

Supplementary Materials

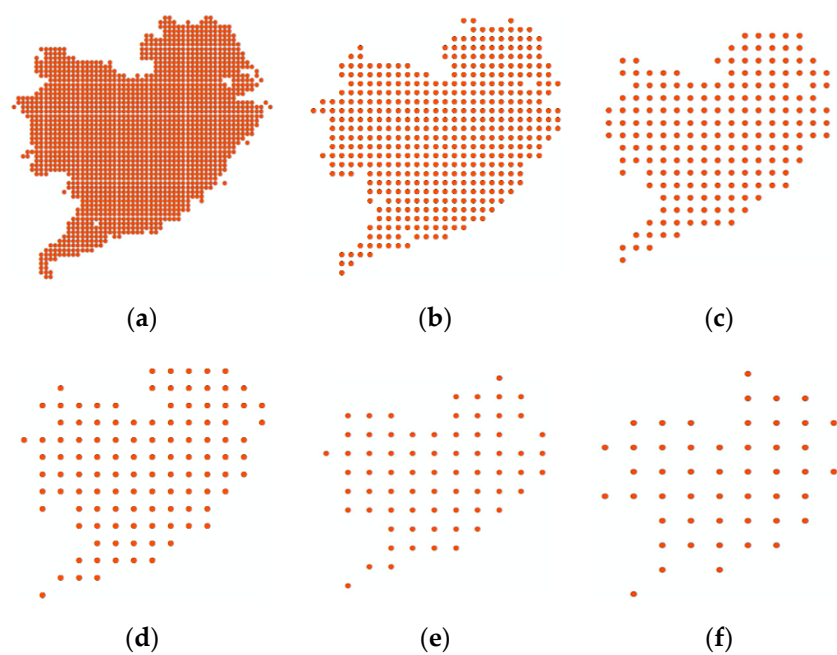


Figure S1. Grids conversion into points located at the center of each pixel (a) 0.25° resolution, (b) 0.50° resolution, (c) 0.75° resolution, (d) 1.0° resolution, (e) 1.25° resolution, (f) 1.50° resolution, respectively.

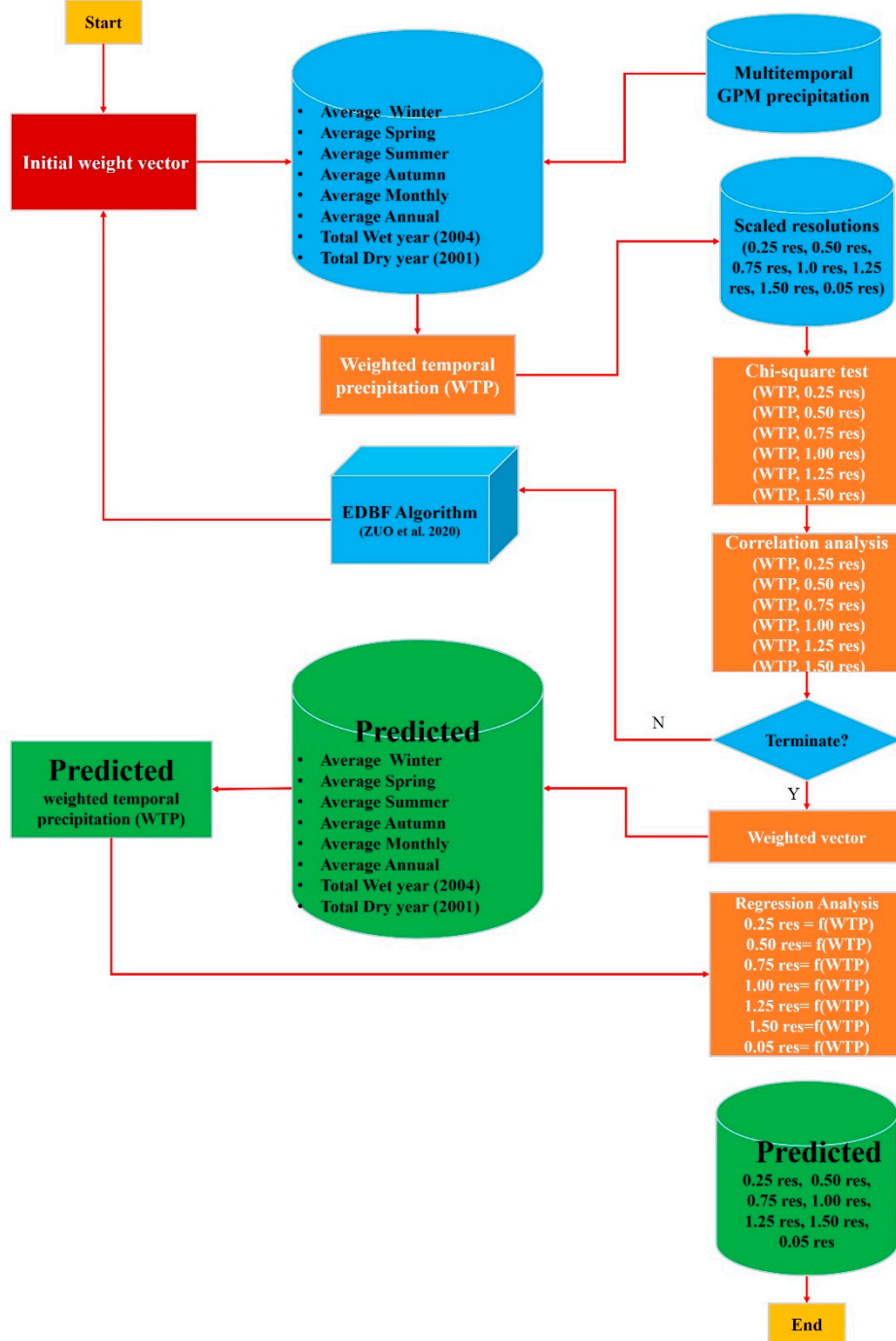
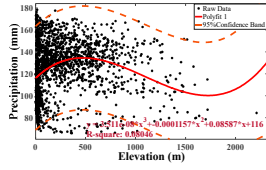
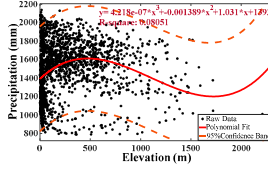


