SUPPLEMENTARY MATERIALS FOR

NUTRIENT FOOTPRINT
FROM THE ORIGIN OF THE KUROSHIO CURRENT TO THE EAST CHINA SEA CONTINENTAL SHELF

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TABLE S1. The average nitrate inventory above depths of 120–125m and 300 m was assessed in different regions The data show two repeat sampling lines along 21.75°N (1991–2015, n = 7) and the PN Line (2000–2020, n = 41). The areas from I to V were divided approximately every 0.5°E from west to east. Along 21.75°N, the ranges were 120.7–121, 121–121.5, 121.5–122, 122–122.5, and 122.5–123°E. Along the PN Line, the ranges were 125.9–126.5, 126.5–127, 127–127.5, 127.5–128, and 128–128.5°E. The estimated data for September/October 2000 were categorized into two water mass types—SCS-like and WPS-like—according to salinity. The estimated nitrate concentrations were calculated separately using the HYbrid Coordinate Ocean Model (HYCOM) and shipboard CTD temperature data. The locations of the sampling tracks are shown in Figure 1. SCS-like = South China Sea-like. WPS-like = West Philippine Sea-like.

Nitrate inventory ($mmol \cdot m^{-2}$)		Multi-year average from measured nitrate concentration					The estimated nitrate data for Sept/Oct 2000			
Areas or water mass/ Location and depth		I	II	III	IV	V	SCS-like (HYCOM)	SCS-like (CTD)	WPS-like (HYCOM)	WPS-like (CTD)
120~125 m	16°N	–	–	–	–	–	172±33	–	38±6	–
	18°N	–	–	–	–	–	224±53	–	53±8	33±13
	21.5°N	–	–	–	–	–	155±28	141±74	50±3	38±11
	21.75°N	189±138	90±78	40±17	30±26	42±33	–	–	–	–
	22.8~23.1°N	–	–	–	–	–	276±33	197±6	59±4	41±9
	23.5°N	–	–	–	–	–	315±32	628	65±6	48±9
	23.92~24.3°N	–	–	–	–	–	340±36	474	71±7	37±1
	25°N	–	–	–	–	–	378±152	401±222	–	–
	PN Line (~28°N)	430±134	200±161	37±36	31±25	46±41	538±95 (measured)		41±49 (measured)	
300 m	16°N	–	–	–	–	–	2410±42	–	791±180	–
	18°N	–	–	–	–	–	2494±170	–	858±157	657±42
	21.5°N	–	–	–	–	–	2278±228	2142±319	750±250	606±264
	21.75°N	1983±802	1478±670	758±303	706±217	652±268	–	–	–	–
	22.8~23.1°N	–	–	–	–	–	2597±227	2396±87	953±250	852±358
	23.5°N	–	–	–	–	–	2812±446	3064	863±261	624±219
	23.92~24.3°N	–	–	–	–	–	2857±240	2940	1398±266	1167±433
	25°N	–	–	–	–	–	2452±471	–	–	–
	PN Line (~28°N)	–	–	1022±415	670±172	696±176	–		578±685 (measured)	

