Enhanced Sea Surface Cooling and Suppressed Storm Intensification during Slow-Moving Track-Turning Stage of Tropical Cyclones

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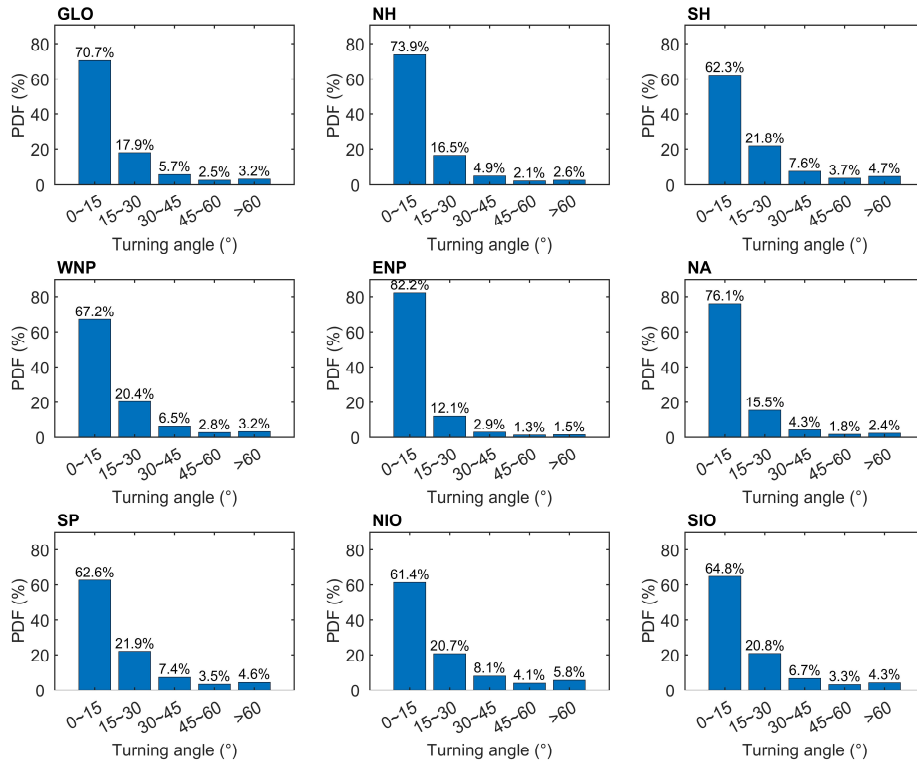
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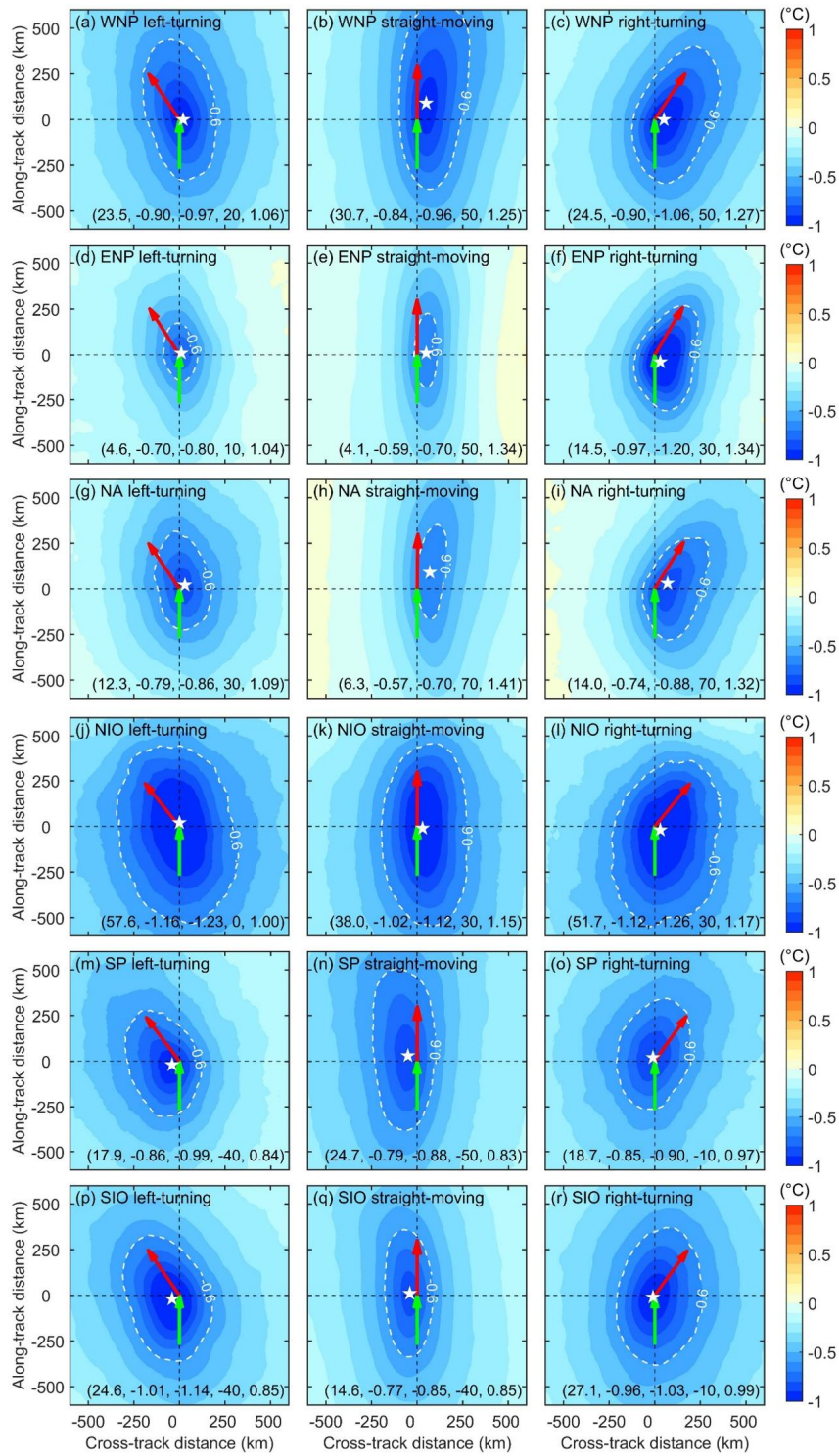**Figure S1.** Same as Figure 1c but in TC-active basins.