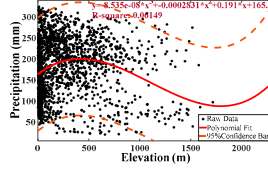
Figure S2. Execution of EDBF algorithm for estimating the weighted precipitation at different scaled resolutions.



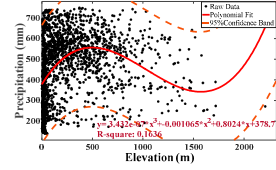
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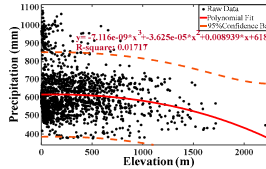
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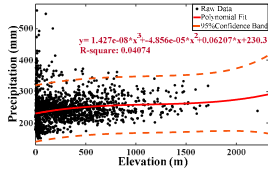
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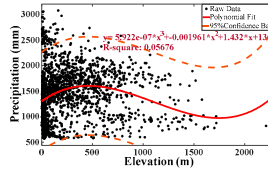
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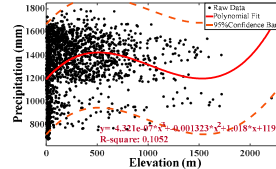
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(f)

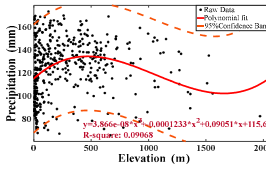


(g)

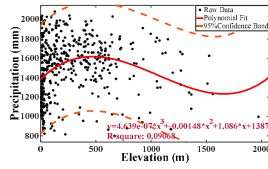


(h)

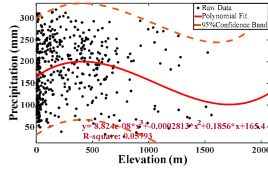
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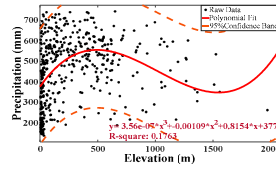
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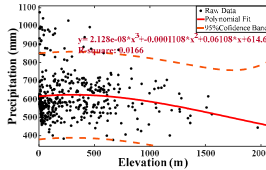
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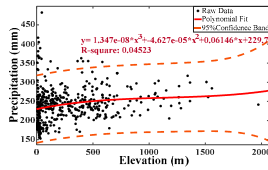
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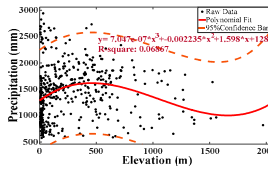
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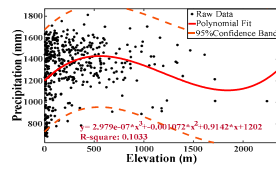
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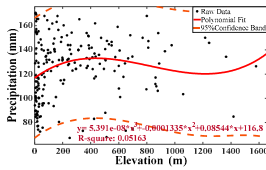


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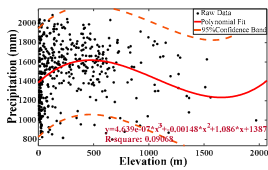


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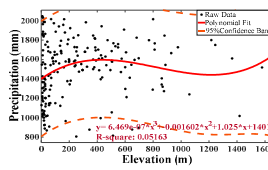
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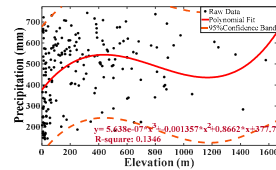
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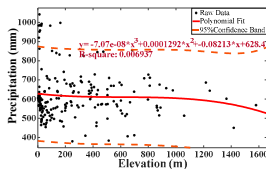
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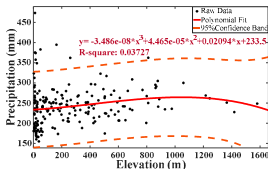
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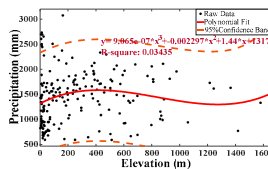
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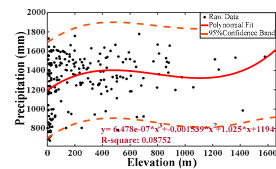
(e)



(f)



(g)



(h)

(III)

