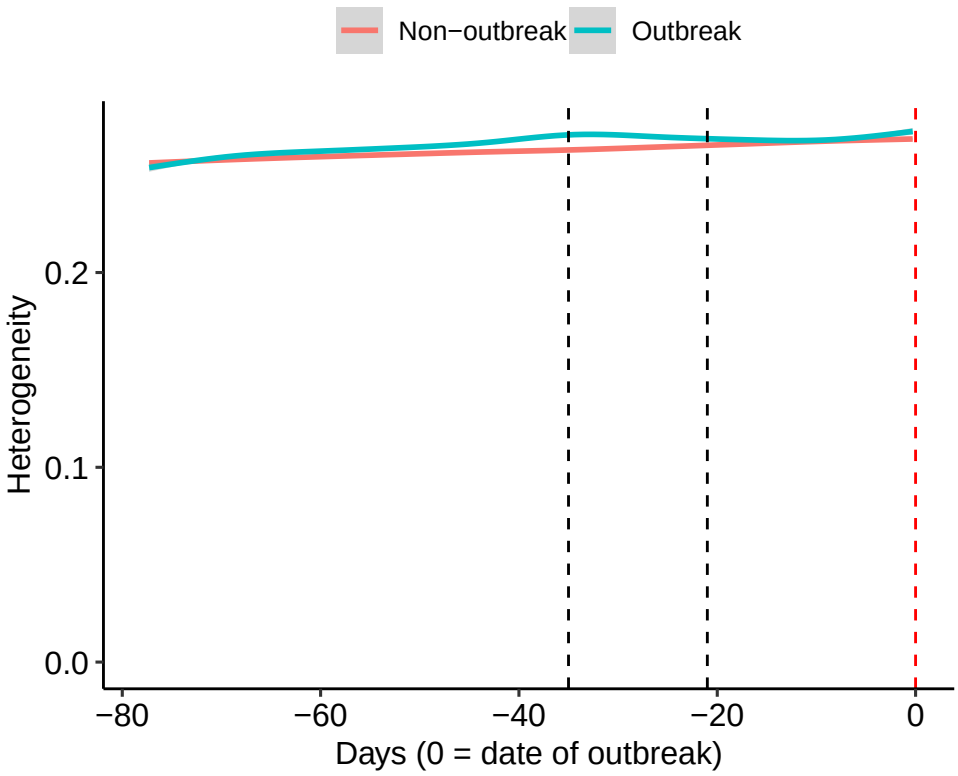
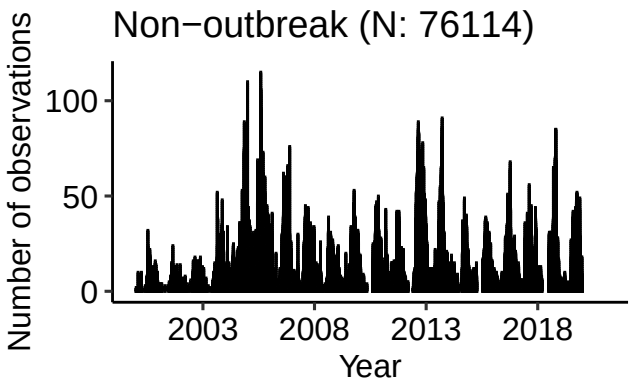
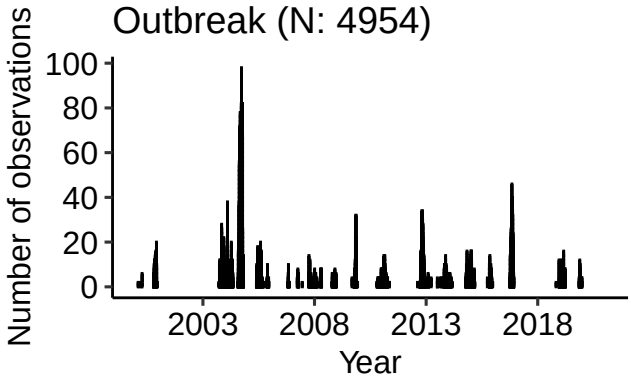
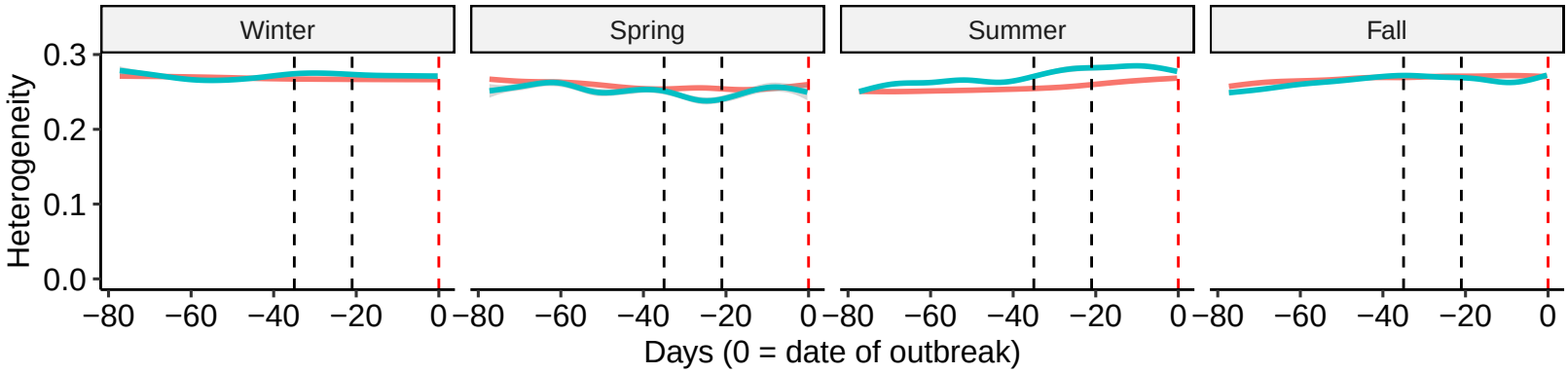
Sahelian Acacia savanna