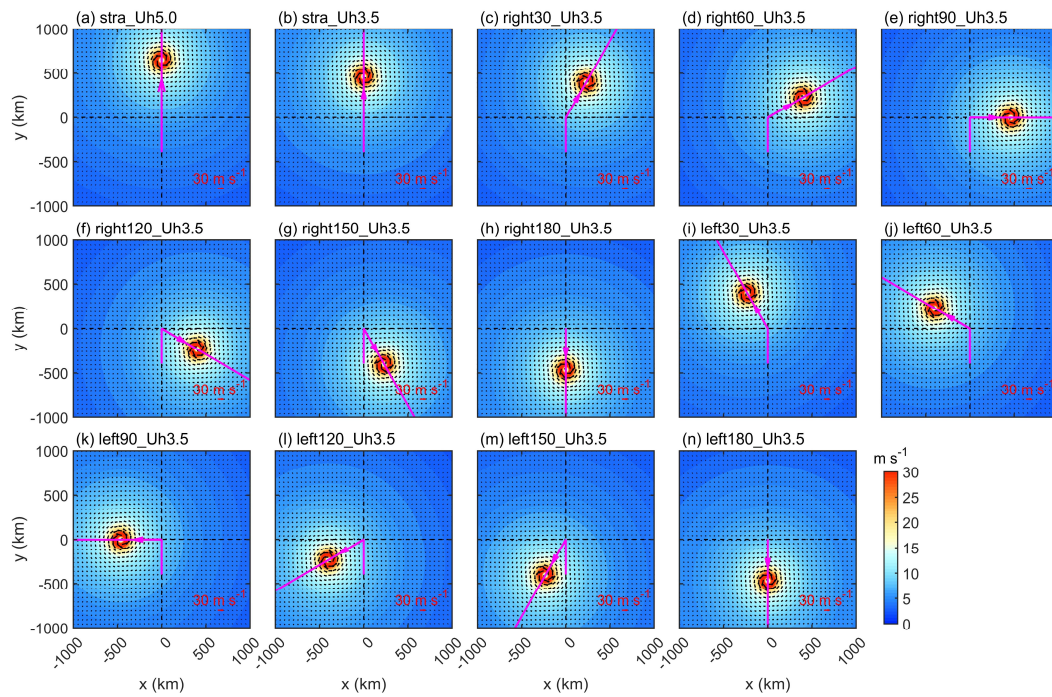**Figure S2.** Same as Figure 3 but in TC-active basins.

