Supplementary Material

Mesopelagic particulate nitrogen dynamics in the subarctic and subtropical regions of the western North Pacific

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# Supplementary Figures



**Fig. S1** Profiles of *C*(SUS) (**A, C**) and δ15N(SUS) (**B, D**) obtained from seasonal cruises between 2010 and 2012 at K2 and S1.



**Fig. S2** Profiles of *F*(SINK) (**A, C**) and δ15N(SINK) (**B, D**) obtained from seasonal cruises between 2010 and 2011 at K2 and S1.

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**Fig. S3** Profiles of water temperature (**A**) and nitrate concentration (**B**) at K2 (blue) and S1 (red) obtained from seasonal cruises between 2010 and 2012. Note that nitrate concentrations at depths below 400 m are nearly constant vertically in K2, while there is a pronounced vertical gradient in the permanent thermocline (300–700 m) of S1.

# Supplementary Tables

**Table S1** The PN sinking flux, *F*(SINK), and vertical mean PN-δ15N of the sinking particles, δ15N(SINK), collected by drifting sediment trap (DST) at 100–200 m during seasonal cruises between 2010 and 2011 at K2 and S1.



*a* PN flux-weighted average of δ15N vertical mean data for each season.

**Table S2** Profiles of annual mean suspended PN concentration, *C*(SUS), and stable nitrogen isotopic composition, δ15N(SUS), at station K2 and S1. The original seasonal data for annual mean values are also shown in Supplementary Fig. S1. Note that data at 500 m were obtained only in summer (June–July) 2012 whereas others were averaged for seasonal data between 2010 and 2011.



***a***mean value for winter-spring data at K2 and for winter data at S1.

**Table S3** Annual averages *F*(SINK) and δ15N(SINK) collected by moored sediment trap (MST) at 500 m. Note that *F*(SINK) was calculated using the Martin curve for particulate organic carbon flux attenuation with the exponent *b* of 0.64 and 1.01, for K2 and S1, respectively, and annual average flux at 60 m at each station (Honda et al., 2016), and averaged organic carbon to nitrogen ratio of MST particles.

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***a***PN flux-weighted average δ15N value for the MST experimental period (2010–2014).