

Population dynamics of Antarctic krill in winter/early spring

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Questions

Describe distribution of different sizes & developmental stages in under ice surface

Can differences be explained by differences in diet?

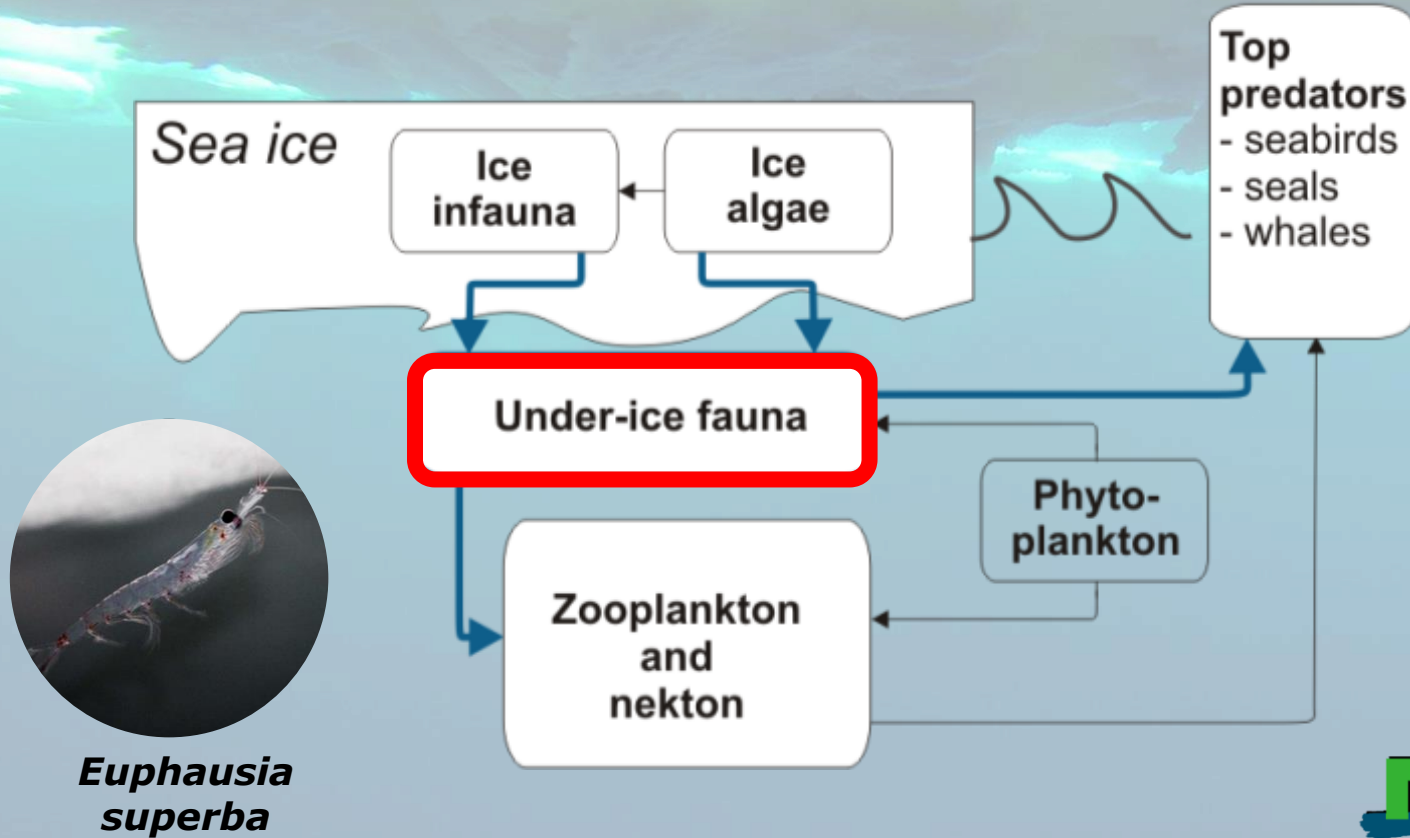
Do sea ice properties have an effect on size/stage distribution?

Background

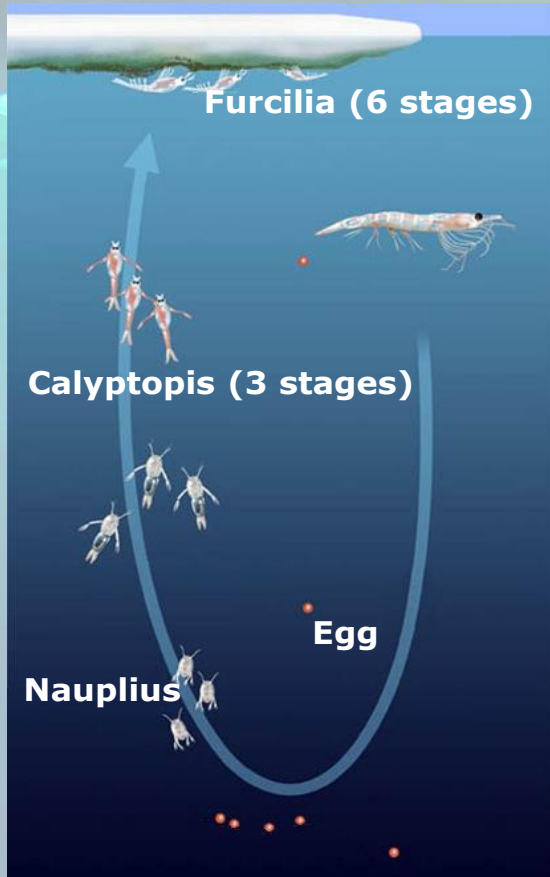


(Eicken, 1992; Quetin & Ross, 2003; Arrigo & Thomas, 2004; Flores *et al.*, 2012)

Background: iceflux



Background



First year:

Furcilia → juveniles ~ 15 mm

Second year:

