

ASCOS floe layout, orientation and rotation

The sketch of the floe is made from the photo of Michael Tjernstöm, taken from his .ppt presentation available in the database on www.ascos.se. The edges are drawn from the photo and since the photo is not taken from directly above, the drawing is “tilted” to make the dimensions of the sketch fit the dimensions of the real floe. The position of the lead site is also taken from Michael’s presentation.

Ship’s orientations are taken from own log book and controlled from photos. Time periods for turning and moving the ship between positions are taken from ship’s log book which was available on the bridge. The floe’s main axis is aligned roughly along the “right” edge of the floe, the edge with the lead site.

Distances and directions between the ship in various positions, the ocean site and the 15 m mast site are found from GPS measurements at the various sites and using `m_idist.m`. Directions relative to the main axis are found from the drawing.

The attached dataset contains the heading of the main axis. This is calculated from the direction from the ocean site to the 15 m mast site and therefore data are limited to periods where data from both sites are available (mainly limited by gaps in data at the ocean site).

In Matlab:

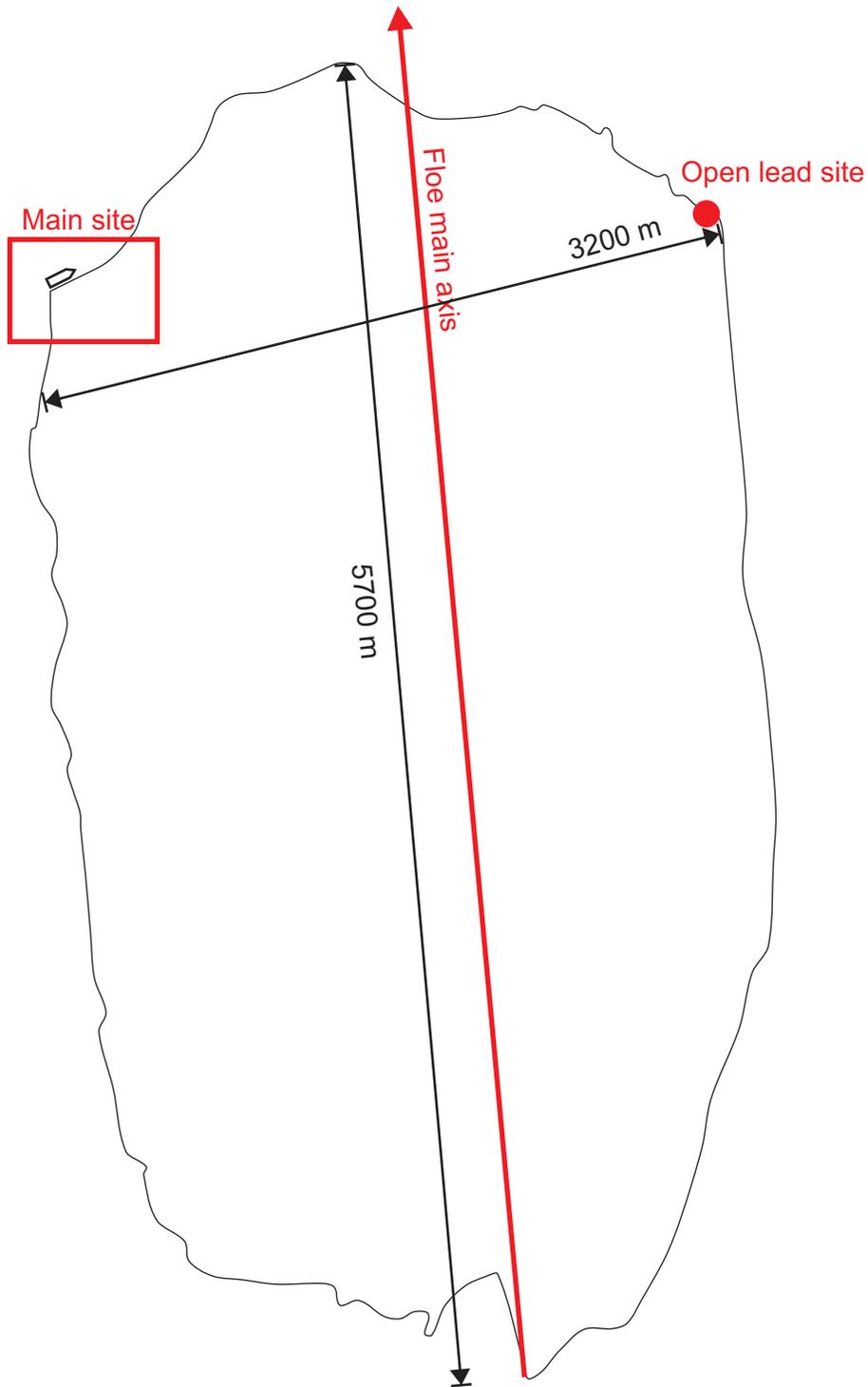
```
>> load ASCOS_floe_rotation  
>> A
```

A =

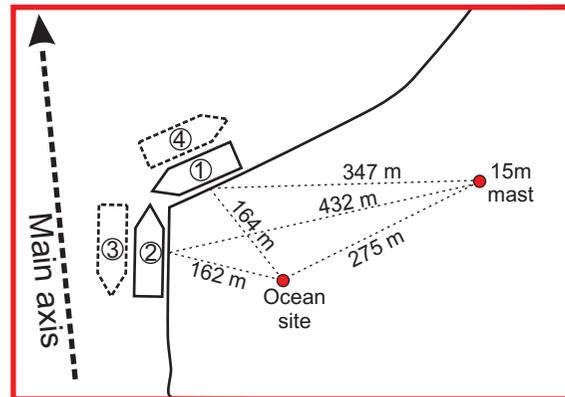
```
    time: [1x10230 double]  
 heading_main_ax: [1x10230 double]  
    comment: 'Heading of the floe’s main axis during ASCOS 2008'
```

I have made this sketch first off all to be able to identify where currents come from at various times. If you want to use the information, feel free to do so but be careful in interpreting all directions as “exact”. But it is worth noting that the floe rotated only 10 degrees during the majority of the drift.

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Main site



Heading of selected "vectors" relative to floe's main axis:

Pos 1 → Ocean site	148°
Pos 2 → Ocean site	110°
Pos 1 → 15 m mast	94°
Pos 2 → 15 m mast	83°
Ocean site → 15 m mast	69°
Pos 1 ship heading	252°
Pos 2 ship heading	6°
Pos 3 ship heading	186°
Pos 4 ship heading	72°

Time and position of ship at main site:

225.44 - 226.66	Pos 1
226.70 - 231.44	Pos 2
231.49 - 234.85	Pos 3
234.90 - 238.44	Pos 4
238.50 - 239.39	Pos 3
239.42 - 241.37	Pos 2
241.41 - 243.59	Pos 3
243.65 - end	Pos 2

