Supplementary Figure

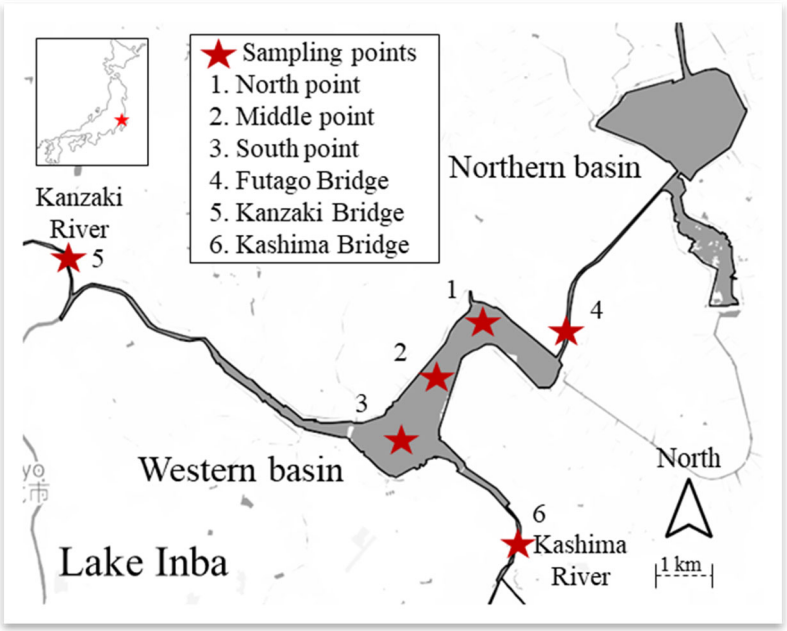


Fig. S1 Sampling site of Lake Inba and inflow rivers

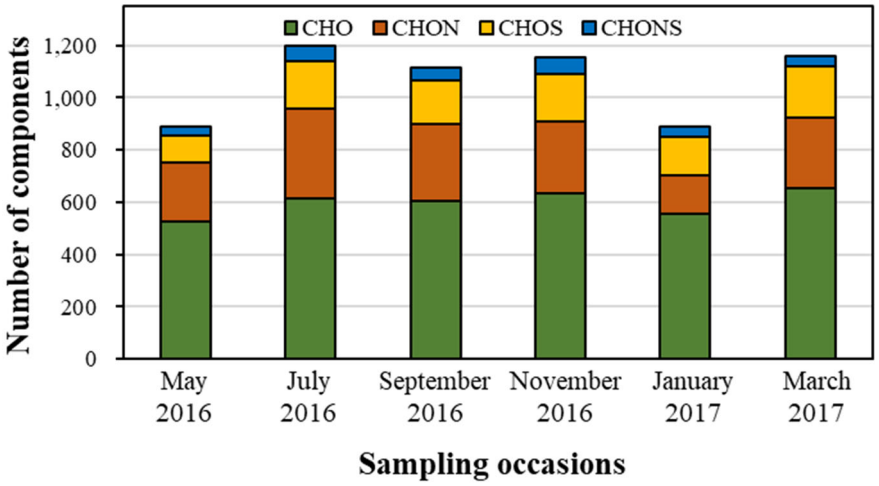
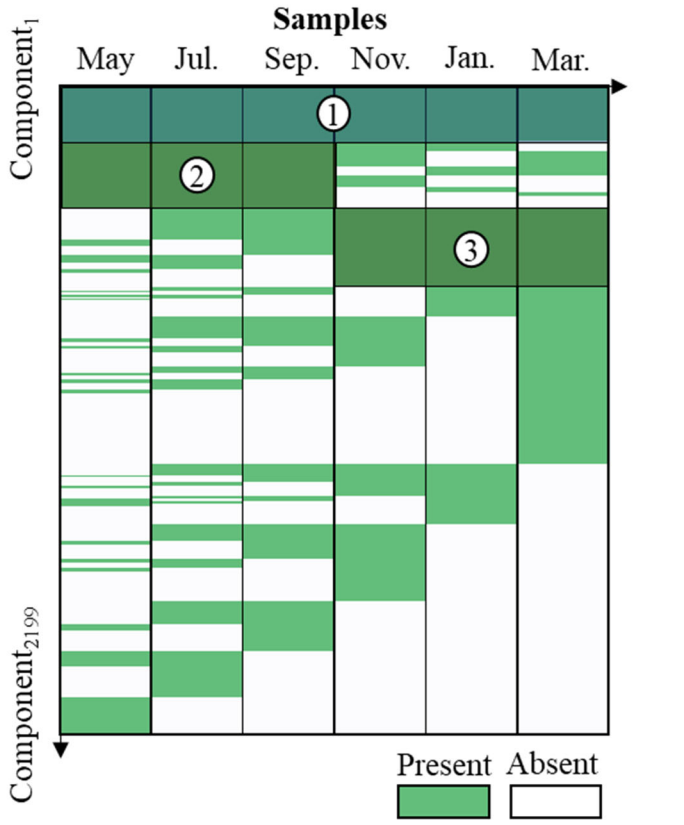


