

Yellowfin tuna vertical behaviour and catchability in the South Atlantic

Serena Wright | David Righton | Joachim Naulaerts | Robbie Schallert | Chris Griffiths | Taylor Chapple | Daniel Madigan | Vladimir Laptikhovsky | Victoria Bendall | Rhys Hobbs | Leeann Henry | Doug Beare | Elizabeth Clingham | Barbara Block | Martin Collins



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Aims

Landings can vary in space and time

Attributed to bottom-up or top-down pressures?
Assessed by looking at the availability and accessibility of the tuna



Outline

- Overview
- Depth and the lunar phase
- Acceleration and behaviour
- Behaviour and landings





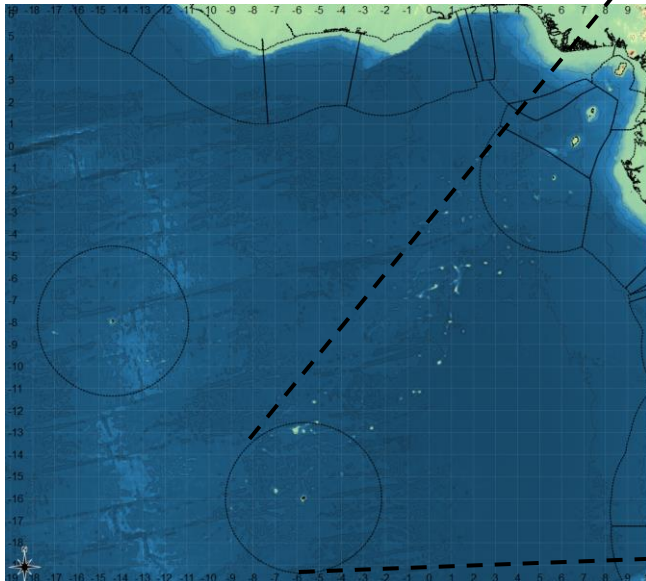
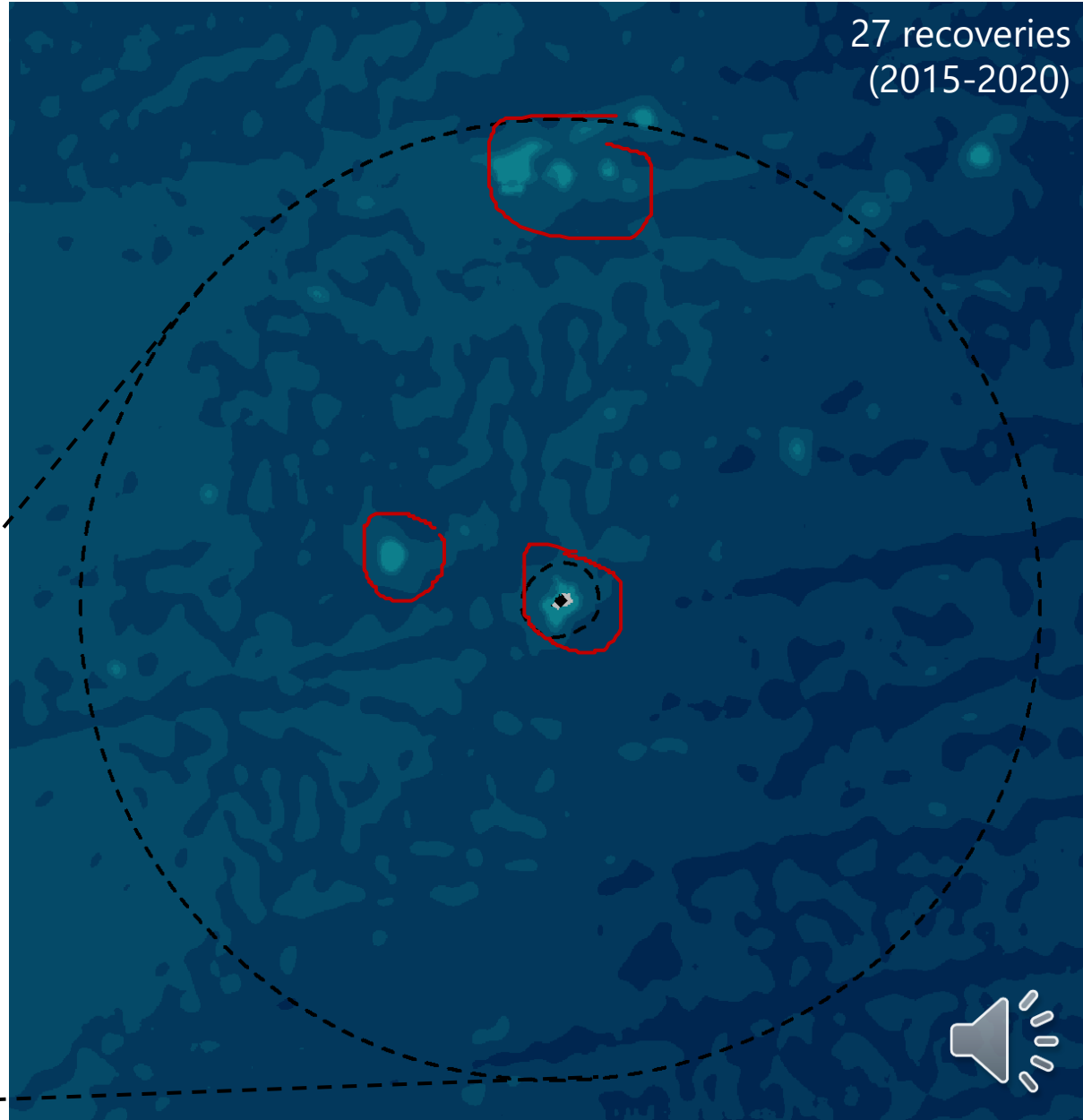
Overview

PSAT (3): 101-125cm SFL (45-232 days)
[Water Temp + Depth + Light + Acc]

DST (14): 67-85cm SFL (21-293 days)
[Body Temp + Depth]

