

# Using ECOMMAS data to describe the habitat preference of harbour porpoise off eastern Scotland



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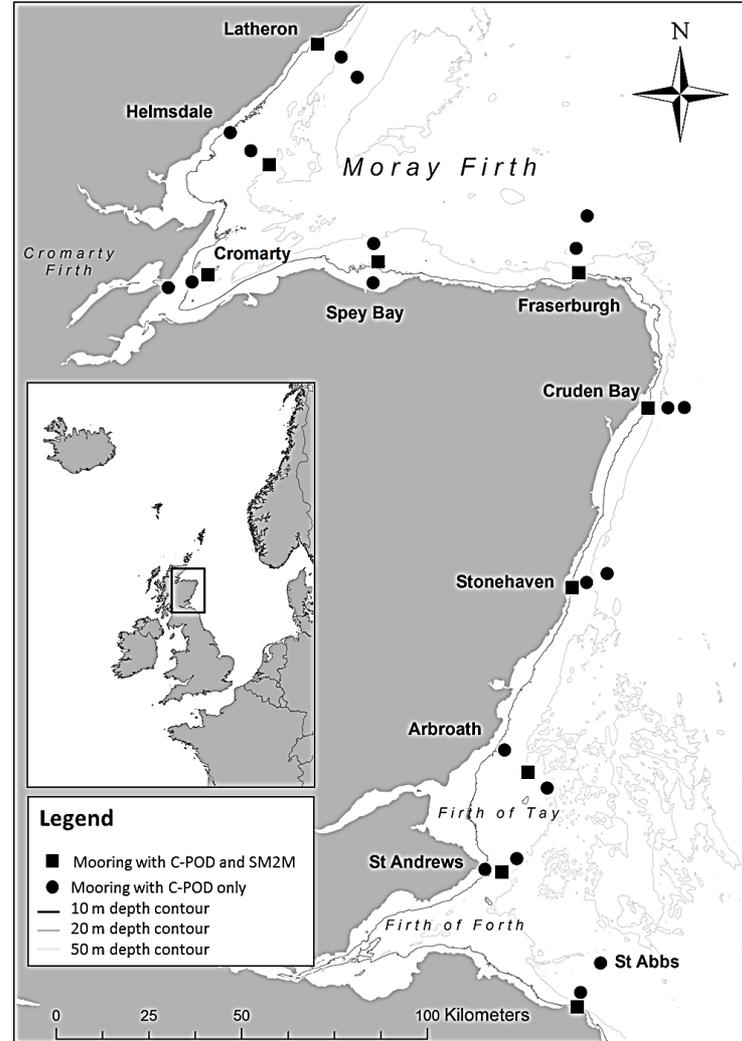
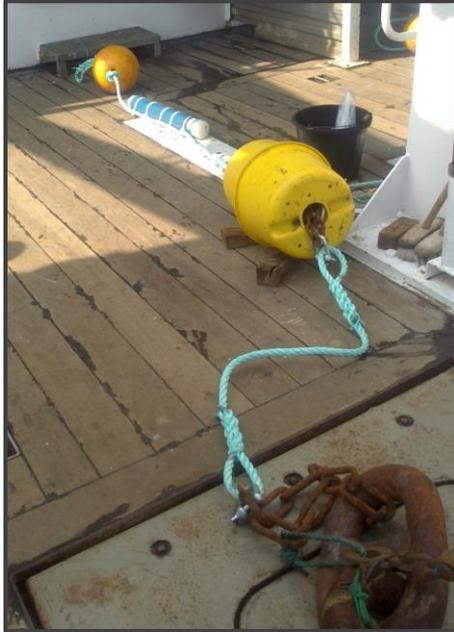
Pablo Chevallard<sup>1</sup>, Ewan Edwards<sup>1</sup>, Ross Culloch<sup>1</sup>, Paul Thompson<sup>2</sup>, Kate Brookes<sup>1</sup>

