Supplementary Material

Table S1. Sentinel-2 tile lists used for the training, validation, and test subsets of SeasonMamba.

Subset	Sentinel-2 tiles
Training	T49QCB, T49QCC, T49QDD, T49QED, T49QFE, T49QGE, T50QKL, T50QLL, T50QMI, T50QNM, T50QQM, T50RNN, T50RQN, T50RQQ, T50RTL, T50SNG, T50SNH, T50SNJ, T50SPH, T50SPJ, T50SQE, T50SQF, T50SQG, T50TQK, T51QTG, T51RTL, T51RTP, T51RUH, T51RUM, T51RUP, T51RVN, T51RVP, T51STS, T51STT, T51STU, T51STV, T51SUR, T51SUS, T51SVA, T51SVD, T51SXD, T51TUF, T51TVE, T51TVF
Validation	T49QBD, T49QDC, T49QEE, T50RPN, T50RRN, T50SQD, T51RUQ, T51STA, T51SUA
Test	T48QZJ, T49QHE, T49QGF, T50RQP, T50SPG, T51STB, T51SUD, T51TTE, T51TUE, T51TWE

Table S2. Main training configuration of SeasonMamba.

Item	Setting
Hardware environment	Linux server equipped with 4 × NVIDIA RTX 3090 GPUs, 24 GB each
Deep learning framework	PyTorch 2.0
Mixed precision	fp16
Input patch size	512 × 512 pixels
Input bands	Three channels
Input organization	Variable-length seasonal groups
Optimizer	AdamW
Initial learning rate	5×10^{-5}
Minimum learning rate	1×10^{-6}
Weight decay	1×10^{-4}
Batch size	16 seasonal groups
Maximum training epochs	300
Learning rate schedule	5-epoch linear warm-up followed by cosine annealing
Loss function	Core-mask supervision + probability-mask supervision + feature consistency constraint
Loss weights	$\lambda_{prob} = 0.5$, $\lambda_{cons} = 0.1$
Model selection	Checkpoint with the lowest validation loss

Table S3. Parameter settings for S-G filtering and Fourier fitting.

Item	Setting
Computing environment	MATLAB
Input time series	Sentinel-2 MNDWI time series
Temporal observations	36 ten-day MNDWI composites
Valid MNDWI range	[-1,1]
Minimum valid observations	10
Missing-value handling	Only valid observations were used; no forced temporal gap filling or extrapolation was applied
S-G filter	Savitzky–Golay smoothing
S-G polynomial order	4
S-G frame length	7
Fourier model	Second-order Fourier function
Frequency coefficient	$\omega=2\pi/365$
Fitting unit	Pixel-wise
Extracted parameter	a_0
Output	Pixel-level a_0 image for each tidal subregion

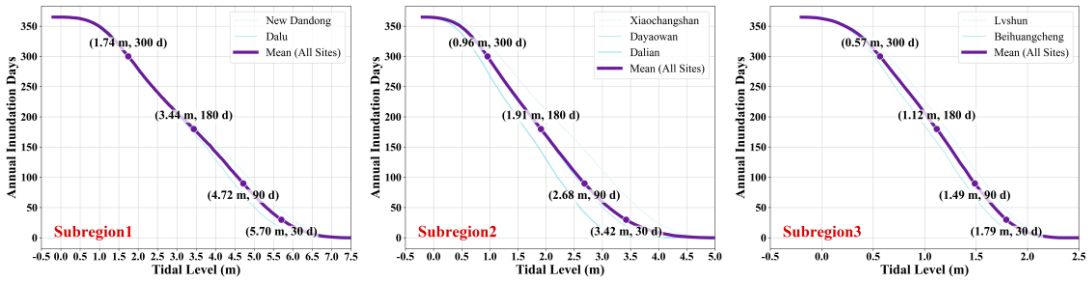
Table S4. Coastal subregion names and four threshold values used for CCWIF mapping (N, S, E, W, NE, NW, SE, and SW denote north, south, east, west, northeast, northwest, southeast, and southwest).