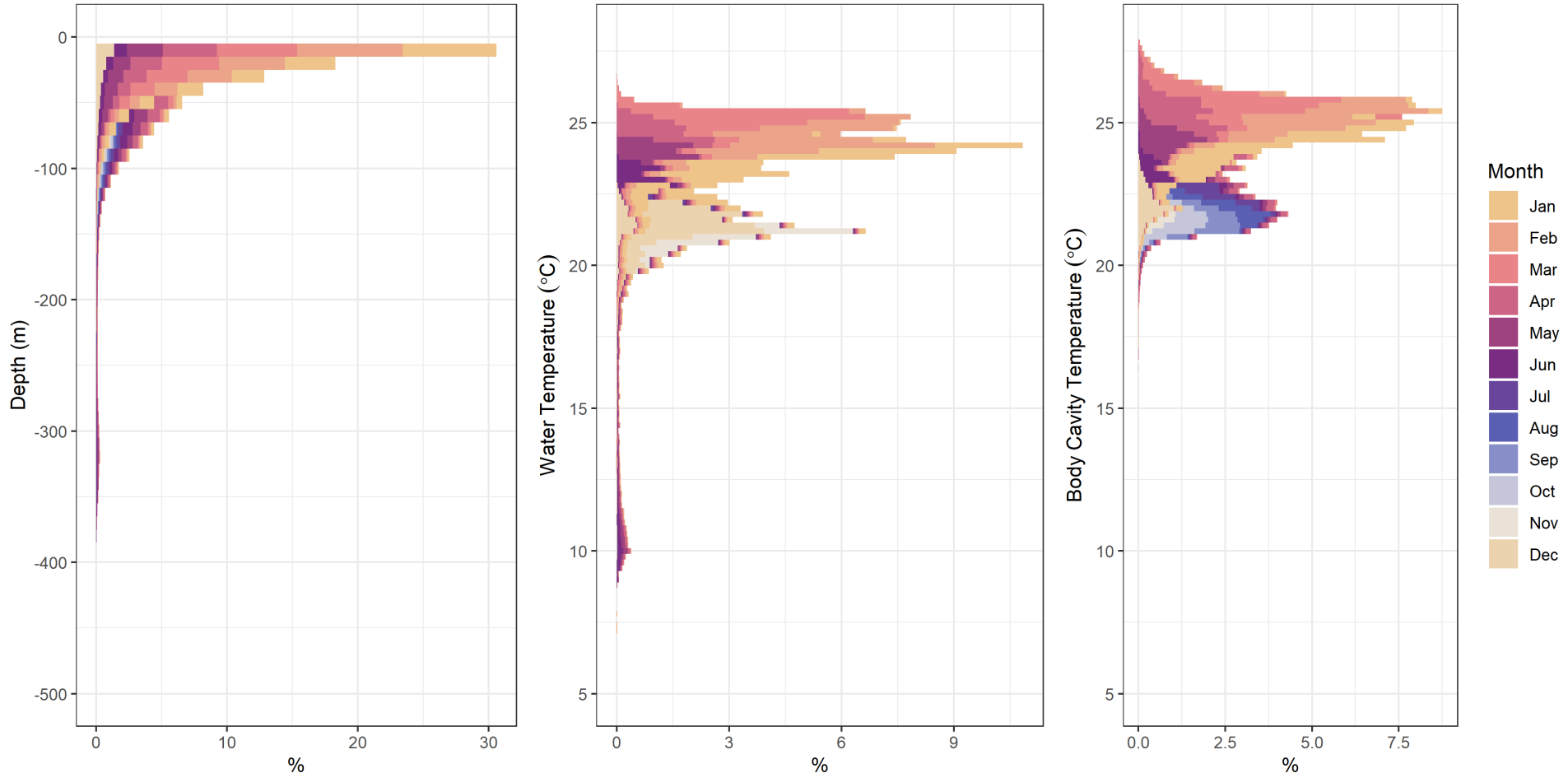
DST (10): 64-87cm SFL (9-187 days)
[Water+Body Temp + Depth + Light]

27 recoveries
(2015-2020)