<sup>1</sup>Marine Scotland Science

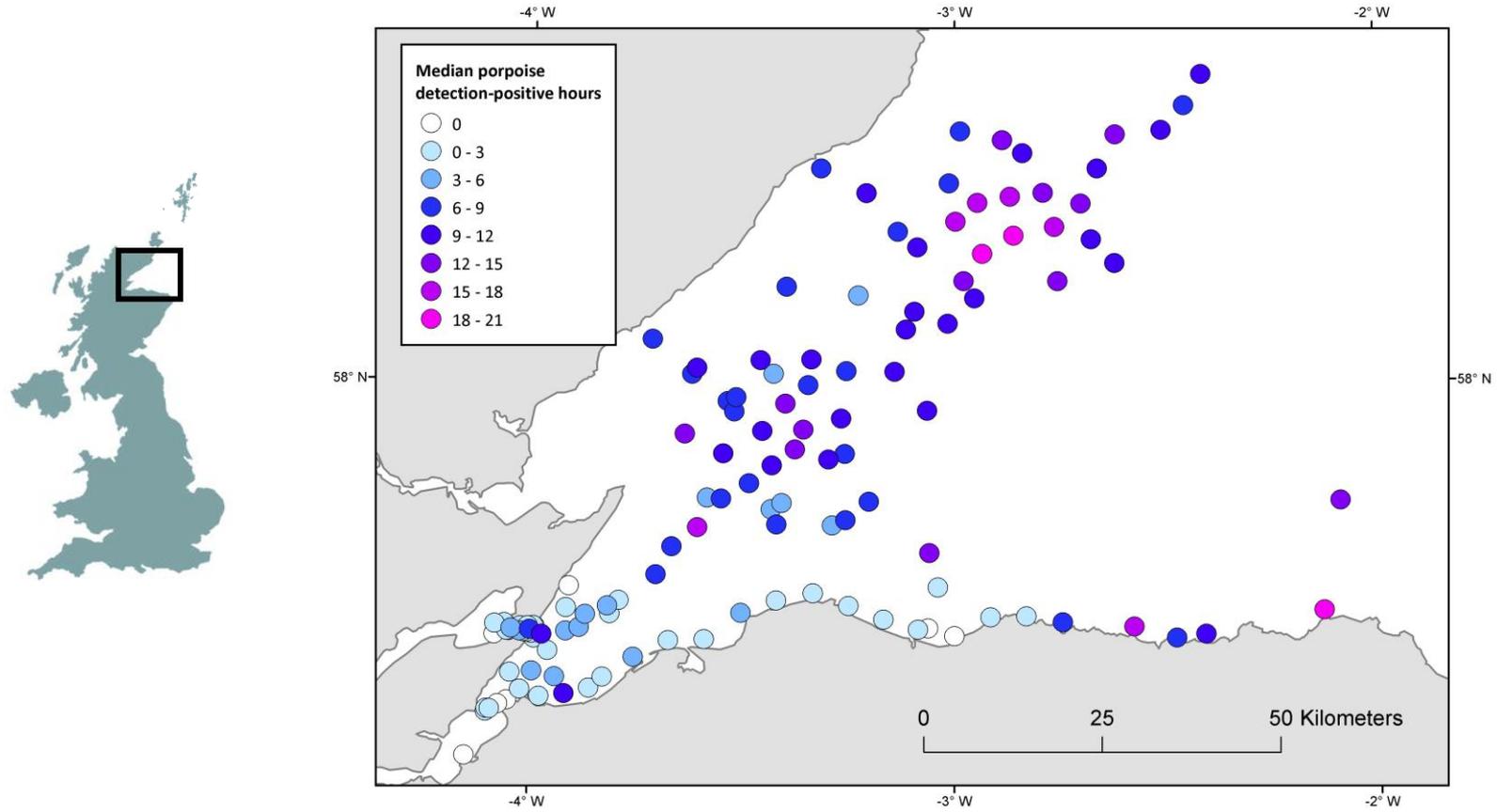
<sup>2</sup>University of Aberdeen

marine scotland  
science

# ECOMMAS C-PODs

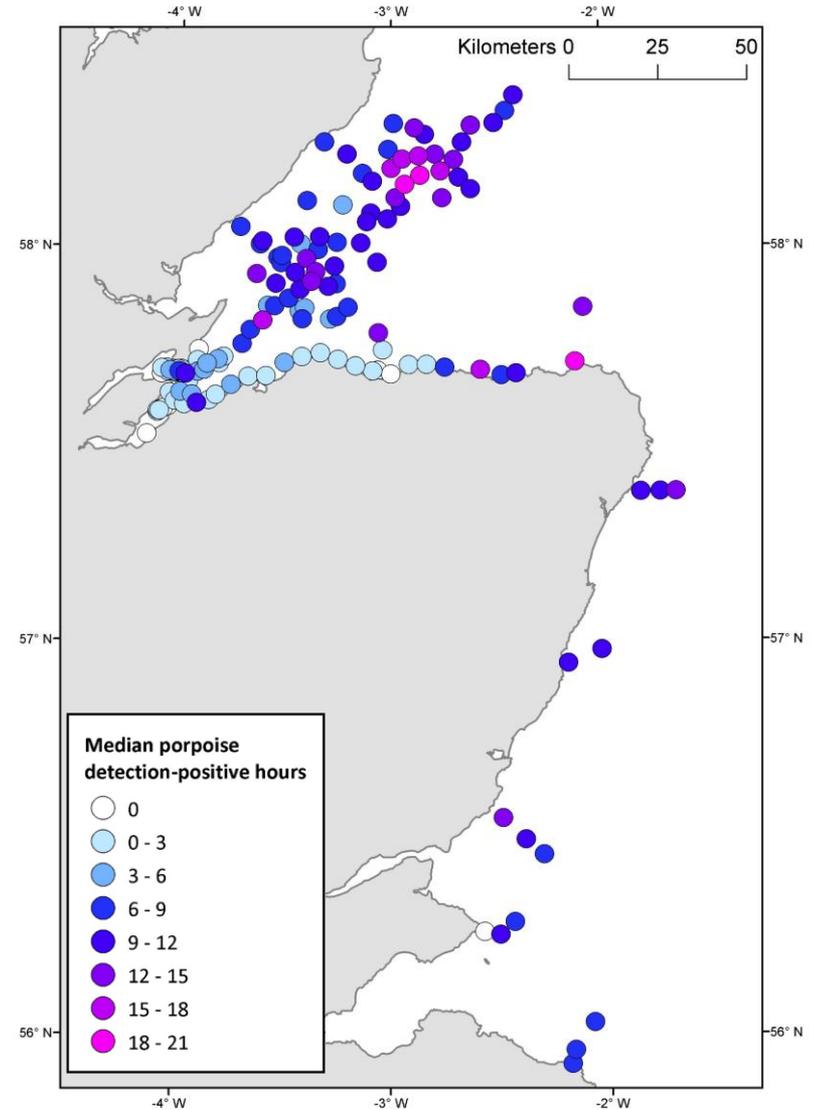


# Moray Firth C-PODs

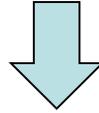


# Summary data (DPH)

- Large dataset.
- Temporal and spatial coverage.
- Summary metrics for different species.



Habitats Directive Annex II and IV: requirements for new information about porpoise presence and distribution.