Juveniles < 33 mm

Juveniles → sub-adults > 26 mm

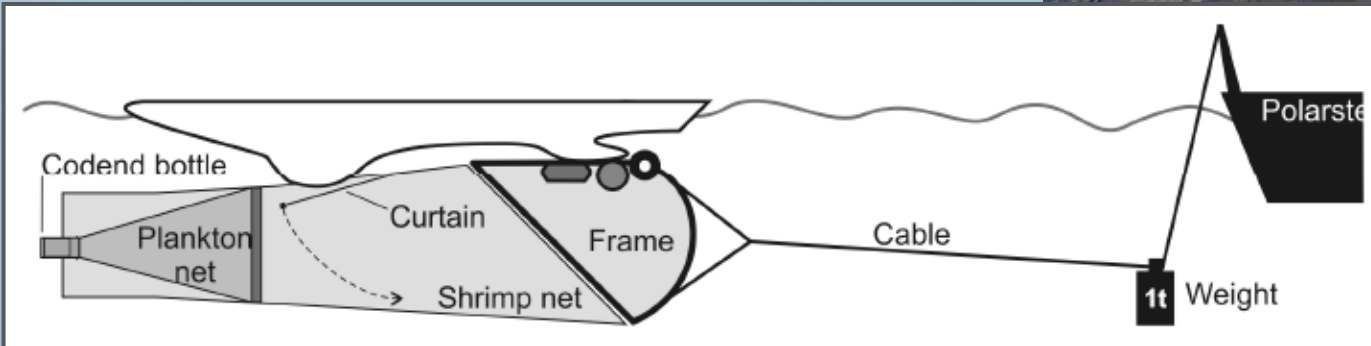
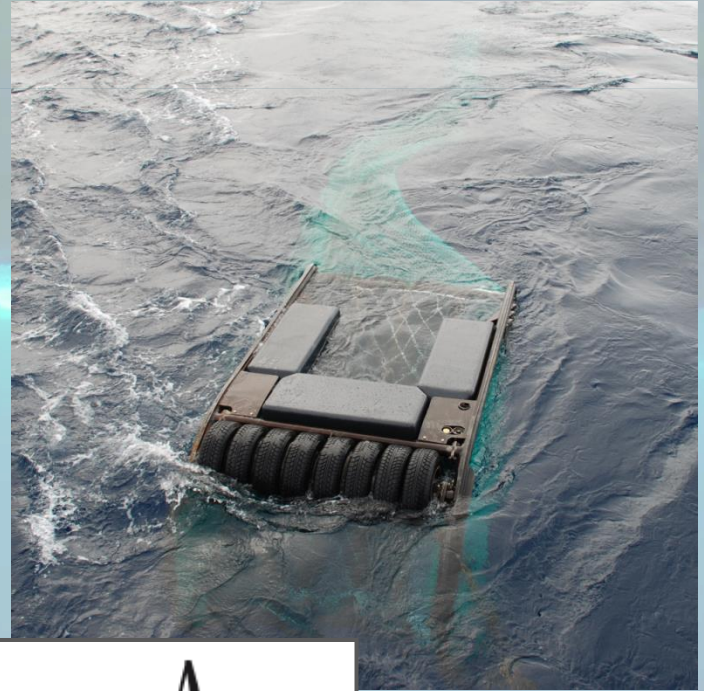
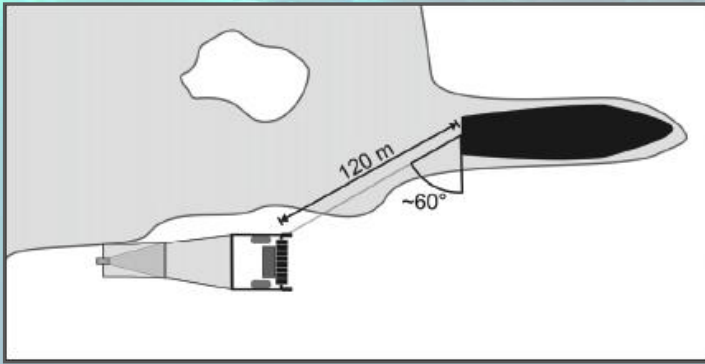
Third year:

Sub-adults → adults > 35 mm

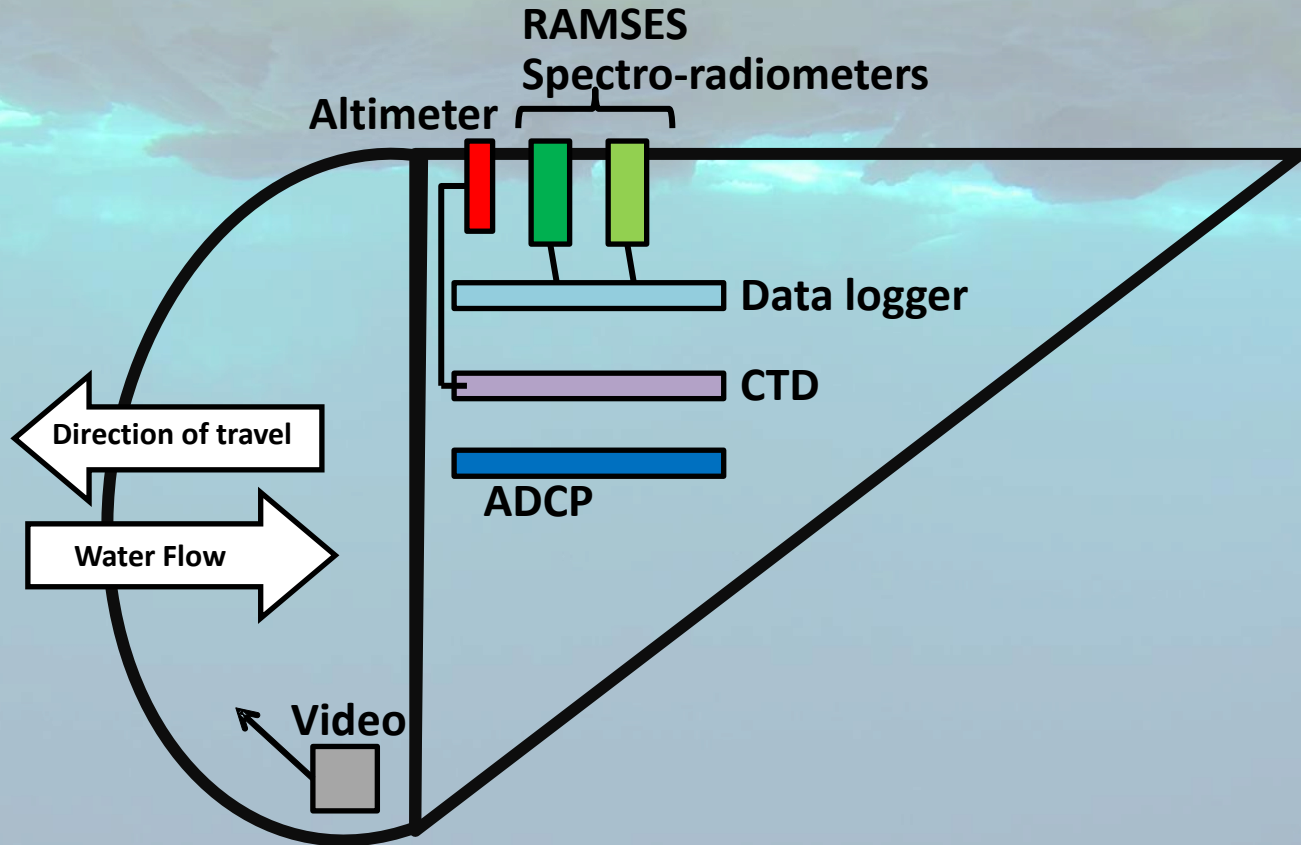
(Fraser, 1936; Bargmann, 1945; Marr, 1962; Siegel, 2000; Meyer & Oettl, 2005; Flores *et al.*, 2012; Jia *et al.*, 2014)

