



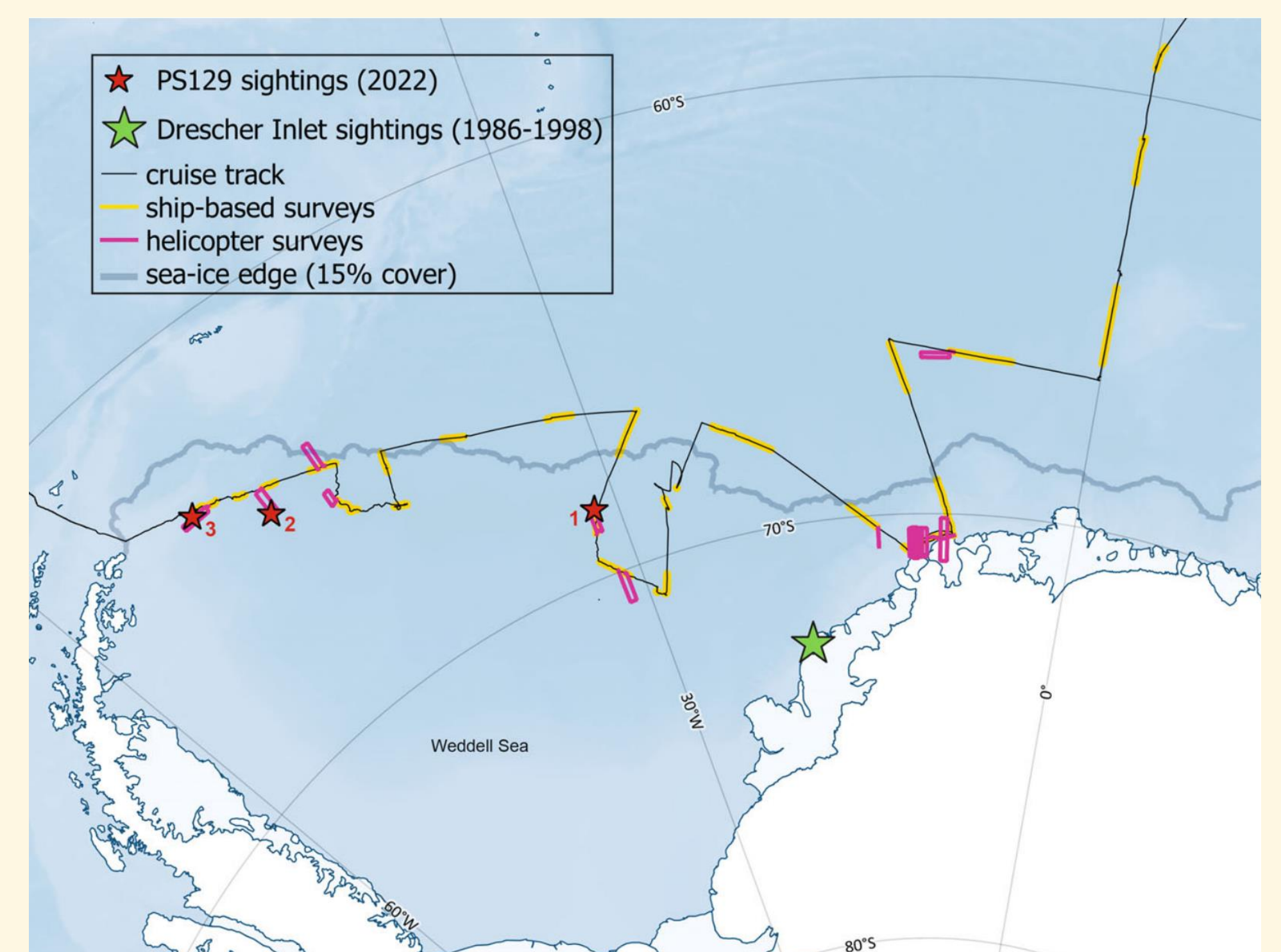
Distribution of Arnoux's beaked whales (*Berardius arnuxii*)

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Background

Arnoux's beaked whales (*Berardius arnuxii*) are generally considered to be uncommon to rare and are assumed to prefer deep oceanic waters of the Southern Hemisphere. During many top-predator surveys in the Southern Ocean, conducted by Wageningen Marine Research and partners since 1988, the species was not sighted. However, in April 2022 three groups were encountered in the marginal sea-ice zone of the Weddell Sea (**Figure 1**). Establishing detailed descriptions of the sighted animals and their environment, combined with the recovery of additional unpublished sightings of this species in the Drescher Inlet by colleagues (**Figure 1**), led to a review of other known observations to improve our understanding of the distribution and habitats of Arnoux's beaked whales in the Southern Ocean.

