ACOUSTICS2008/2421
Source localisation on a single hydrophone

Grégoire Le Touzé, Barbara Nicolas and Jérôme Mars
GIPSA-lab, dep. DIS, 961, rue de la Houille Blanche, 38402 St Martin d'Hères, France

The aim of the study is to localise an undewater Ultra Low Frequency (ULF) source in a shallow water environement. The acoustic signal is recorded on a single hydrophone and the source, which has to be short in time, is unknown. To perform the localisation, we have developed modal filters based on time-frequency techniques.
Different localisation techniques are proposed :
- Conventional Matched Mode Processing: results are good for range estimation but contain error on source depth estimation. We show that those errors are due to the ULF band.
- Source depth estimation technique based on mode amplitude estimation: this estimation is precise but presents ambiguities.
- Range estimation technique using mode phase estimation: we recently developed this method which also estimates mode signs. The source range is precisely estimated and mode sign estimation avoids ambiguity on source depth estimation combined with the previous method.
These methods are validated on real data comming from the North Sea.