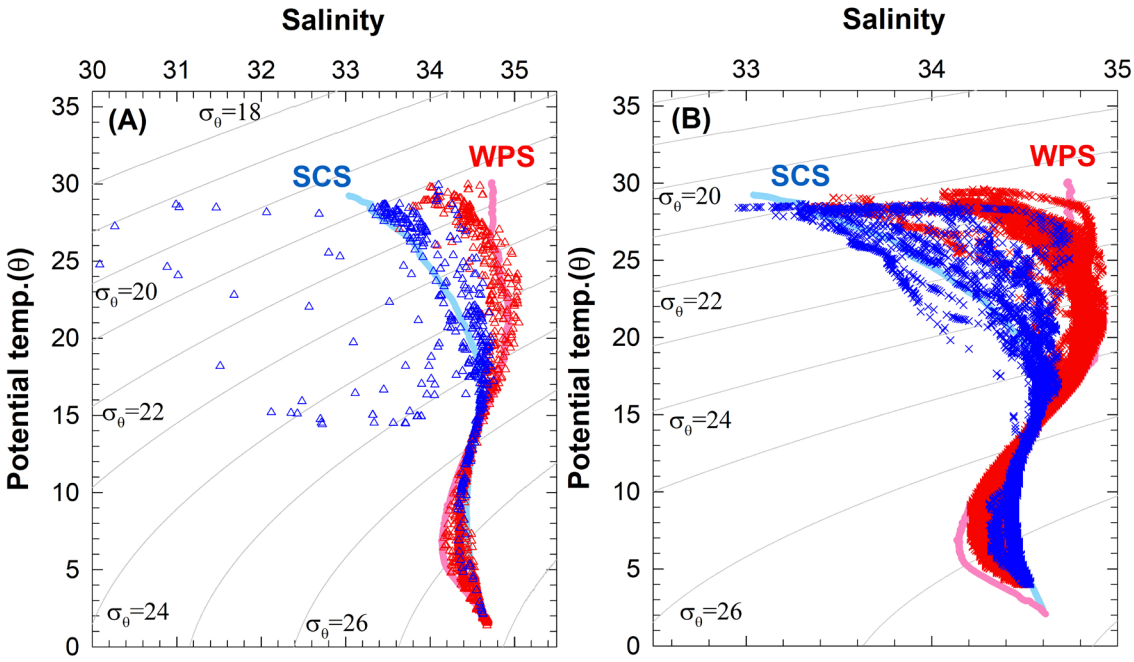

FIGURE S1. Theta-salinity plots of (A) five cruises along the Kuroshio path, and (B) September 2000 east of Philippines and Taiwan individually. The gray lines represent isopycnals. The pink and light blue lines indicate typical WPS and SCS water, respectively. The data are simplified into two types: WPS-like (red markers) and SCS-like (blue markers) based on S-max values greater than 34.75 or less. Different symbols correspond to the locations shown in Figure 1.

