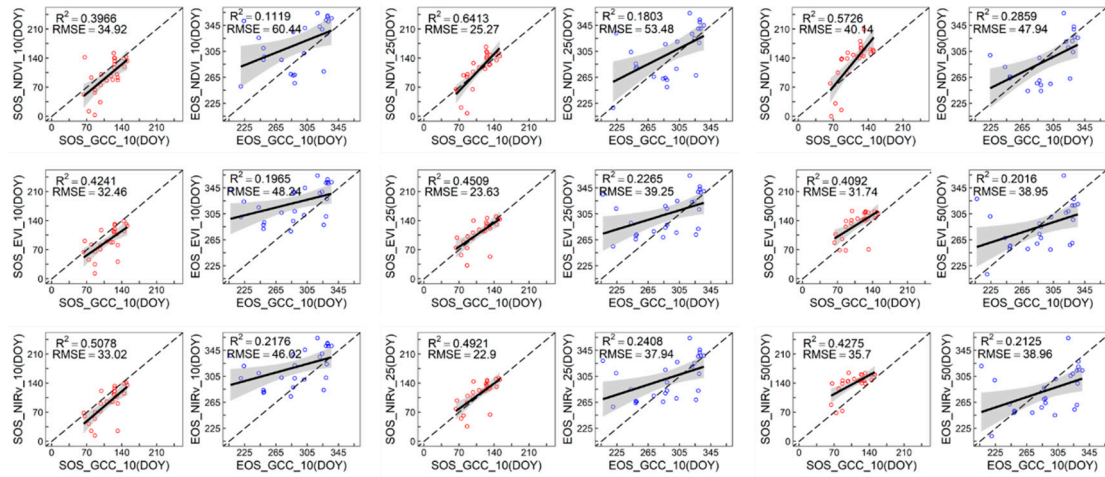
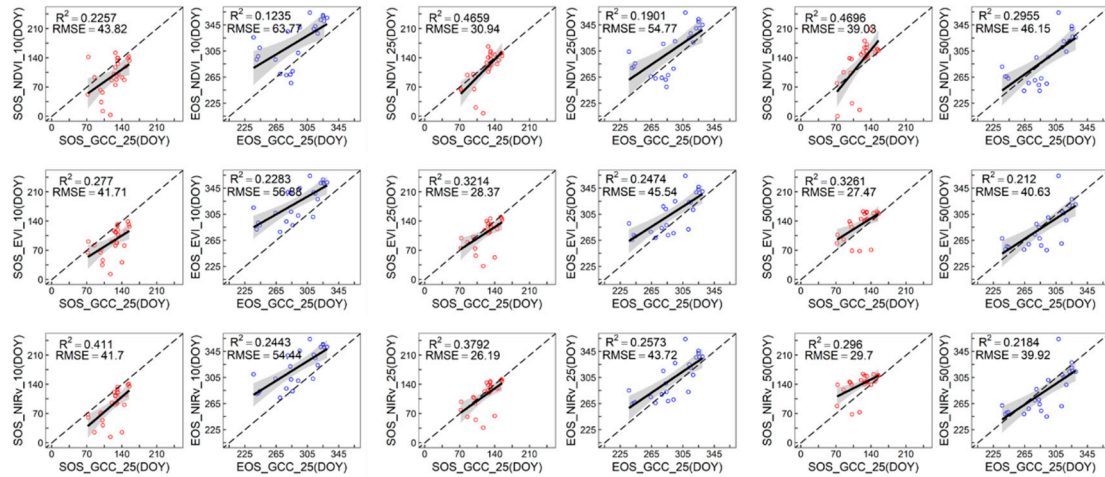


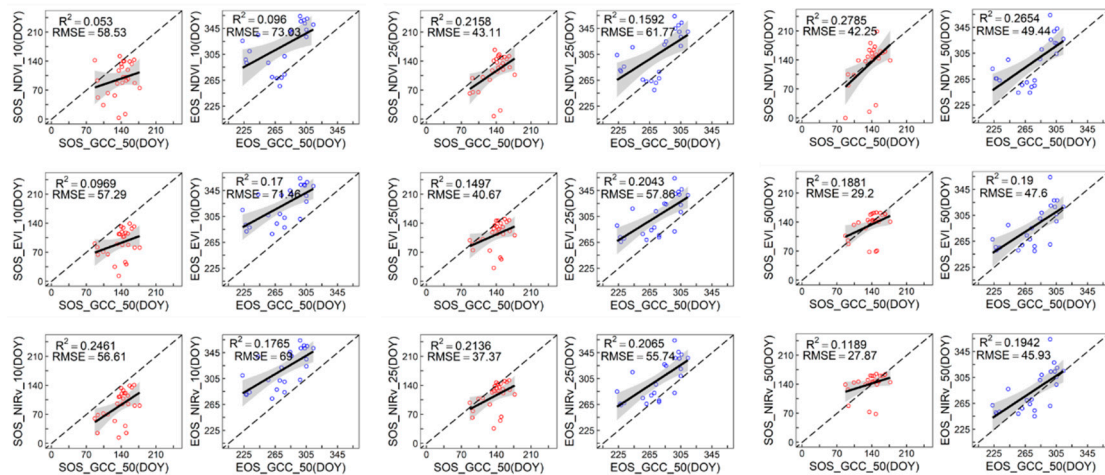
## Supplemental Information



**Figure S1.** Wetland vegetation phenology results based on the fusion of Landsat and Sentinel-2 (LandSent30) at 15m extracted buffer (10% of the green chromatic coordinate (GCC) amplitude).