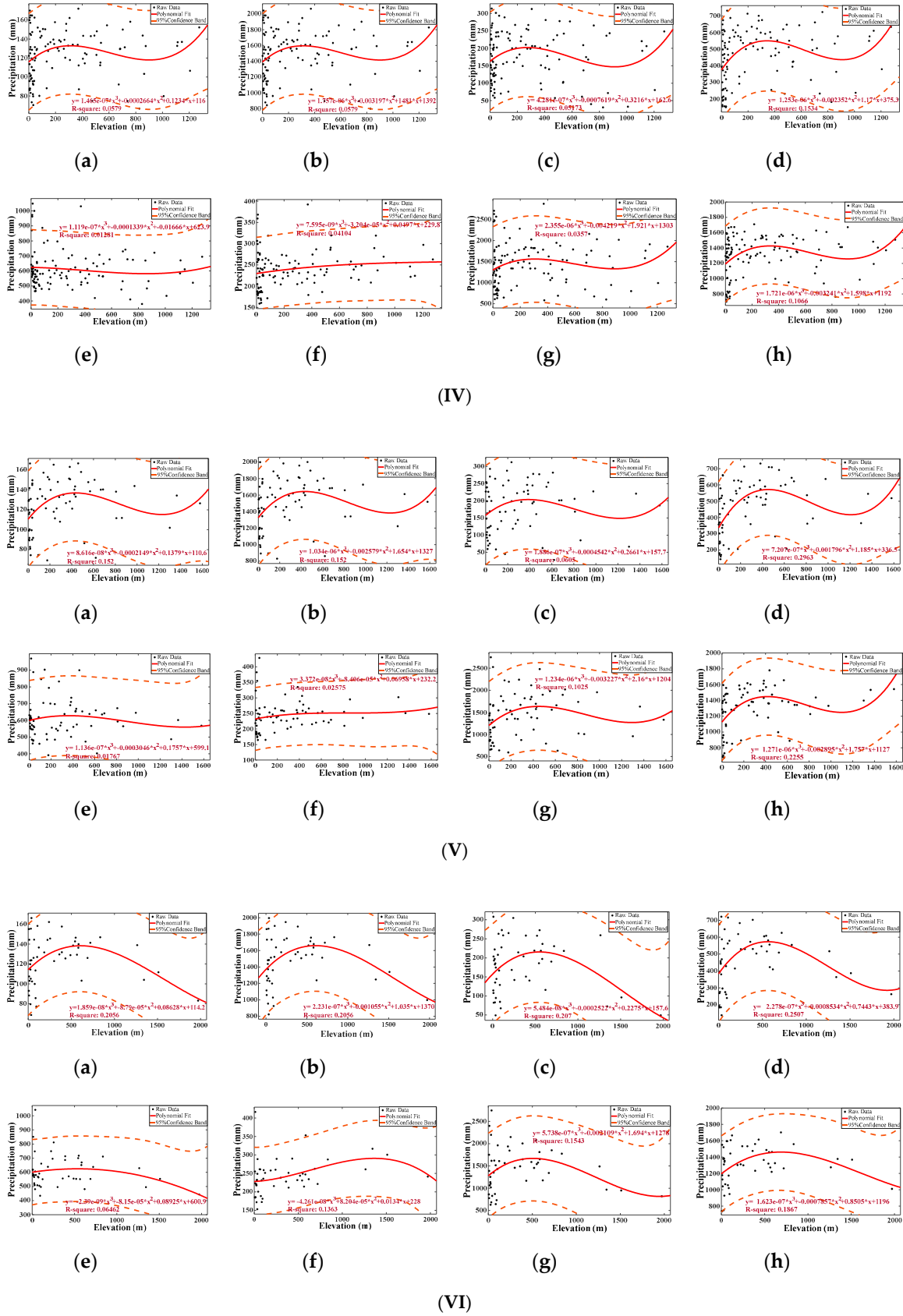
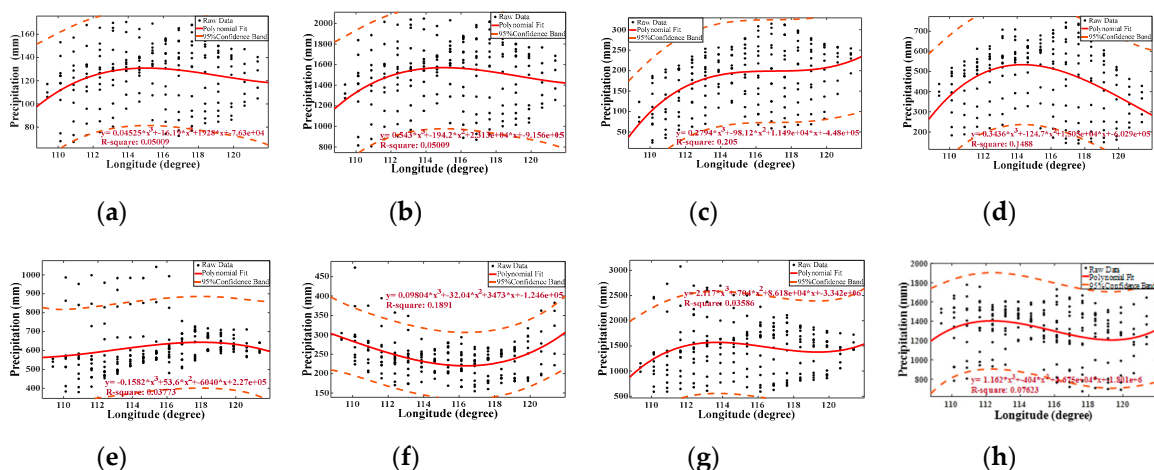
