Contribution ID: **24**   Type: **Invited Lecture**

Tracking Algorithms in Marine Mammal Acoustics

Monday, 21 October 2013 10:40 (50 minutes)

The problems associated with detecting, classifying and localising marine mammals using acoustic methods have been widely studied. These represent challenging tasks when applied to individual animals and become even more burdensome when groups are encountered, as is frequently the case in practice. Here we shall consider an aspect of such acoustic processing systems that is the focus of less attention, namely the issue of tracking. Many automated acoustic systems yield detections made over short, sliding, temporal windows, resulting in sequences of, potentially multiple, detections. Tracking allows one to link together detections through time and by doing so provides a more complete picture of the acoustic environment. The use of tracking techniques has some benefits when applied to situations where a single animal is present; for example they allow optimal estimation of position based on a sequence of measurements, effectively reducing noise on location estimations. However, arguably, there is much greater potential in scenarios where many animals are vocalising simultaneously. In those instances tracking methods offer the potential to link together (associate) detections from individuals to form tracks and hence solve the problem of which vocalisation came from which animal.

This paper will review the principles underlying tracking methods and outline the panoply of existing techniques. Two prototypical tracking problems encountered in the acoustic analysis of odontocetes will be used to illustrate the issues, these are: the spatial tracking of sperm whales using a towed array and dolphin whistle tracking (contour extraction).

Presenter: WHITE, Paul (Southampton Univ., UK)

Session Classification: Interdisciplinary approach to Computational (Bio)Acoustics