

## Supplementary Material

**Table S1:** Determination of the weights for the morphological vulnerability indicators “V” and “H”.

	INDICATOR		RA	FP	SI	SC	DF	VS	GS	CS
	Characteristic value		5	1	2	5	1	2		
H	Erosion rate	Tr =1	4	4	1	4	1	1	1	<b>0.77</b>
		Tr =10	4	4	2	4	2	2	1	<b>0.84</b>
		Tr =25	4	4	3	4	3	3	1	<b>0.92</b>
		Tr =100	4	4	4	4	4	4	1	<b>1.00</b>
V	Presence of coastal dune		4	1	1	4	1	1	2	<b>0.72</b>
V	Defence structure		4	4	4	4	2	4	1	<b>0.97</b>
H	Shoreline evolution		4	4	4	4	2	4	1	<b>0.97</b>
V	Variation of the dune system length		4	3	4	4	4	2	1	<b>0.92</b>
V	Submerged beach slope		4	3	4	4	4	2	1	<b>0.92</b>
H	Exposition and intensity of sea storms		4	2	4	4	4	2	1	<b>0.91</b>
V	Harbour structures	Tr =1	4	4	4	4	4	4	1	<b>1.00</b>
		Tr =10	4	2	2	2	2	2	2	<b>0.66</b>
		Tr =25	4	3	3	3	3	3	1	<b>0.83</b>
		Tr =100	4	1	1	1	1	1	3	<b>0.48</b>
V	Coastal waterproof level	Tr =1	4	1	1	1	1	1	3	<b>0.48</b>
		Tr =10	4	2	2	2	2	2	2	<b>0.66</b>
		Tr =25	4	3	3	3	3	3	1	<b>0.83</b>
		Tr =100	4	4	4	4	4	4	1	<b>1.00</b>
V	Distance from the shoreline to the limit of the active zone	Tr =1	4	4	4	4	4	4	1	<b>1.00</b>
		Tr =10	4	2	2	2	2	2	2	<b>0.66</b>
		Tr =25	4	3	3	3	3	3	1	<b>0.83</b>
		Tr =100	4	1	1	1	1	1	3	<b>0.48</b>
V	Protected areas		4	2	4	3	4	3	1	<b>0.86</b>
V	Lithological characteristics		4	4	4	1	1	2	2	<b>0.66</b>

**Table S2:** Determination of the “weight” for the socio-economical vulnerability “E”.

	INDICATOR	RA	FP	SI	SC	DF	VS	Score	GS	CS
	Characteristic value	5	1	2	5	1	2			
E	Loss of the soil value	4	4	4	4	4	4	64	1	1.00
E	Touristic activities	4	4	4	4	4	4	64	2	1.00
E	Productive activities	4	4	4	4	4	4	64	3	1.00
E	Population	4	4	4	4	4	4	64	4	1.00

**Table S3:** Values of the different indicators and morphological vulnerability defined for each profile for the different return periods.

MACRO-AREA	Profiles	Tr	I <sub>RU</sub>	I <sub>R</sub>	E <sub>LT</sub>	I <sub>D</sub>	I <sub>i</sub>
Macroarea 2	P1	1	2	1	0	1	4
		10	3	1	0	1	5
		25	3	2	0	1	6
		100	4	2	0	1	7
	P2	1	2	2	0	1	5
		10	3	3	0	1	7
		25	3	3	0	1	7
		100	4	3	0	1	8
	P3	1	1	1	0	1	3
		10	2	2	0	1	5
		25	3	1	0	1	5
		100	3	3	0	1	7
	P4	1	1	2	0	1	4
		10	2	2	0	1	5
		25	2	3	0	1	6
		100	3	3	0	1	7
	P5	1	2	1	0	1	4
		10	3	2	0	1	6
		25	3	3	0	1	7
		100	4	3	0	1	8
Macroarea 3	P6	1	3	1	0	0	4