Overview: depth and temp



Depth

Max = 1014m

94% < 100m

Water Temp

88% > 20°C

Body

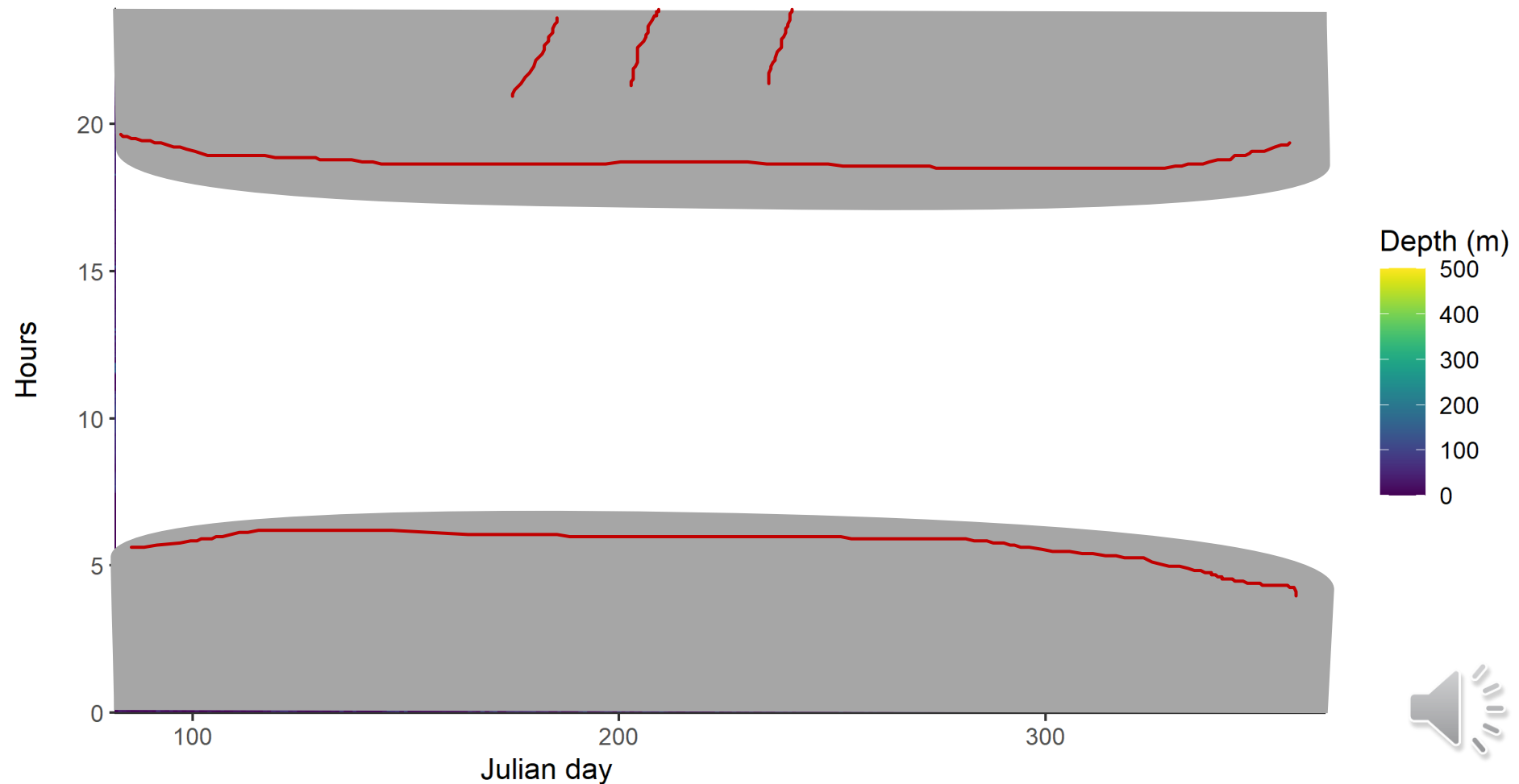
Temp

86% > 22°C

Cavity



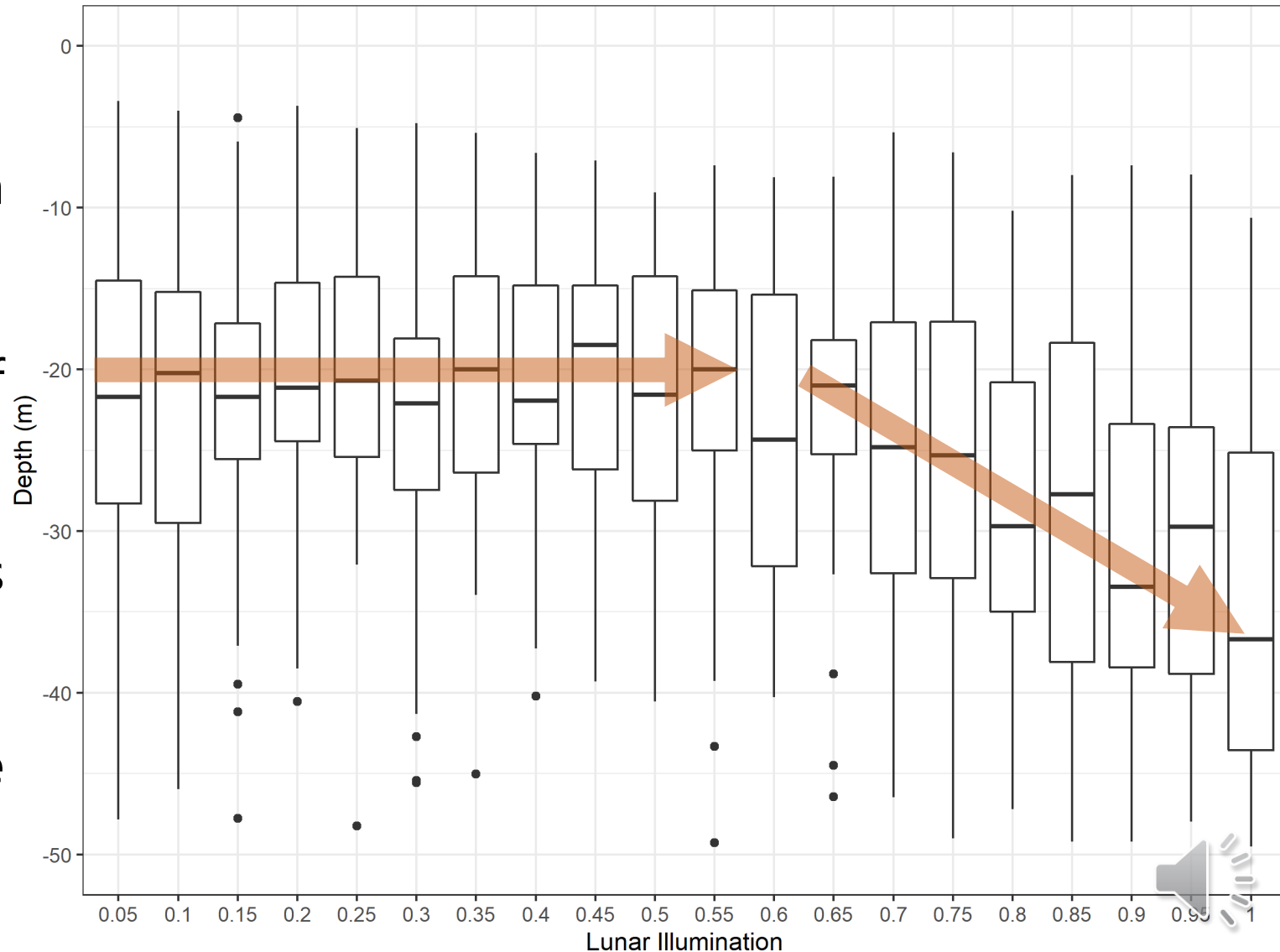
Depth and the lunar phase



Depth and the lunar phase

Average
night depth
changes
depending
on level of
illumination

How does
behaviour
change
during the
day?