Figure 1. Cruise track of Polarstern PS129 in March and April 2022 (black line) and the location of the Drescher Inlet (green star). Yellow portions in the black line indicate where dedicated ship-based surveys were made. Helicopter top predator surveys are shown by pink lines. Positions of Arnoux's beaked whale sightings in 2022 are indicated with red stars. The thick gray line indicates the sea ice extent.



Results

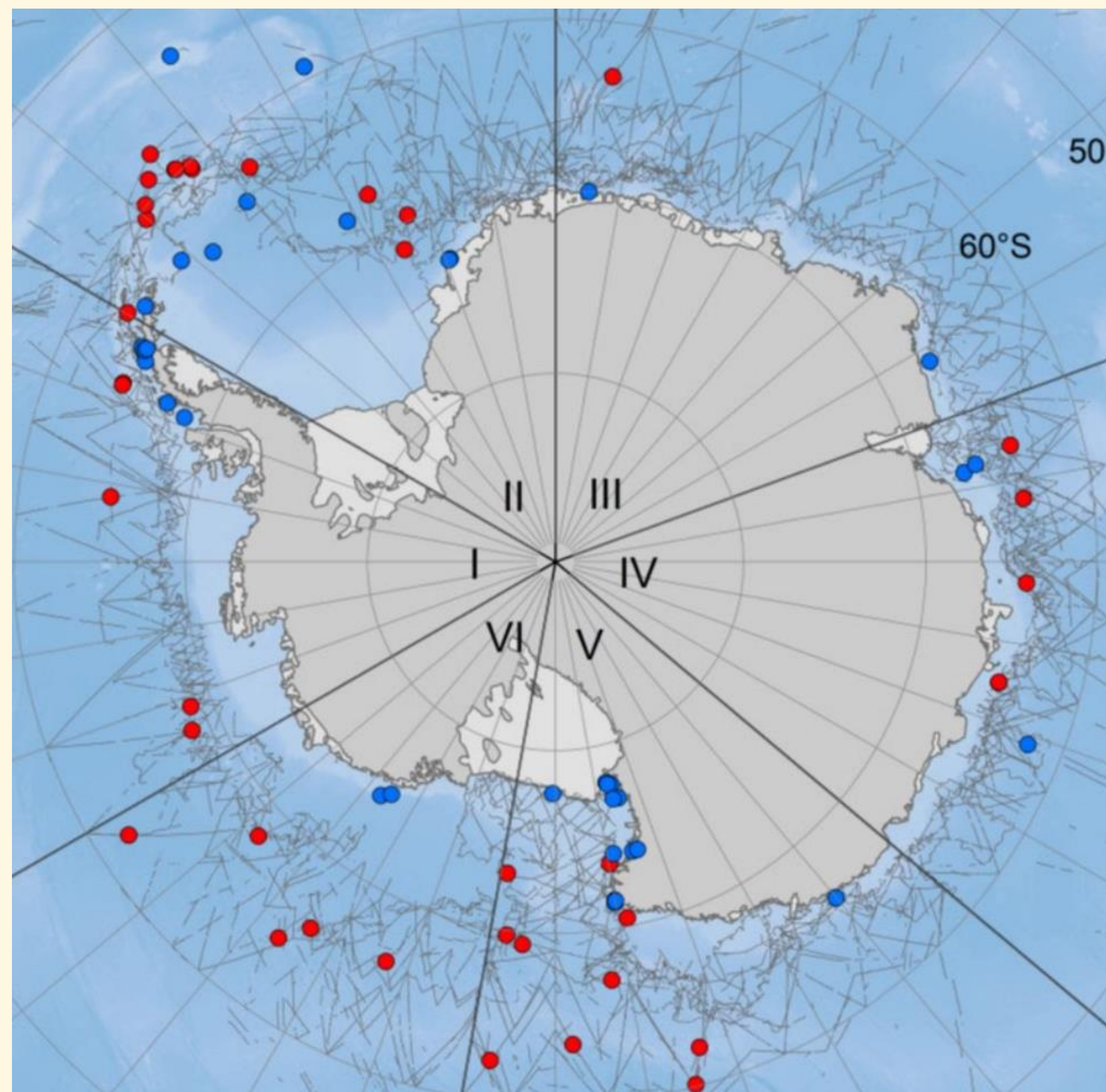


Figure 2. Locations of all documented sightings of Arnoux's beaked whales. Blue dots show locations of 'incidental' records from our own surveys, personal information, literature and online databases. Red dots provide the positions documented in the IWC SOWER database, with all SOWER transects shown by grey lines. Most vessels involved in the SOWER surveys were unable to enter the sea ice. Roman numerals refer to the IWC Management Areas.



