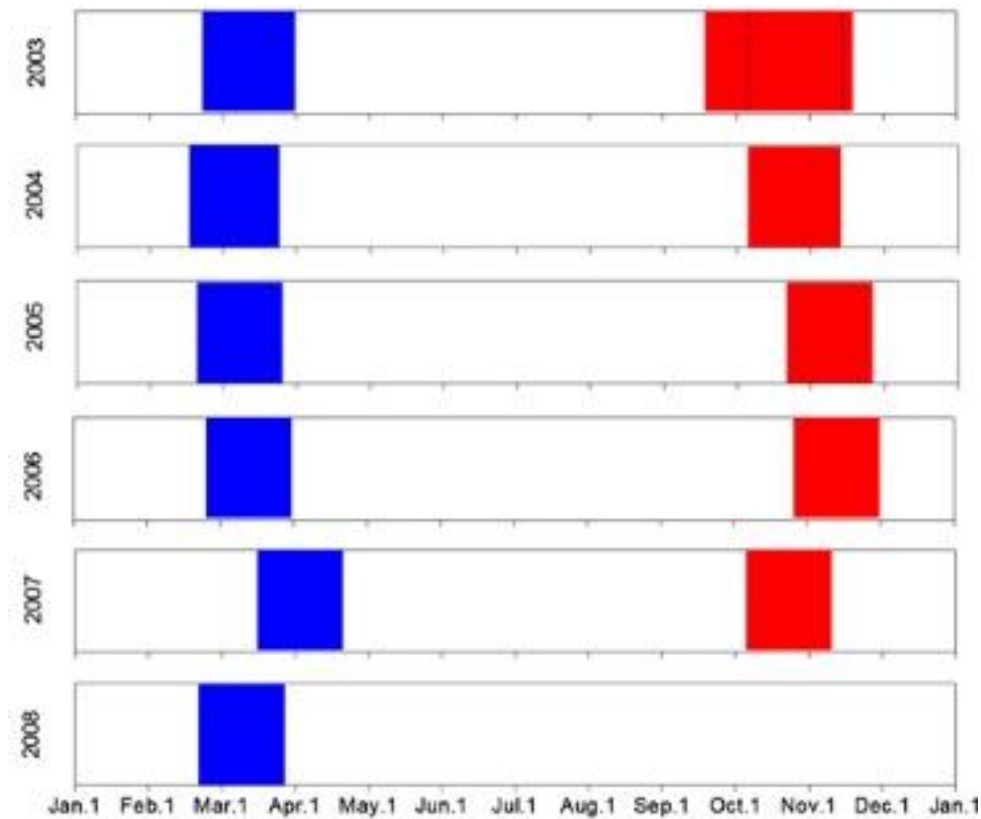
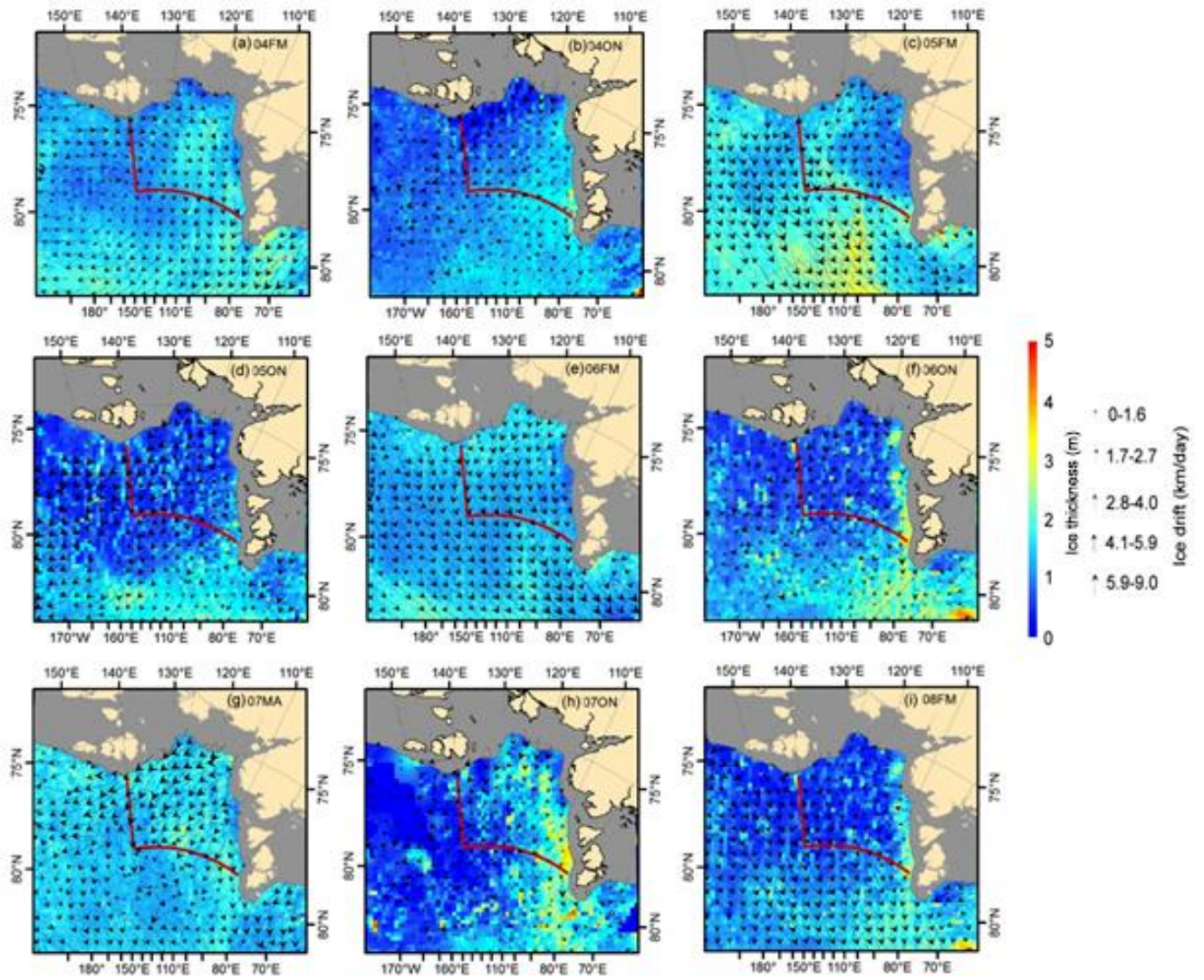