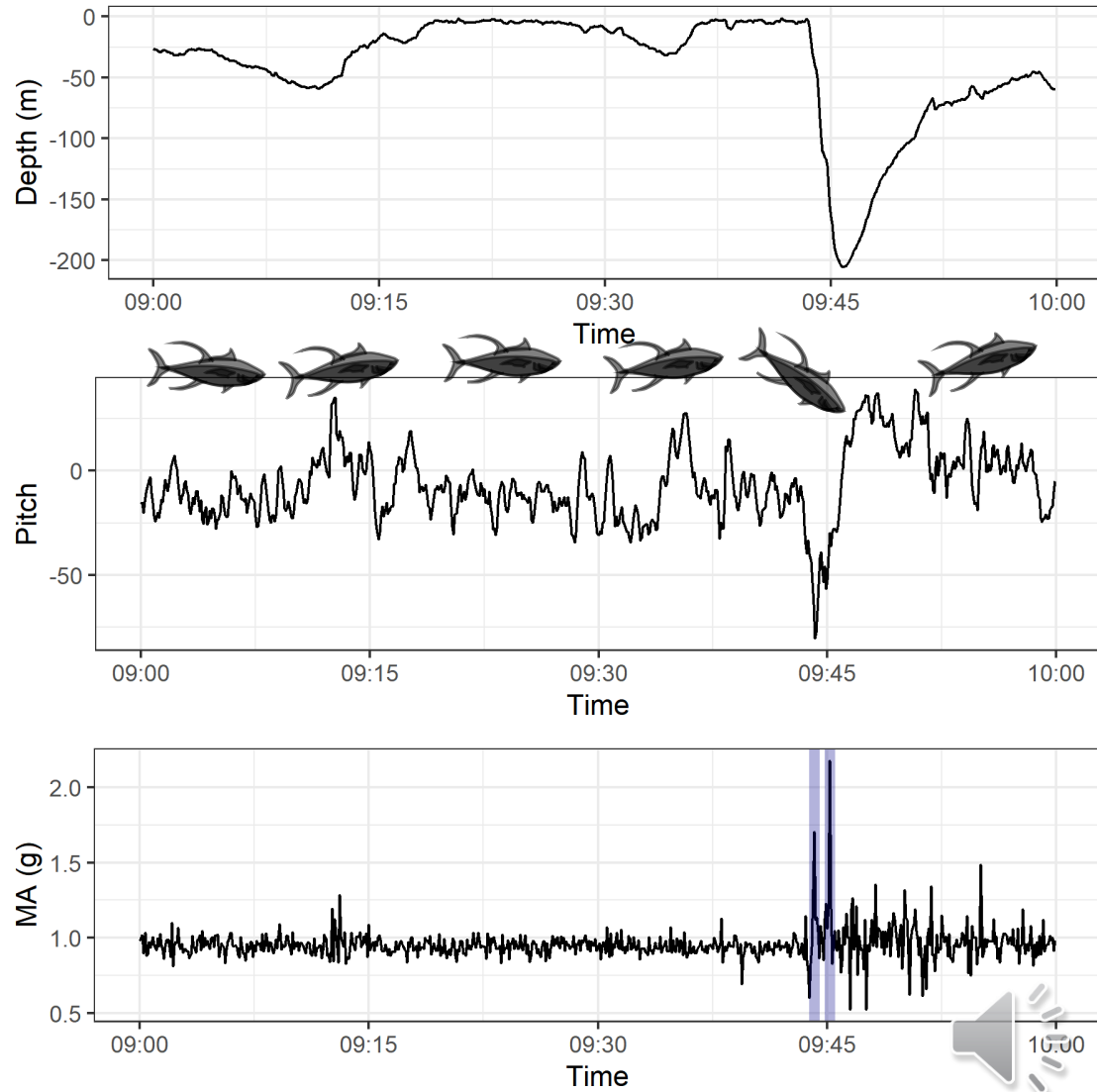


Acceleration and behaviour

Acceleration can be used to indicate the depth of strike events

Pitch angle shows the angle of the tuna on ascents and descents

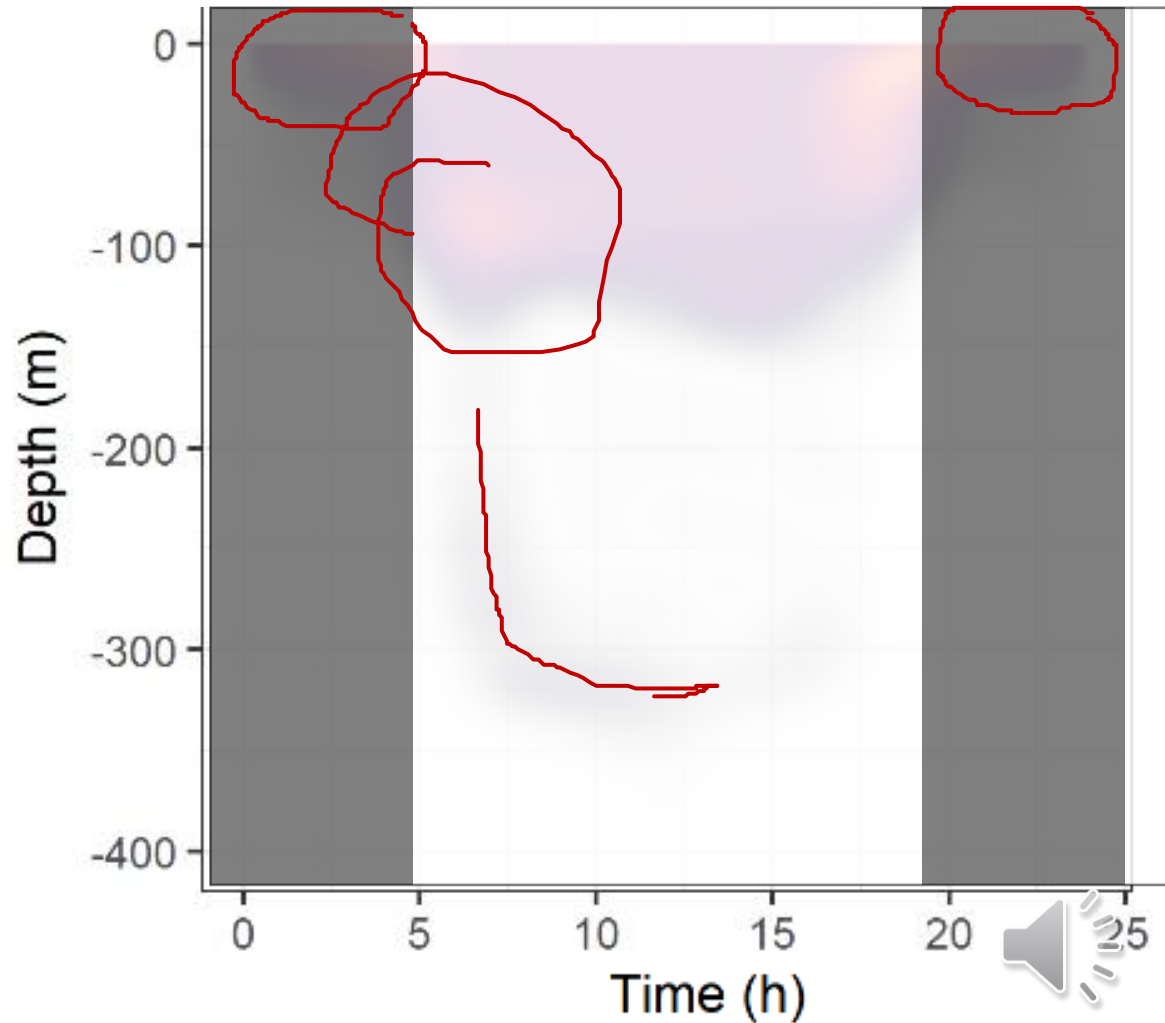