Figure 3. Number of observed Arnoux's beaked whales in the Southern Ocean in relation to satellite observed ice cover at position and date of observation (n = 869). Data were binned in 10% ice cover categories. SOWER surveys focused on the area south of 60°S but mostly avoided sea ice.

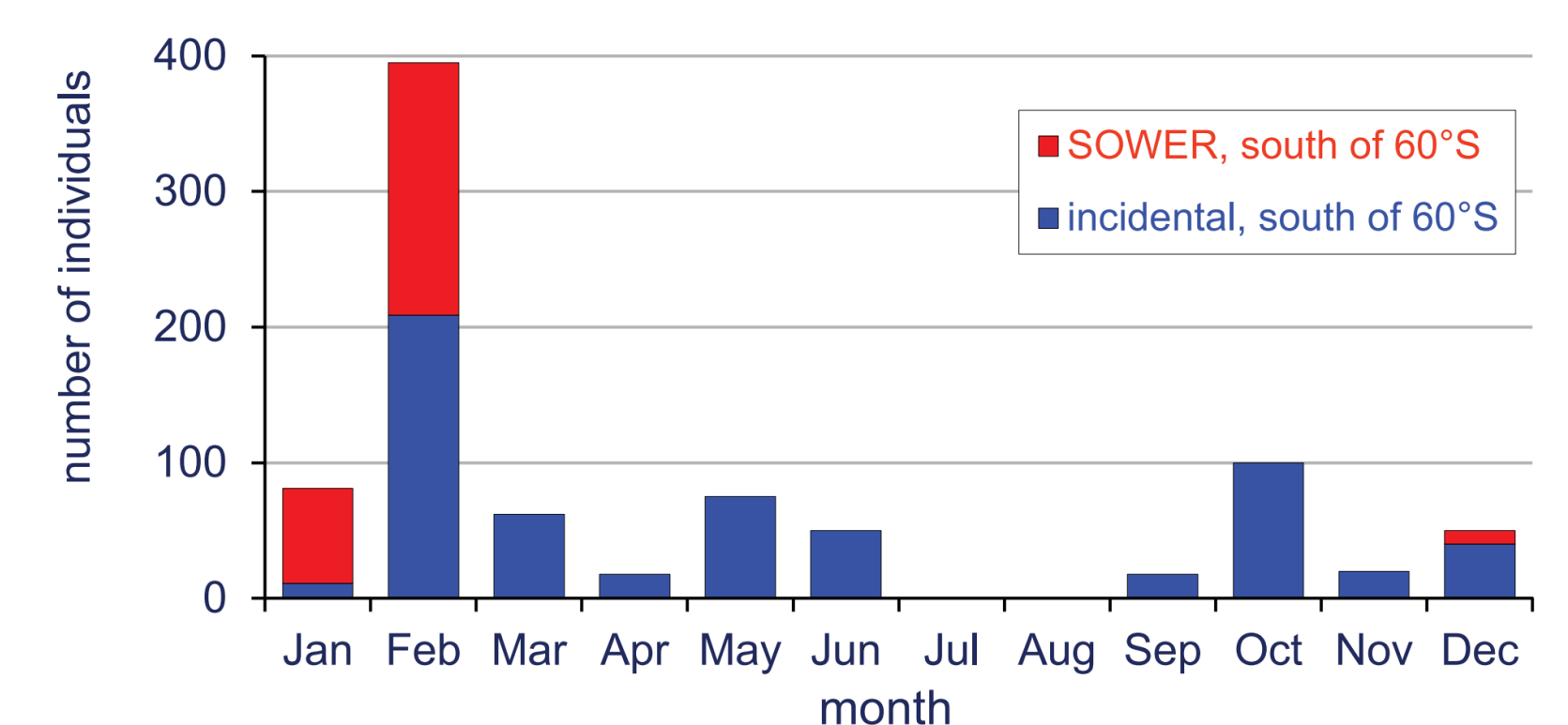
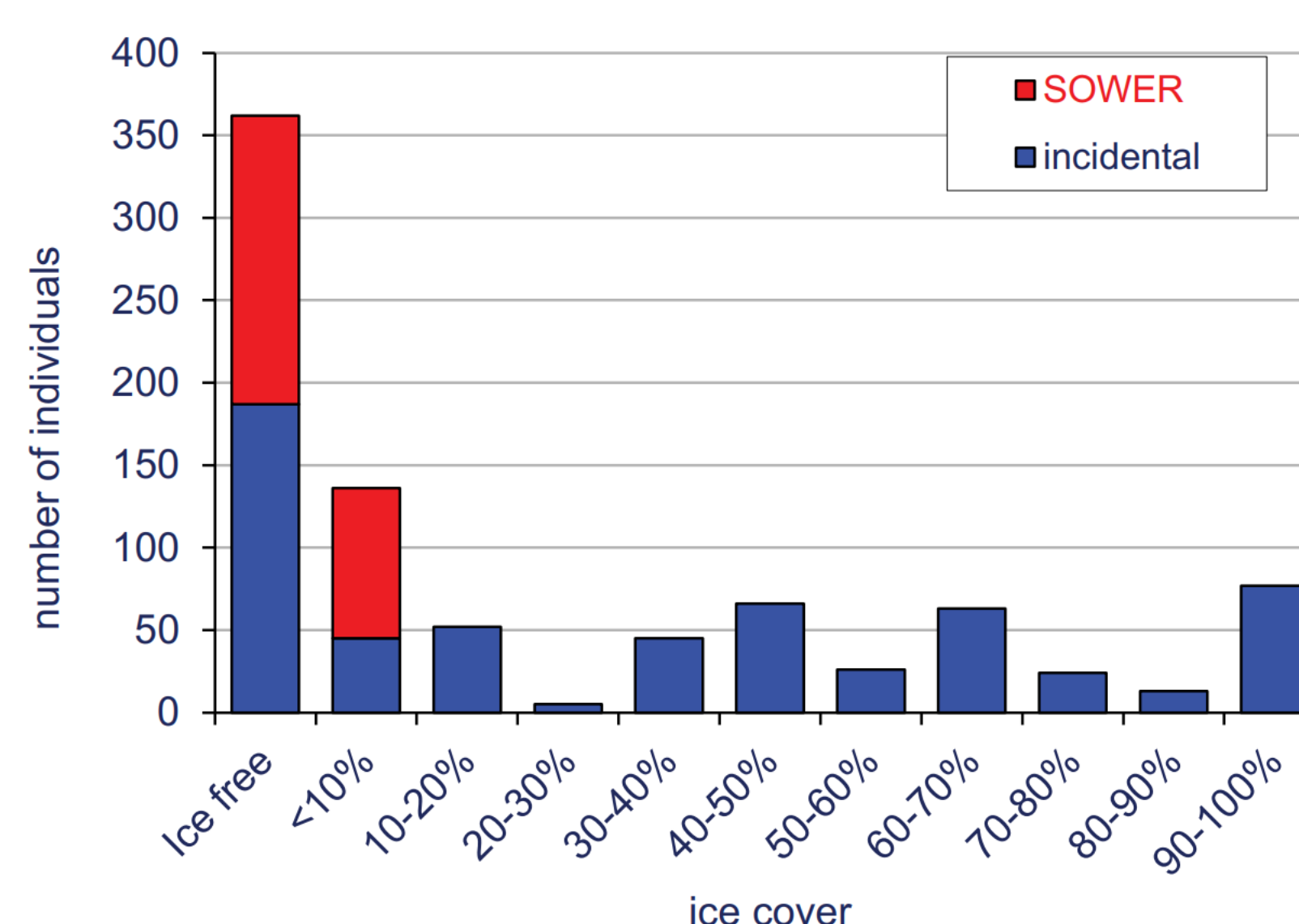


Figure 4. Seasonal pattern of observations of Arnoux's beaked whales (n = 869). SOWER surveys were only conducted from late December to February.

A search of published information on the distribution of the species revealed 108 documented sightings with a total of 1,125 individuals (**Figure 2**). In combination, these sources of information for the Southern Ocean suggest a frequent occurrence in ice-covered waters, often close to the continental coast and edges of fast ice and ice-shelves (**Figures 2 and 3**).

Conclusions

- In the Southern Ocean, Arnoux's beaked whales have been sighted in all months of the year, so there is no evidence of seasonal movements (**Figure 4**).
- There appears to be a clear link between Arnoux's beaked whales and sea ice.
- Arnoux's beaked whales commonly occur in shallower waters.
- North of 60°S, in the temperate regions of the Southern Hemisphere, the species was also regularly sighted near continents, even far inshore, in fjords surrounded by land.

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Top right pictures: André Meijboom (top and bottom) and Susanne Kühn (middle). Bottom left pictures: Joachim Plötz†.