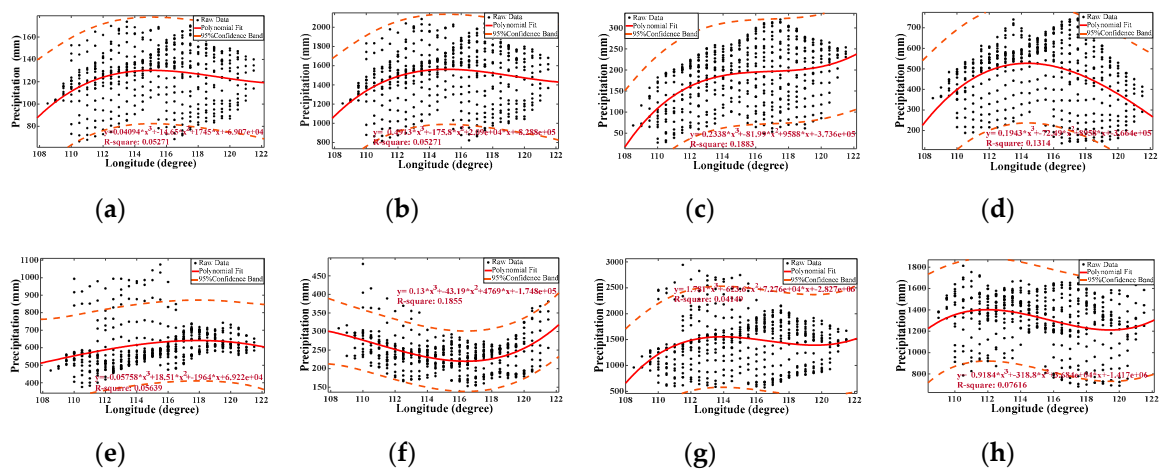
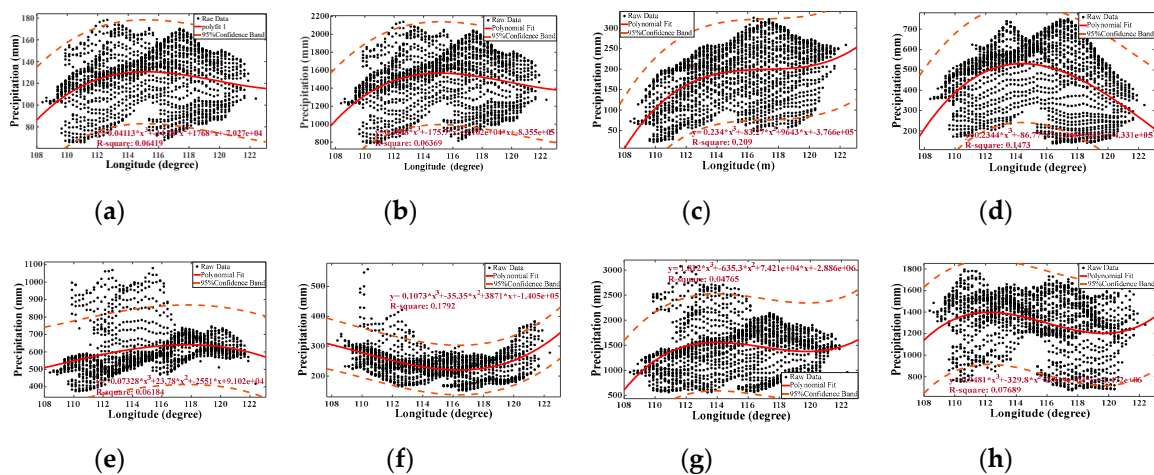