Macroarea 4		10	4	2	0	0	6
		25	4	3	0	0	7
		100	4	3	0	0	7
	P7	1	1	1	0	1	3
		10	2	1	0	1	4
		25	2	1	0	1	4
		100	3	2	0	1	6
	P8	1	4	2	0	1	7
		10	4	3	0	1	8
		25	4	3	0	1	8
		100	4	3	0	1	8
	P9	1	2	1	1	1	5
		10	3	1	1	1	6
		25	3	1	1	1	6
		100	4	2	1	1	8
Macroarea 5	P10	1	3	3	1	0	7
		10	4	3	1	0	8
		25	4	3	1	0	8
		100	4	3	1	0	8
Macroarea 6	P11	1	1	1	0	1	3
		10	1	1	0	1	3
		25	2	1	0	1	4
		100	2	1	0	1	4
	P12	1	1	1	1	1	4
		10	2	1	1	1	5
		25	3	2	1	1	7
		100	3	3	1	1	8
Macroarea 7	P13	1	4	3	1	1	9
		10	4	3	1	1	9
		25	4	3	1	1	9
		100	4	3	1	1	9

**Table S4:** Flooding index, erosion Index, combine coastal risk index along the Basilicata Ionian coast.

		Scenario			Scenario			Scenario			Scenario		
		Tr=1 yr			Tr=10			Tr=25			Tr=100		
		ZPI	ZEE	ICC	ZPI	ZEE	ICC	ZPI	ZEE	ICC	ZPI	ZEE	ICC
MA2	P1-	ZPI4	ZPE3	ICC3	ZPI3	ZPE3	ICC2	ZPI2	ZPE2	ICC2	ZPI2	ZPE2	ICC2
	P2	ZPI3	ZPE3	ICC2	ZPI2	ZPE2	ICC2	ZPI2	ZPE2	ICC2	ZPI1	ZPE2	ICC2
	P3	ZPI4	ZPE3	ICC3	ZPI3	ZPE2	ICC3	ZPI3	ZPE2	ICC3	ZPI2	ZPE2	ICC2
	P4	ZPI4	ZPE3	ICC3	ZPI3	ZPE2	ICC3	ZPI2	ZPE2	ICC2	ZPI2	ZPE2	ICC2
	P5	ZPI4	ZPE4	ICC3	ZPI2	ZPE4	ICC2	ZPI2	ZPE4	ICC2	ZPI1	ZPE4	ICC2
MA3	P6	ZPI4	ZPE3	ICC3	ZPI2	ZPE3	ICC2	ZPI2	ZPE3	ICC2	ZPI2	ZPE3	ICC2
	P7-	ZPI4	ZPE3	ICC3	ZPI4	ZPE3	ICC3	ZPI4	ZPE3	ICC3	ZPI2	ZPE3	ICC2
MA4	P8-	ZPI3	ZPE2	ICC3	ZPI2	ZPE2	ICC2	ZPI2	ZPE2	ICC2	ZPI2	ZPE2	ICC2
	P9	ZPI4	ZPE4	ICC3	ZPI3	ZPE4	ICC3	ZPI3	ZPE4	ICC3	ZPI2	ZPE4	ICC2
MA5	P10	ZPI3	ZPE4	ICC3	ZPI2	ZPE4	ICC2	ZPI2	ZPE4	ICC2	ZPI2	ZPE4	ICC2
MA6	P11	ZPI4	ZPE3	ICC3	ZPI4	ZPE3	ICC3	ZPI4	ZPE3	ICC3	ZPI4	ZPE3	ICC3
	P12	ZPI4	ZPE4	ICC3	ZPI4	ZPE4	ICC3	ZPI3	ZPE4	ICC3	ZPI2	ZPE4	ICC2
MA7	P13	ZPI1	ZPE4	ICC2	ZPI1	ZPE4	ICC2	ZPI1	ZPE4	ICC2	ZPI1	ZPE4	ICC2