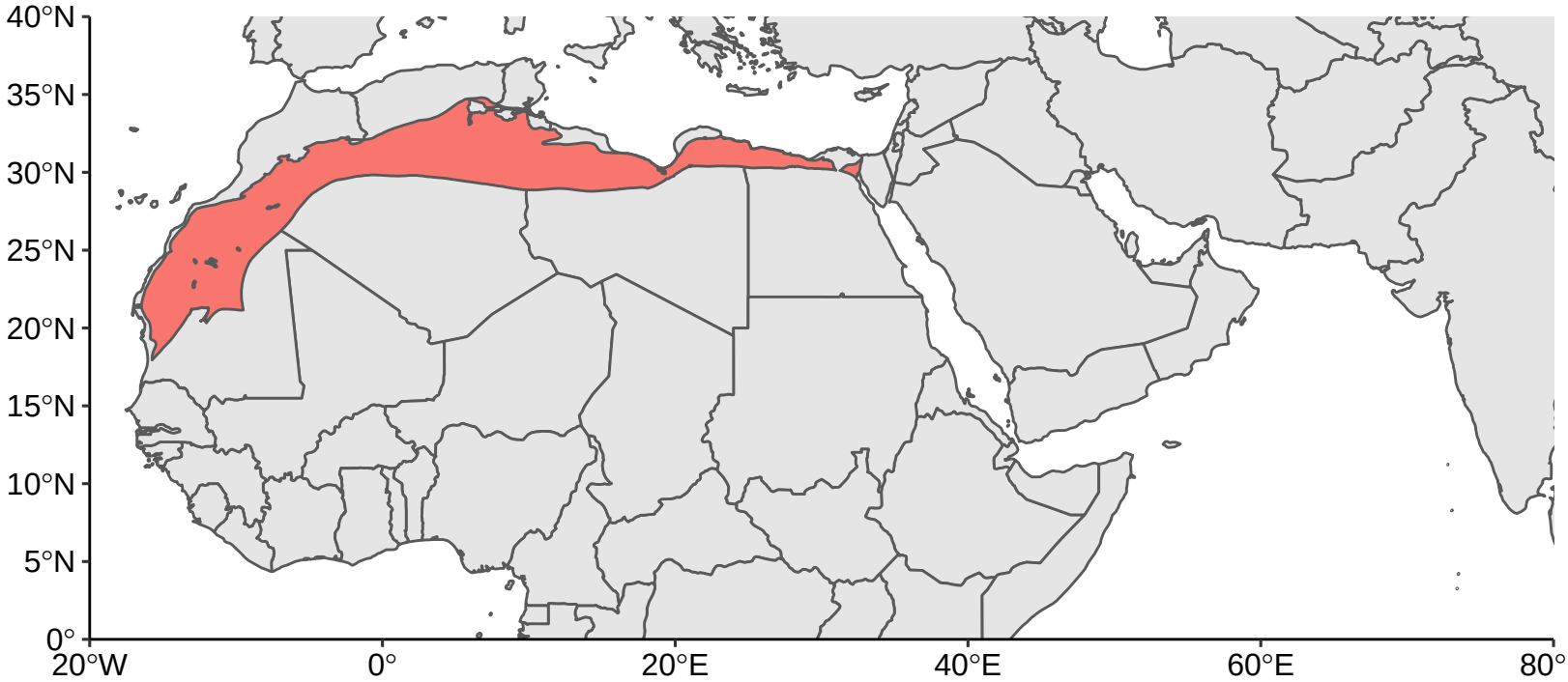


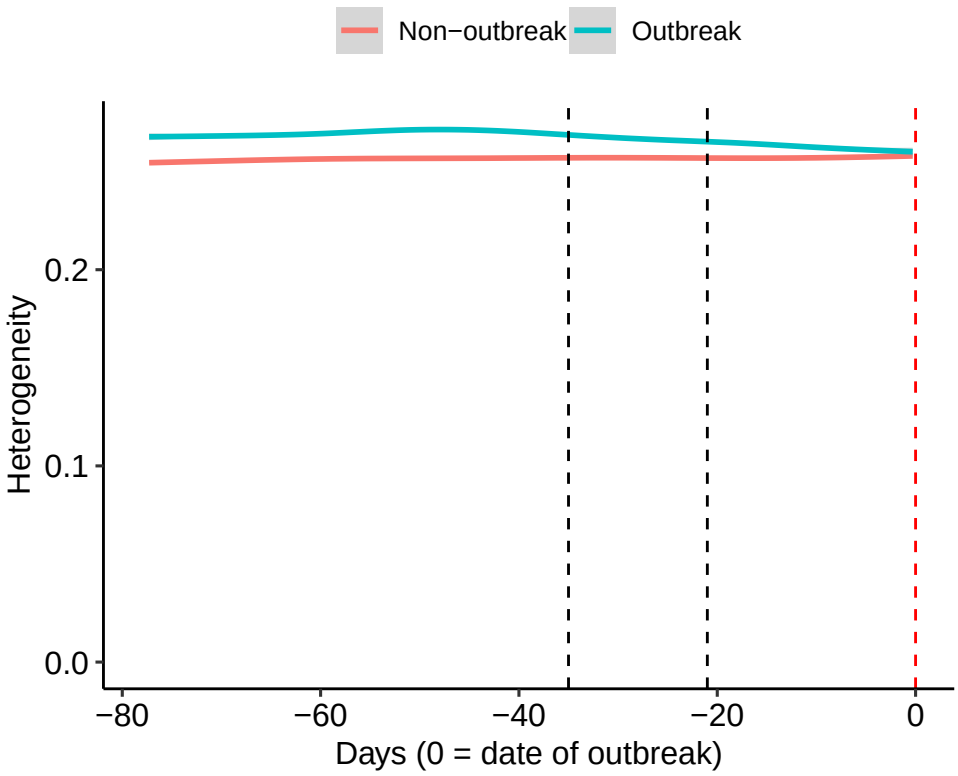


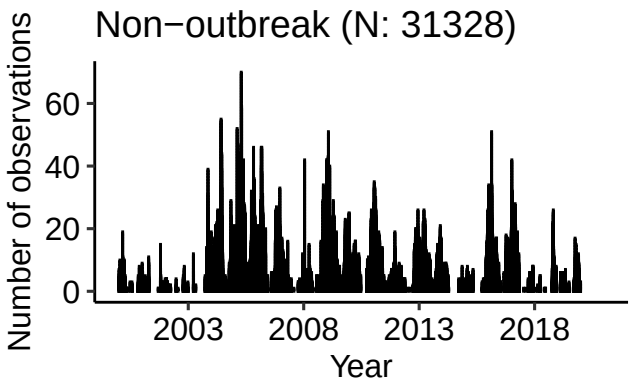


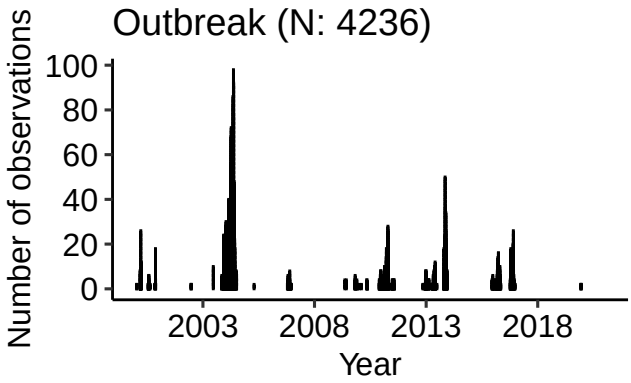


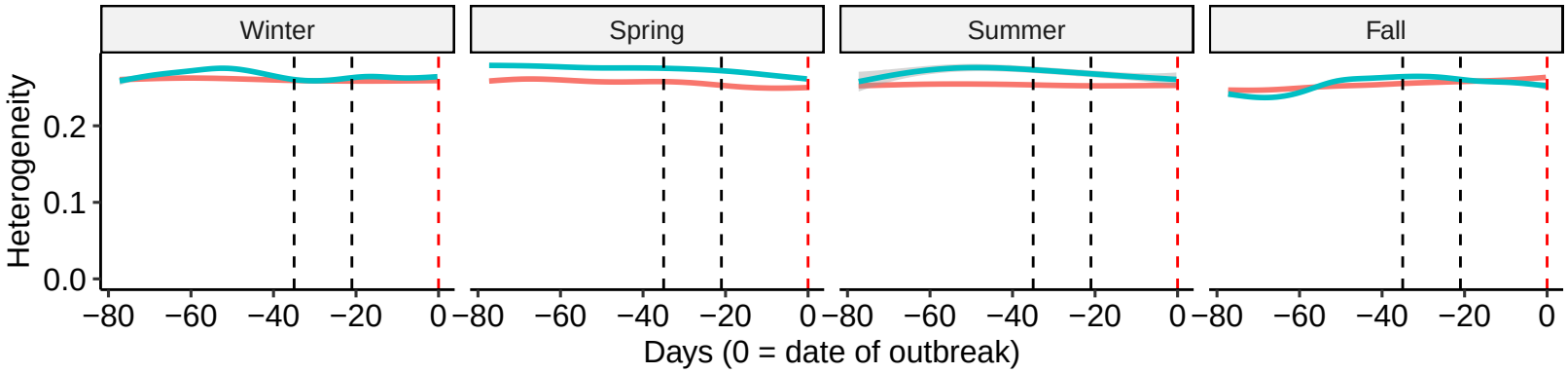
North Saharan steppe and woodlands



