

ACOUSTICS2008/1223
Geoacoustic inversion with recreational boat noise

A. Vincent Van Leijen

Netherlands Defence Academy, P.O. Box 10 000, 1780 CA Den Helder, Netherlands

During the MREA07 sea trials various experiments involved geoacoustic inversion with sound sources of opportunity. A particular experiment that focussed on exploiting the self noise of autonomous vehicles suffered from interfering noise due to increased boating activity in the weekend. In this work the same data is re-examined to study the potential of recreational boats as sound sources for geoacoustic inversion. Even though recreational boats are non cooperative sound sources, in the sense that weekend traffic does not sail predefined tracks and navigational logging is absent, various boats swarm out and cover large areas thus acting as a distributed set of sound sources. A typical small boat signature counts numerous harmonics of narrowband tones that cover the frequency spectre from 100 Hz up to 2 kHz. With these tones matched field inversion and traditional Doppler techniques are used to find an initial geometry of the experiments and these results are fine tuned during the final geoacoustic inversion of a locally range-independent model of a coastal environment. Results of inversions with recreational boating sounds are shown to match with previous analysis results with self noise of autonomous vehicles, bottom grab samples and seismic data.