ID	Subregion	300 d threshold	180 d threshold	90 d threshold	30 d threshold
1	Dandong S	23.60	46.54	63.83	77.17
2	Dalian SE	19.39	38.62	54.27	69.31
3	Dalian S	24.13	47.63	63.41	76.46
4	Dalian W	24.10	42.05	56.23	70.77
5	Jinzhou S	17.69	37.21	54.60	69.96
6	Huludao E	23.87	42.04	58.75	75.34
7	Huludao S	12.66	29.33	47.41	66.51
8	Qinhuangdao SE	26.17	45.01	59.03	72.63
9	Tangshan SE	35.52	61.95	74.17	86.36
10	Tianjin SE	34.29	57.91	72.53	82.85
11	Binzhou N	29.31	51.75	66.65	78.88
12	Dongying N	36.23	55.60	67.78	80.61
13	Weifang N	24.94	40.42	55.71	72.00
14	Yantai NW	21.15	36.76	52.04	69.31
15	Yantai N	23.54	45.92	62.01	75.63
16	Yantai NE	26.77	50.28	68.40	81.13
17	Weihai NE	24.84	41.56	55.20	72.27
18	Weihai S	27.09	48.76	64.44	79.01
19	Qingdao SE	24.11	46.00	61.78	73.73
20	Lianyungang N	27.09	49.90	67.29	77.96
21	Yancheng Upper	27.80	50.72	69.84	82.02

22	Yancheng Central	21.05	46.13	63.03	76.04
23	Nantong NE	22.12	43.54	59.91	73.52
24	Shanghai NE	25.66	45.15	60.83	74.52
25	Shanghai S	22.28	49.22	68.43	81.52
26	Ningbo N	17.11	40.46	58.39	73.50
27	Ningbo NE	29.67	49.24	63.46	75.72
28	Ningbo SE	29.12	49.59	65.66	77.98
29	Ningbo S	26.84	47.07	63.40	75.99
30	Taizhou E	26.75	49.17	66.15	77.93
31	Wenzhou E	25.01	45.41	60.08	71.75
32	Wenzhou S	23.32	47.76	66.67	78.44
33	Ningde S	25.19	47.05	63.94	75.97
34	Fuzhou E	25.02	49.05	66.85	78.72
35	Putian E	26.93	49.67	66.92	77.36
36	Xiamen S	26.06	48.94	66.73	77.74
37	Zhangzhou SE	31.69	53.95	70.07	80.04
38	Taiwan W	27.78	51.81	70.40	81.31
39	Taiwan E	25.37	50.12	63.49	75.33
40	Taiwan S	25.55	40.82	53.70	69.01
41	Zhangzhou S	30.00	53.34	70.26	81.07
42	Shantou E	27.12	45.55	55.24	65.82
43	Jieyang S	28.53	47.87	60.12	69.27
44	Shanwei S	26.02	41.64	54.75	68.14
45	Hong Kong S	26.27	42.44	54.86	67.87
46	Macao S	34.15	50.06	61.15	73.87
47	Zhuhai S	20.22	35.66	48.13	62.04
48	Yangjiang S	26.78	41.69	53.66	67.94
49	Maoming S	24.46	39.10	52.07	65.33
50	Zhanjiang E	22.19	37.10	54.29	71.29
51	Zhanjiang S	27.76	49.14	62.21	73.16
52	Zhanjiang SW	27.58	46.17	60.92	77.87
53	Zhanjiang W	25.04	41.30	56.88	72.58
54	Fangchenggang S	23.29	40.79	57.67	74.40
55	Wenchang E	27.03	45.31	61.68	74.46
56	Sanya S	21.23	38.82	53.81	68.41
57	Dongfang W	20.96	40.68	58.30	74.49
58	Danzhou NW	21.66	40.96	58.94	75.34

Table S5. Confusion matrices of CCWEM validation based on stratified random sampling at the national and provincial levels.