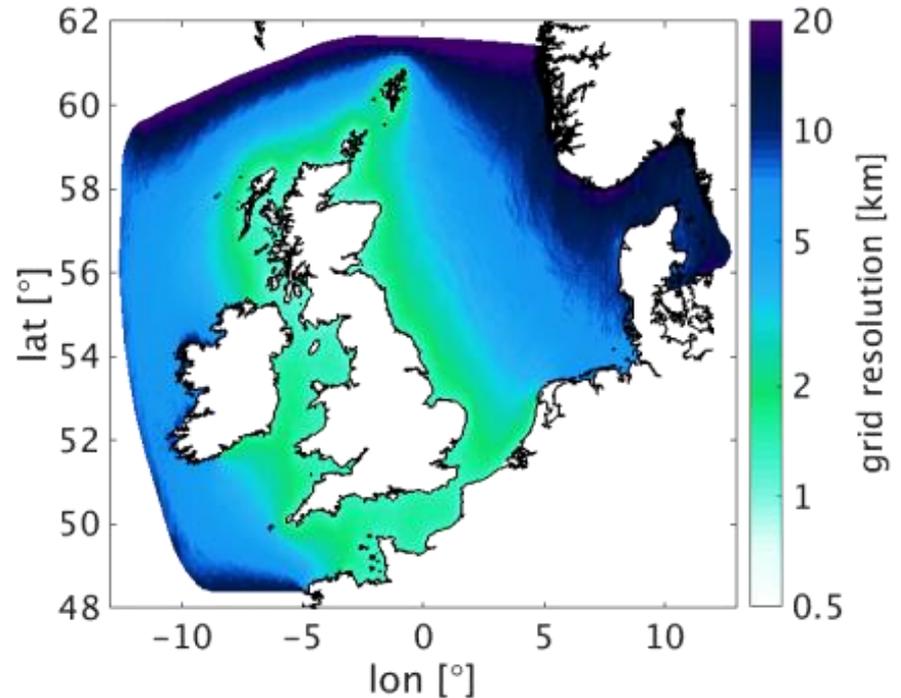
Model habitat preference of porpoises



© Charlie Phillips / WDC

# Scottish Shelf model v2

- New source of data for modelling.
- Allows for the extraction of oceanographic covariates for a series of points in time and space.



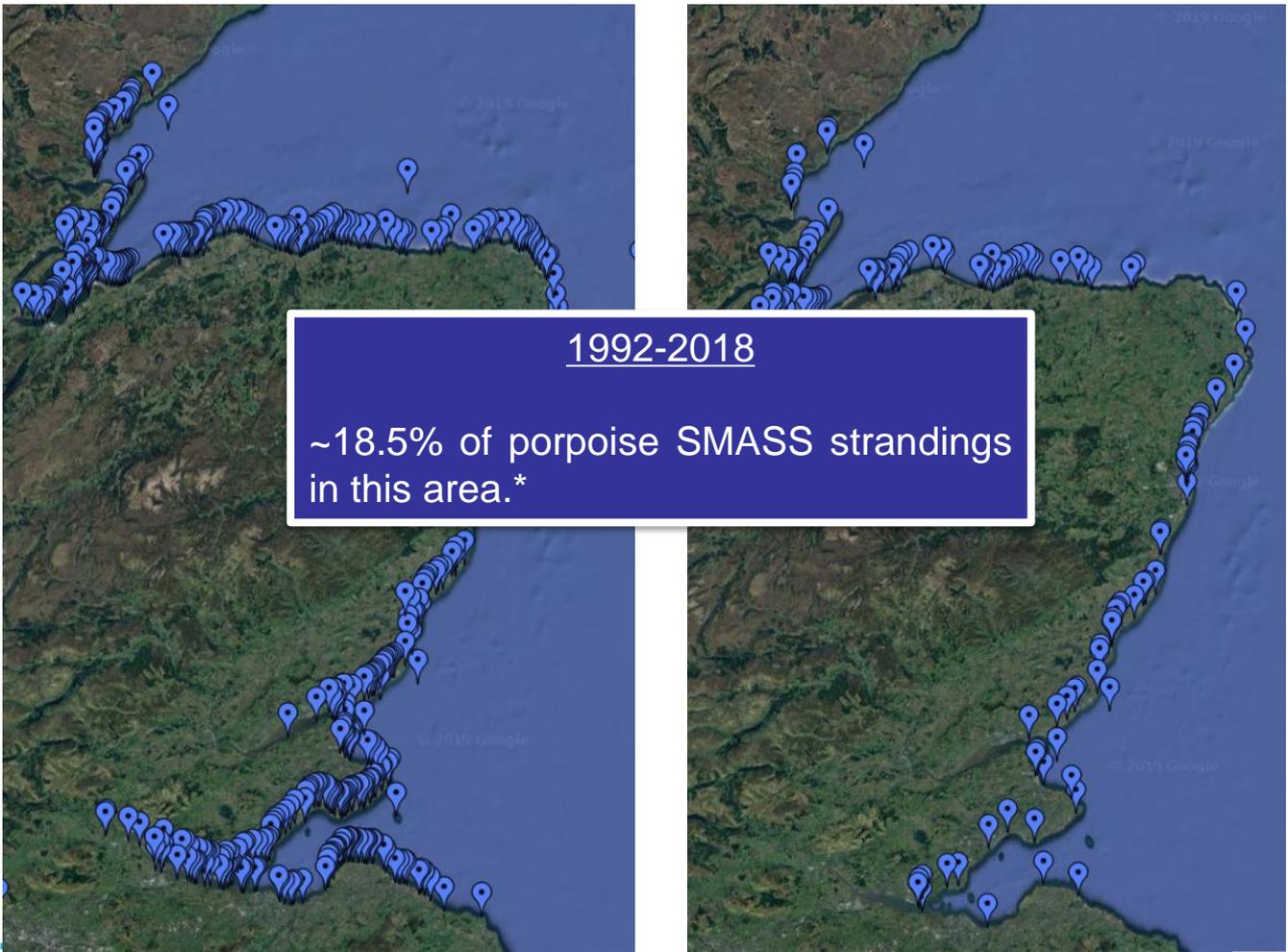
The domain and grid resolution of the wider domain Scottish Shelf Model