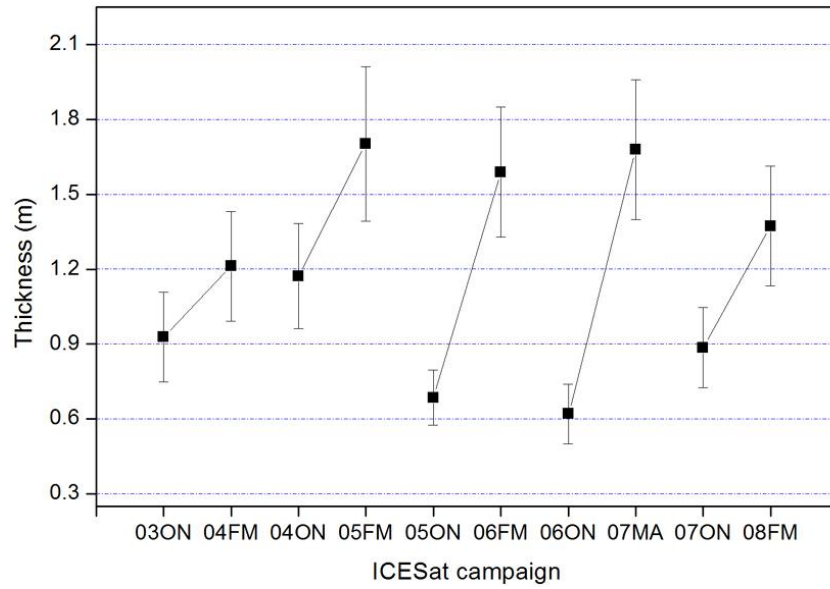
Supplementary file for: Bi H., Huang H., Fu M., Fu T., Zhou X. & Xu X. 2016. Estimating sea-ice volume flux out of the Laptev Sea using multiple satellite observations. *Polar Research* 35. Correspondence: Haibo Bi, Key Laboratory of Marine Geology and Environment, Institute of Oceanology, Chinese Academy of Sciences, Nanhai Road 7, Qingdao 266071, China. E-mail: bhb@qdio.ac.cn