Figure S3. Per meter elevation received precipitation at 0.25°, 0.50°, 0.75°, 1.0°, 1.25° and 1.50° resolution for (a) the average monthly, (b) the average annual (2001–2015), (c) the average winter, (d) the average spring, (e) the average summer, (f) the average autumn, (g) the dry-year (2001), (h) the wet-year (2004) precipitation, respectively.



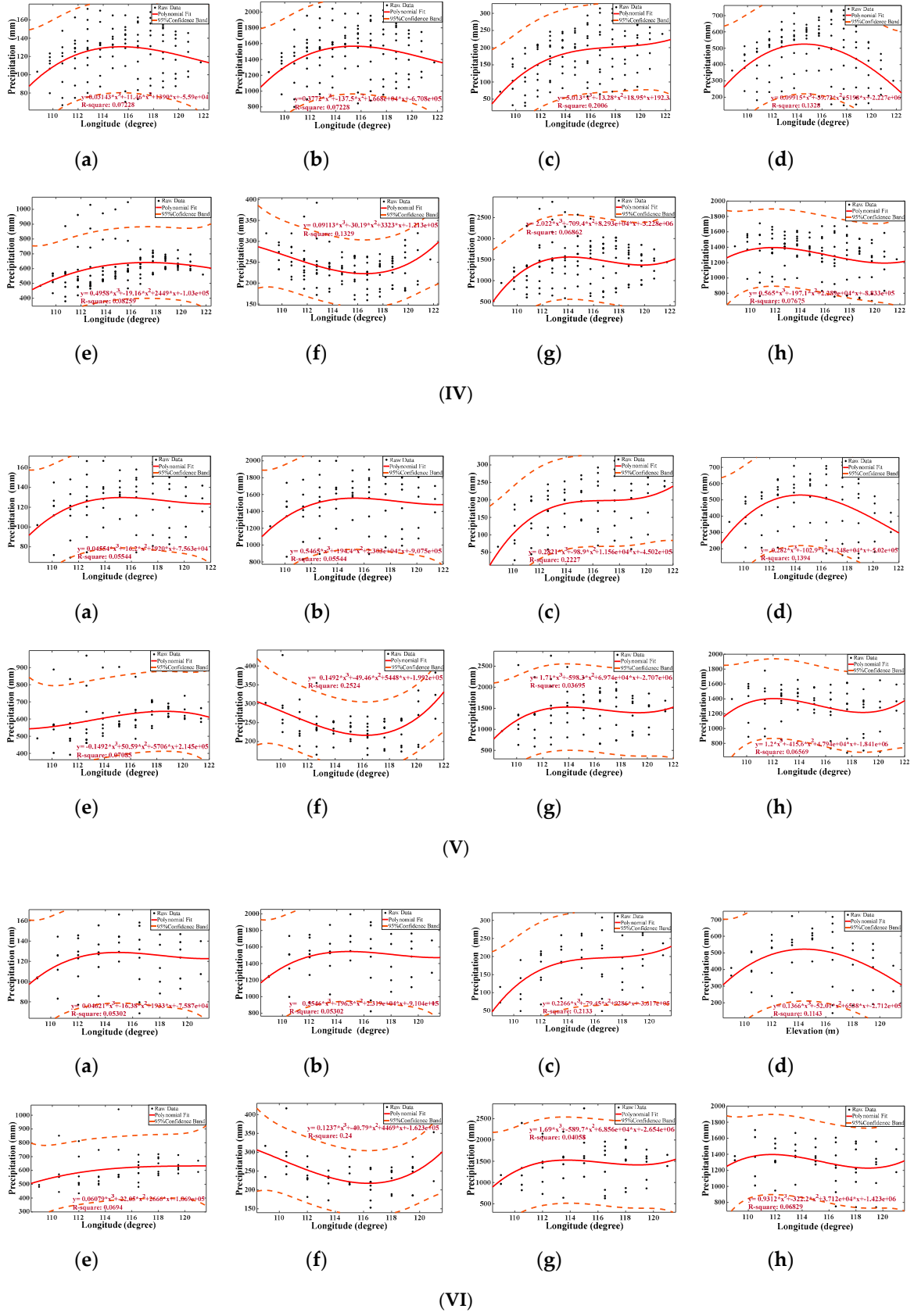
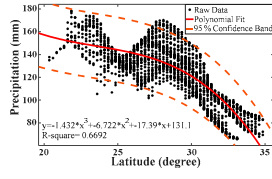
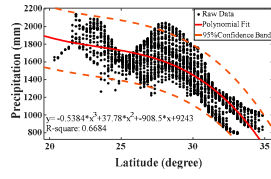


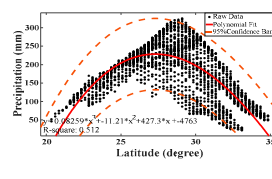
Figure S4. Per degree longitude received precipitation at 0.25°, 0.50°, 0.75°, 1.0°, 1.25° and 1.50° resolution for (a) the average monthly, (b) the average annual (2001–2015), (c) the average winter, (d) the average spring, (e) the average summer, (f) the average autumn, (g) the dry-year (2001), (h) the wet-year (2004) precipitation, respectively.



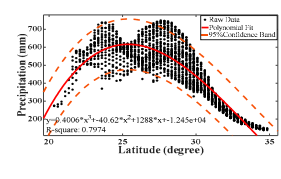
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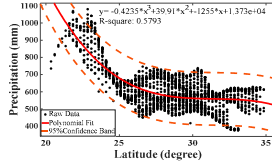
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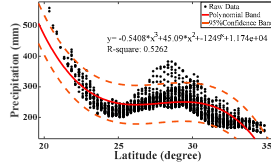
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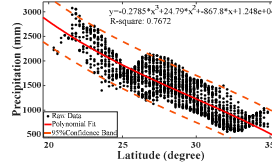
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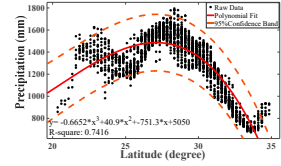
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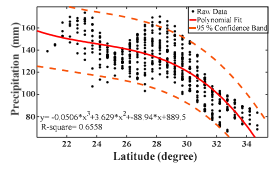


(g)

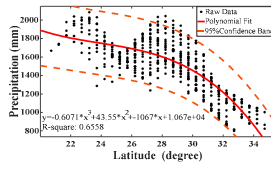


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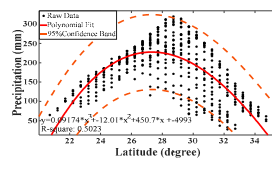
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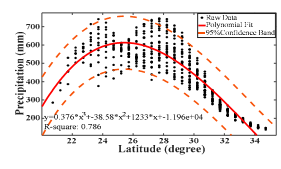
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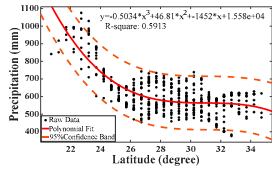
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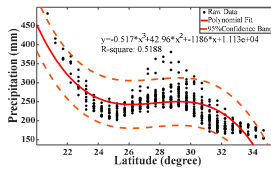
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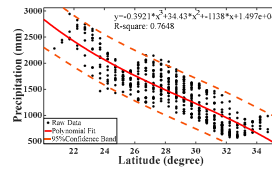
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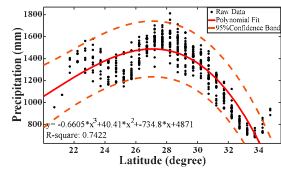
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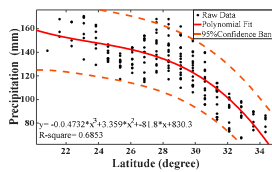