# Interactions with bottlenose dolphins

Latest data in the strandings record → in some areas, bottlenose dolphins may be excluding harbour porpoises.



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# Interactions with bottlenose dolphins

Latest data in the strandings records → in some areas, bottlenose dolphins may be excluding porpoises.

Test whether bottlenose dolphin habitat is avoided by porpoises.

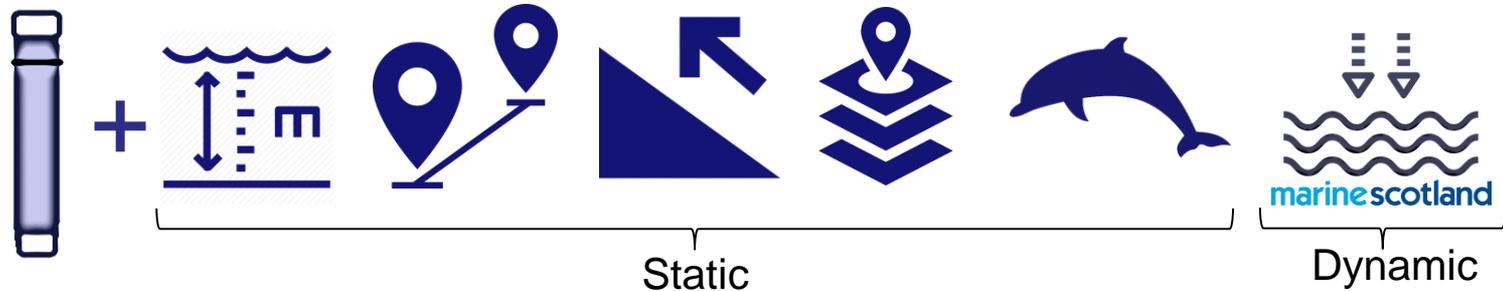


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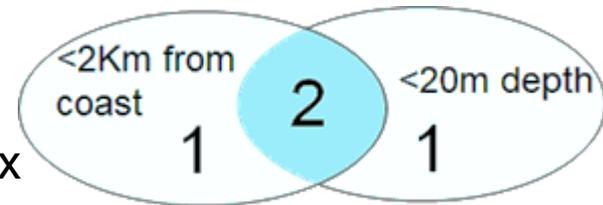
Model fitted in a GEE-GAM framework

- Binomial response: detection/no detection.
- Detections grouped in 3-hour bins.
- AR(1) structure accounts for serial autocorrelation:  
P(detection) is influenced by the pr/ab in the previous time bin.
- Period: 1 Aug – 30 Sep. MF: 2008-15. ECOMMAS: 2013-15.