Fig. S2 Compositions of DOM_{SPE} components in water samples from Lake Inba.



1. Components common in all samples (184 components)
2. Components common in May, Jul. and Sep. (224 components)
3. Components common in Nov., Jan., and Mar. (270 components)

Fig. S3 Presence and absence of DOM_{SPE} components in water samples from Lake Inba collected between May 2016 and March 2017.

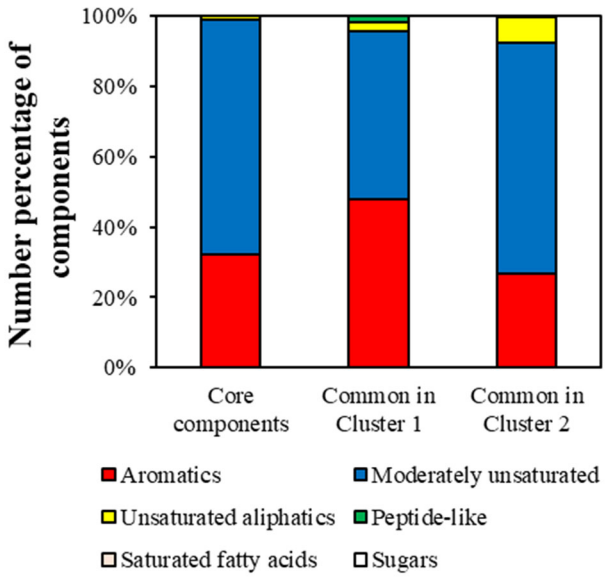


Fig. S4 Classifications of clustered components based on number of heteroatoms, H/C, O/C and Ai_{mod}