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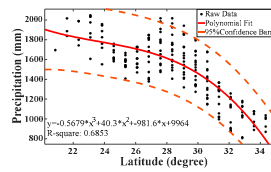


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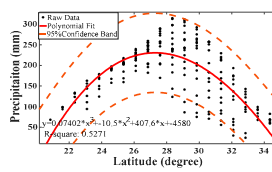
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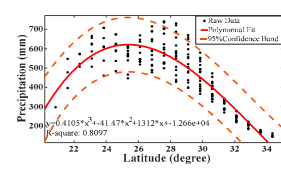
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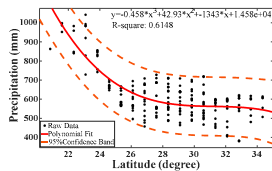
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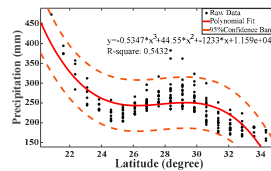
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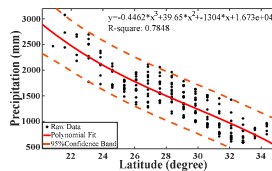
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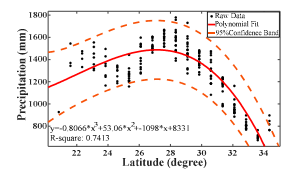
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(f)



(g)



(h)

(III)

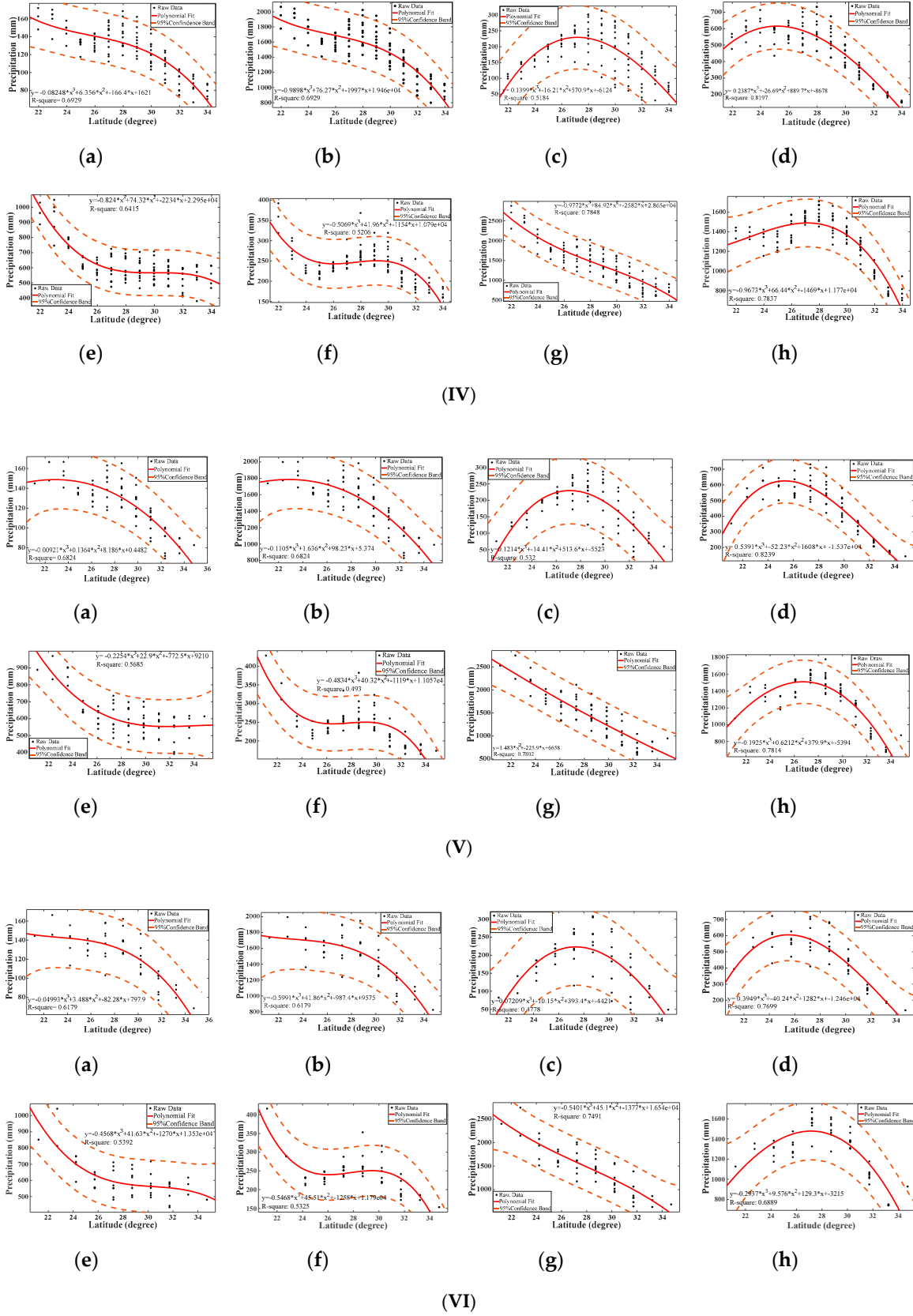


Figure S5. Per degree latitude received precipitation at 0.25°, 0.50°, 0.75°, 1.0°, 1.25° and 1.50° resolution for (a) the average monthly, (b) the average annual (2001–2015), (c) the average winter, (d) the average spring, (e) the average summer, (f) the average autumn, (g) the dry-year (2001), (h) the wet-year (2004) precipitation, respectively.