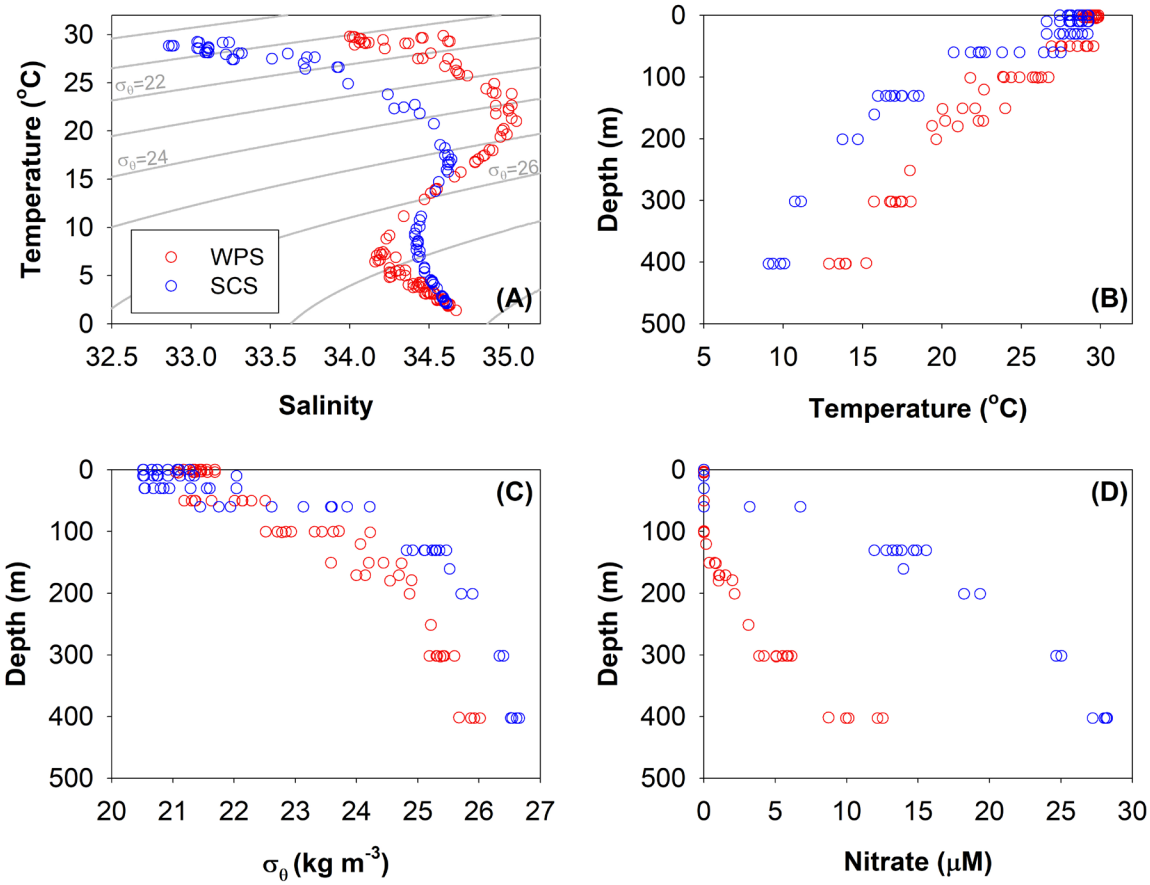

FIGURE S2. Hydrographic properties of typical WPS and typical SCS waters. (A) Temperature-salinity diagram with isopycnal contours. (B) Temperature-depth profile. (C) σ_θ-depth profile. (D) Nitrate-depth profile. Red and blue circles represent typical WPS and typical SCS water samples, respectively. Data from Chen et al. (2006) were used.

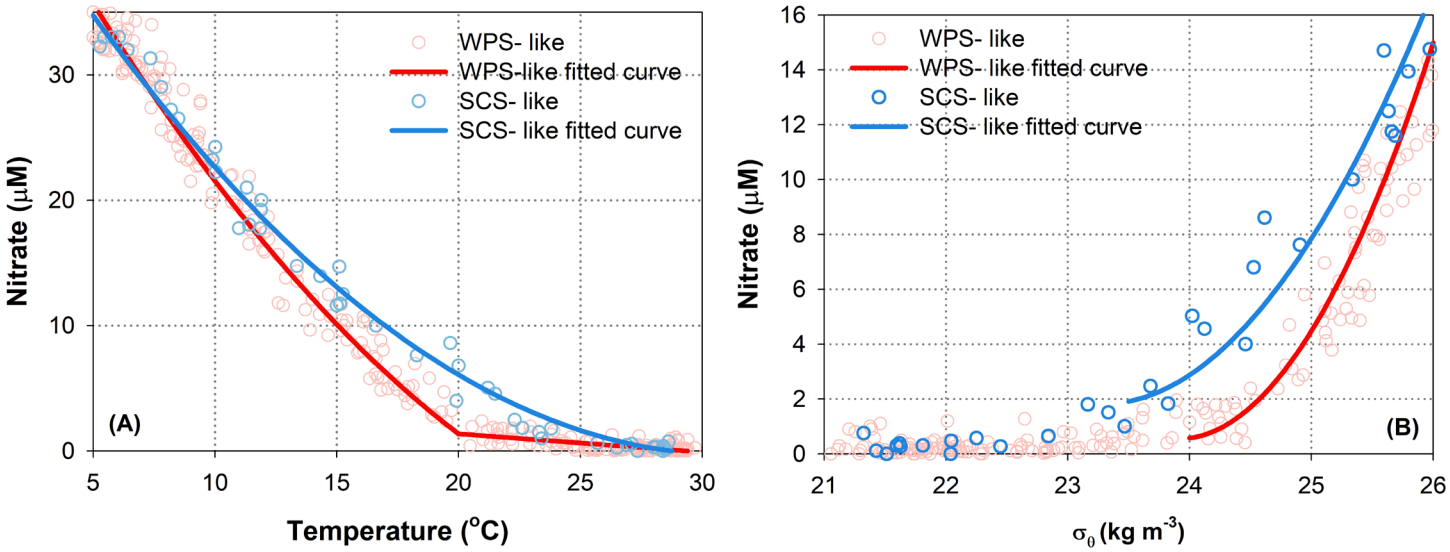

FIGURE S3. Relationship between nitrate concentration and (A) temperature and (B) σ_θ for WPS-like and SCS-like waters. Red and blue circles represent WPS-like and SCS-like water samples, respectively, while the solid red and blue lines indicate their respective fitted curves.