Figure S3. Wind fields applied in numerical experiments. (a and b) For the tropical cyclone (TC) that follows a straight path at a constant translation speed of (a) 5.0 m s^{-1} and (b) 3.5 m s^{-1}. (c–h) For the TC that undergoes right turning at a constant translation speed of 3.5 m s^{-1}, with the turning angle of 30°–180° in increments of 30°. (i–n) Same as (c–h), but for left turning. The solid magenta line and arrow indicate the track and moving direction of the TC, respectively.
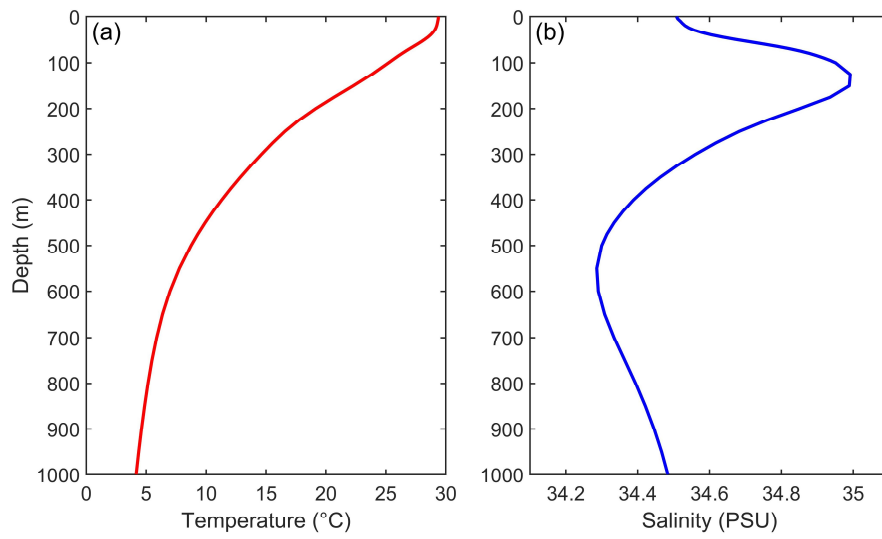
Figure S4. The initial (a) temperature and (b) salinity profiles in numerical experiments. The profiles are composited based on profiles in the region spanning 10°N–25°N and 120°E–160°E from July to October, using the monthly data of *World Ocean Atlas 2018* (https://www.ncei.noaa.gov/access/world-ocean-atlas-2018/).

Table S1. Simulated sea surface temperature anomaly (SSTA) induced by tropical cyclones (TCs) and contribution of track turning.

	Turning angle	Translation speed (m s⁻¹)	Minimum SSTA (°C)	ΔSSTA1 (°C)	ΔSSTA2 (°C)	Contribution of track turning (%)	Average SSTA (°C)	ΔSSTA1 (°C)	ΔSSTA2 (°C)	Contribution of track turning (%)
Straight moving	0°	5.0	−1.44	/	/	/	−1.20	/	/	/
	0°	3.5	−1.91	−0.47	/	/	−1.60	−0.40	/	/
Right turning	30°	3.5	−2.05	−0.61	−0.14	23%	−1.66	−0.46	−0.06	13%
	60°	3.5	−2.27	−0.83	−0.36	43%	−1.76	−0.56	−0.16	29%
	90°	3.5	−2.56	−1.12	−0.65	58%	−1.90	−0.70	−0.30	43%
	120°	3.5	−2.91	−1.47	−1.00	68%	−2.10	−0.90	−0.50	56%
	150°	3.5	−3.16	−1.72	−1.25	72%	−2.26	−1.06	−0.66	62%
	180°	3.5	−3.23	−1.79	−1.32	74%	−2.31	−1.11	−0.71	64%
Left turning	30°	3.5	−1.91	−0.47	0.00	0%	−1.60	−0.40	0.00	0%
	60°	3.5	−1.91	−0.47	0.00	0%	−1.60	−0.40	0.00	0%
	90°	3.5	−2.03	−0.59	−0.12	20%	−1.64	−0.44	−0.04	9%
	120°	3.5	−2.35	−0.91	−0.44	48%	−1.73	−0.53	−0.13	25%
	150°	3.5	−2.87	−1.43	−0.96	67%	−2.00	−0.80	−0.40	50%
	180°	3.5	−3.23	−1.79	−1.32	74%	−2.31	−1.11	−0.71	64%

Note. "Average SSTA" means the average SSTA within 100 km from the position of the minimum SSTA. "ΔSSTA1" and "ΔSSTA2" mean the SSTA difference with the SSTA induced by the TC following a straight path at a constant translation speed of 5 m s⁻¹ and 3.5 m s⁻¹, respectively (i.e., SSTA in the first and second rows). ΔSSTA1 results from slow translation speed and track turning, while ΔSSTA2 results only from track turning. "Contribution of track turning" means the contribution of track turning to ΔSSTA1. The computation is as follows: contribution of track turning = ΔSSTA2 / ΔSSTA1 × 100%. For example, for minimum SSTA induced by the TC that undergoes a 30° right turning, contribution of track turning = (−0.14) / (−0.61) *100% = 23%.