Table S1. Data Summary for the calculation of Chi-square test value.

S.R.	P.V.	O	E	O – E	(O – E) ²	(O – E) ² /E
0.25	M	0.160	0.153	0.007	0.0000	0.000
	A	0.047	0.034	0.013	0.0002	0.005
	Wn	0.020	0.030	–0.009	0.0001	0.003
	Su	0.040	0.077	–0.038	0.0014	0.018
	Sp	0.127	0.034	0.093	0.0087	0.259
	Au	0.035	0.065	–0.029	0.0009	0.013
	Dry-y	0.477	0.423	0.054	0.0029	0.007
	Wet-y	0.094	0.079	0.015	0.0002	0.003
0.5	M	0.020	0.153	–0.133	0.0177	0.116
	A	0.024	0.034	–0.009	0.0001	0.003
	Wn	0.002	0.030	–0.028	0.0008	0.027
	Su	0.086	0.077	0.009	0.0001	0.001
	Sp	0.321	0.034	0.287	0.0825	2.441
	Au	0.040	0.065	–0.024	0.0006	0.009
	Dry-y	0.441	0.423	0.018	0.0003	0.001
	Wet-y	0.065	0.079	–0.013	0.0002	0.002
0.75	M	0.042	0.153	–0.110	0.0122	0.080
	A	0.004	0.034	–0.029	0.0009	0.026
	Wn	0.089	0.030	0.059	0.0035	0.119
	Su	0.234	0.077	0.157	0.0246	0.318
	Sp	0.166	0.034	0.132	0.0175	0.519
	Au	0.077	0.065	0.013	0.0002	0.003
	Dry-y	0.296	0.423	–0.127	0.0160	0.038
	Wet-y	0.090	0.079	0.012	0.0001	0.002
1	M	0.224	0.153	0.071	0.0050	0.033
	A	0.076	0.034	0.042	0.0018	0.052
	Wn	0.021	0.030	–0.008	0.0001	0.002
	Su	0.016	0.077	–0.061	0.0037	0.048
	Sp	0.031	0.034	–0.002	0.0000	0.000
	Au	0.005	0.065	–0.060	0.0036	0.055
	Dry-y	0.470	0.423	0.047	0.0022	0.005
	Wet-y	0.157	0.079	0.078	0.0061	0.078
1.25	M	0.076	0.153	–0.076	0.0058	0.038
	A	0.041	0.034	0.007	0.0000	0.001
	Wn	0.012	0.030	–0.018	0.0003	0.011
	Su	0.029	0.077	–0.048	0.0023	0.030
	Sp	0.115	0.034	0.081	0.0066	0.195
	Au	0.152	0.065	0.088	0.0077	0.120
	Dry-y	0.536	0.423	0.114	0.0129	0.031
	Wet-y	0.038	0.079	–0.041	0.0017	0.021
1.5	M	0.395	0.153	0.242	0.0585	0.383
	A	0.010	0.034	–0.023	0.0005	0.016
	Wn	0.034	0.030	0.004	0.0000	0.001
	Su	0.058	0.077	–0.019	0.0004	0.005
	Sp	0.082	0.034	0.049	0.0024	0.070
	Au	0.077	0.065	0.012	0.0001	0.002
	Dry-y	0.316	0.423	–0.107	0.0114	0.027
	Wet-y	0.028	0.079	–0.051	0.0026	0.033

Note: S.R. stands for scaled resolutions, P.V. stands for precipitation variables, O stands for observed frequency, E stands for expected frequency.

$\chi^2_{calculated}$	$\chi^2_{tabulated}$
5.267	49.802

Note: Tabulated value is estimated with 35 degrees of freedom at significance level ($\alpha=0.05$).

Table S2. Comparison between the weighted precipitation and the multitemporal precipitation variables at different resolution scales.