Combined acceleration (MA) indicates where fast starts occurred.



Acceleration and behaviour

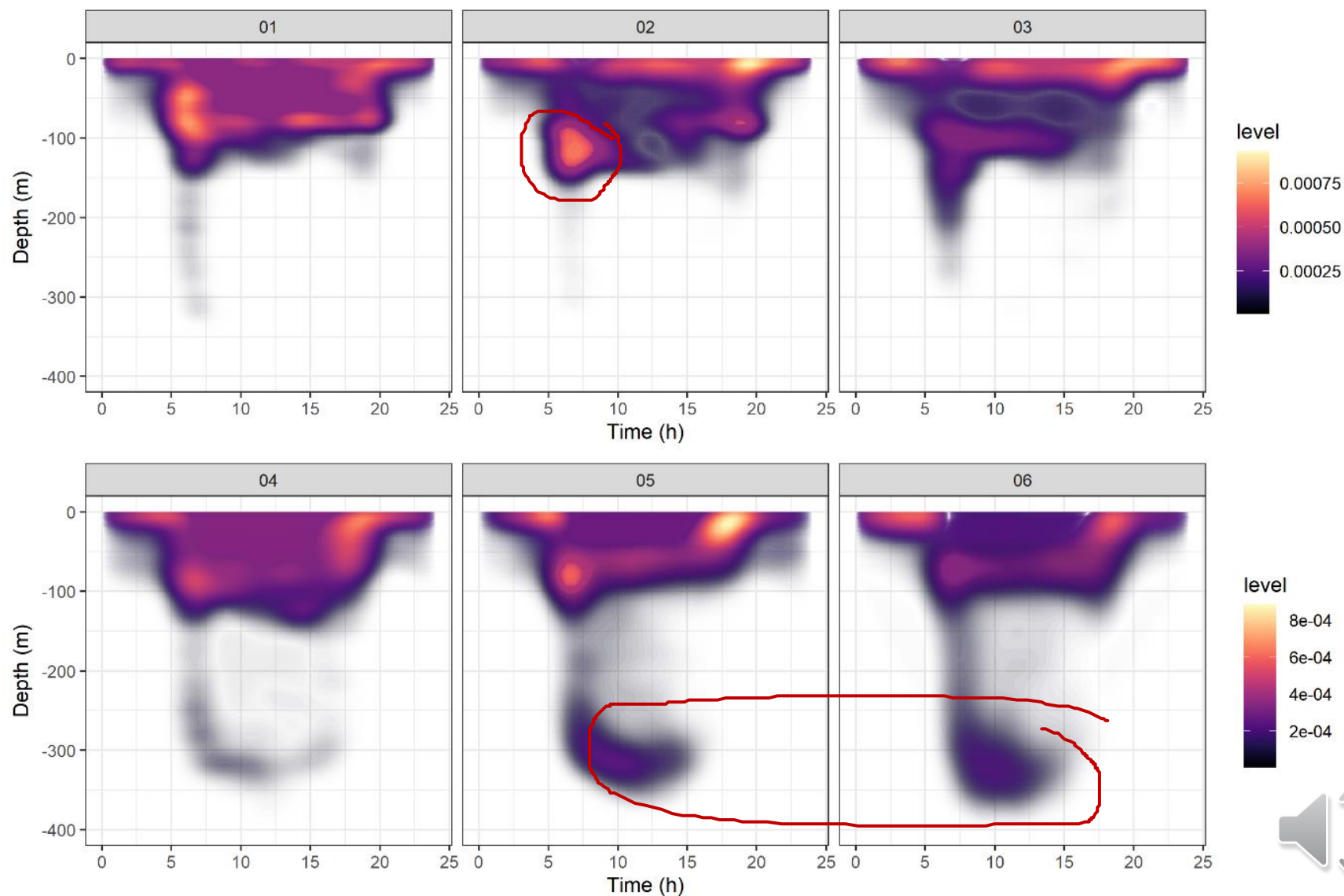
Fasts starts represent high acceleration events (strikes or escape).

What depths were fast starts?

