



40th International Sea Turtle Symposium

Workshop Proposal for ISTS40

Title of Proposed Workshop:

How to quantitatively describe correlations between sea turtle movement and ocean surface current

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Suggested Duration of Workshop: Half Day (4 hours)

Description and Justification of the Workshop:

The purpose of this workshop is to let the participants understand how to quantitatively describe sea turtle movement model through the studies of satellite monitored data and ocean surface current (OSC) data. The OSC data obtained from the product of Ocean Surface Current Analyses Real-time (OSCAR), a NASA funded research project and global surface current database managed by Earth & Space Research (ESR). The OSCAR data are formatted in netCDF (see <https://www.unidata.ucar.edu/>) and valid for describing surface currents within a water depth of 15 meters, which should be appropriate for describing our species movement. Learners of this workshop will have the chances to work with the organizer through the data processing steps required for quantitatively describing the correlations between sea turtle movement and concurrent OSC field, which are both vector data type. The time-dependent correlation between animal's instantaneous orientation and OSC vector was measured by an index developed by the organizer, which will be shown to the participants in the workshop. The monitored post-nesting hawksbill turtles were tagged with Platform Transmitter Terminals (PTTs) made by Wildlife Computers Inc. (Redmond, Washington, USA) and the females were released back to the sea in July-September 2016. Immediately after the releases from their nesting sites, the tagged animals were telemetrically monitored by ARGOS satellite system.

The data processing tasks were made on Matlab and the developed Matlab scripts will be released to the participants in advance, or after the workshop. It is highly

suggested that participants of this workshop can have their own Matlab environment ready during the workshop so that they can put their hands on the real data processing steps and understand if there will be any problems in their own Matlab environment.

In addition to the introduction of the program background, limitations and applicability of the proposed sea turtle movement model will be also discussed. Finally participants are welcomed to discuss their own sea turtle monitoring problems, share their own research directions and expectations and see if the organizer can also learn from the participants' experiences. Hence, the proposed workshop will finally finish from the fixed half day (4 hours) time schedule with a half-hour or one hour discussion for this particular sea turtle monitoring problem.

Expected Outcomes of the Workshop:

Participants of this workshop will have an overview of the telemetrically monitored data formatted by ARGOS satellite system, ocean surface current (OSC) data formatted in netCDF, a proposed index for quantitatively describing correlations between sea turtle movement and OSC field, and the data processing steps developed in Matlab by the organizer. During the workshop, participants will have the chances to understand possible technical difficulties in satellite telemetry researches, which could involve data format problems in reading, processing and algorithm development, limitations and applicability of available database, including spatial and time resolution and latency problems. Ultimately it is expected that the participants will be finally equipped with an overview of some of the basic components in satellite telemetry programs and learn from a real case problem for how to quantitatively describe time-dependent correlations between sea turtle movement and dynamic ocean surface current. For interested persons, the organizer has uploaded a short video to show how five post-nesting sea turtles' instantaneous movements were affected and correlated with the concurrent ocean surface current field in the Caribbean. Please see the link below.

<https://youtu.be/bj0MtsETEIA>