Region	Map class	Ref non-wetland	Ref wetland
China	non-wetland	1872	77
	wetland	101	950
Liaoning	non-wetland	212	7
	wetland	12	121
Hebei	non-wetland	60	3
	wetland	5	42
Tianjin	non-wetland	40	3
	wetland	3	26
Shandong	non-wetland	206	9
	wetland	16	152
Jiangsu	non-wetland	197	11
	wetland	16	247
Shanghai	non-wetland	107	6
	wetland	8	61
Zhejiang	non-wetland	202	9
	wetland	8	62
Fujian	non-wetland	294	8
	wetland	11	85
Guangdong	non-wetland	291	10
	wetland	7	58
Guangxi	non-wetland	86	4
	wetland	7	41
Hainan	non-wetland	77	3
	wetland	5	26
Taiwan	non-wetland	100	4
	wetland	3	29



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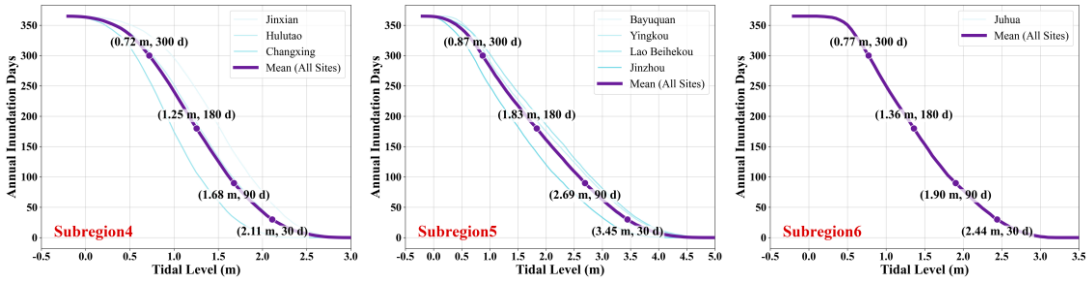

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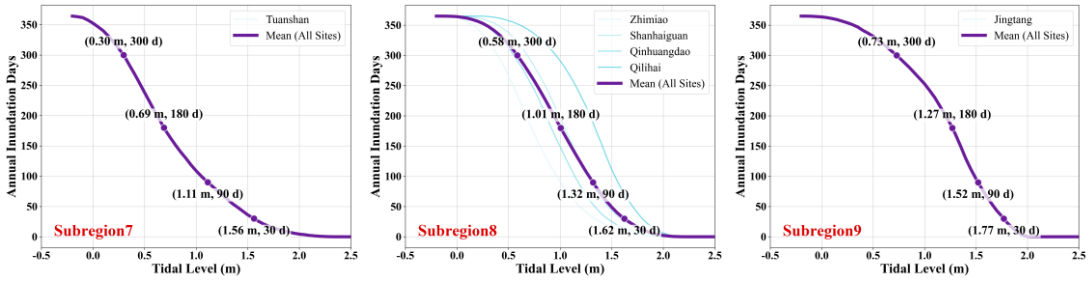

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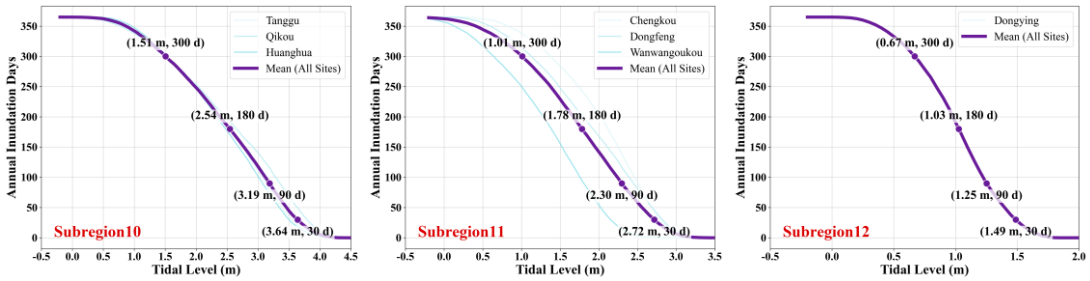

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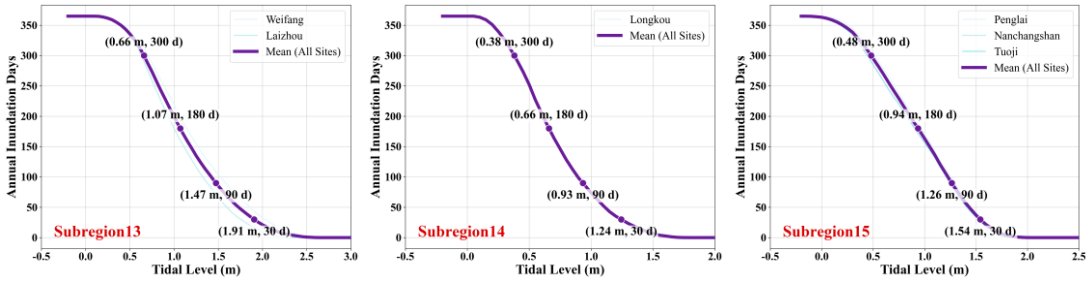