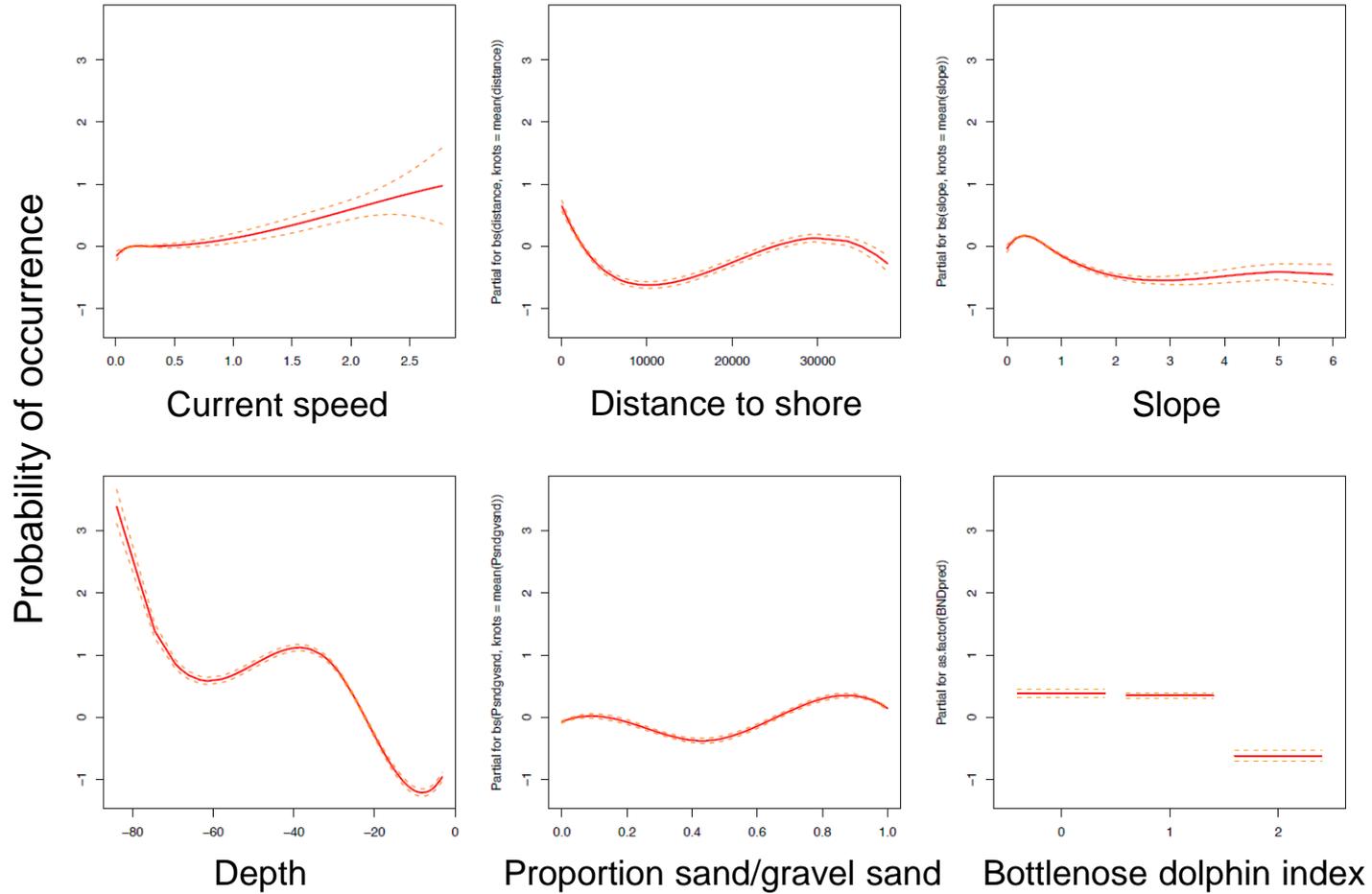
Covariates extracted at each POD location:



Bottlenose  
dolphin  
habitat index

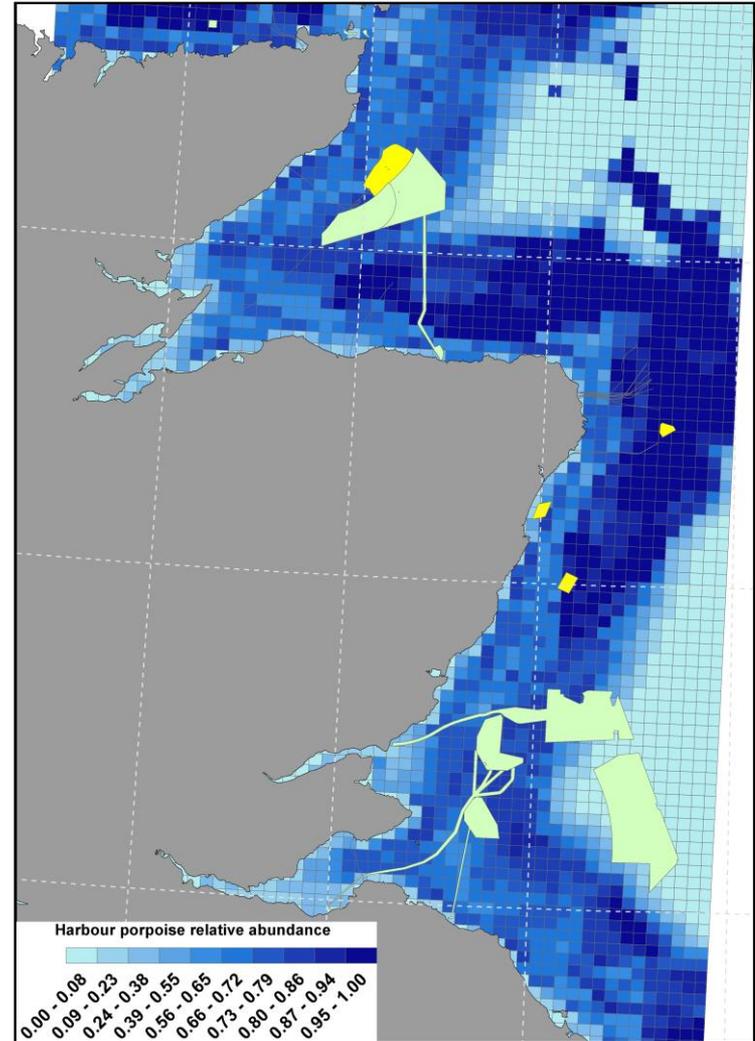


# Results

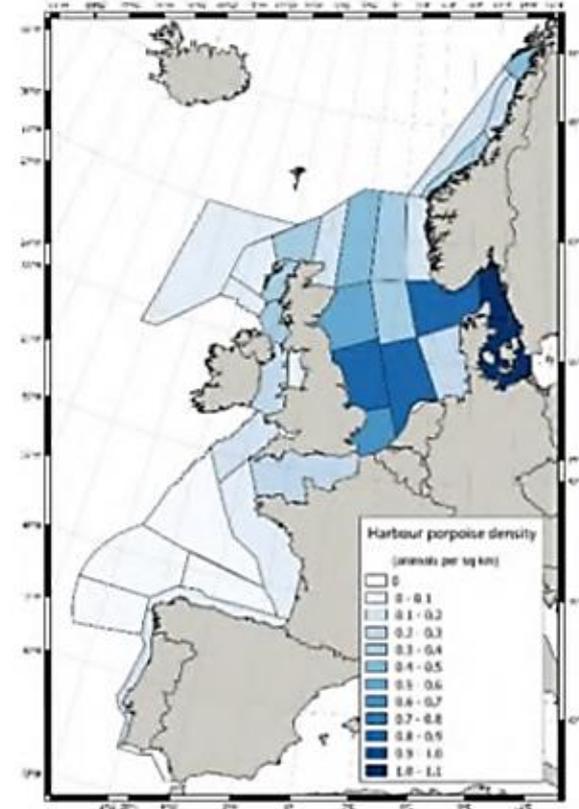
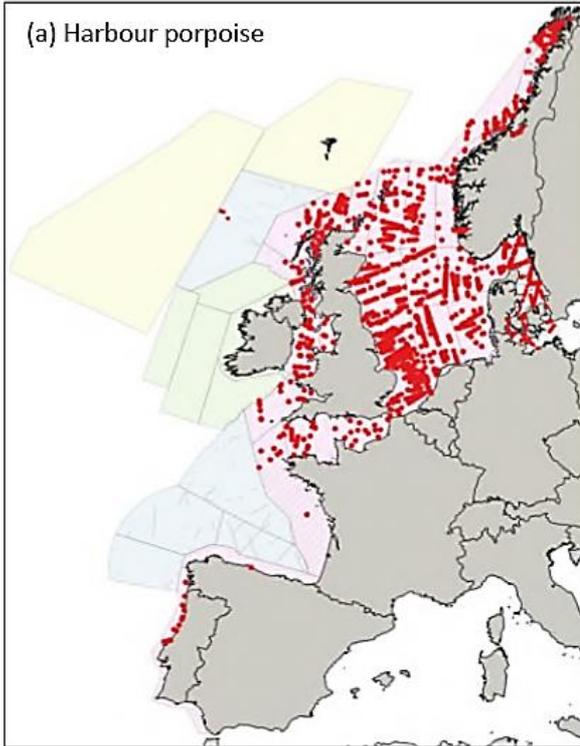


