



Electromagnetic Field Impacts on Elasmobranch and American Lobster Movement and Migration from Direct Current Cables

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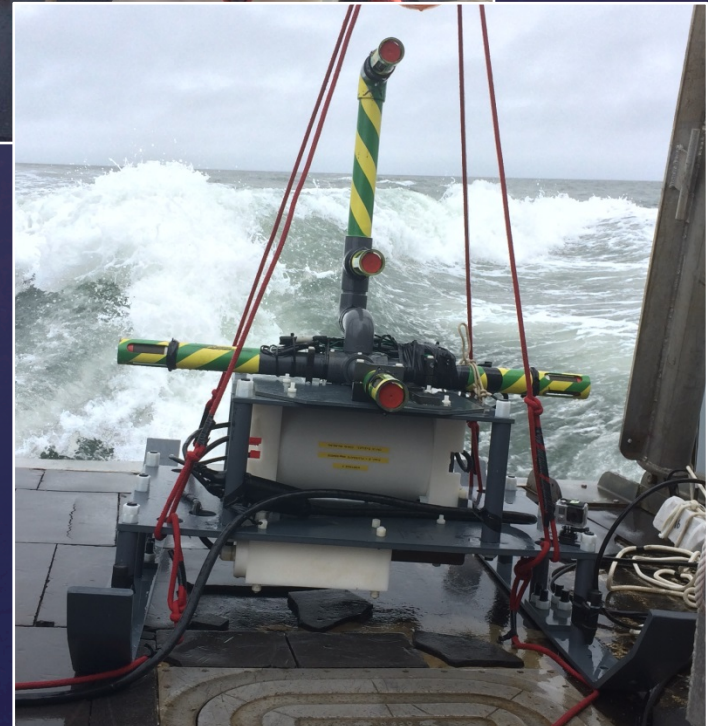