**Figure S2.** Wetland vegetation phenology results based on the fused LandSent30 at 15m buffer (25% of the GCC amplitude).



**Figure S3.** Wetland vegetation phenology results based on the fused LandSent30 at 15m buffer (50% of the GCC amplitude).

**Table S1.** Differences in the phenology of wetland vegetation (PWV) estimated by satellite remote sensing with different spatial resolutions at 15m buffer (10% of the GCC amplitude and 50% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.35   0.04	0.14   0.41
	RMSE	46.92   39.85	57.80   37.07
	Bias	28.50   8.64	-9.68   -2.11
EVI	R <sup>2</sup>	0.24   0.06	0.12   0.30
	RMSE	35.12   37.35	46.02   39.09
	Bias	18.54   4.36	-4.11   -8.21
NIRv	R <sup>2</sup>	0.27   0.04	0.13   0.31
	RMSE	36.78   39.11	45.80   40.01
	Bias	24.46   8.00	-7.71   -11.68

**Table S2.** Differences in PWV estimated by satellite remote sensing with different spatial resolutions at 30m buffer (10% of the GCC amplitude and 25% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.24   0.11	0.00   0.48
	RMSE	35.76   39.02	91.47   54.00
	Bias	-5.32   -12.57	15.46   18.57
EVI	R <sup>2</sup>	0.22   0.18	0.04   0.02
	RMSE	33.34   37.91	73.87   76.54
	Bias	-4.68   -16.36	24.93   26.61
NIRv	R <sup>2</sup>	0.19   0.14	0.23   0.02
	RMSE	30.6   37.06	64.32   76.29
	Bias	-0.07   -11.89	20.61   23.82

**Table S3.** Differences in PWV estimated by satellite remote sensing with different spatial resolutions at 45m buffer (10% of the GCC amplitude and 50% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.22   0.13	0.02   0.57
	RMSE	50.24   38.96	75.86   44.98
	Bias	27.63   7.40	8.97   2.10
EVI	R <sup>2</sup>	0.36   0.15	0.05   0.05
	RMSE	33.17   36.96	68.68   69.25
	Bias	13.43   3.43	8.17   1.40
NIRv	R <sup>2</sup>	0.42   0.12	0.16   0.04
	RMSE	32.80   38.50	63.06   69.76
	Bias	17.83   7.07	5.10   -1.87

**Table S4.** Differences in PWV estimated by satellite remote sensing with different spatial resolutions at 60m buffer (10% of the GCC amplitude and 50% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.19   0.13	0.02   0.57
	RMSE	49.31   38.96	75.72   44.98
	Bias	31.43   7.40	9.30   2.10
EVI	R <sup>2</sup>	0.35   0.15	0.05   0.05
	RMSE	33.14   36.96	69.12   69.25
	Bias	10.87   3.43	8.70   1.40
NIRv	R <sup>2</sup>	0.40   0.12	0.06   0.04
	RMSE	32.46   38.50	68.16   69.76
	Bias	16.30   7.07	6.43   -1.87

**Table S5.** Differences in PWV estimated by satellite remote sensing with different spatial resolutions at 90m buffer (25% of the GCC amplitude and 50% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.21   0.16	0.29   0.15
	RMSE	40.71   36.47	46.10   53.99
	Bias	13.83   -2.24	8.83   -1.66
EVI	R <sup>2</sup>	0.35   0.14	0.20   0.37
	RMSE	28.73   36.85	45.09   39.15
	Bias	1.83   -5.45	5.03   -0.31
NIRv	R <sup>2</sup>	0.42   0.13	0.16   0.38
	RMSE	26.75   36.88	46.43   39.01
	Bias	7.97   -1.66	2.17   -3.55

**Table S6.** Differences in PWV estimated by satellite remote sensing with different spatial resolutions at 120m buffer (25% of the GCC amplitude and 50% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.18   0.16	0.29   0.15
	RMSE	41.88   36.47	45.78   53.99
	Bias	16.79   -2.24	8.59   -1.66
EVI	R <sup>2</sup>	0.28   0.14	0.17   0.37
	RMSE	30.41   36.85	45.78   39.15
	Bias	4.38   -5.45	2.72   -0.31
NIRv	R <sup>2</sup>	0.24   0.13	0.17   0.38
	RMSE	32.02   36.88	45.94   39.01
	Bias	8.52   -1.66	0.62   -3.55

**Table S7.** Differences in PWV estimated by satellite remote sensing with different spatial resolutions at 150m buffer (25% of the GCC amplitude and 50% of the vegetation indices).

Remote sensing index	Statistic	SOS	EOS
		Landsat   MODIS	Landsat   MODIS
NDVI	R <sup>2</sup>	0.24   0.16	0.26   0.15
	RMSE	37.52   37.04	49.59   54.47
	Bias	5.89   -2.79	12.21   -3.07
EVI	R <sup>2</sup>	0.20   0.13	0.18   0.38
	RMSE	31.49   37.33	46.03   39.70
	Bias	3.75   -4.96	2.11   0.32
NIR <sub>v</sub>	R <sup>2</sup>	0.14   0.12	0.19   0.39
	RMSE	34.47   37.48	45.89   39.35
	Bias	7.86   -1.32	-0.46   -2.68