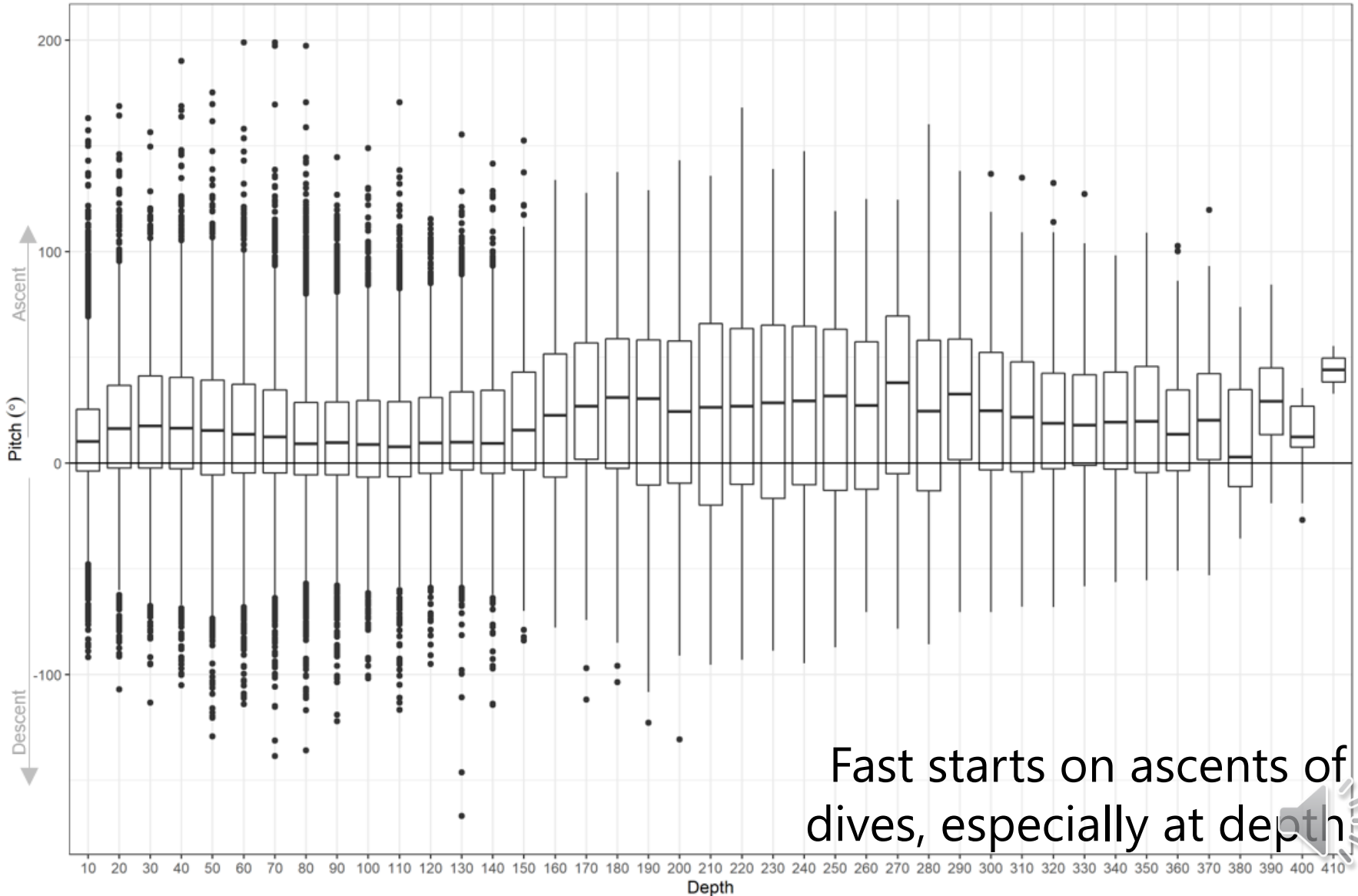




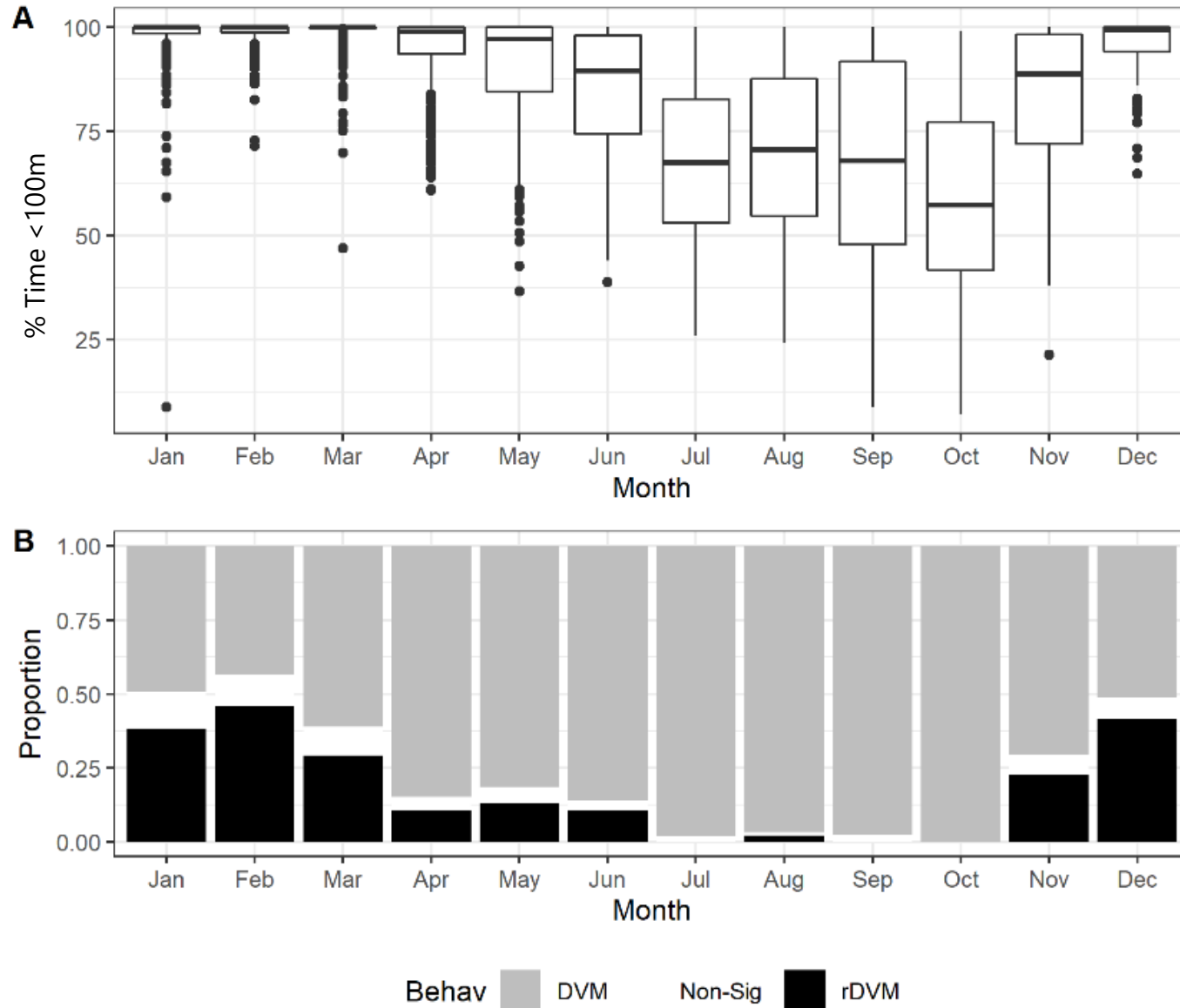
Acceleration and behaviour



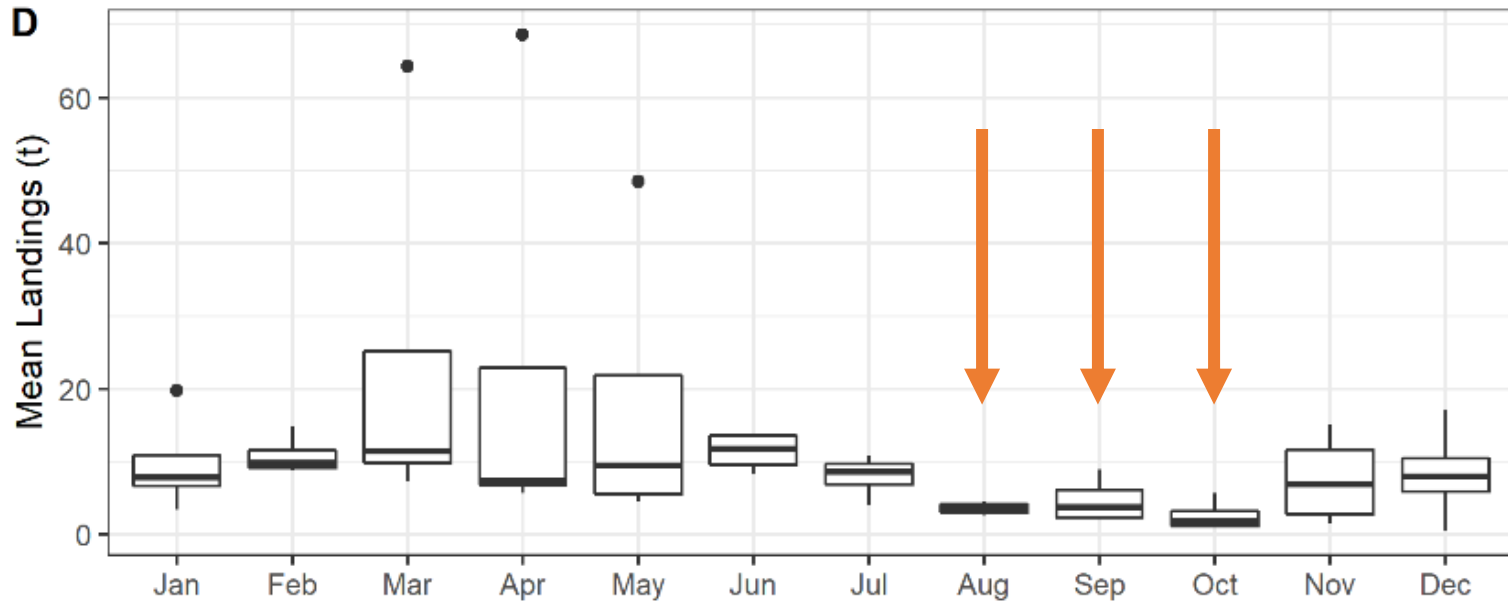
Acceleration and behaviour



Behaviour and landings



Behaviour and landings

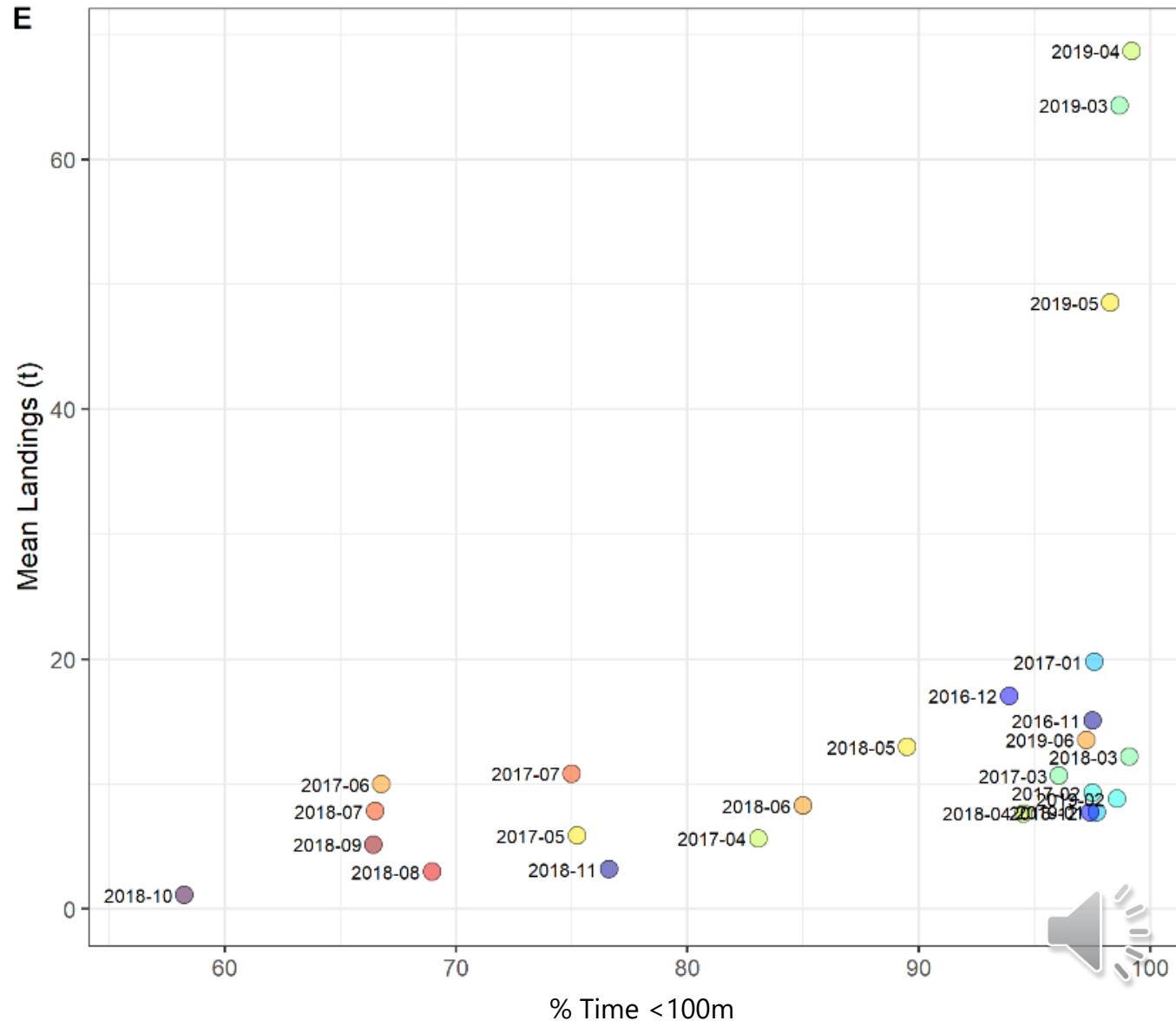


