

Supplementary material A

Table A1 Roughness length used in logarithmic law equation

Land type	Roughness length/m
Urban construction land	1.2
Woodland	0.75
Shrubbery	0.5
Cultivated land	0.1
Grassland	0.03
Bare land (the unutilized land)	0.005
Permanent glacial snow land	0.001
Water area	0.0002

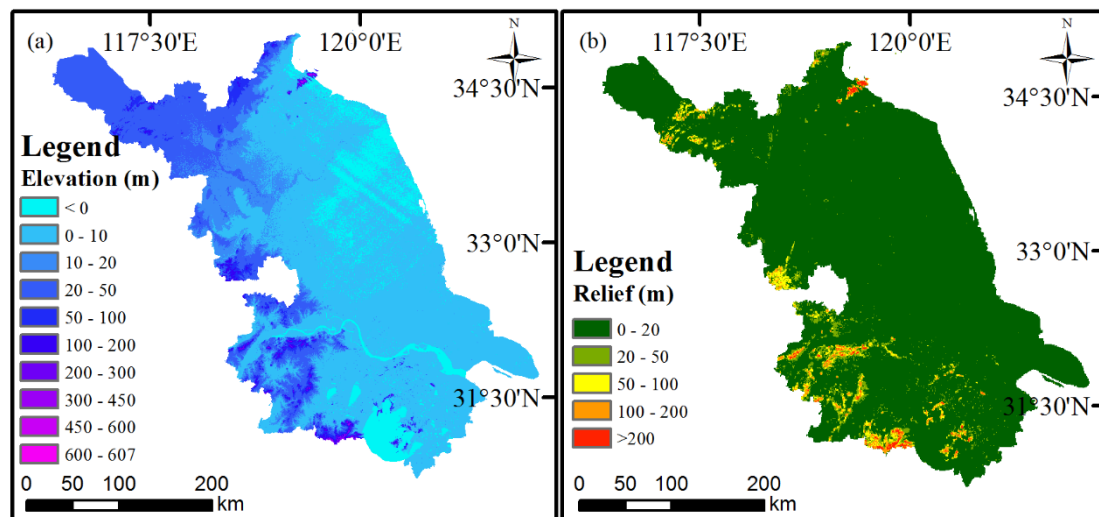


Fig. A1 The elevation and relief of Jiangsu Province. (a) Elevation, where the elevation less than 50 m account for 96.61 % of the whole province; (b) relief, where the relief less than 20 m account for 93 % of the whole province.

Supplementary B

Table B1 The comparison of wind speed between ASCAT and offshore stations

Platform number	Offshore distance/km	Average deviation $/(m \cdot s^{-1})$	Mean absolute deviation $/(m \cdot s^{-1})$	RMSE $/(m \cdot s^{-1})$	Correlation coefficient
M8002	24.75	0.28	1.56	0.15	0.87
M8003	14.87	0.17	1.31	1.70	0.85
M8004	49.51	-1.51	2.95	3.78	0.77
M8005	7.15	-0.28	3.03	3.98	0.41
M8008	7.36	1.34	1.91	2.68	0.78
Total	20.73	0.17	2.13	2.96	0.70

Table B2 The comparison of wind direction between ASCAT and offshore stations

Platform number	Offshore distance /km	Average deviation $/(^{\circ})$	Mean absolute deviation $/(^{\circ})$	RMSE $/(^{\circ})$	Correlation coefficient
M8002	24.75	-1.76	52.65	88.83	0.69
M8003	14.87	22.87	59.40	113.71	0.36
M8004	49.51	-8.70	43.68	94.28	0.61
M8005	7.15	10.45	46.96	92.60	0.59
M8008	7.36	-13.88	45.51	83.83	0.64
Total	20.73	0.31	49.18	93.78	0.58

Table B3 The comparison of wind direction between Windsat and offshore stations

Platform number	Offshore distance/km)	Average deviation $/(m \cdot s^{-1})$	Mean absolute deviation $/(m \cdot s^{-1})$	RMSE $/(m \cdot s^{-1})$	Correlation coefficient
M8002	24.75	-2.13	2.60	3.23	0.81
M8003	14.87	-0.76	1.54	1.93	0.87
M8004	49.51	-1.72	3.08	3.37	0.78
Total	29.71	-1.55	2.42	3.19	0.78