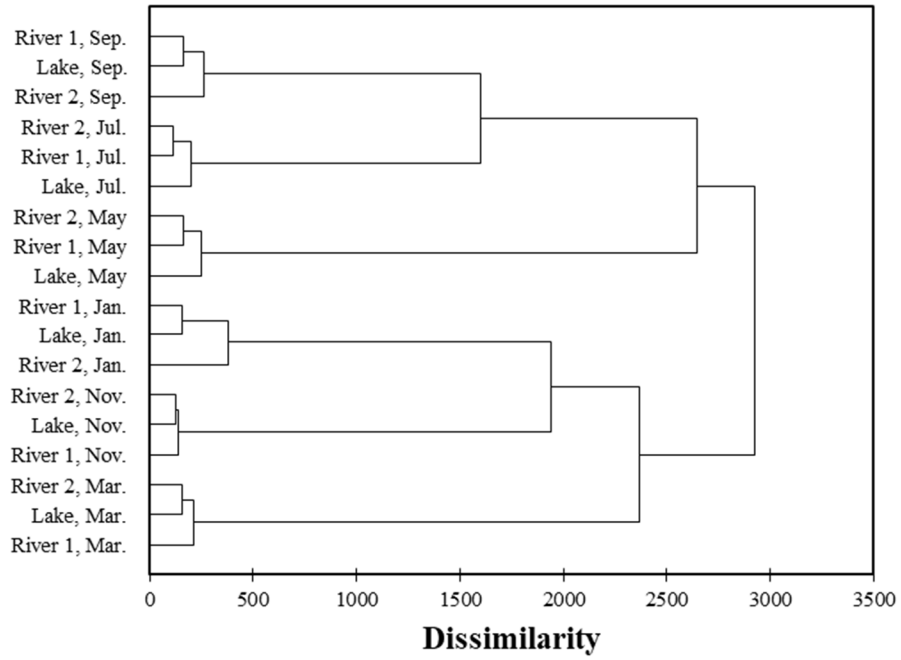


Fig. S5 Cluster analysis of DOM_{SPE} components in water samples from Lake Inba and two inflow rivers. These binary data were analyzed by Ward's method. Please note that Lake denotes Lake Inba, River 1 denotes Kashima River, and River 2 denotes Kanzaki River.

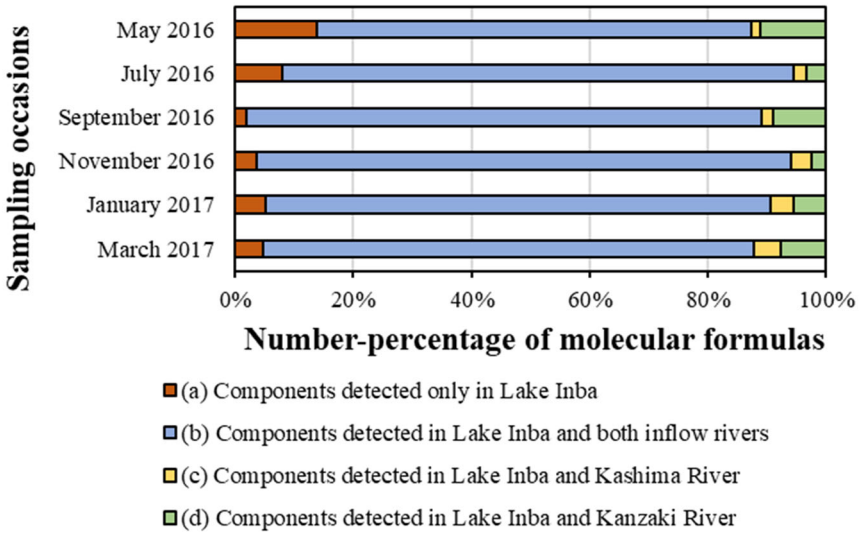


Fig. S6 Categorization of DOM_{SPE} components in water samples collected in Lake Inba into (a) components detected only in Lake Inba, (b) components detected in Lake Inba and both inflow rivers, (c) components detected in Lake Inba and Kashima River, and (d) components detected in Lake Inba and Kanzaki River.