Methods: SUIT

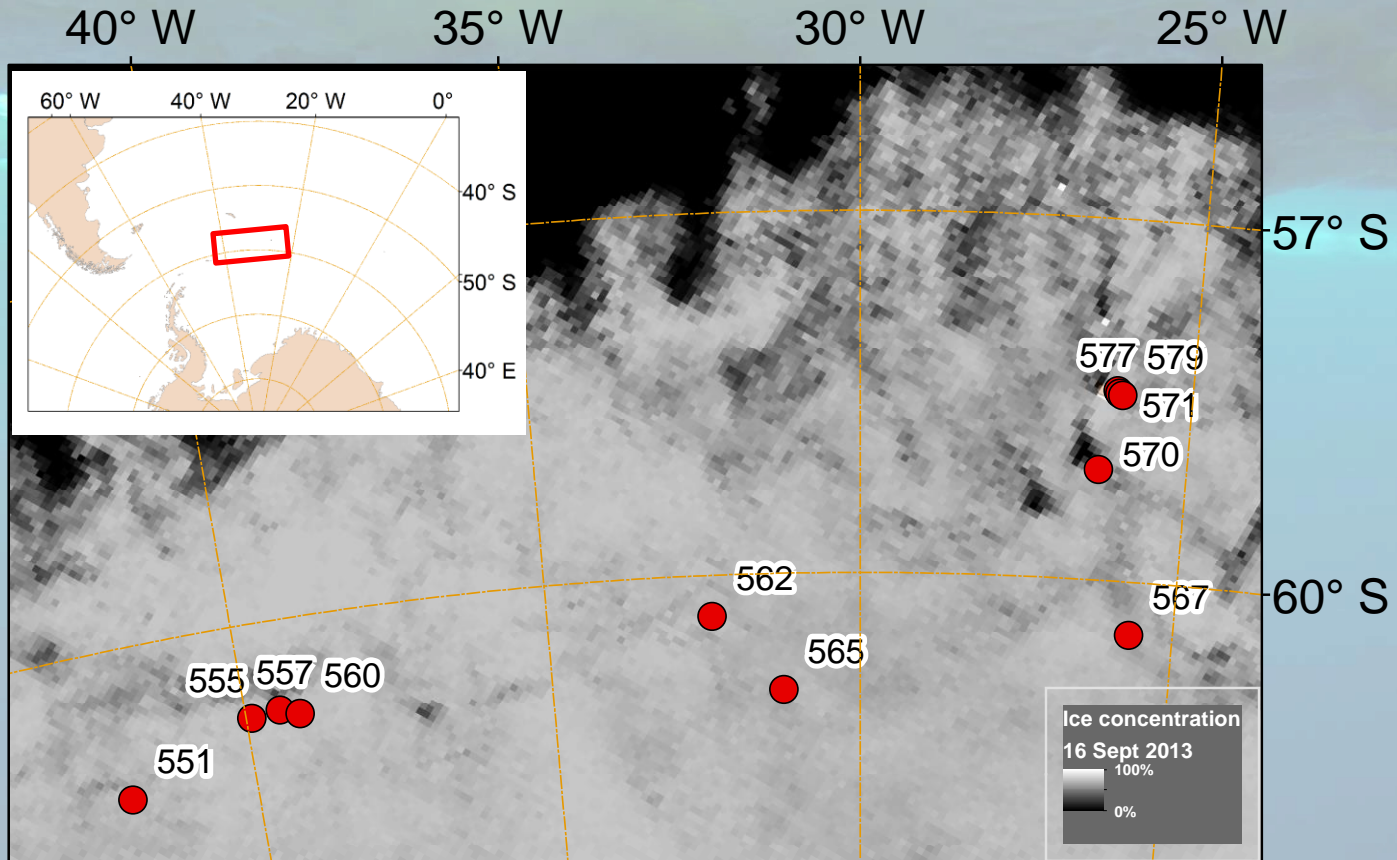
Surface and Under Ice Trawl



Methods: sensors

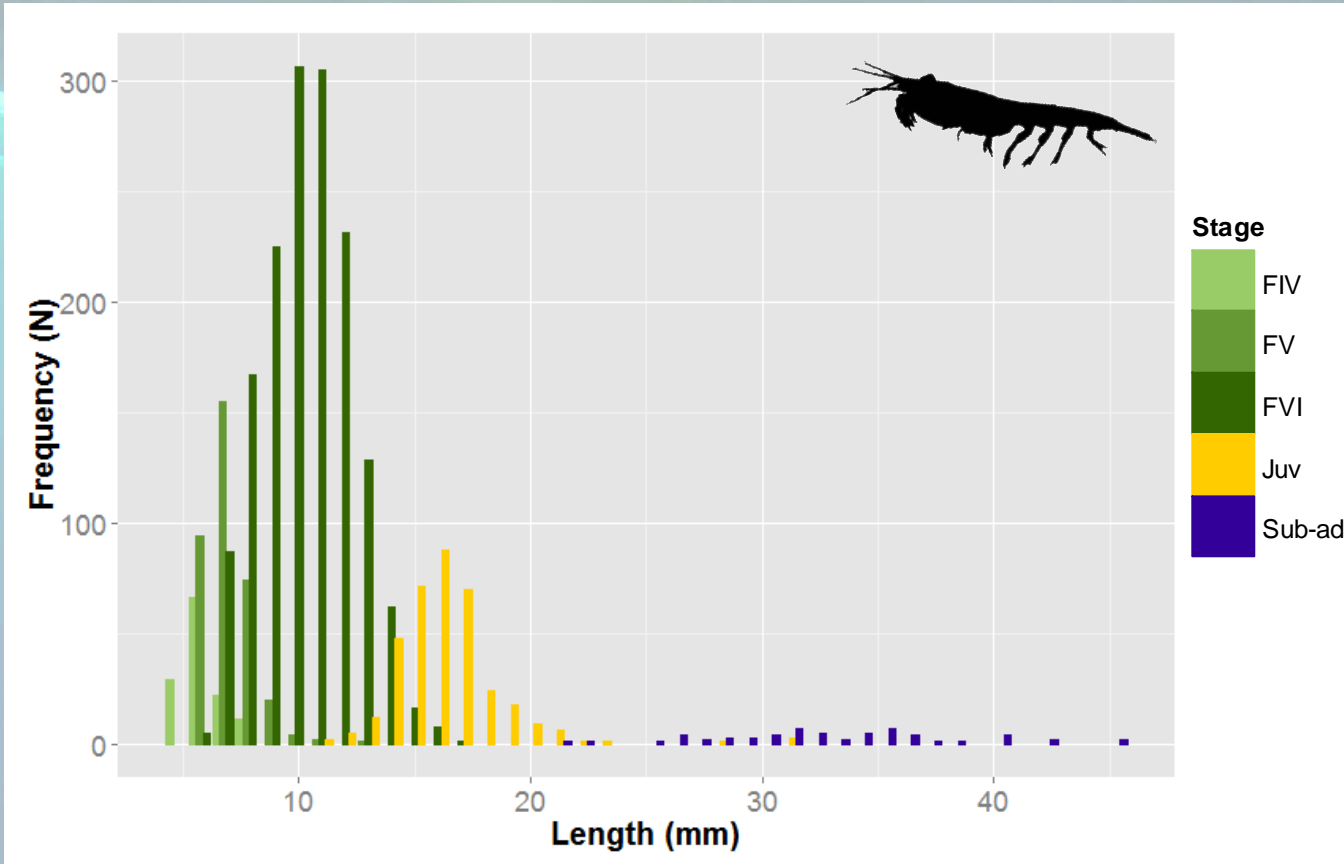


