Investigation of the Effect of Outflow Intrusion the Persian Gulf to the Gulf of Oman on Sound Propagation

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Abstract

Outflow intrusions are often observed in vertical profiles of temperature and salinity in the ocean (for instance the Red Sea and the Persian Gulf outflow into the open sea). They are made visible by large fluctuations, or inversions, in the profiles and as zig-zag patterns in temperature–salinity plots. These features typically have vertical scales of 10–100 m and horizontal scales of 1–100 km. In this research, first by using the collected data of the salinity and temperature in the region of the Oman sea in spring (1996) season, the sound speed was calculated by Wilson formula, then by plotting the profile of the sound speed, it was seen that the vertical structure at depth 200 to 400 m of the profile have anomaly. Using acoustic sources in presence and absence of outflow intrusion at different depths, the sound propagation was studied by method ray. The simulation have shown that the of outflow intrusion leads to the creation sound channel and absence of the outflow intrusion leads to the vanish sound channel.

Keywords: *Outflow Intrusions, Oman Sea, Sound Propagation, Acoustic Sources.*