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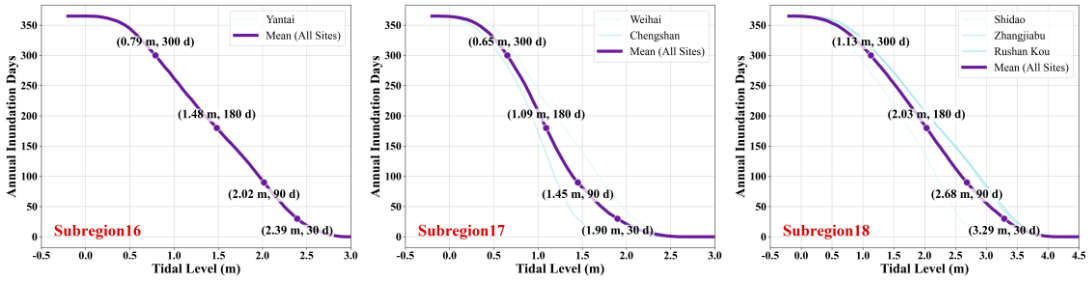

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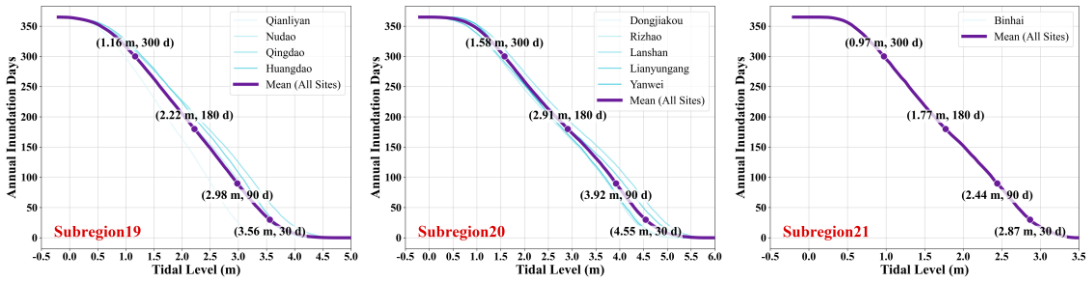

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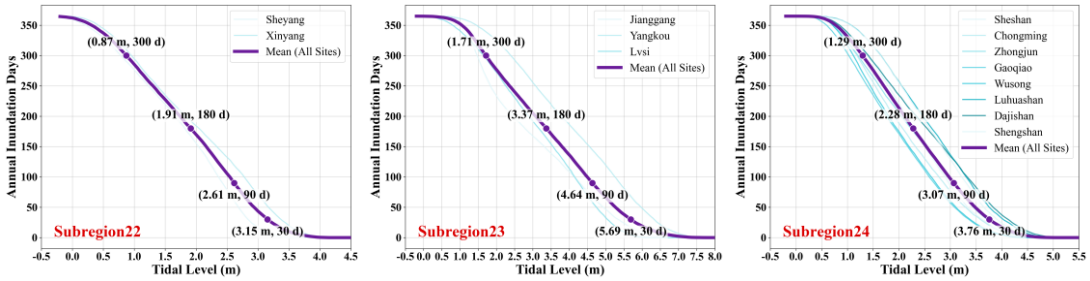