Sampling area



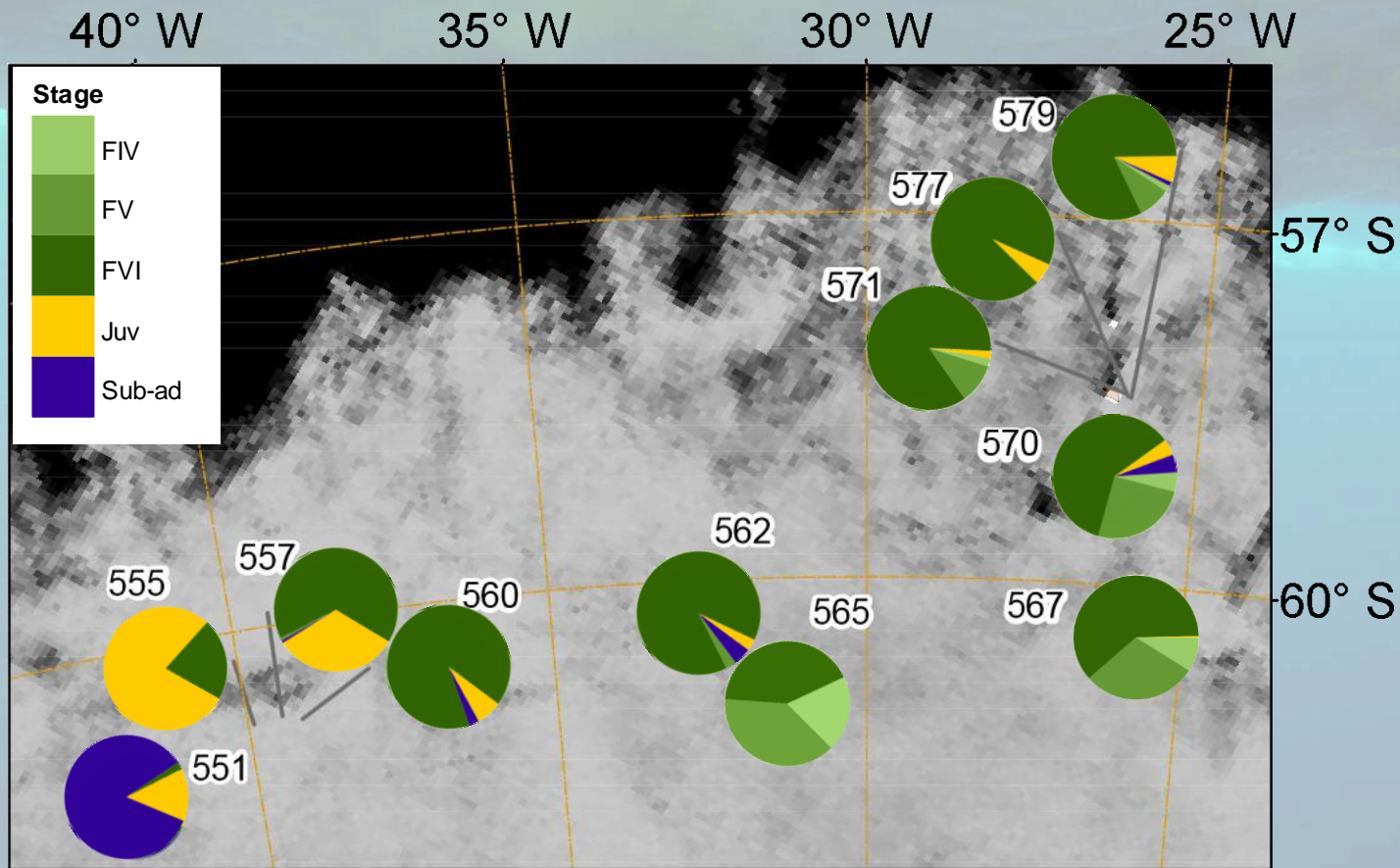
Results: catch

size & stage distribution



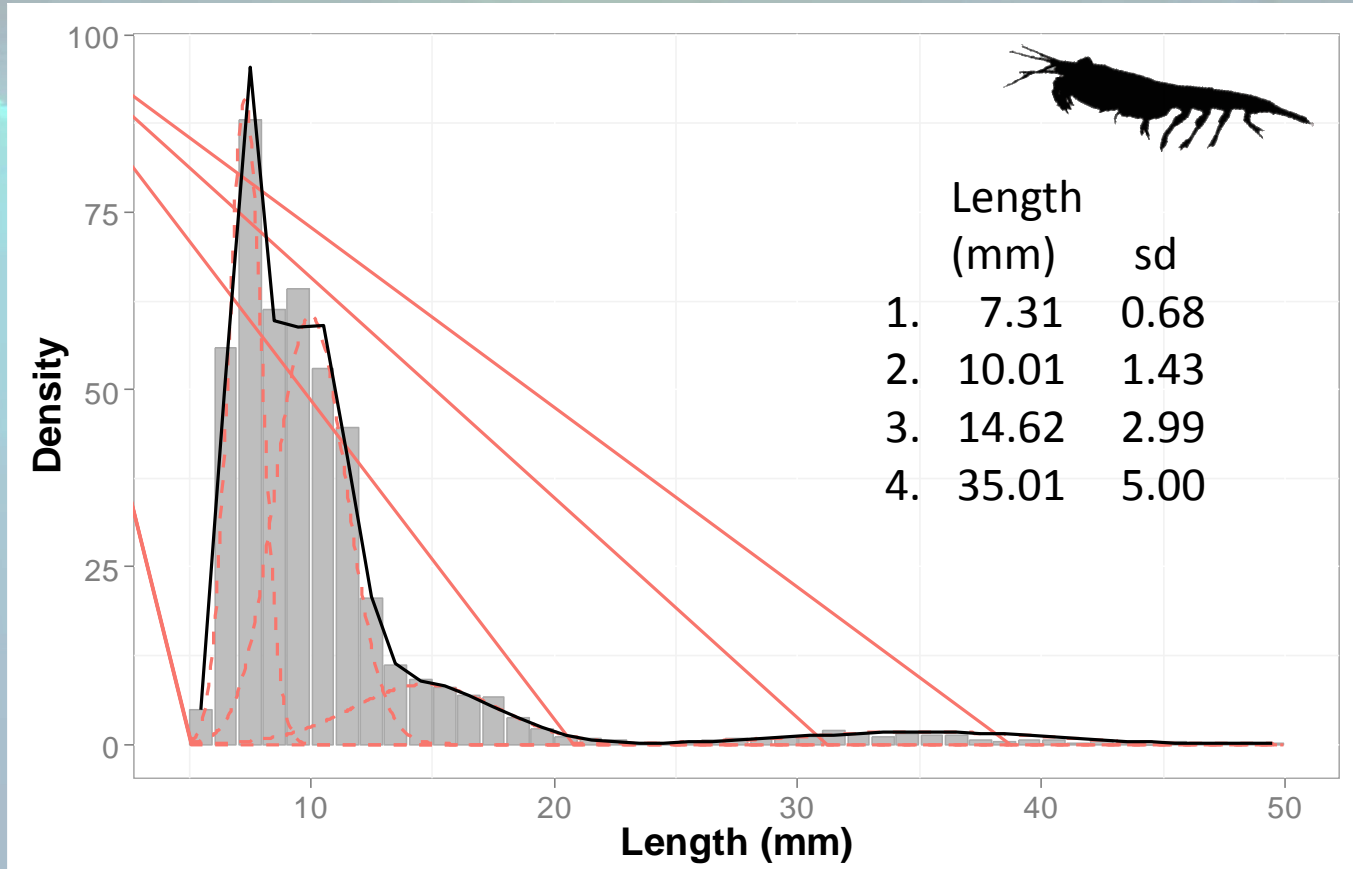
Results: stages