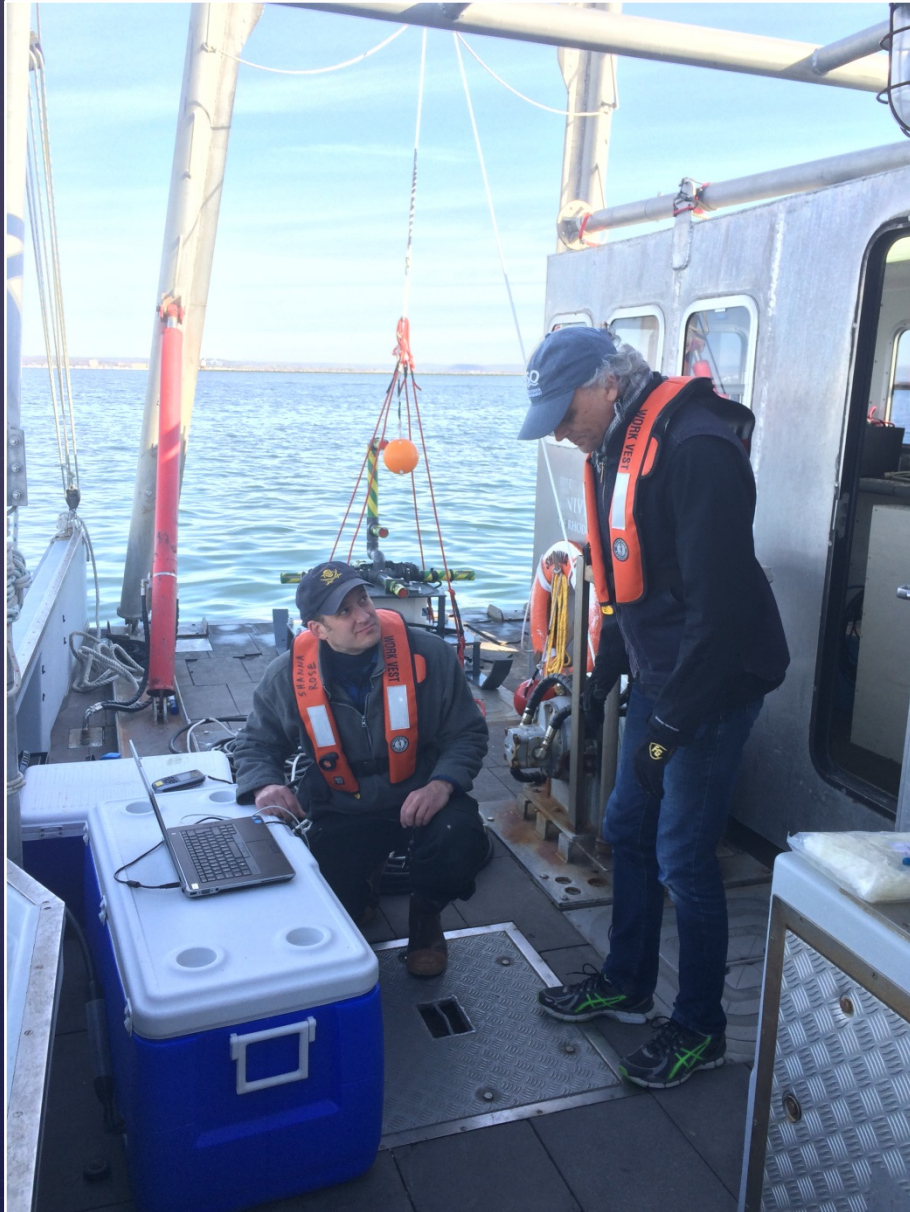
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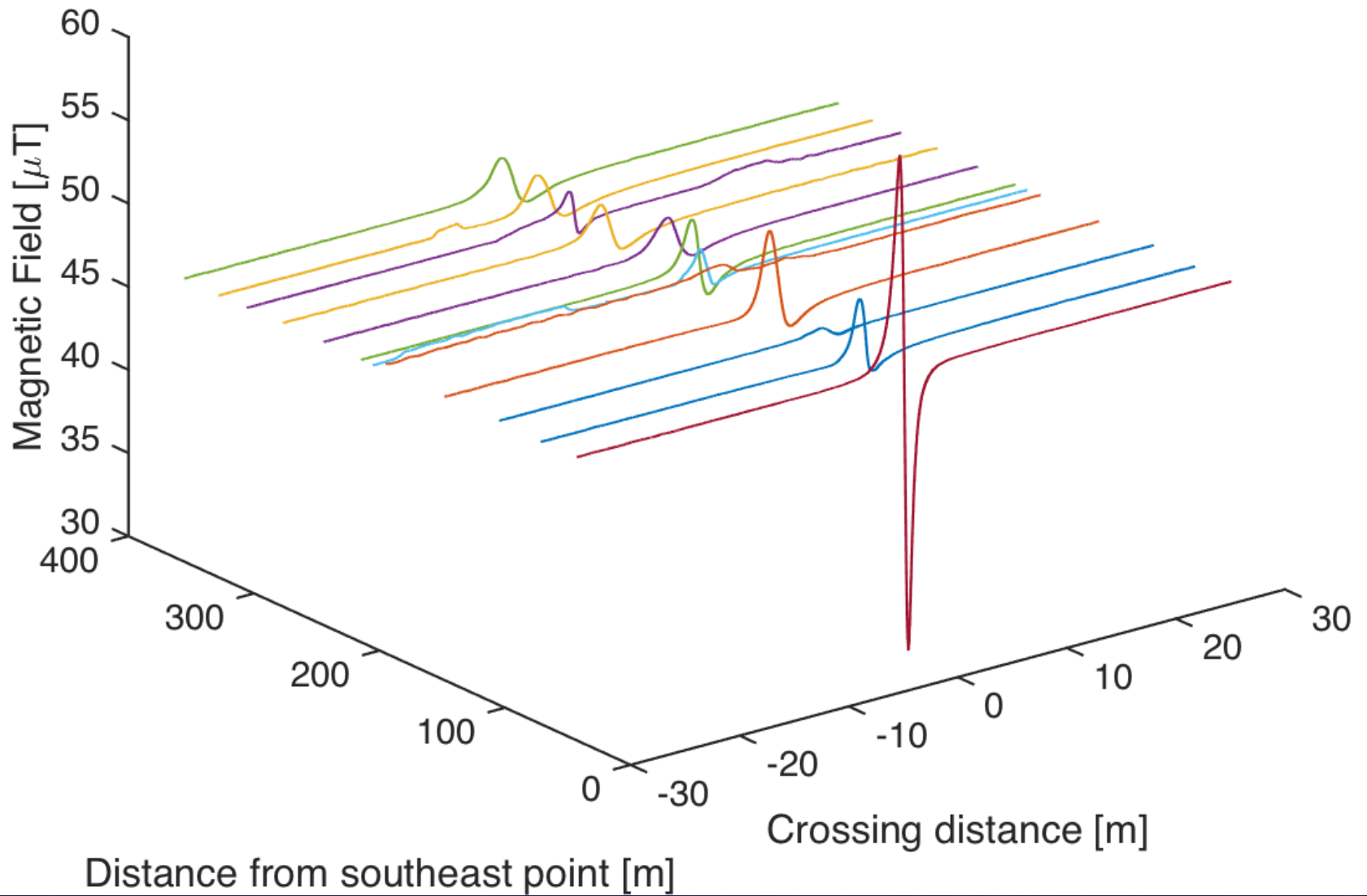
Cranfield University, UK