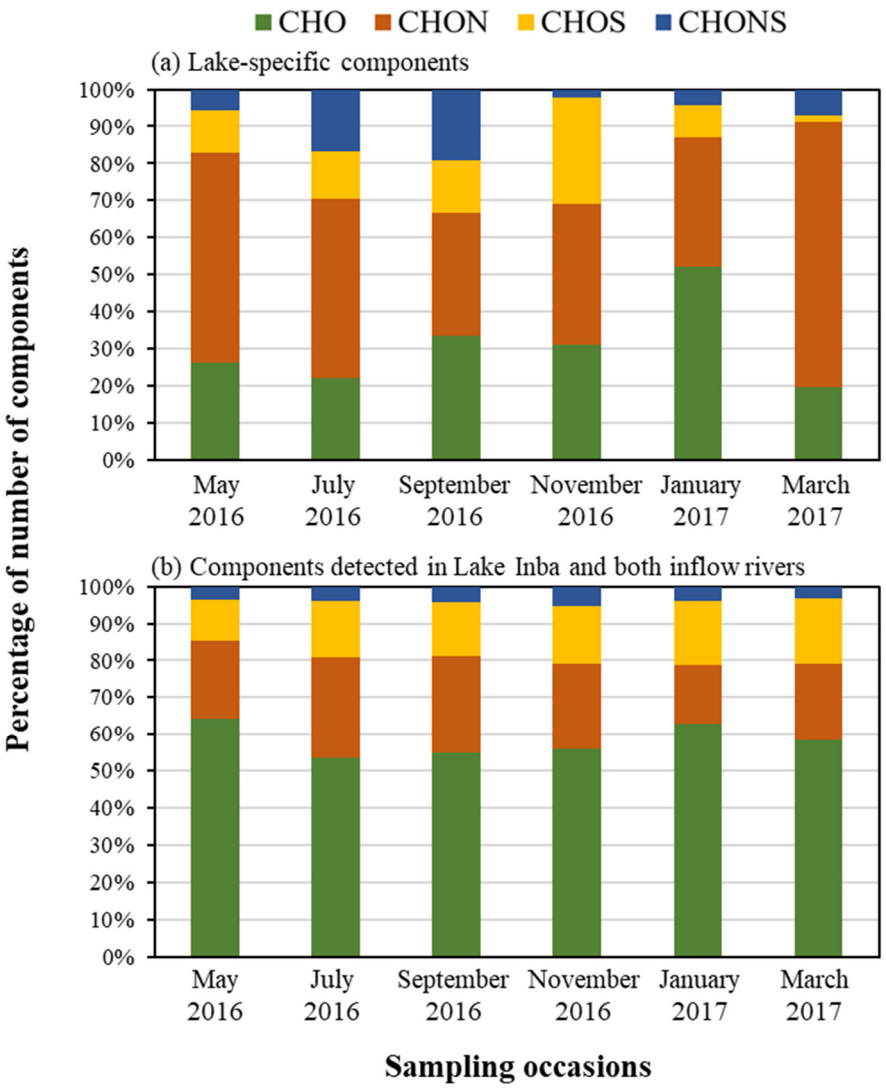


Fig. S7 Composition of DOM$_{SPE}$ components in water samples from Lake Inba and two inflow rivers. (a) Lake-specific components. (b) Components detected in Lake Inba and both inflow rivers.

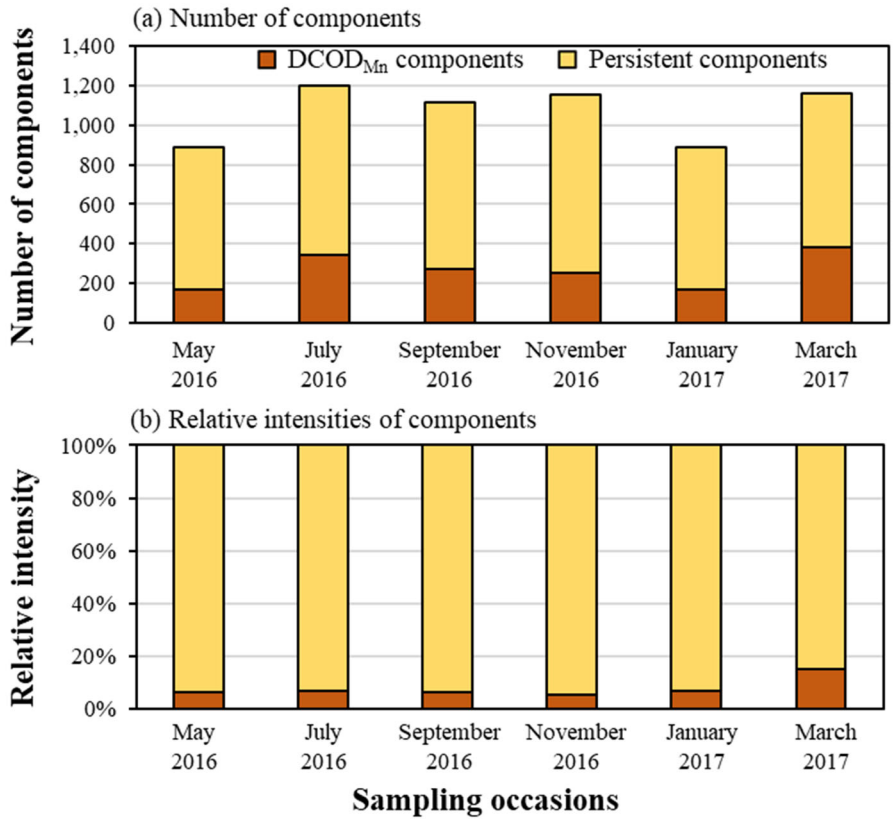


Fig. S8 Classification of DOM$_{SPE}$ components into components responsible for DCOD$_{Mn}$ and persistent components, based on (a) the number of components and (b) relative intensities of the components.

