# Lateral advection of biogenic particles in the southwestern Canada Basin, Arctic Ocean

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Intensified sea surface circulation due to sea ice reduction changes the condition of material transportation from the Chukchi Sea shelf to the Canada Basin. This physical oceanographic change influences to marine ecosystem and biogeochemical cycle. In order to observe the relationship between the changing hydrographic condition and particle transportation from sea surface and the Chukchi Sea shelf, two moorings with sediment trap and hydrographic sensors were deployed in the southwestern Canada Basin (Station NBC: 72˚28.3’N 155˚24.4’W, Station NHC: 73˚18.1’N 160˚47’W) from September 2015 to September 2017. Sediment trap was moored at 160-265 m depth (NBC & NHC) and 1315-1400 m depth (NBC only). Total mass flux of settling particles (< 1mm size) at shallower trap depth reached to 2,389 mg $m^{-2}$ $d^{-1}$ and 3,729 mg $m^{-2}$ $d^{-1}$ at Stations NBC and NHC, respectively. This value is one order higher than the previous data in the central Canada Basin and the Northwind Abyssal Plain. The trapped particles are mainly composed of lithogenic matters (72 wt% in all studied samples) which is shelf origin. Based on abundance ratio of biogenic and lithogenic matters for the low productivity season in winter, trapped biogenic matters were distinguished to shelf origin with lithogenic matters and upper water-column origin in study area. The abundance ratio of two different origins shows that biogenic matters of upper water-column origin were relatively abundant in summer and contribution of shelf origin was higher in fall-winter seasons. There was the high flux period of total biogenic matters at two mooring stations from late October 2016 to January 2017. This high particle flux period corresponds to the period for temporal lateral advection of Bering shelf water to 50-150 m depth at the mooring position. The settling flux of particulate organic carbon (POC) for the lateral advection event contributed 45-63% of total POC flux during the second annual deployment period since September 2016.

Keywords: Arctic Ocean, Chukchi Sea, Canada Basin, Hydrography, Sediment trap

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