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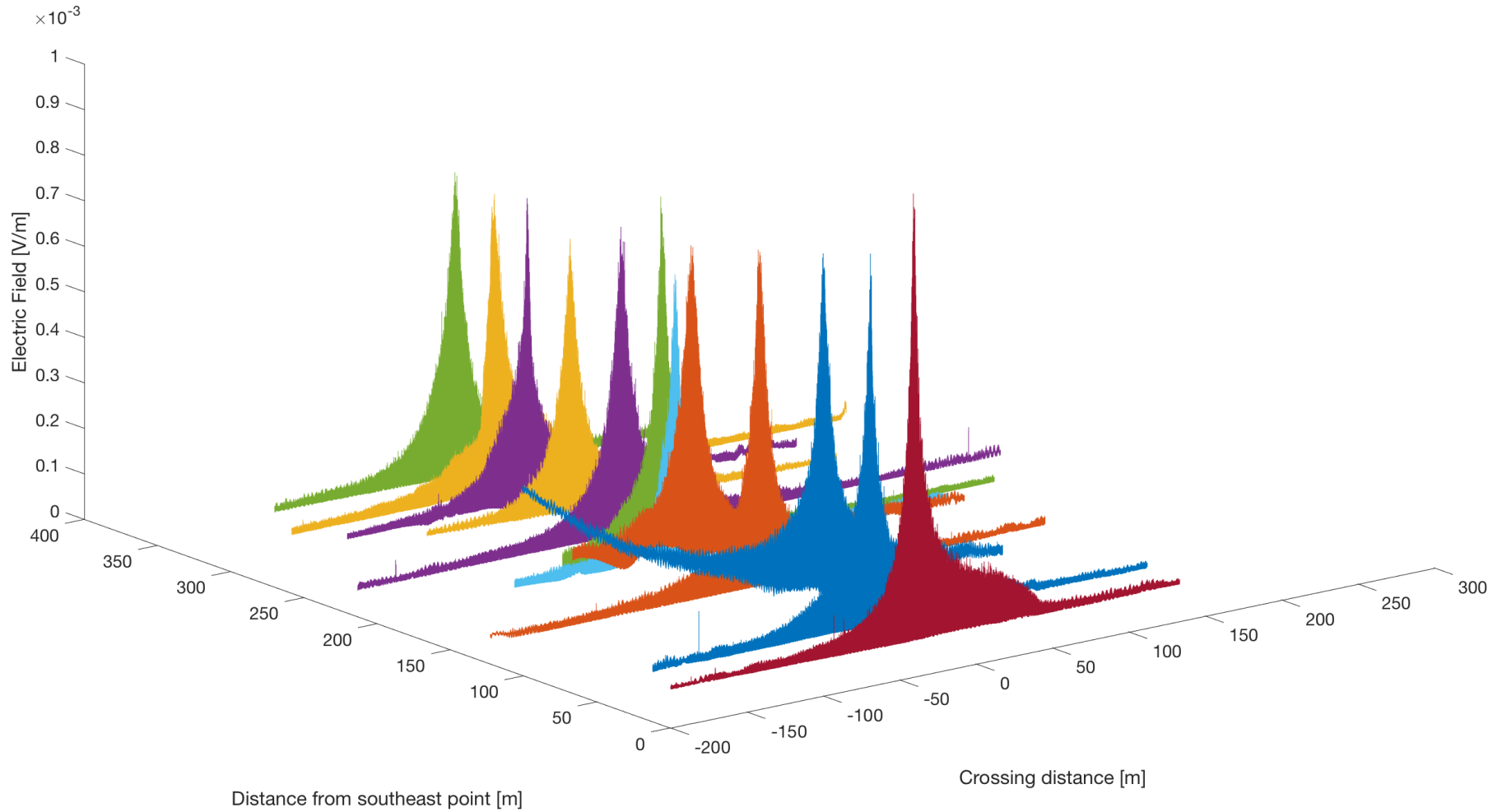
SEMLA Survey