size & stage distribution



Results: mixture distribution

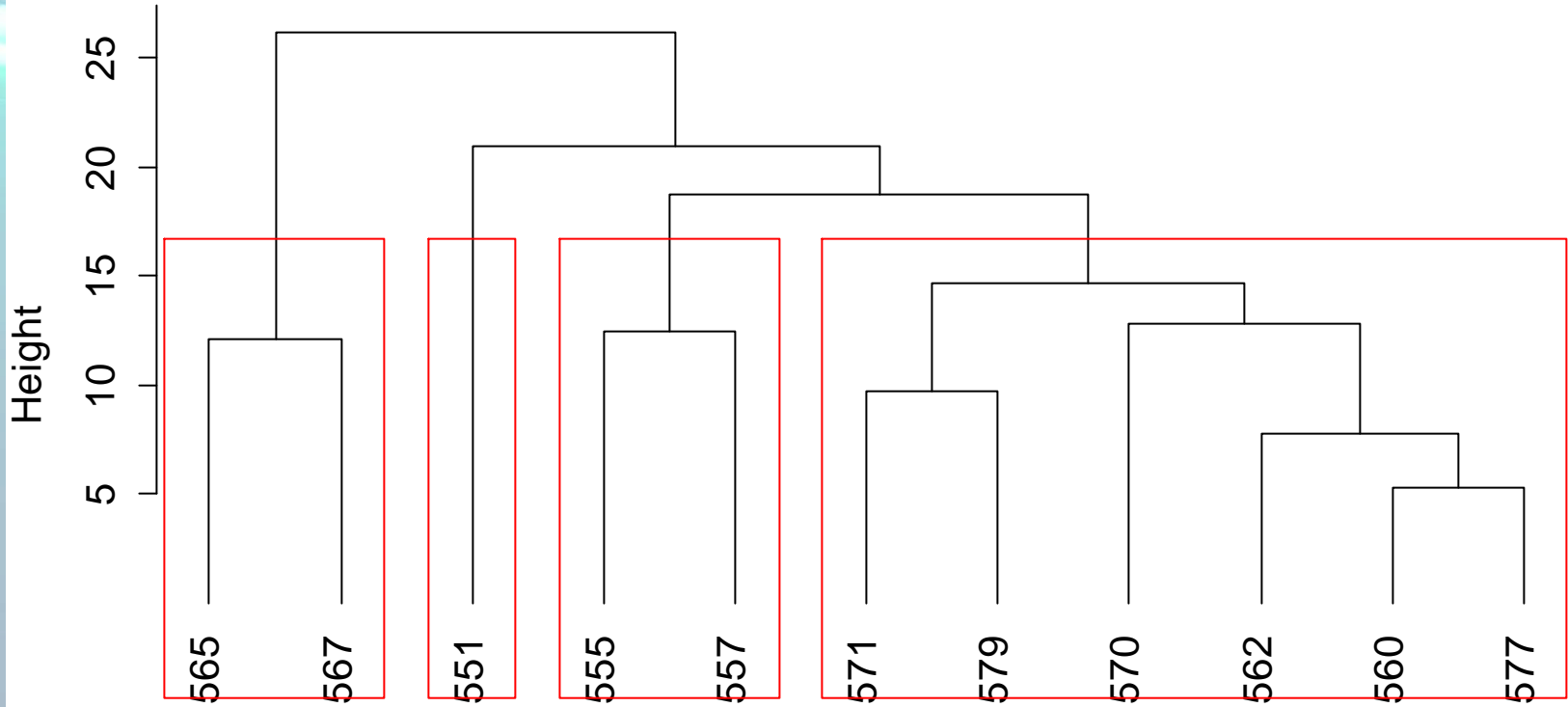
size & stage distribution



(method in
De la Mare, 1994)