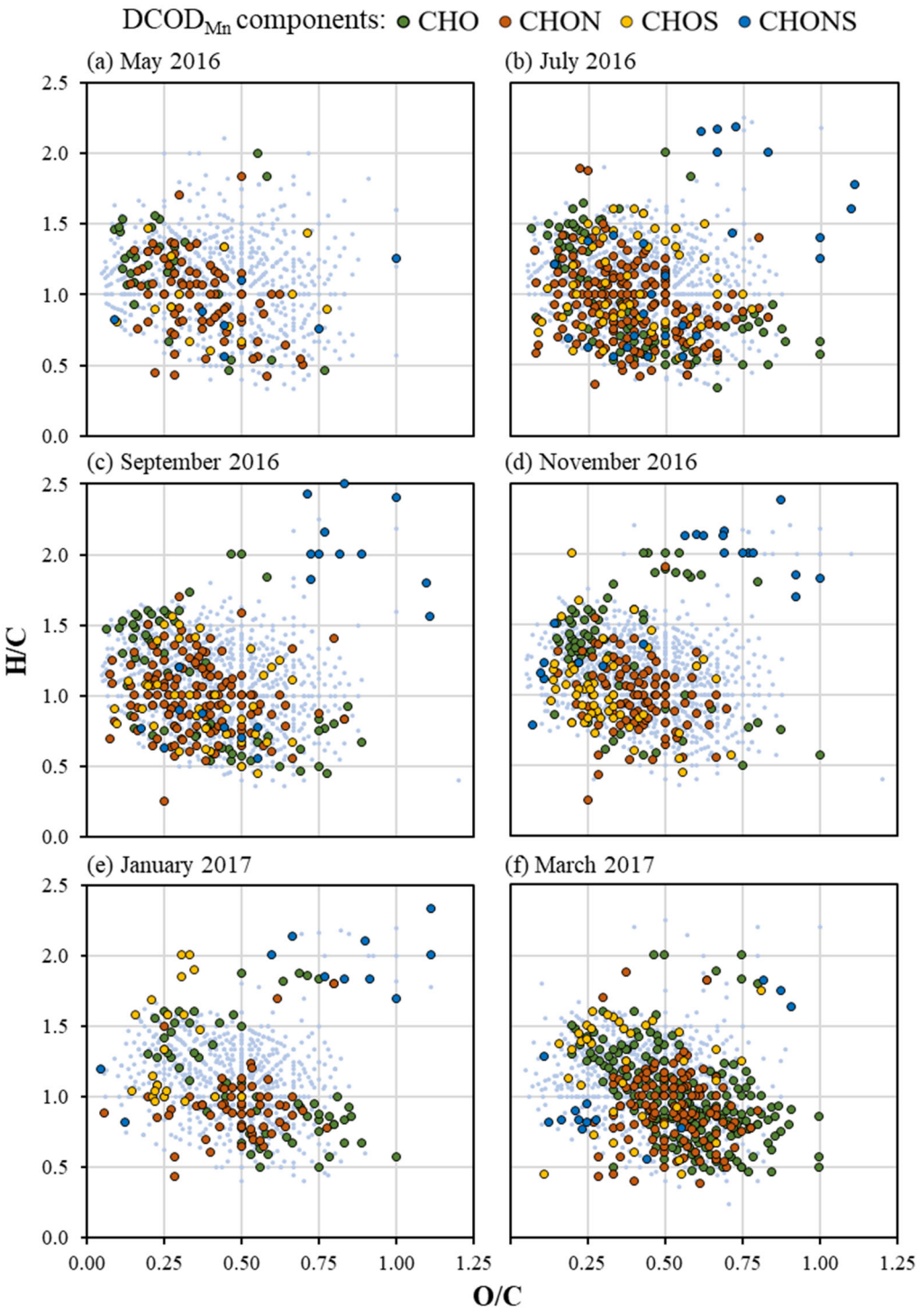


Fig. S9 van Krevelen diagrams of $DCOD_{Mn}$ components (colored circles) and persistent components (dim-colored circles) detected in water samples from Lake Inba collected in (a) May 2016, (b) July 2016, (c) September 2016, (d) November 2016, (e) January 2017, and (f) March 2017.

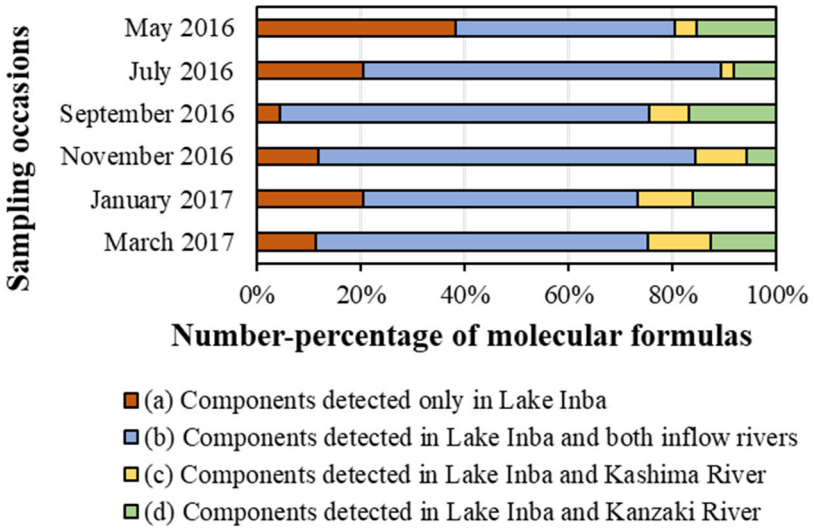


Fig. S10 Categorization of $DCOD_{Mn}$ components detected in water samples from Lake Inba: (a) components detected only in Lake Inba, (b) components detected in Lake Inba and Kashima River, (c) components detected in Lake Inba and Kanzaki River, and (d) components detected in Lake Inba and both inflow rivers.

Supplementary Tables

Table S1 Water quality parameters for Lake Inba samples collected between May 2016 and March 2017

Lake water samples	TOC (mg L^{-1})	DOC (mg L^{-1})	$TCOD_{Mn}$ (mg L^{-1})	$DCOD_{Mn}$ (mg L^{-1})	UV_{254} (cm^{-1})	SUVA (L mg^{-1} m^{-1})	Chl-a (μg L^{-1})
May 2016	9.5	3.4	12.3	4.1	0.093	2.7	289.4
July 2016	5.9	4.0	9.3	3.9	0.101	2.5	113.7
September 2016	3.9	2.7	6.1	3.5	0.081	3.0	53.9
November 2016	3.4	2.2	5.4	2.5	0.050	2.2	78.0
January 2017	4.8	2.1	6.4	2.7	0.050	2.4	68.0
March 2017	4.6	2.4	8.4	1.9	0.044	1.8	100.9

Table S2 Number-averaged double bond equivalent minus oxygen (DBE-O_n) of $DCOD_{Mn}$ and persistent components.

	May 2016	July 2016	September 2016	November 2016	January 2017	March 2017
$DCOD_{Mn}$ components	3.32	2.89	2.84	2.17	0.91	0.96
Persistent components	1.37	1.52	1.44	1.01	0.65	1.16

Table S3 Number-averaged modified aromaticity index ($AI_{mod,n}$) of $DCOD_{Mn}$ and persistent components.

	May 2016	July 2016	September 2016	November 2016	January 2017	March 2017
$DCOD_{Mn}$ components	0.57	0.53	0.55	0.41	0.41	0.45
Persistent components	0.44	0.42	0.41	0.37	0.36	0.40