Cable Magnetic Field: Full Power



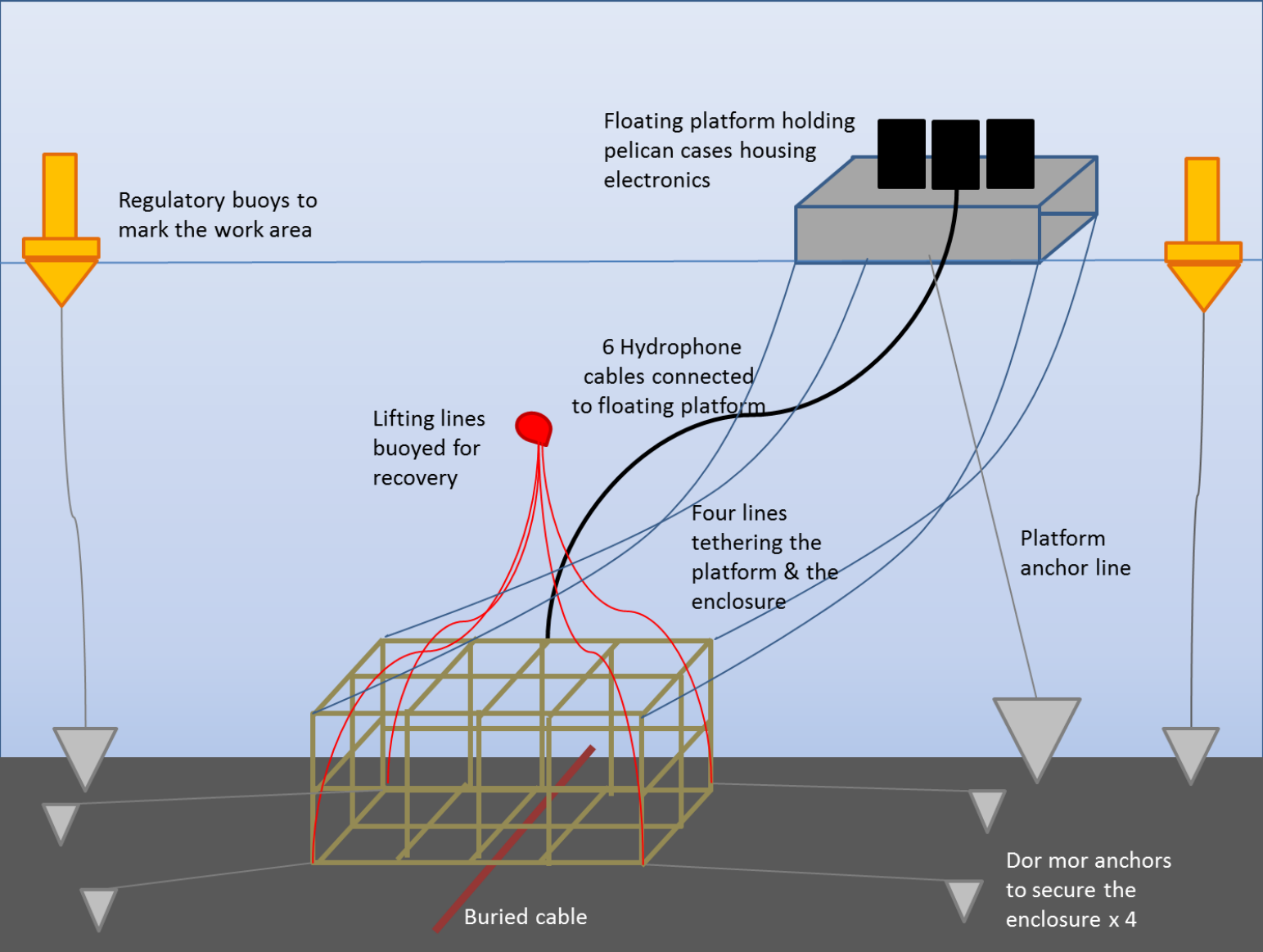
Cable Electrical Field: Full Power



Summary of SEMLA Studies

- We have done SEMLA studies on two DC cables (Cross Sound Cable and Neptune Cable), and one AC cable (Sea2Shore).
- EMF fields associated with DC cables tend to be higher and broader than predicted by models.
- EMF fields associated with the Sea2Shore cable (AC) are significantly lower than predicted by models.
- Effects of AC cables are likely to be less pronounced than DC cables.