Supplementary C

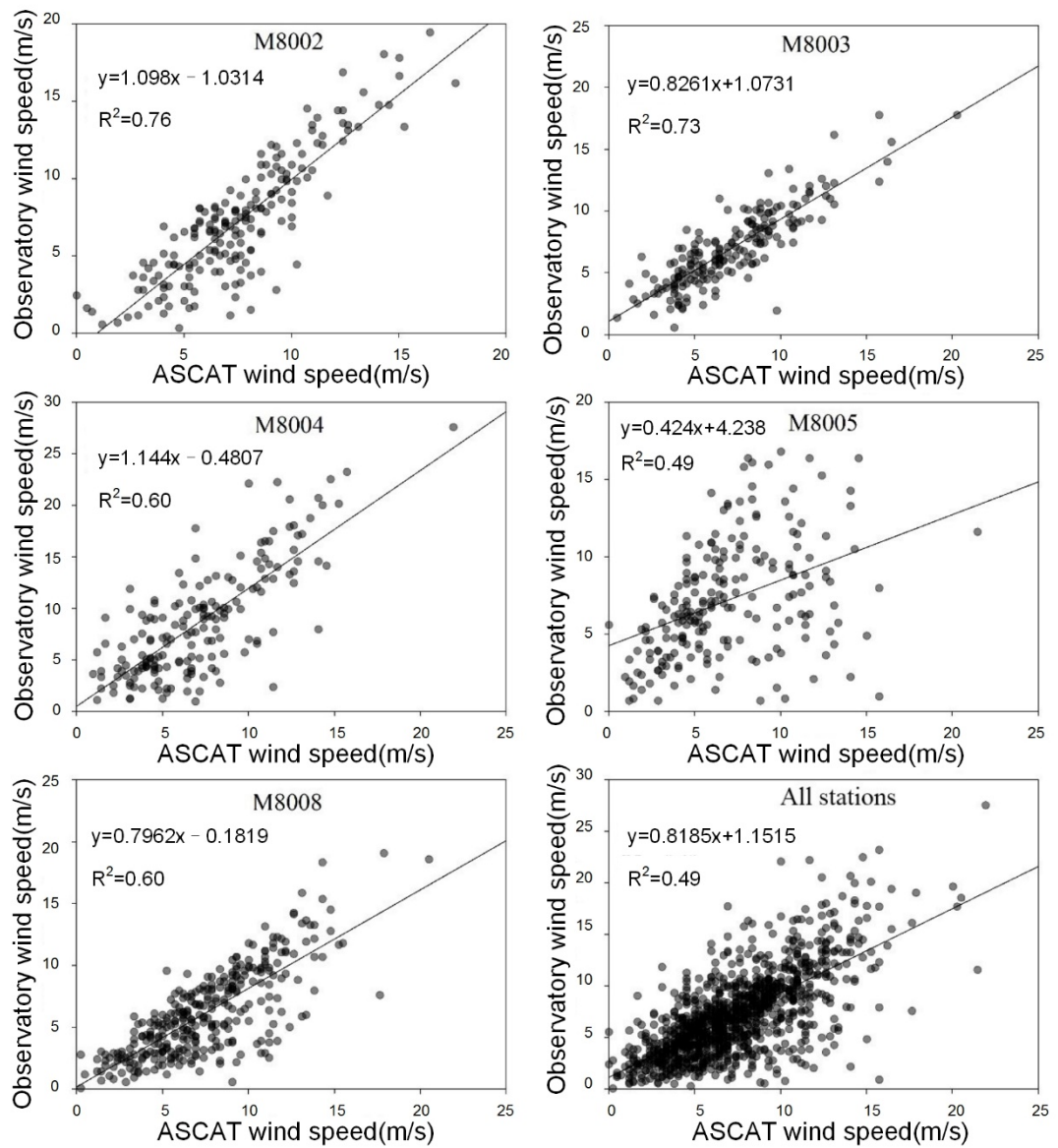


Fig. C1 Correlation analysis of wind speed between ASCAT data and ocean meteorological observation data.