Mean landings by inshore pole and line fleet lowest between August and October



Behaviour and landings

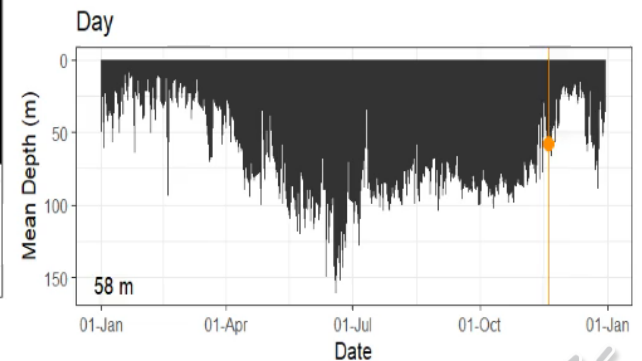
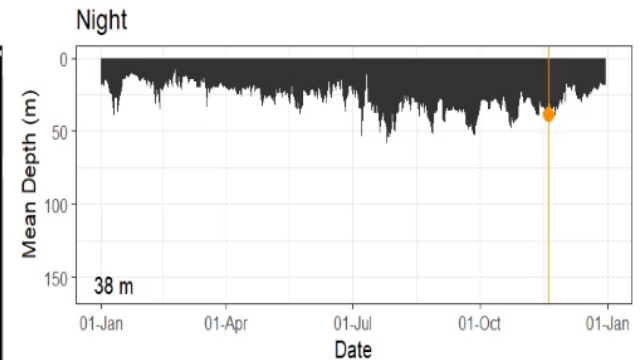
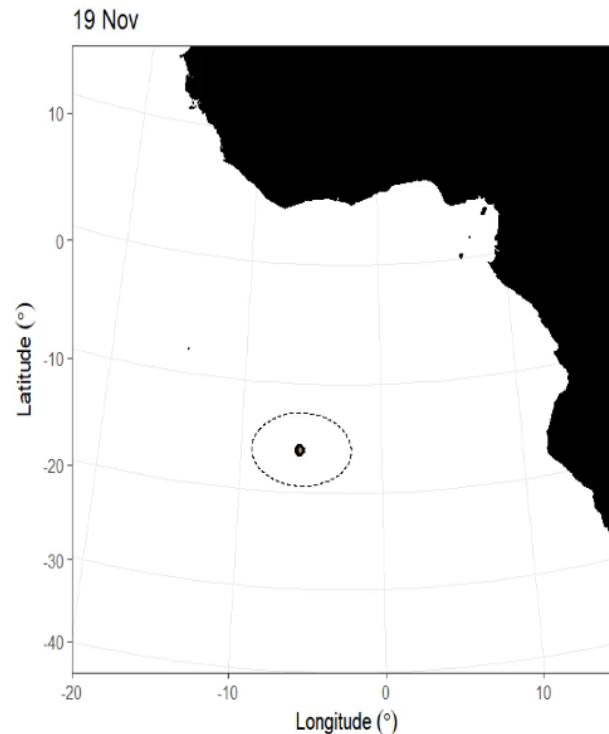
Increase in mean landings coincides with when tuna spend more time in surface waters (<100m)



Summary

Use of fisheries **independent** data to understand fisheries **dependent** data

Catchability to a pole and line fishery is **reduced during the winter** due to patterns of foraging behaviour





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