

Breakout session

Physical

Common testing grounds

- Timescales: minutes, data symbols
- Model is divorced from the modulation scheme
- Need for typical channel types (3-10 of them)
- Ambient noise, directivity & spatial dependence
- Frequency dependence
- Models useful for: research, validation & performance prediction
- Repository of channel responses/measurements to be made available to the community
- Statistical model based on channel responses
- Testing ground

Common testing grounds

Data collection & dissemination

- NSF funding for collection of channel measurements
- Navy may be able to provide some datasets, and testing facilities
- NSF funding for dissemination of data
- Publication and citation and peer-reviewed process for datasets (IEEE OES TC?)
- List of things people MUST measure, and MAY wish to measure to be published

Common testing grounds

Notes & thoughts

- Interface between physical oceanography, acoustic and signal processing
- Once we have benchmark datasets, physical models that explain dataset may be more forthcoming

Other ideas

- Capacity analysis
- Interference management
- Multimodal communication (acoustic + optical + EM)
- Underwater cellular networks & coverage
- Asymmetric links (uplink vs downlink)

Other ideas

- Underwater localization & "GPS"
- Physical layer feedback: adaptive modulation, large scale vs small scale
- Cooperative distributed communication (spatial diversity)
- Full-duplex modems
- Low computational complexity performance prediction to position mobile nodes