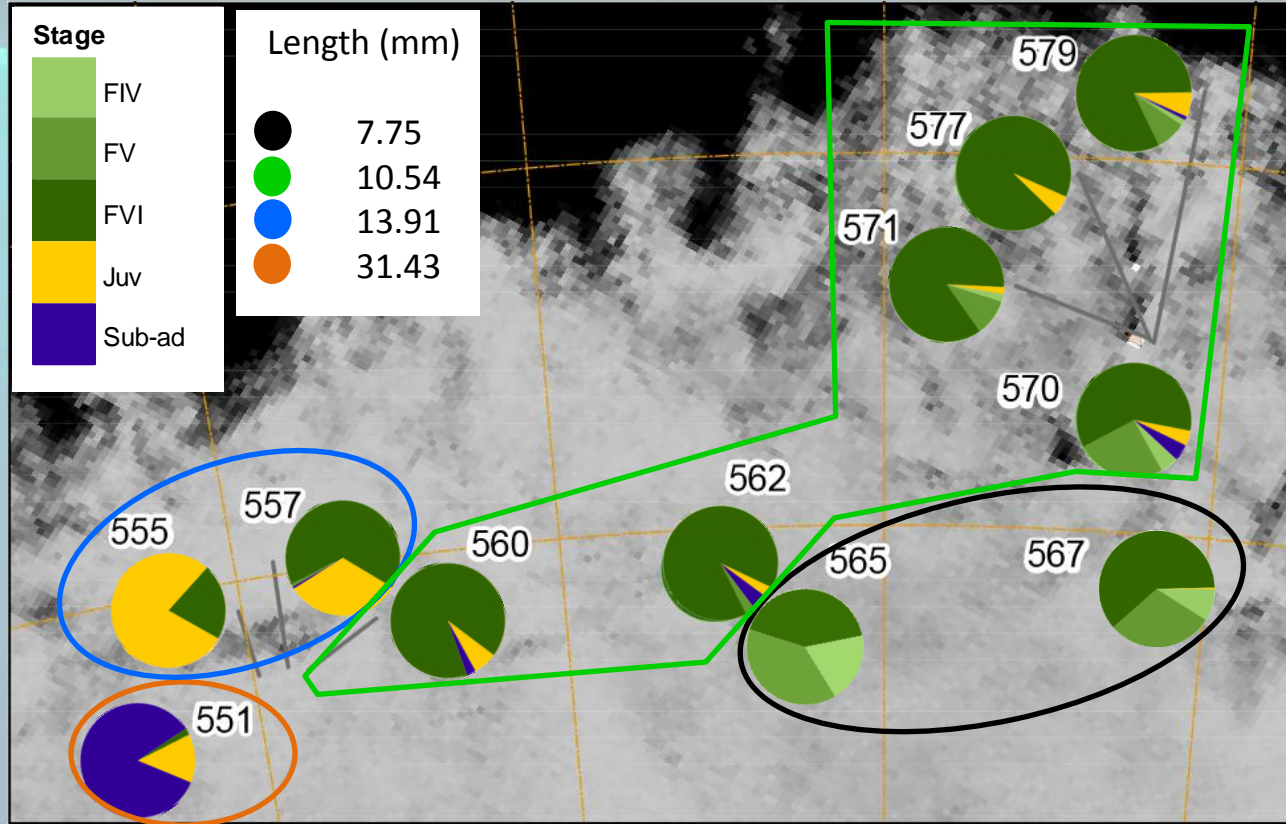
Results: cluster analysis

size & stage distribution



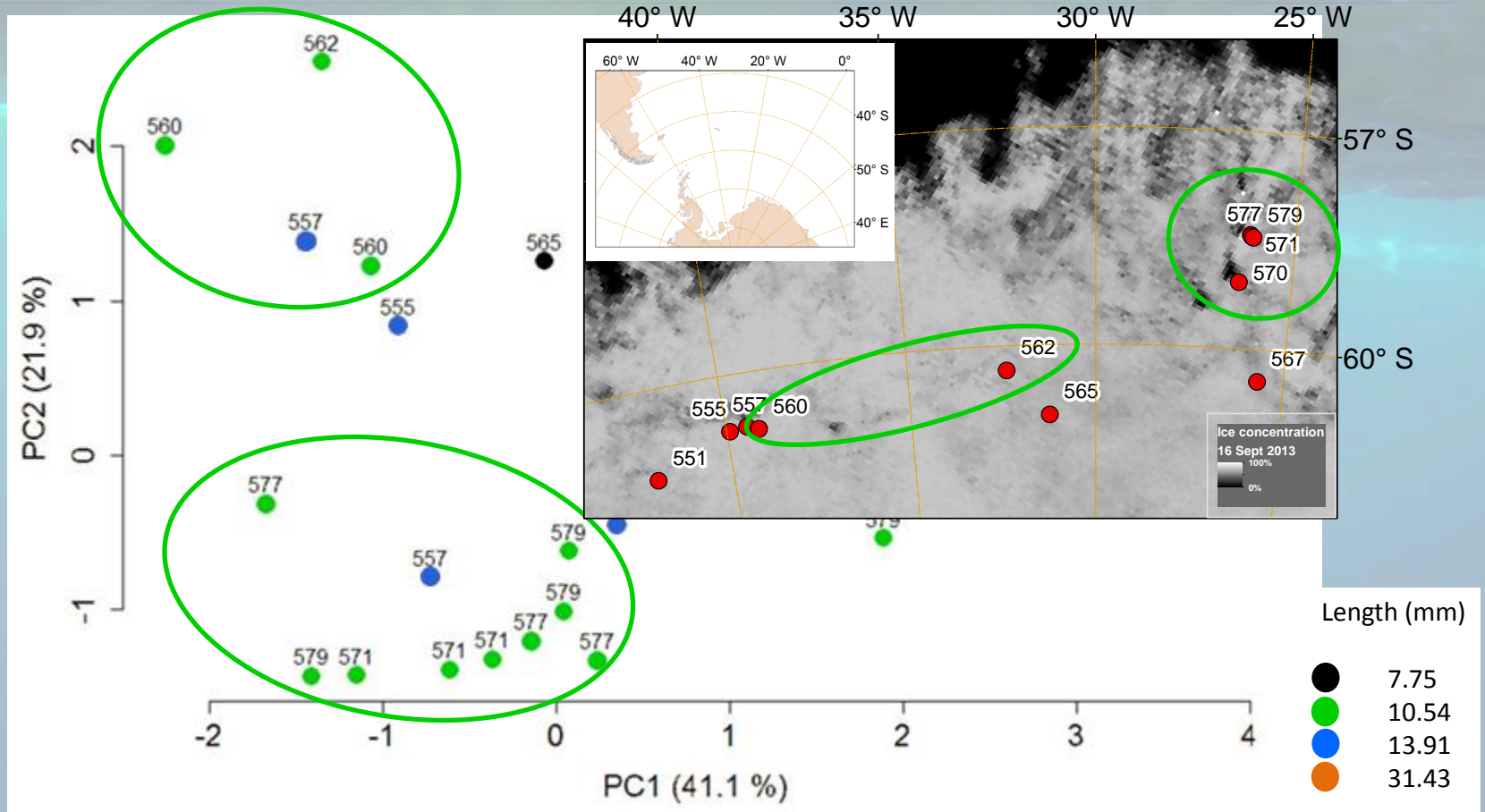