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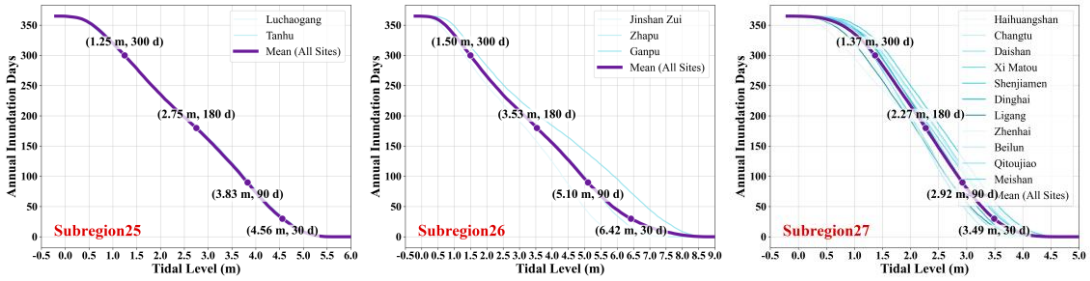

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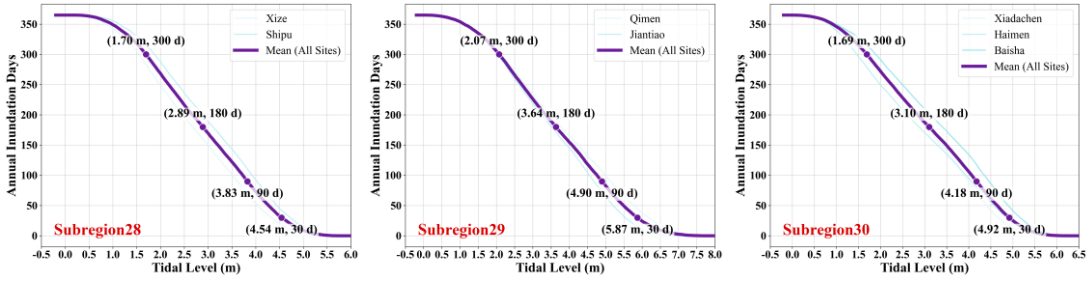

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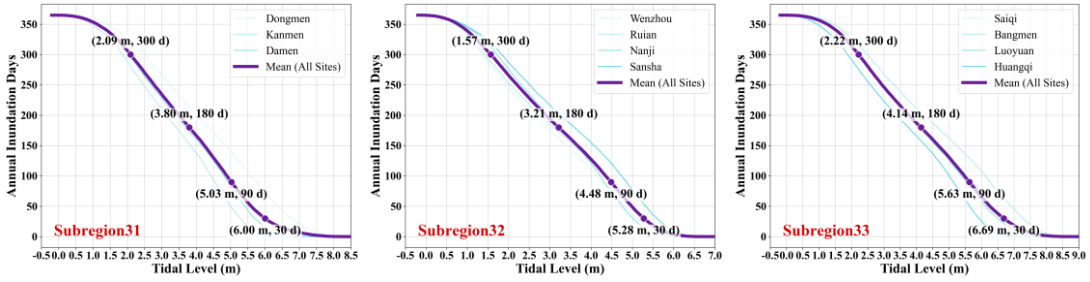

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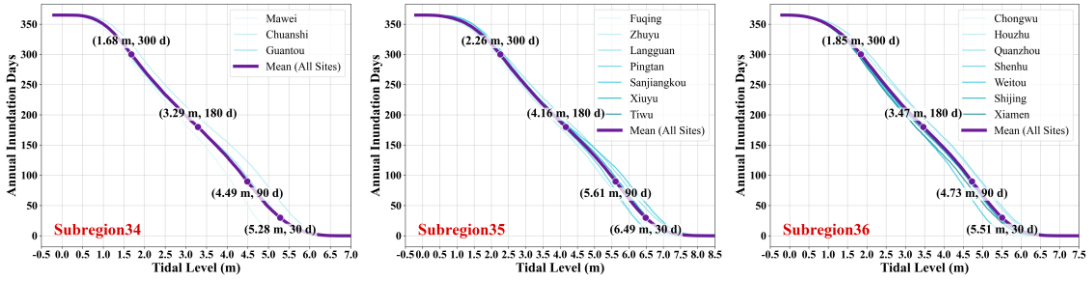