Predictors	Statistical Parameters	Spatial Scale				
		0.25 °	0.5 °	1.00 °	1.25 °	1.5 °
Weighted Ppt	Mean	868.970	930.890	1022.300	761.610	829.910
	S. deviation	281.890	303.480	334.650	238.800	251.440
	R-square	0.7761	0.7697	0.7944	0.7919	0.7517
	RMSE	133.377	145.632	151.723	108.930	125.295
	Bias	9.5E-06	-3.0E-06	-0.0003	4.9E-05	-0.0013
Avg-Monthly	Mean	124.651	125.006	124.325	124.840	124.238
	S. deviation	25.154	24.782	25.659	25.018	23.952
	R-square	0.5889	0.5747	0.6280	0.6130	0.5273
	RMSE	16.128	16.161	15.651	15.563	16.467
	Bias	1.8E-05	1.1E-05	-1.34E-05	-3.6E-05	-2.5E-05
Avg-Annual	Mean	1496.289	1500.067	1491.895	1498.074	1485.820
	S. deviation	301.438	297.383	307.913	300.215	288.259
	R-square	0.5897	0.5747	0.6280	0.6130	0.5259
	RMSE	193.089	193.942	187.813	186.764	206.461
	Bias	1.1E-05	3.4E-05	1.3E-05	3.0E-05	-0.0237
Avg-Winter	Mean	180.826	180.810	179.118	181.533	182.144
	S. deviation	70.528	69.673	70.698	71.026	67.848
	R-square	0.5138	0.5030	0.5137	0.5268	0.5811
	RMSE	49.180	49.116	49.300	48.856	51.007
	Bias	-0.0002	0.0002	0.0006	0.0003	-0.0090
Avg-Summer	Mean	612.616	614.868	611.865	611.703	600.844
	S. deviation	119.936	120.013	123.580	114.946	106.052
	R-square	0.4055	0.4021	0.4215	0.4133	0.4357
	RMSE	92.474	92.799	93.992	88.043	89.445
	Bias	7.0E-05	-6.5E-05	-4.81E-05	-1.1E-05	-0.0286
Avg-Spring	Mean	465.357	467.142	465.580	465.805	469.249
	S. deviation	159.538	157.335	160.377	160.007	155.184
	R-square	0.5604	0.5459	0.6328	0.5709	0.5561
	RMSE	105.773	106.019	97.181	104.817	110.382
	Bias	-6.3E-05	9.2E-05	3.4E-05	-4.1E-05	-0.0171
Avg-Autumn	Mean	241.172	241.020	239.056	242.575	241.098
	S. deviation	46.607	45.562	42.520	48.795	46.241
	R-square	0.2992	0.3047	0.3115	0.3132	0.2664
	RMSE	39.016	37.991	35.282	40.437	39.605
	Bias	-4.0E-06	-9.8E-06	-1.25E-05	7.8E-06	-1.8E-05
Wet-Y (2004)	Mean	1305.663	1309.136	1310.908	1310.625	1310.980
	S. deviation	256.322	252.297	256.098	264.433	238.878
	R-square	0.308	0.289	0.3791	0.3385	0.1965
	RMSE	213.23278	212.734	201.803	215.070	214.122
	Bias	-3.2E-05	-9.5E-06	6.3E-06	-1.2E-05	3.6E-05
Dry-Y (2001)	Mean	1440.234	1446.310	1431.355	1433.792	1439.104
	S. deviation	504.262	503.256	510.427	499.641	480.271
	R-square	0.7675	0.7629	0.7778	0.7791	0.7467
	RMSE	243.124	245.029	240.590	234.827	241.696
	Bias	8.5E-05	-8.7E-05	7.2E-05	-7.6E-05	3.2E-05

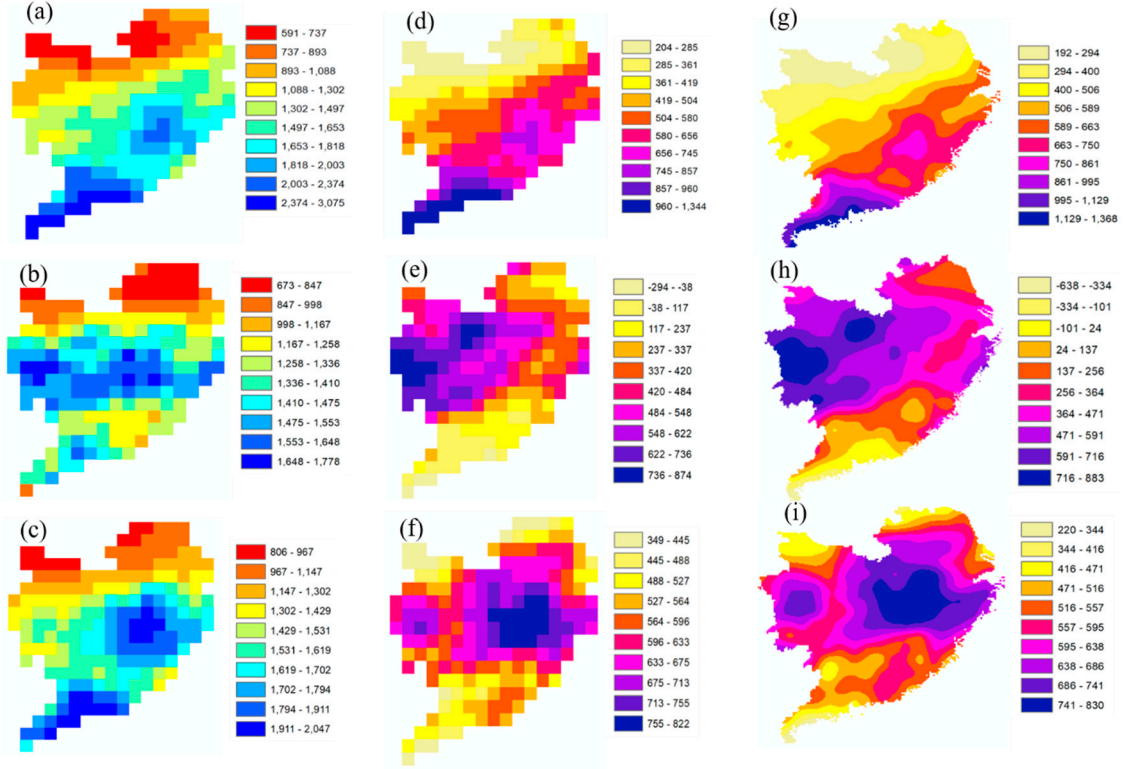


Figure S6. Generation of the high-resolution weighted residuals (g)(h)(i) at 0.05° from the low-resolution weighted residuals (d)(e)(f) at 0.75° for, (a) the dry year (2001), (b) the wet year (2005), and (c) the average annual (2001–2015) precipitation at 0.75° resolution, respectively.