Results: cluster analysis

size & stage distribution



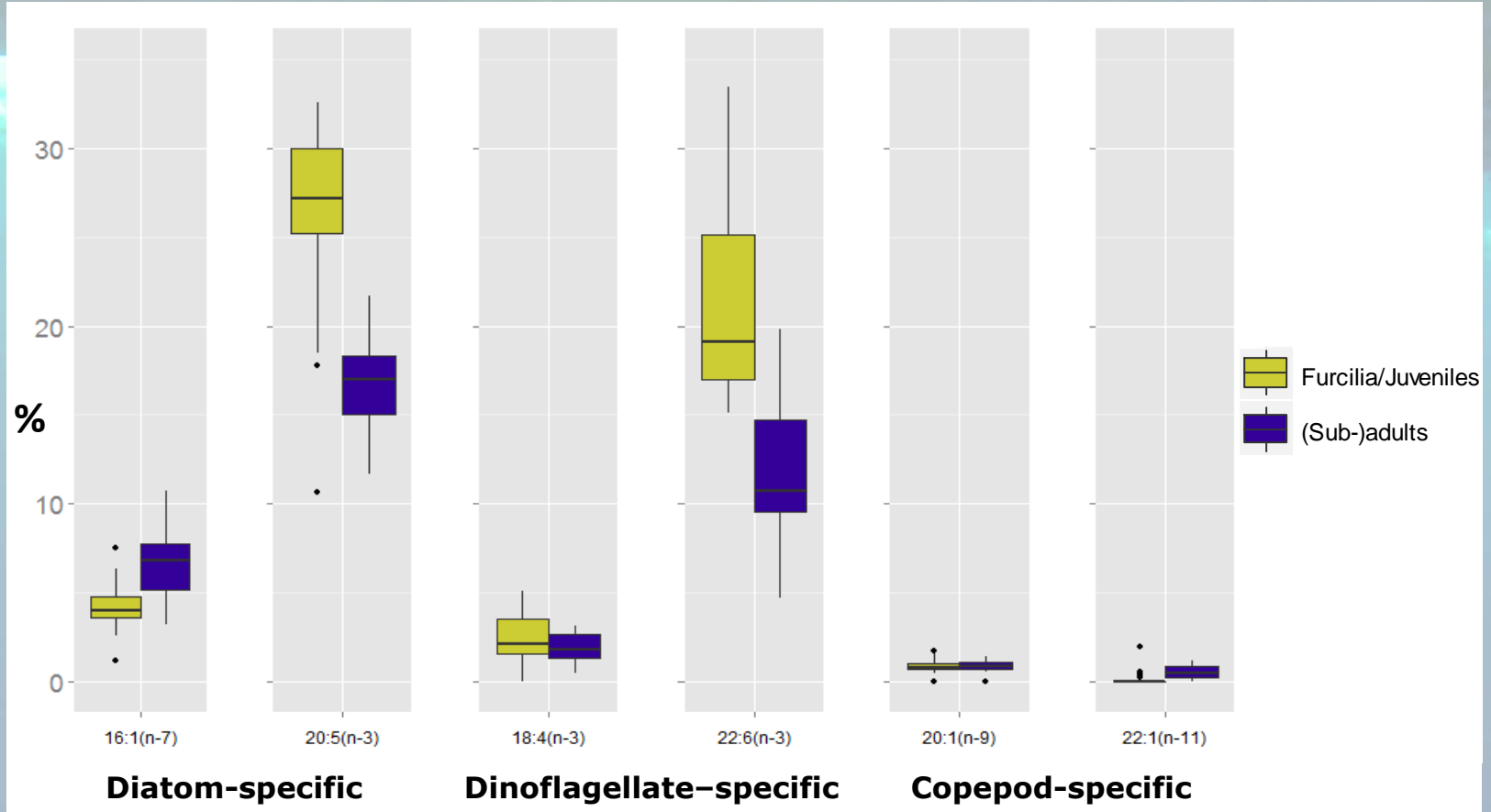
Results: fatty acid profile first year krill