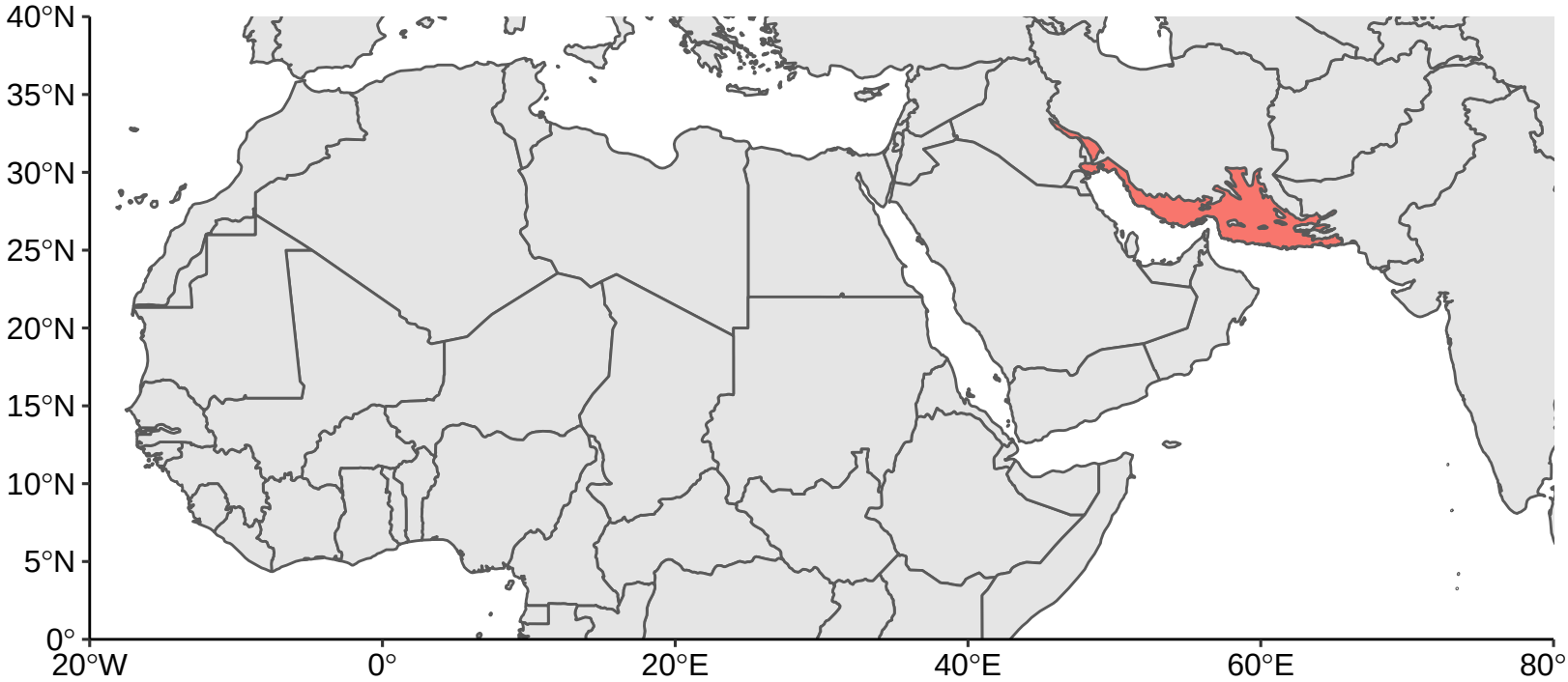


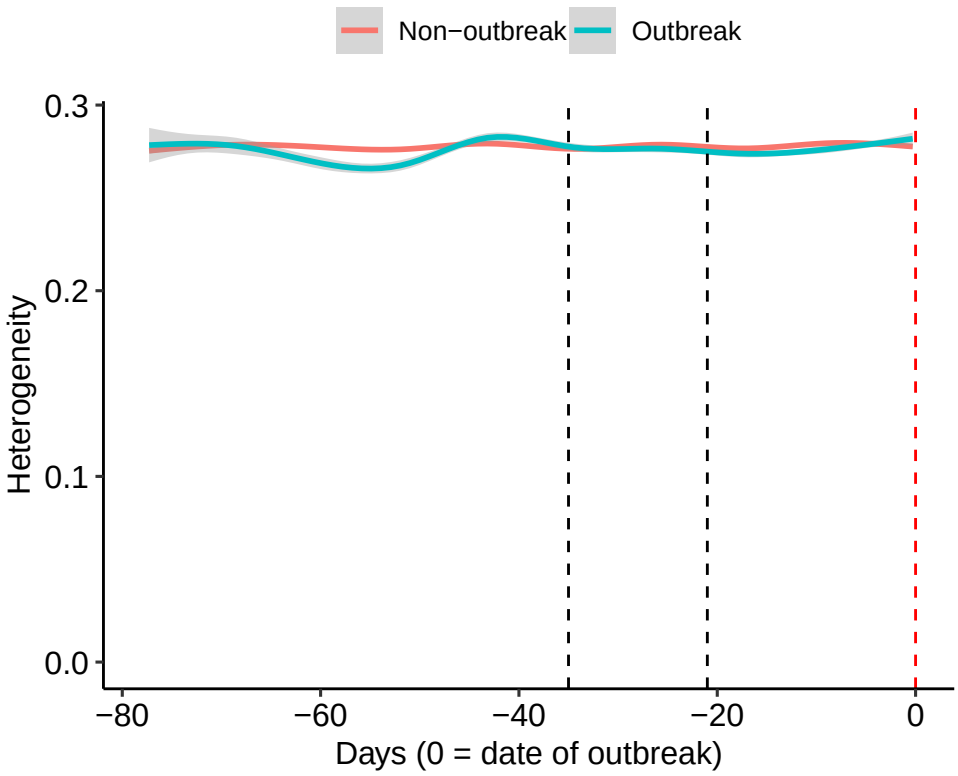


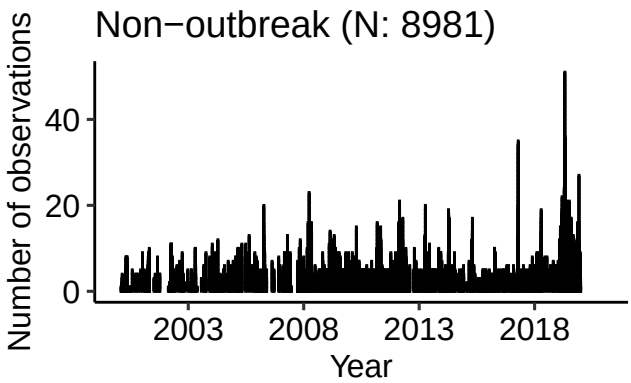


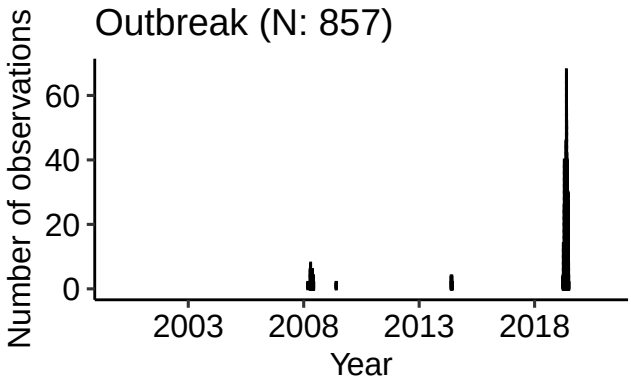


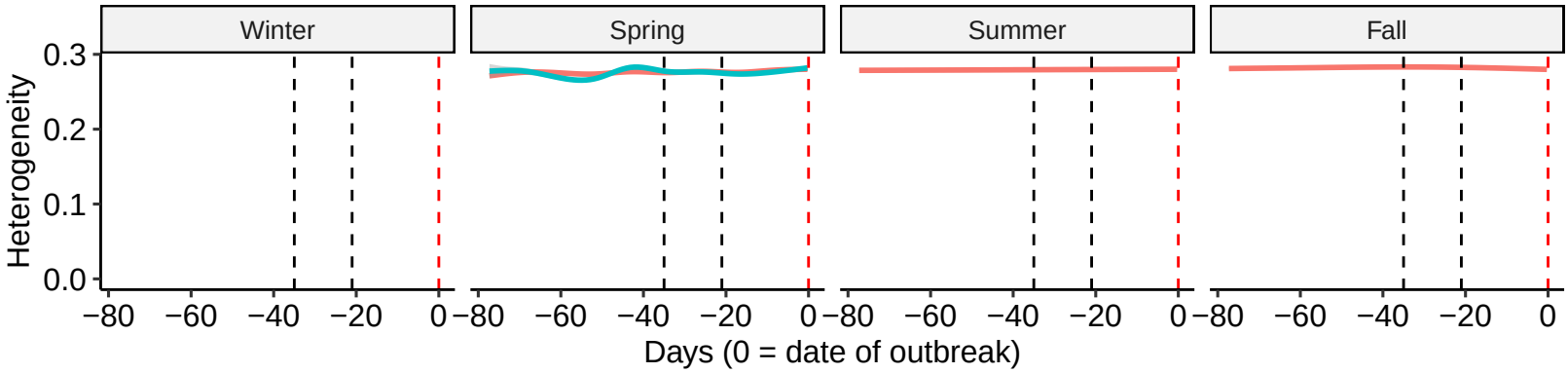
South Iran Nubo−Sindian desert and semi−desert