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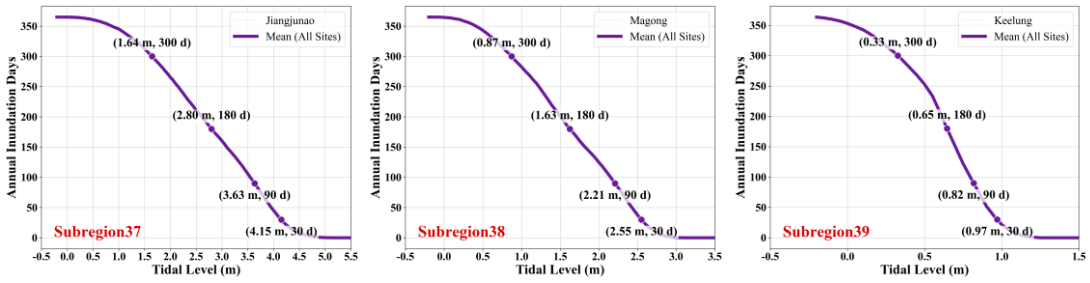

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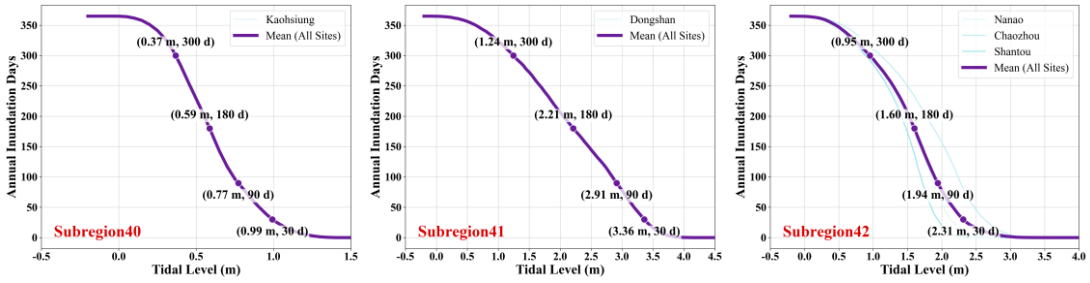

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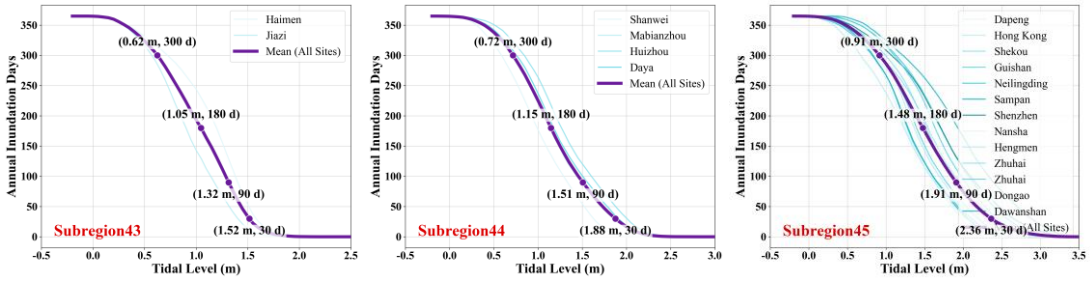

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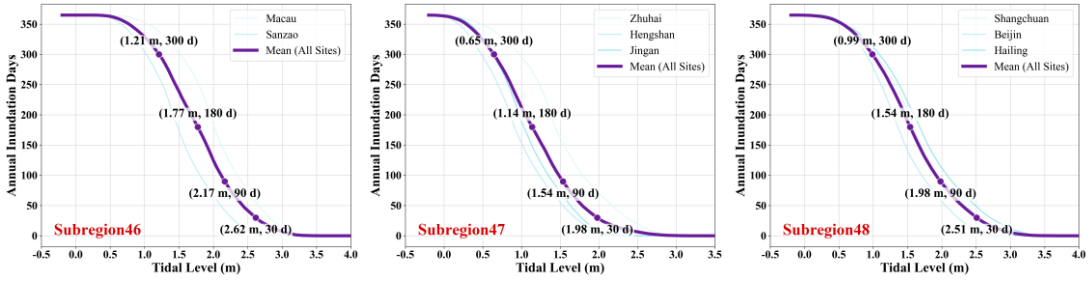