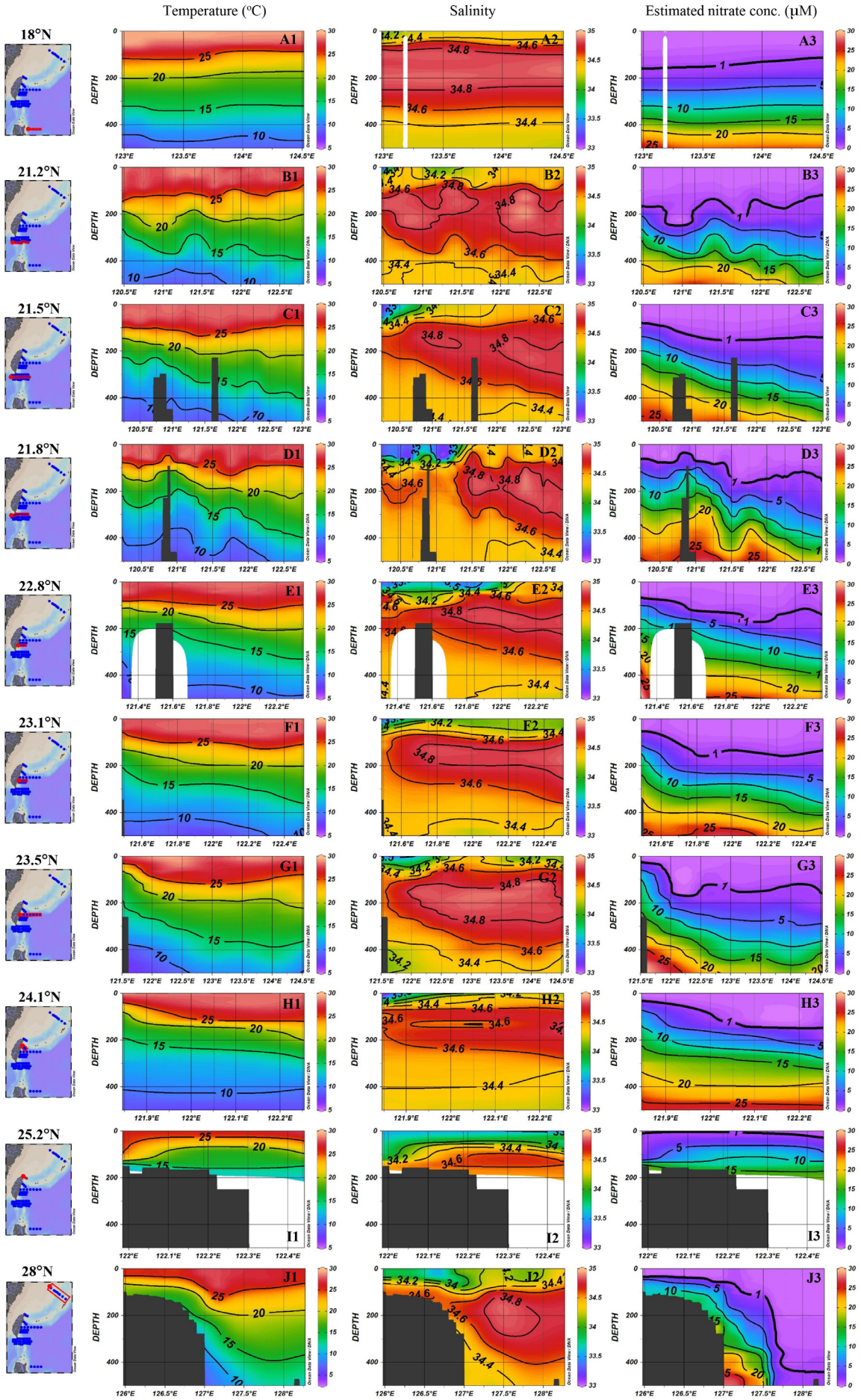

Figure S4. Vertical profiles of temperature, salinity, and estimated nitrate concentrations along different transects between 18°N and 28°N.