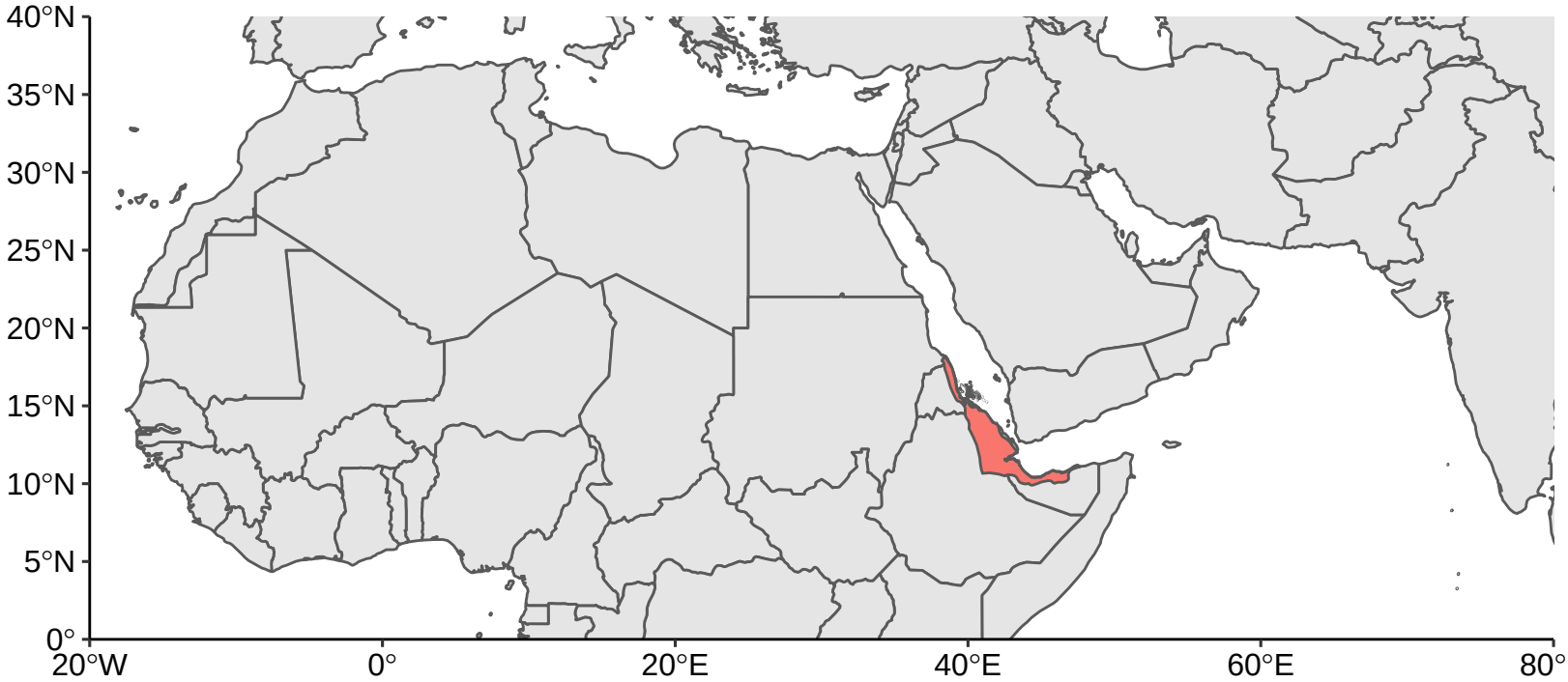


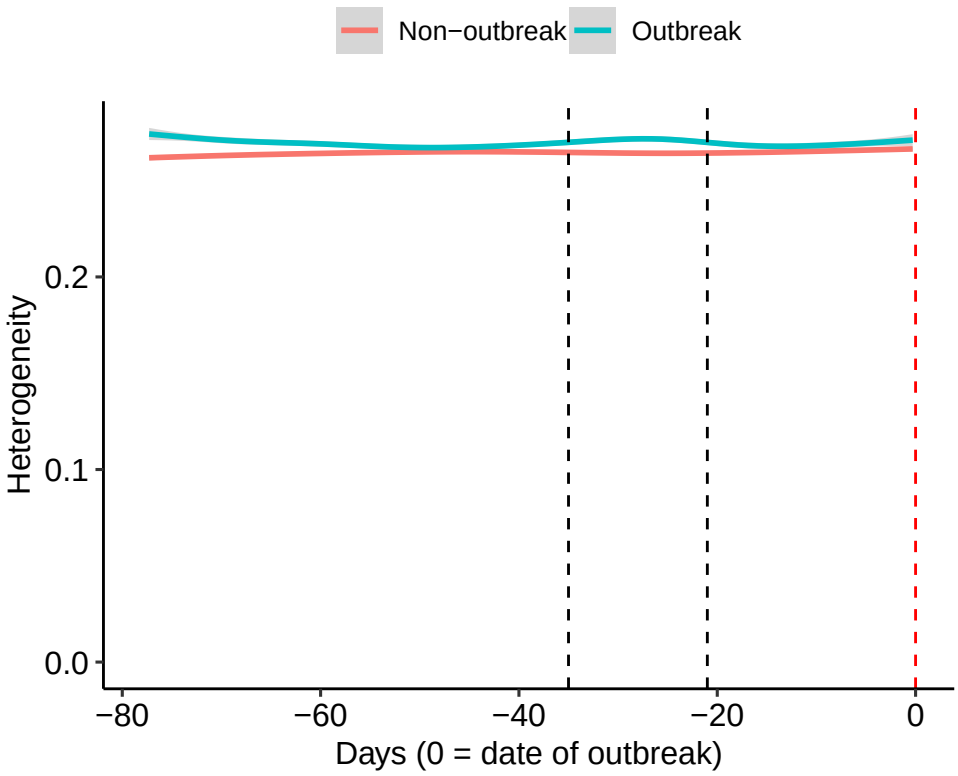


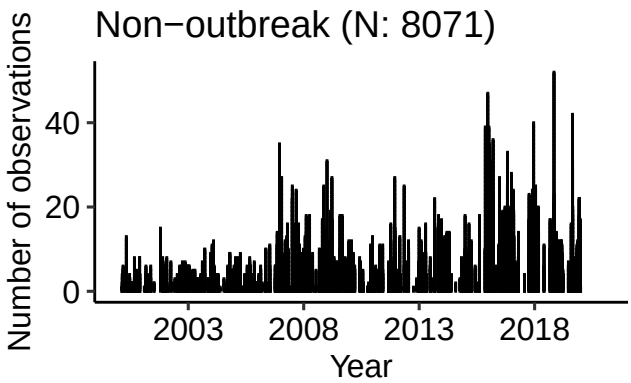


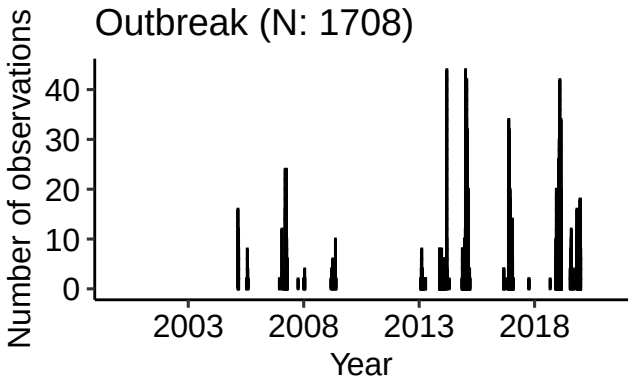


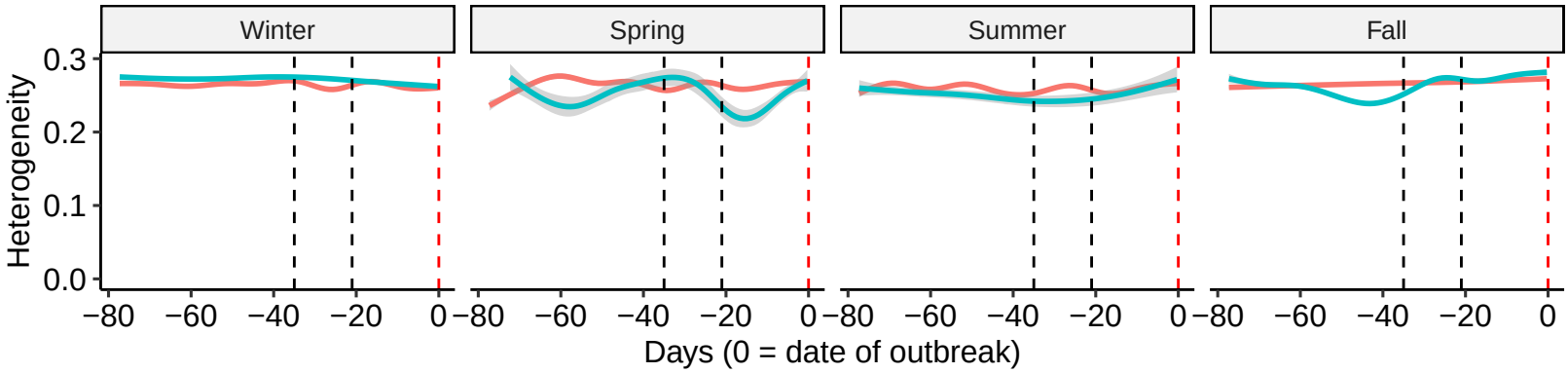
Ethiopian xeric grasslands and shrublands