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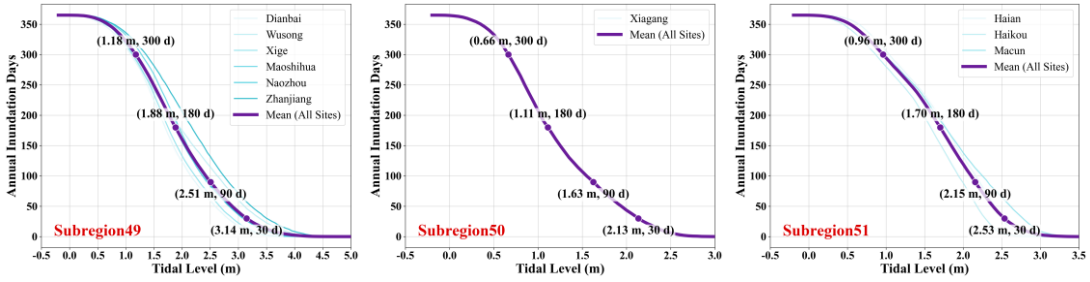

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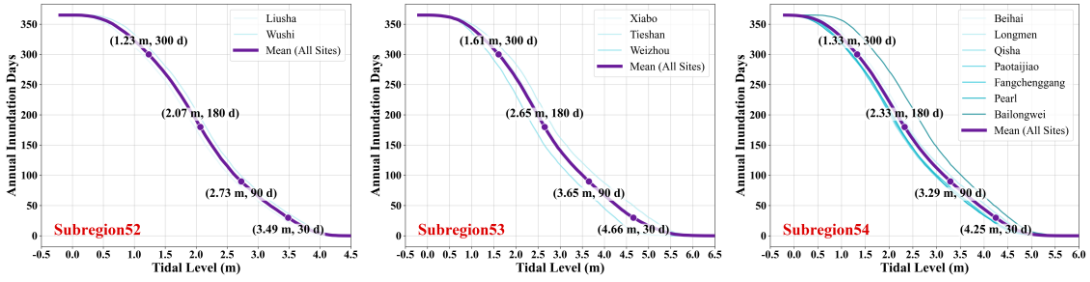

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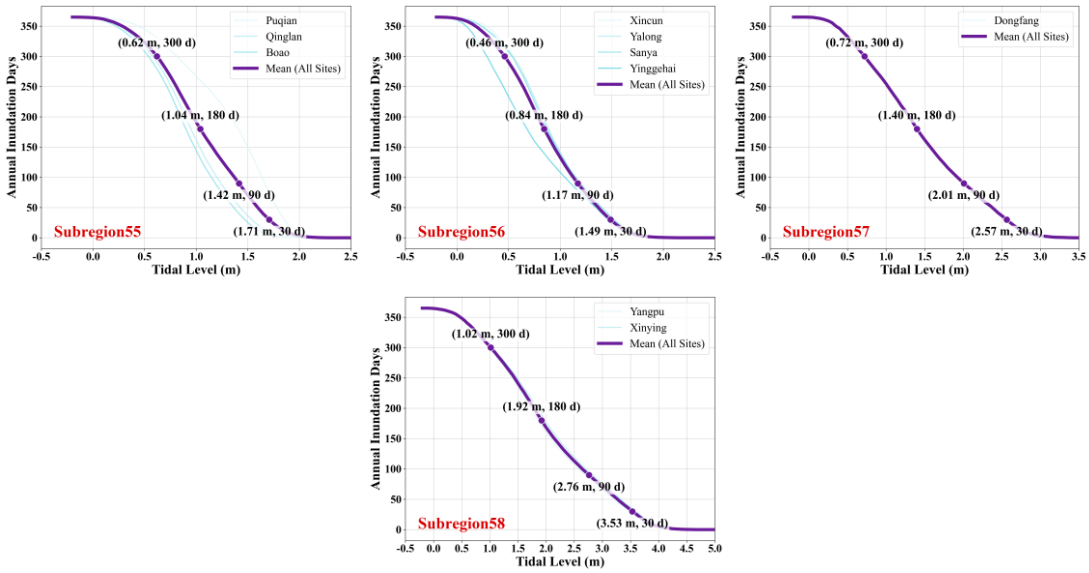

Fig. S1. Region-specific tidal level–annual inundation days curves and the corresponding 30, 90, 180, and 300 d threshold points for the 58 coastal subregions.