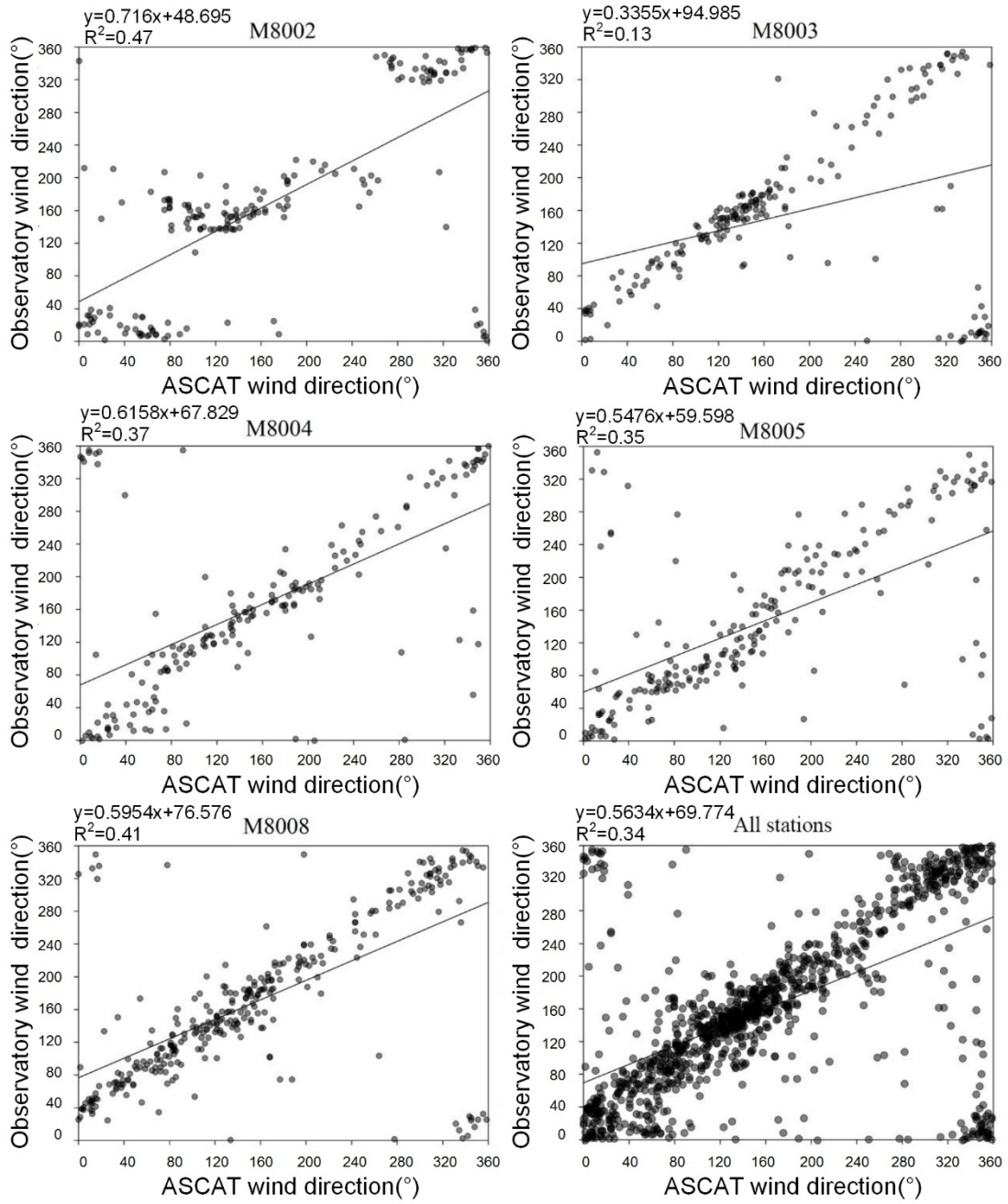


Fig. C2 Correlation analysis of wind direction between ASCAT data and ocean meteorological observation data.

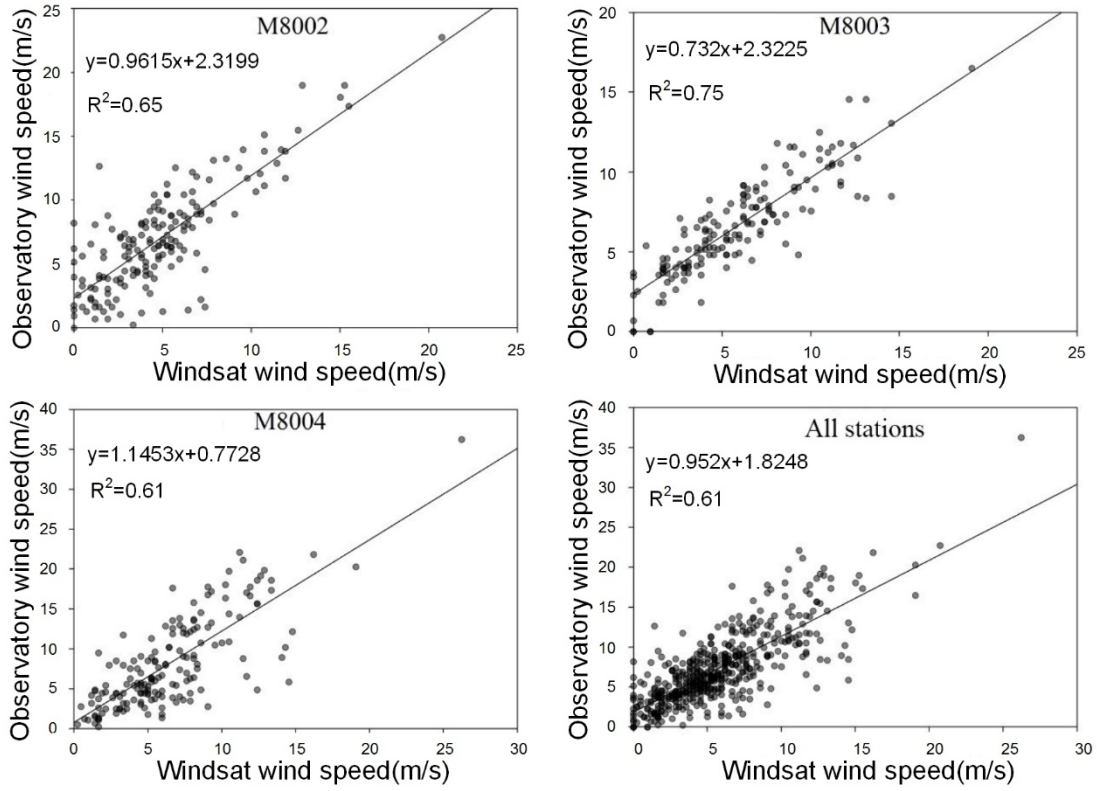


Fig. C3 Correlation analysis of wind speed between Windsat data and ocean meteorological observation data.