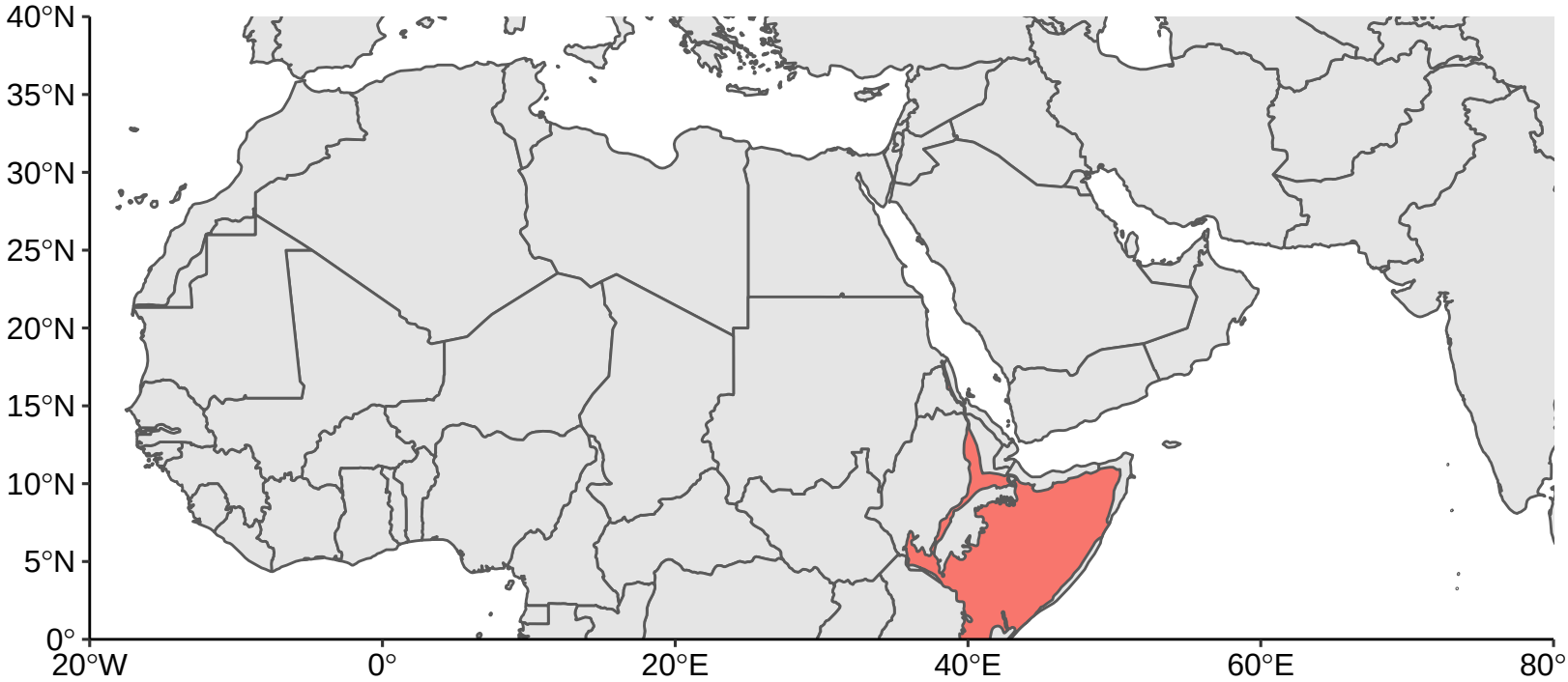


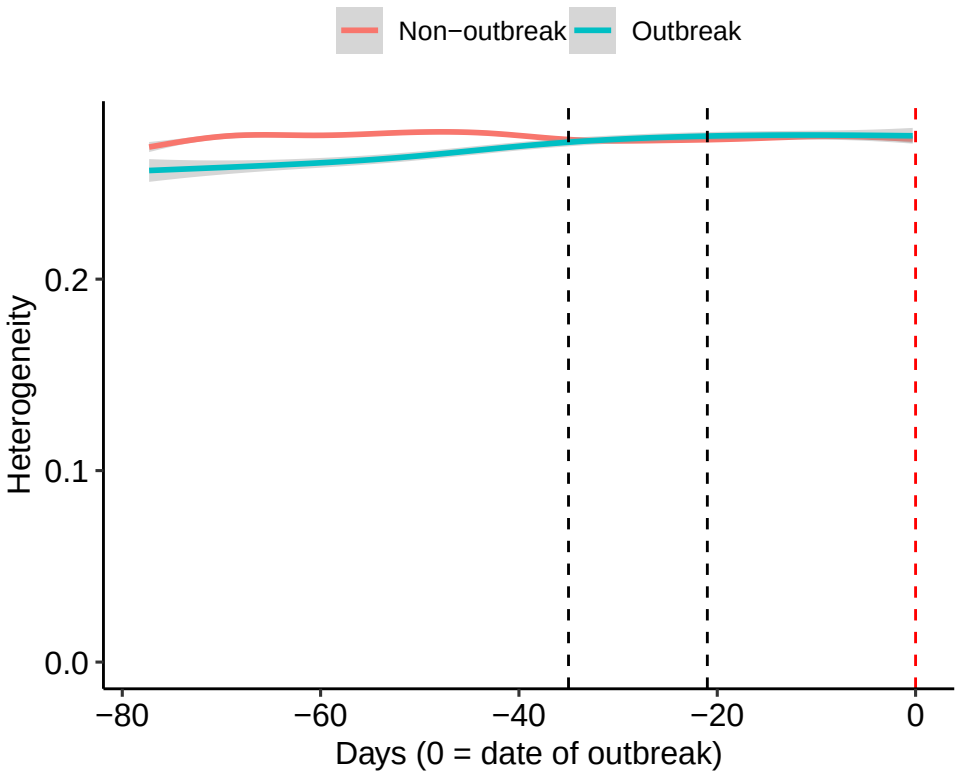


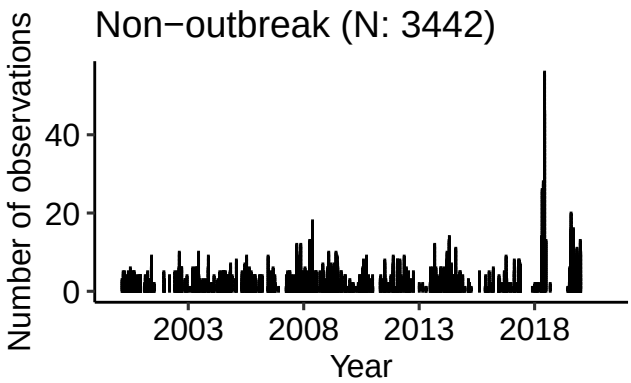


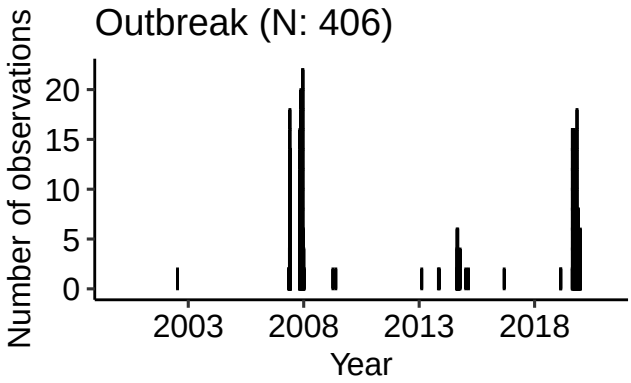


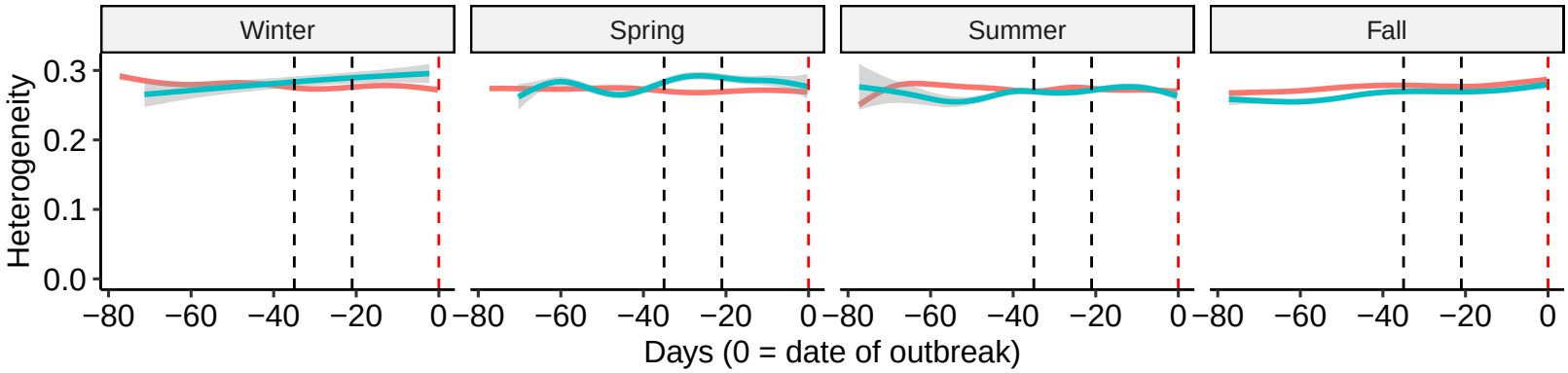
Somali Acacia−Commiphora bushlands and thickets