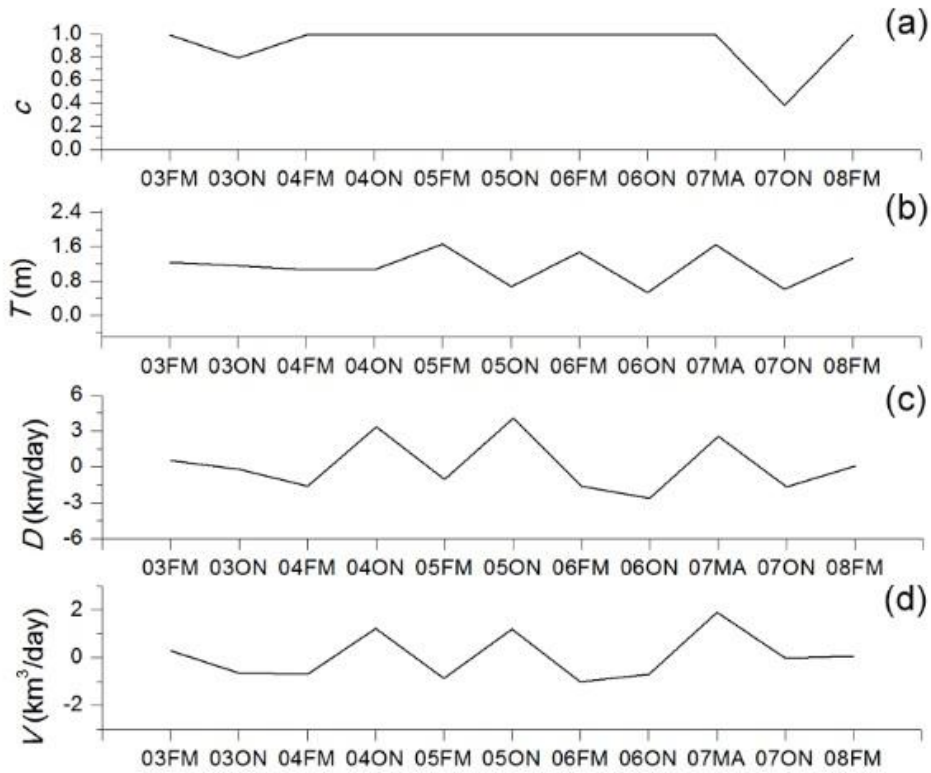
Supplementary Fig. S1. Time ranges of the ICESat autumn (red) and winter (blue) campaigns, 2003-08. The autumn time range outlined in 2003 by the black line in the top panel represents the actual time length of ICESat measurement to produce our 03ON grid product of freeboard and thickness.



Supplementary Fig. S2. Spatial distribution patterns of ice-drift vectors superimposed on the thickness estimates (blue-to-red) retrieved from the ICESat measurements. The maps in the left and right column represent the winter and autumn campaigns, respectively, spanning a five-year period (2004-08). The red lines represent the location of the two boundaries as indicated in Fig. 1 in the main text.



Supplementary Fig. S3. Variability of sea-ice thickness averaged over the Laptev Sea. Error bars indicate mean standard deviation of ice thickness estimates.



Supplementary Fig S4. Time series of volume flux estimates at the EB along with time series of values of parameters used to obtain the volume flux estimates. This figure represents the variability of sea-ice concentration (c), ice thickness (T), ice-drift rate (D) and ice volume flux (V) over the EB boundary.

Supplementary Table S1. Time ranges of ICESat winter and autumn campaigns used in this study.

Survey	Period	Length (day)
03FM	20 Feb - 29 Mar 2003	37
03ON	25 Sep - 19 Nov 2003	55
04FM	17 Feb - 21 Mar 2004	33
04ON	03 Oct - 08 Nov 2004	36
05FM	17 Feb - 24 Mar 2005	35
05ON	21 Oct - 24 Nov 2005	34
06FM	22 Feb - 28 Mar 2006	34
06ON	25 Oct - 27 Nov 2006	33
07FM	12 Mar - 14 Apr 2007	34
07ON	02 Oct - 05 Nov 2007	34
08FM	17 Feb - 21 Mar 2008	33