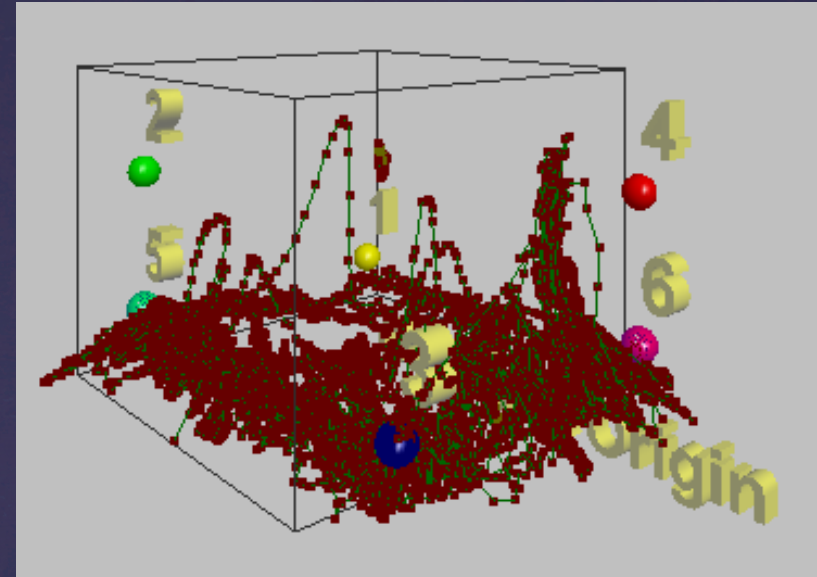
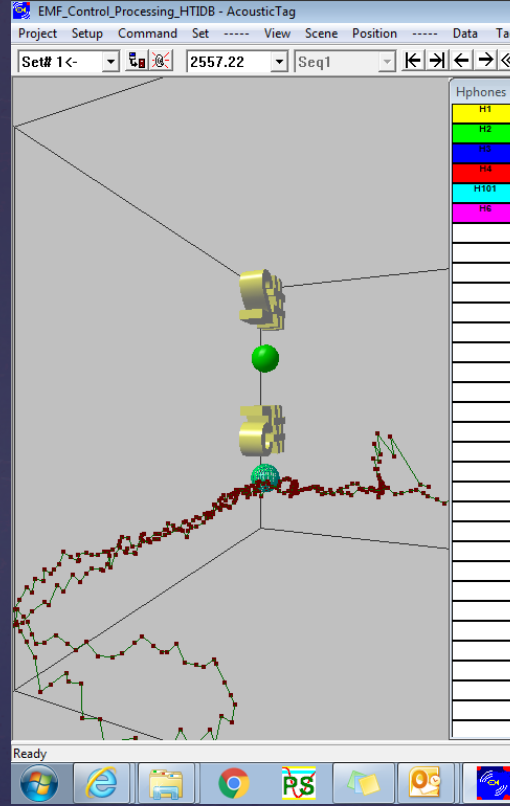
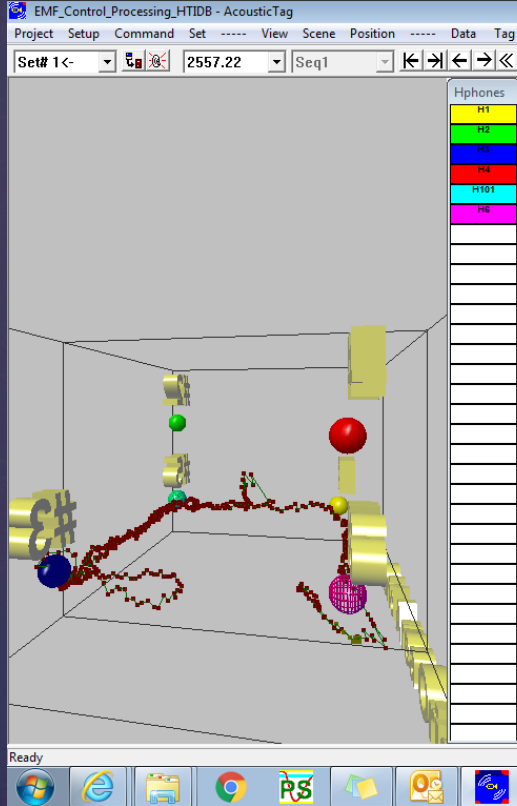
Enclosure and Electronics Deployment Plan (USCG Approved)



Specimen Tagging



Examples of Preliminary Data



5 lobsters moving over 1 hour

	X Position	Y Position	Z Position
Average	11.689678	12.428766	11.926173
StDev	0.0255143	0.0141711	0.0463334
n	636	636	636

What The Data Tell Us

- The acoustic tagging method performs well for monitoring movements of multiple animals within an experimental mesocosm .
- The equipment produced high resolution (every 6 seconds) and high accuracy (~10 cm) data.
- Lobster data indicate that they can detect an EMF and appear to engage in avoidance behavior.
- Skate data indicate that they are strongly attracted to EMF and spend significant time investigating the environment proximal the cable.
- Effects (changes in behavior) do not necessarily translate into impacts.
- Interaction with a single cable is not likely to produce an impact, whereas interaction with multiple cables is more likely to produce an impact.