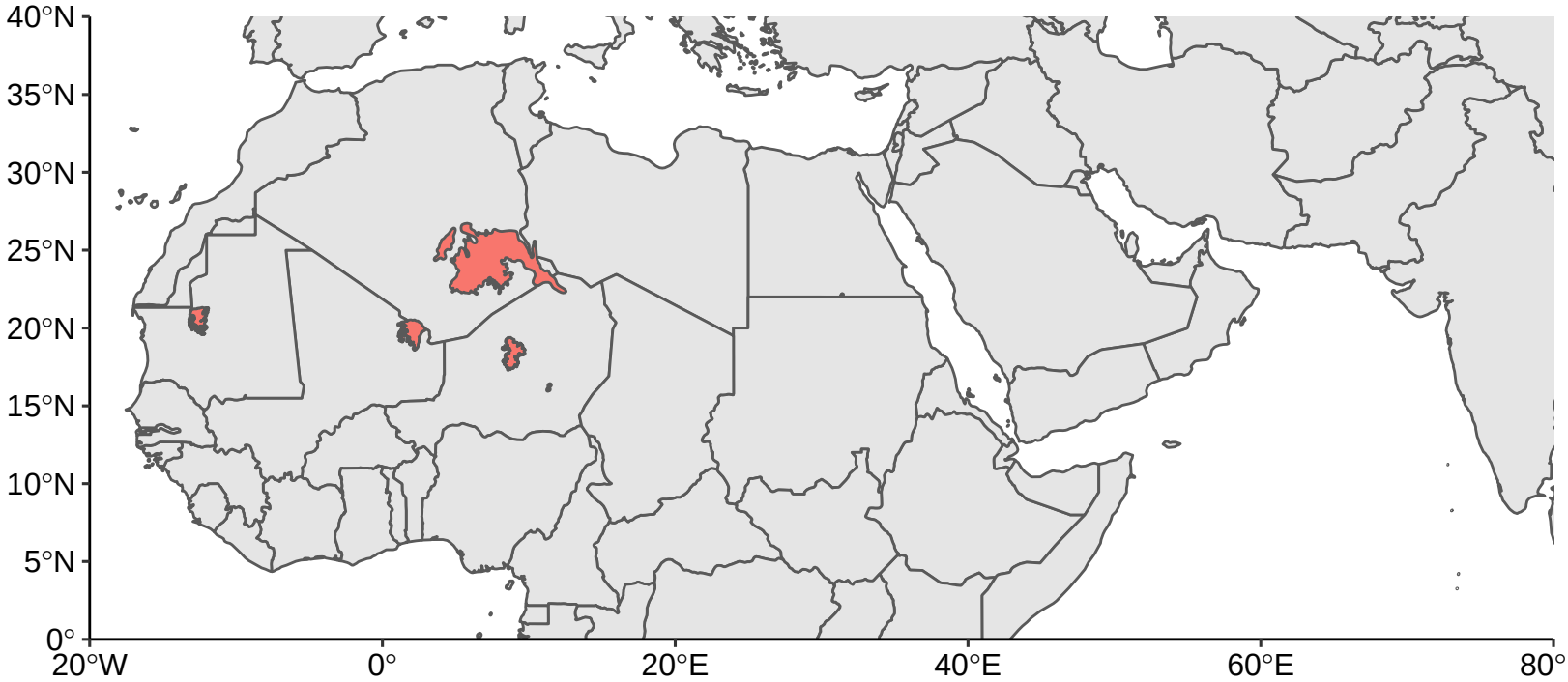


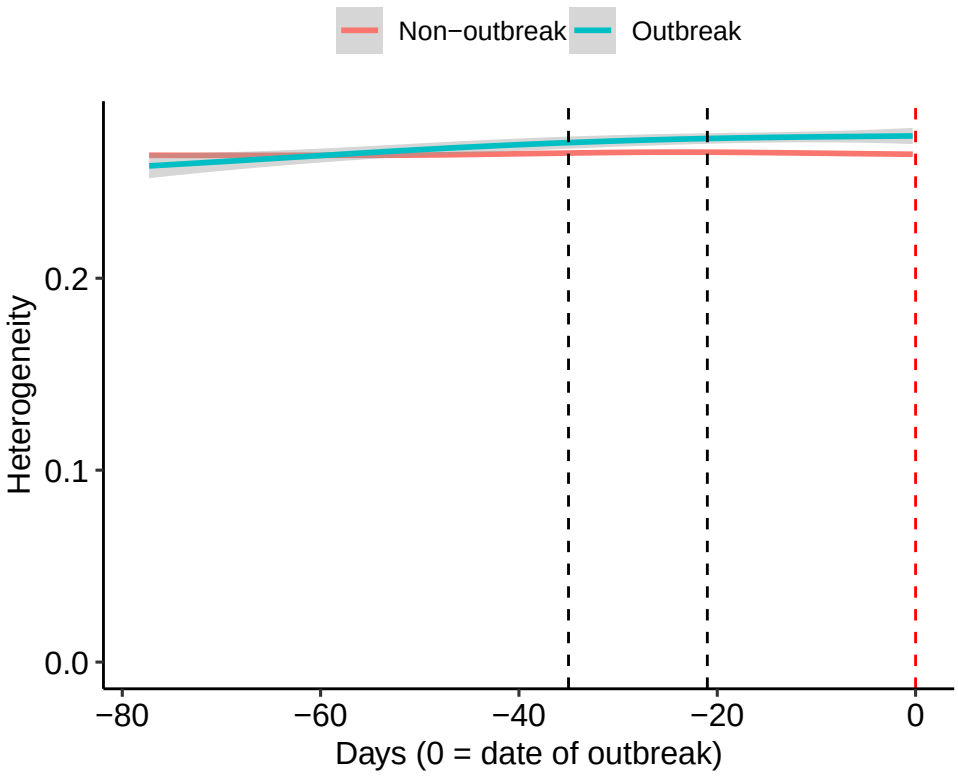


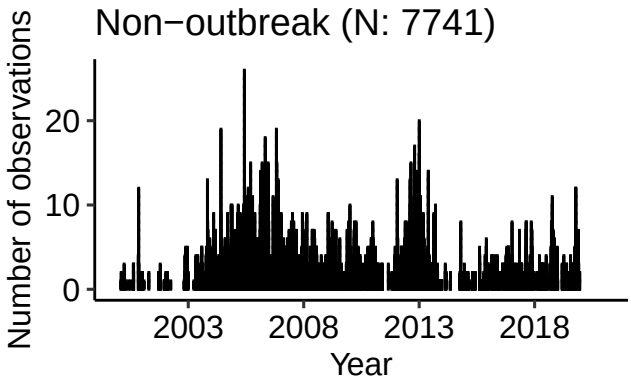


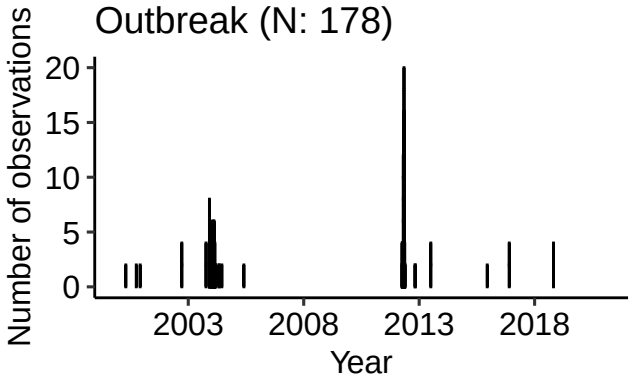


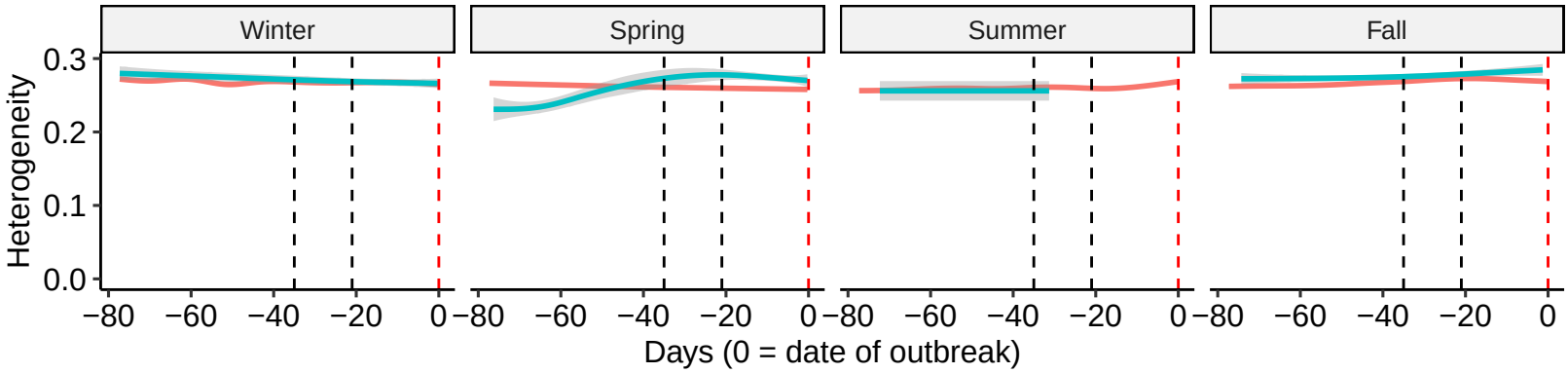
West Saharan montane xeric woodlands



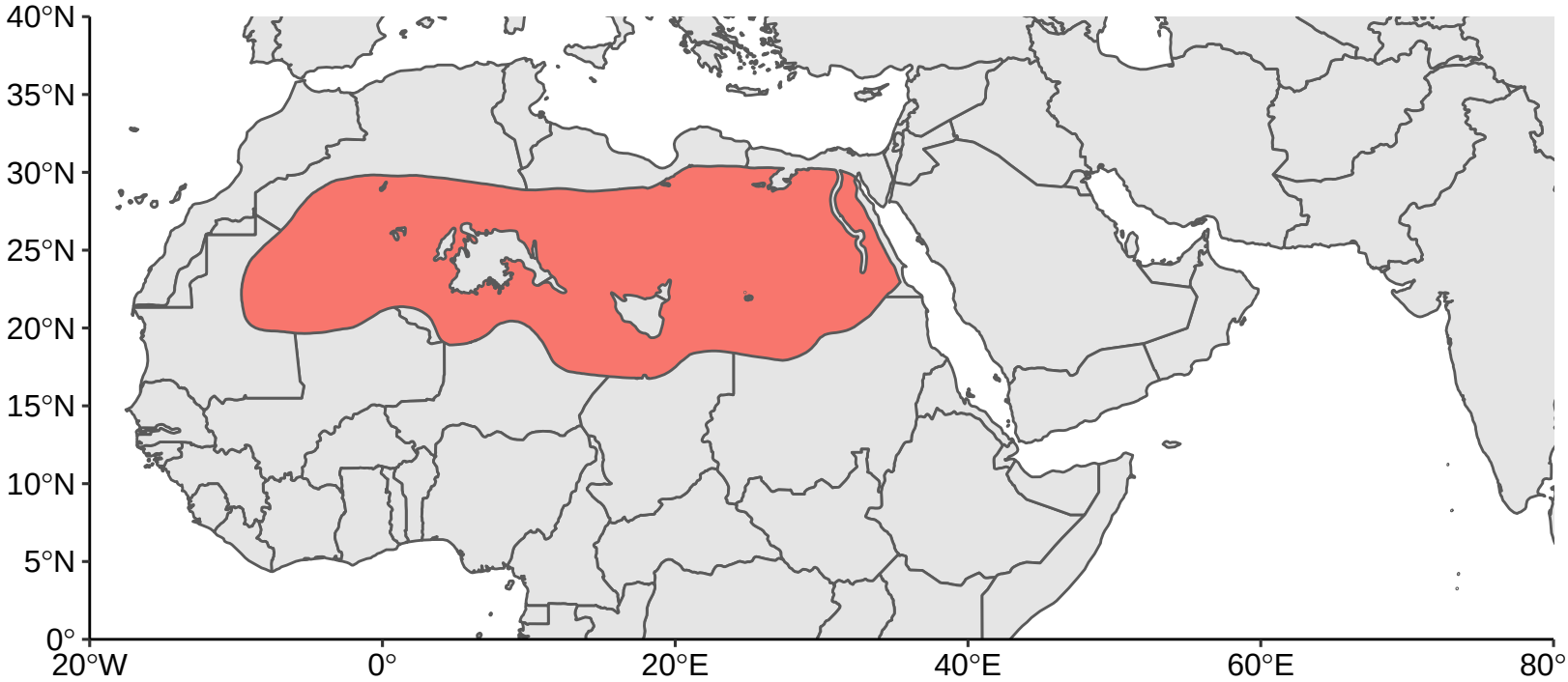


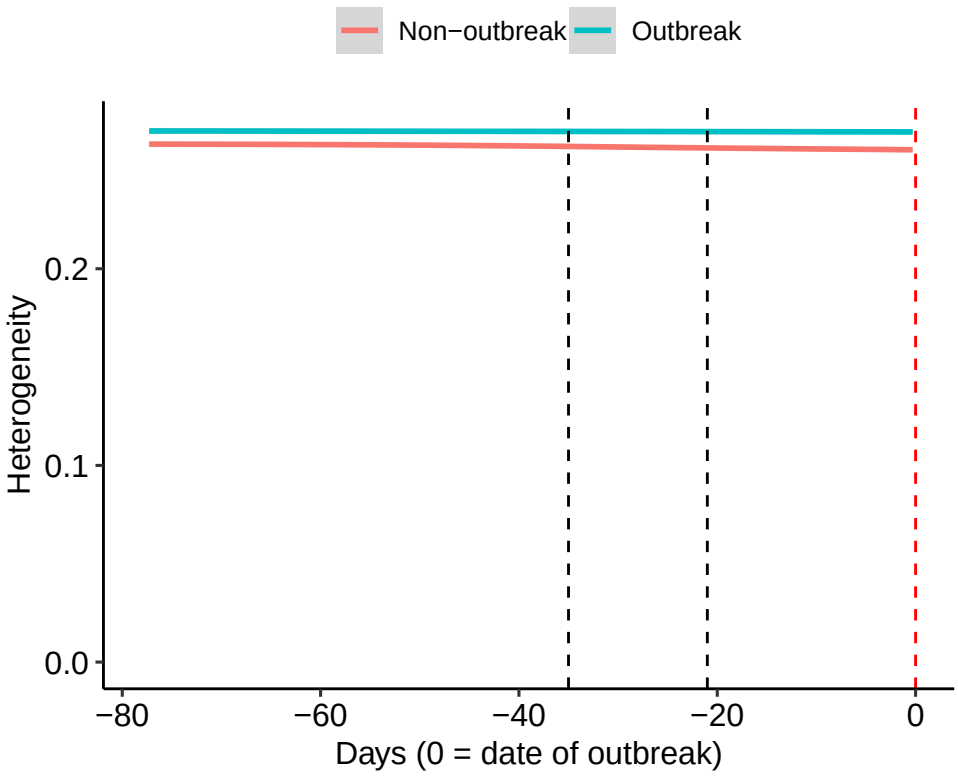