Diet

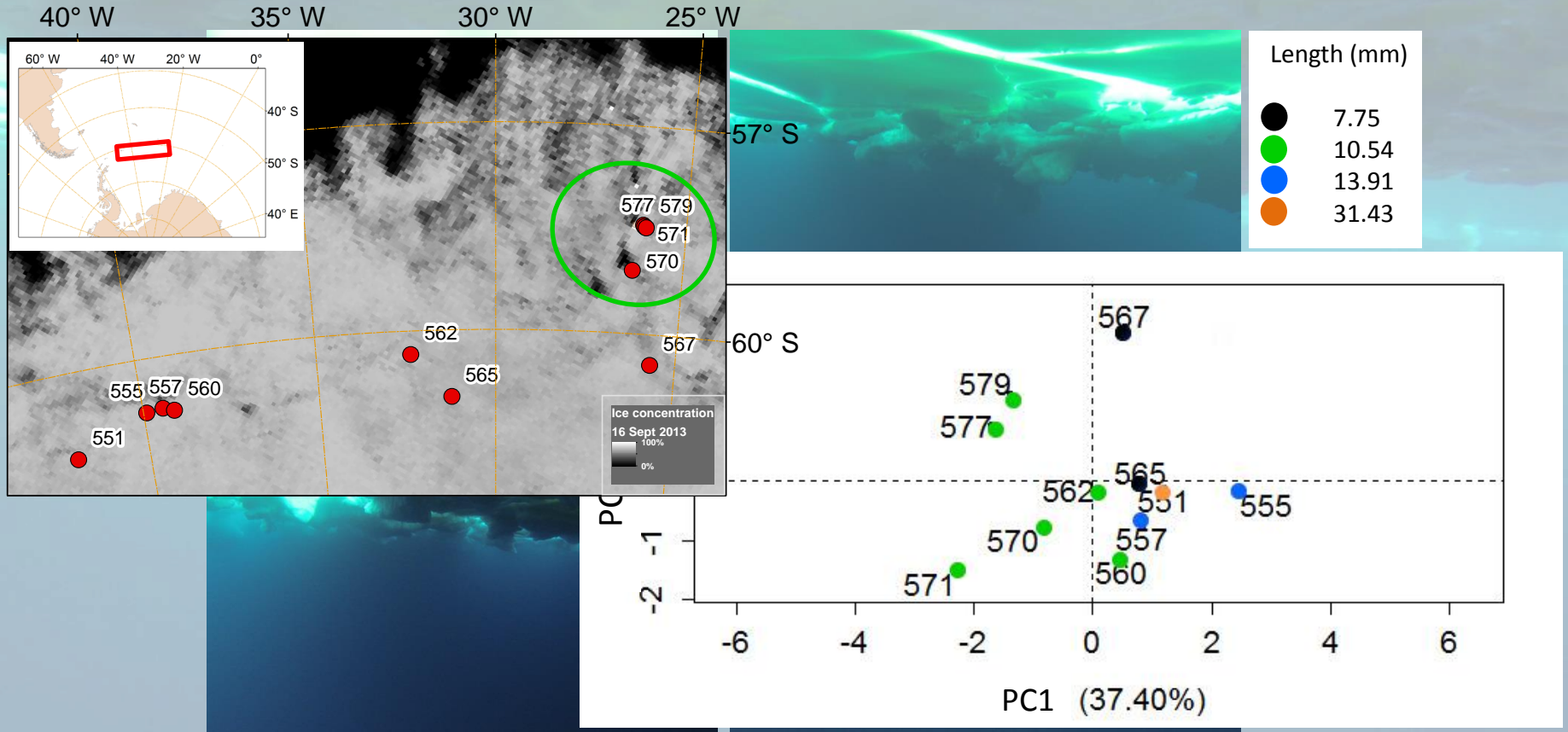


Results: fatty acid biomarkers

Diet



Results: sea ice



Conclusions

Krill found in the area are from different age classes → different origin or prolonged reproductive season

(Quetin & Ross, 2003)

A separation in size and/or location is reflected in fatty acid composition.

First year krill have a different carbon source than adults.

Length distribution does not seem to be associated with sea ice or under ice properties.

Thank you!



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Martina Vortkamp
Santiago Alvarez-Fernandez



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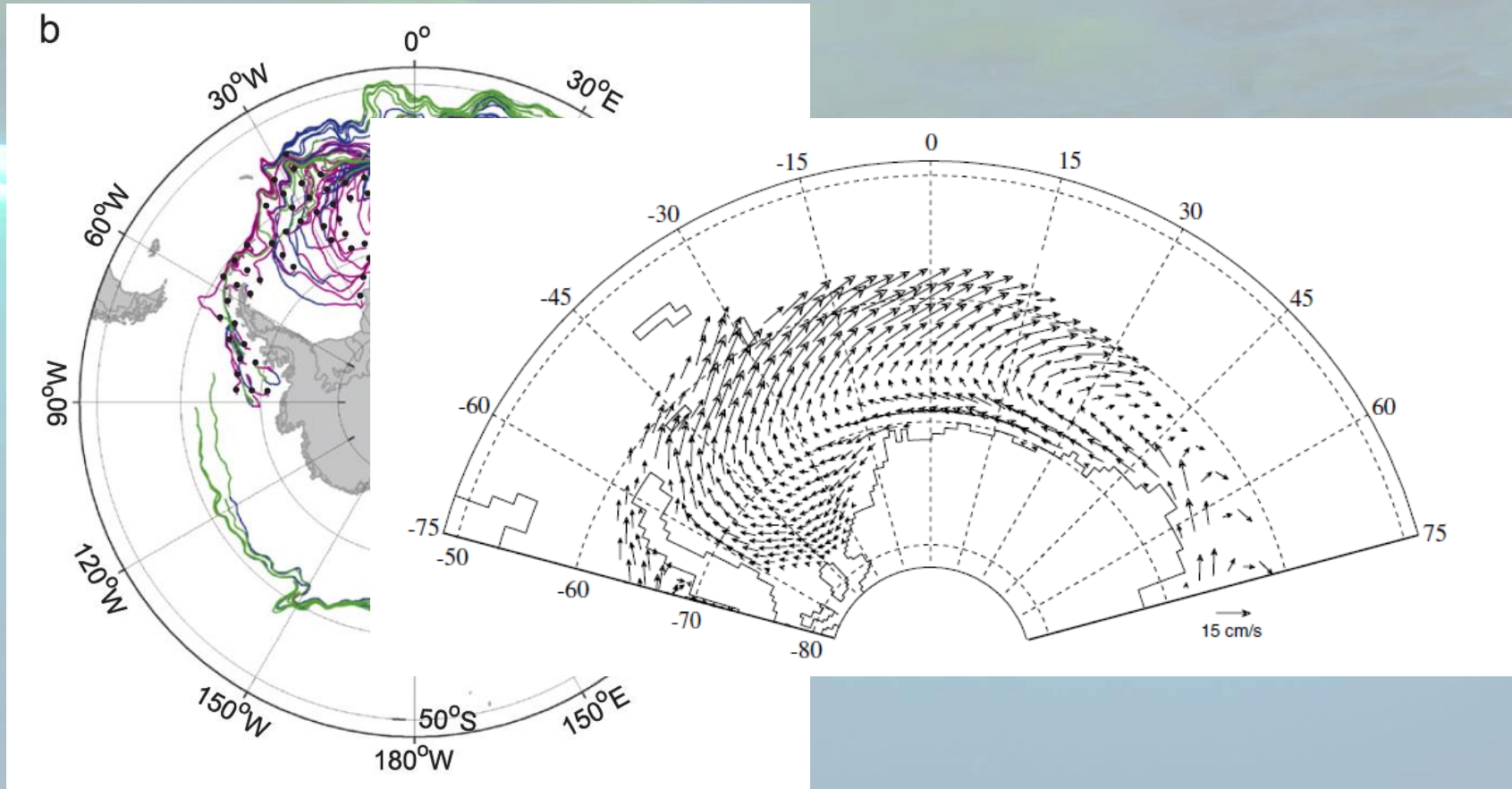


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(Timmermann *et al.*, 2002; Thorpe *et al.*, 2007)

