (with Dorado AUV on deck) transits back to MBARI.

Waypoints programming algorithm:

Prior to the start of each AUV mission (mission duration: 6am ~ midnight), waypoints are sent from shore (Zhang and Ryan) to Zephyr AUV team. The waypoints are determined based on the following information and calculations:

- ESP drifter's trail of locations, estimated surface current velocity, and ESP's projected location when Dorado conducts the triangular transects.
- Stella drifters' trail of locations.