# Results

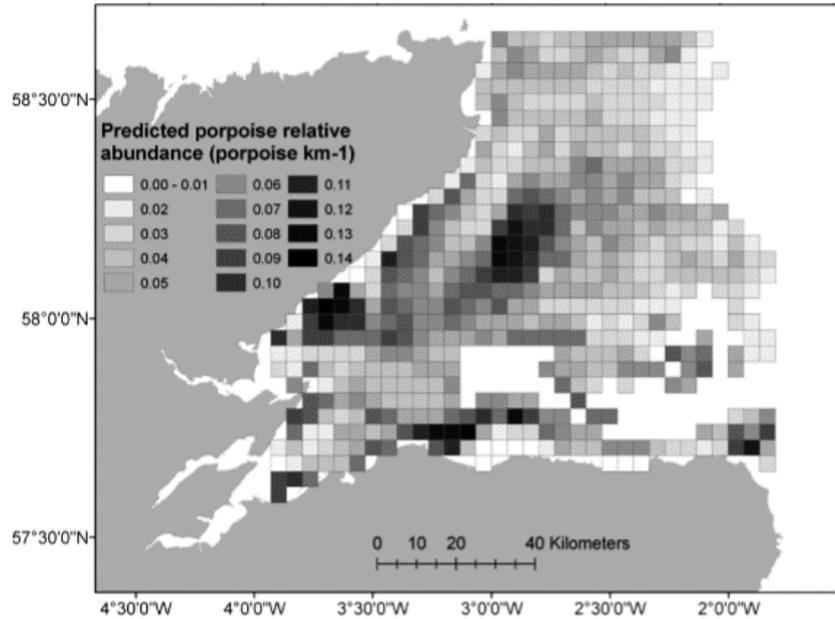
- ❖ Predicted to be distributed widely around east Scotland.
- ❖ Highest probabilities of relative abundance off the Aberdeenshire coast between Buckie and Stonehaven.
- ❖ Occurrence close to bottlenose dolphin “hotspots” lower than surrounding waters.
- ❖ Model does not predict well beyond 30Km.



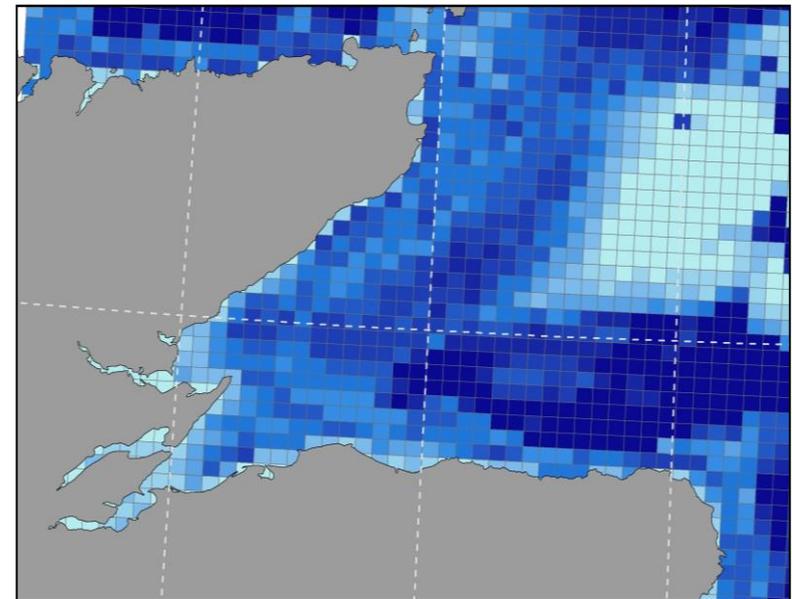
# SCANS III



Brookes *et al.* (2013)



Present study



# Conclusions and future work

- C-POD data used within a GEE-GAM framework to model the habitat preference of porpoises.
- More data to be added (2016-18).
- Include other dynamic covariates.
- Incorporate a temporal component.



# Acknowledgements

Rory O'Hara and MSS's Oceanography team.  
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The SMASS team.  
Students and volunteers.



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