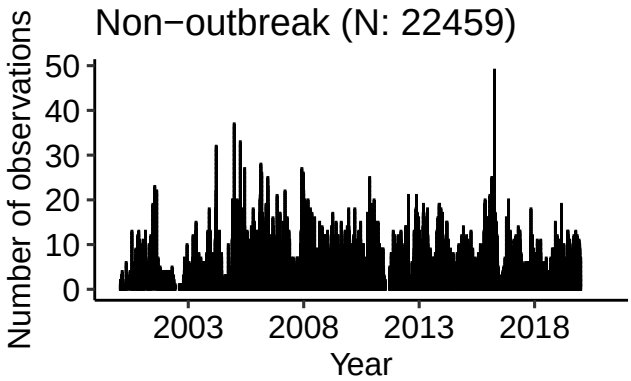


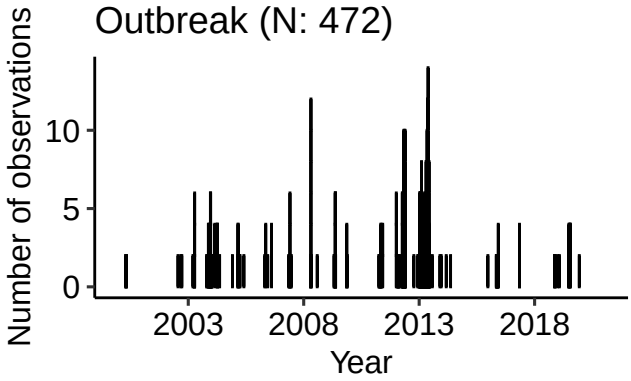


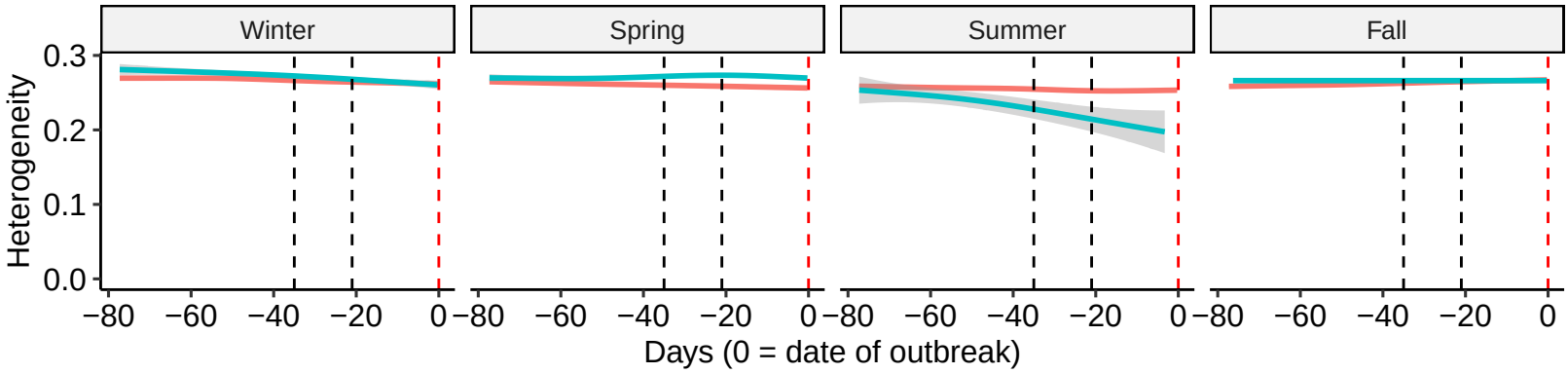
Sahara desert



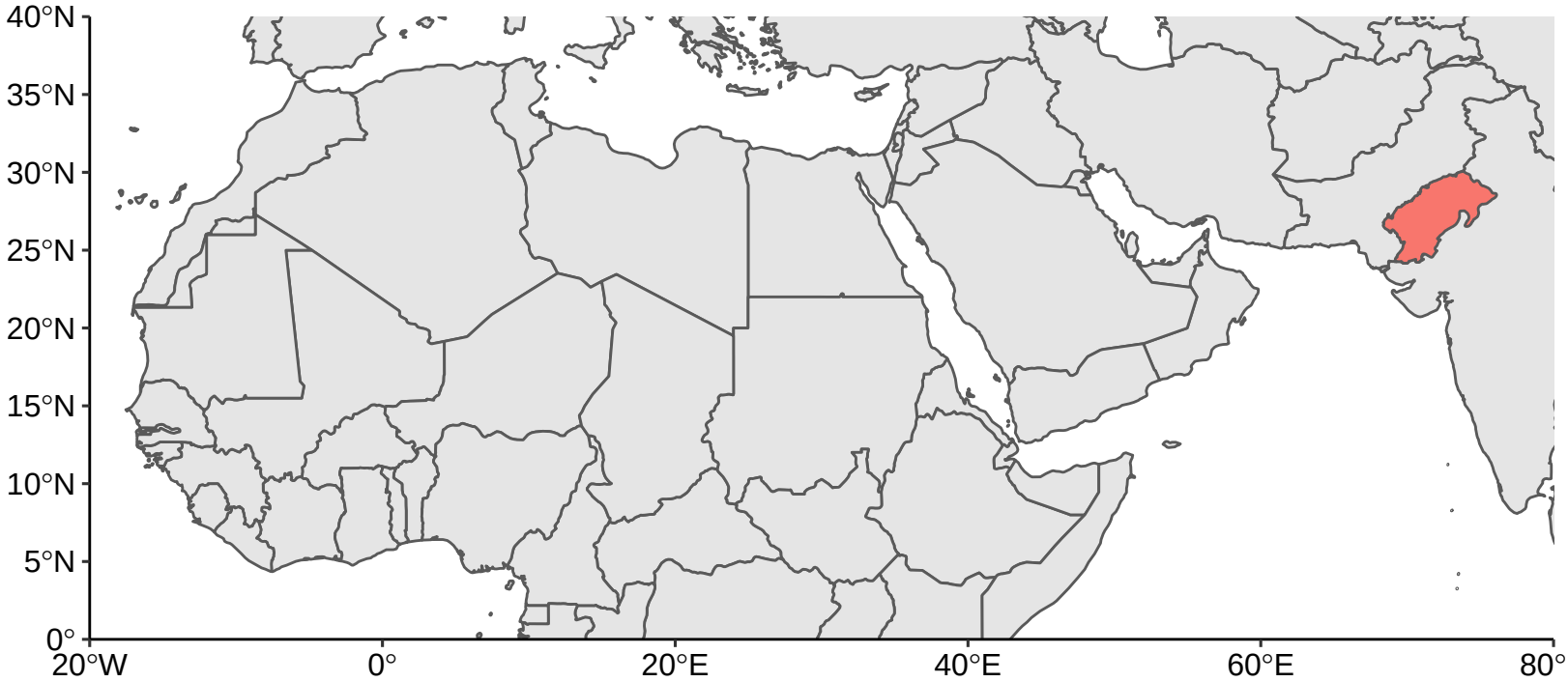


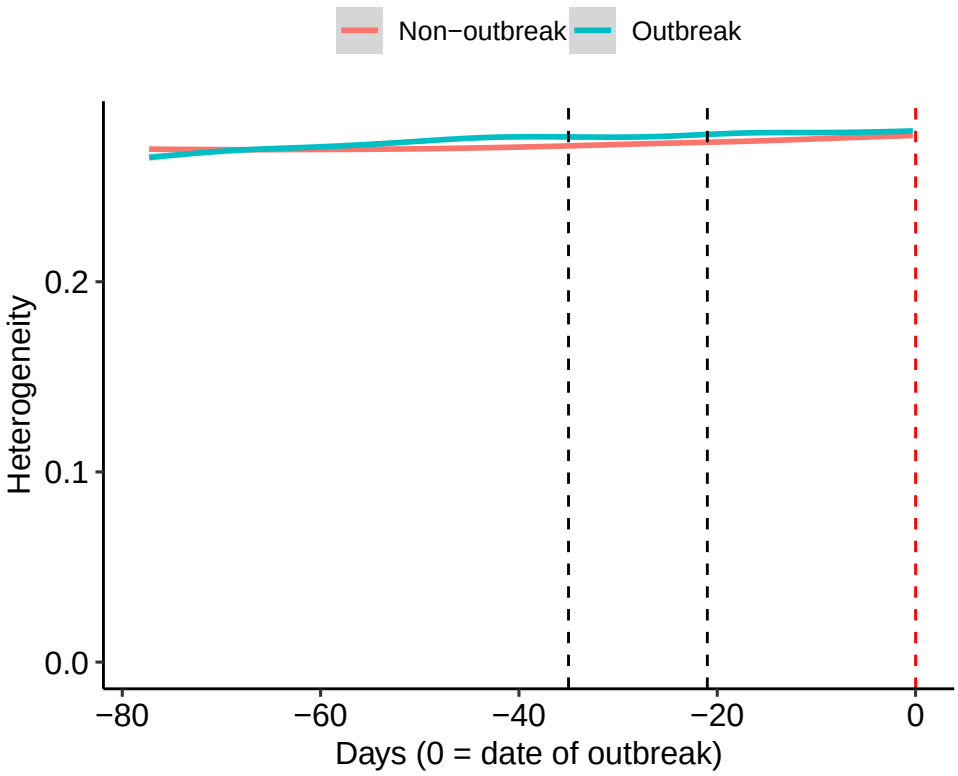


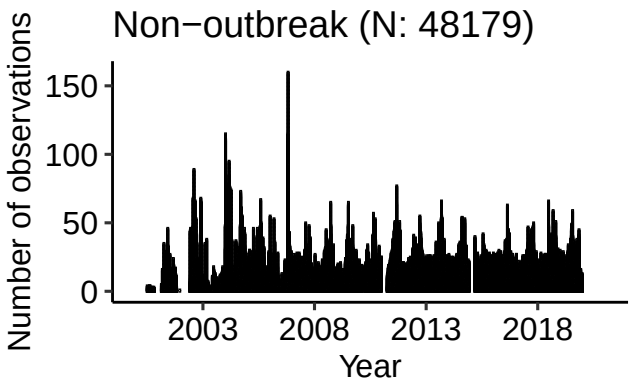


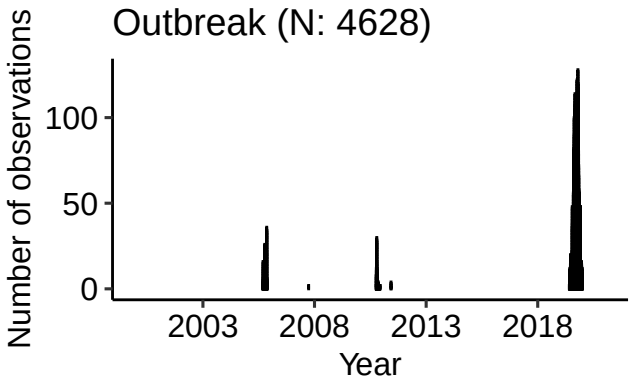


Thar desert


40°N
35°N
30°N
25°N
20°N
15°N
10°N
5°N
0°
20°W
0°
20°E
40°E
60°E
80°


Non−outbreak
Outbreak
Heterogeneity
0.0
0.1
0.2
−80
−60
−40
−20
0
Days (0 = date of outbreak)


Non−outbreak (N: 48179)
Number of observations
0
50
100
150
2003
2008
2013
2018
Year


Outbreak (N: 4628)
Number of observations
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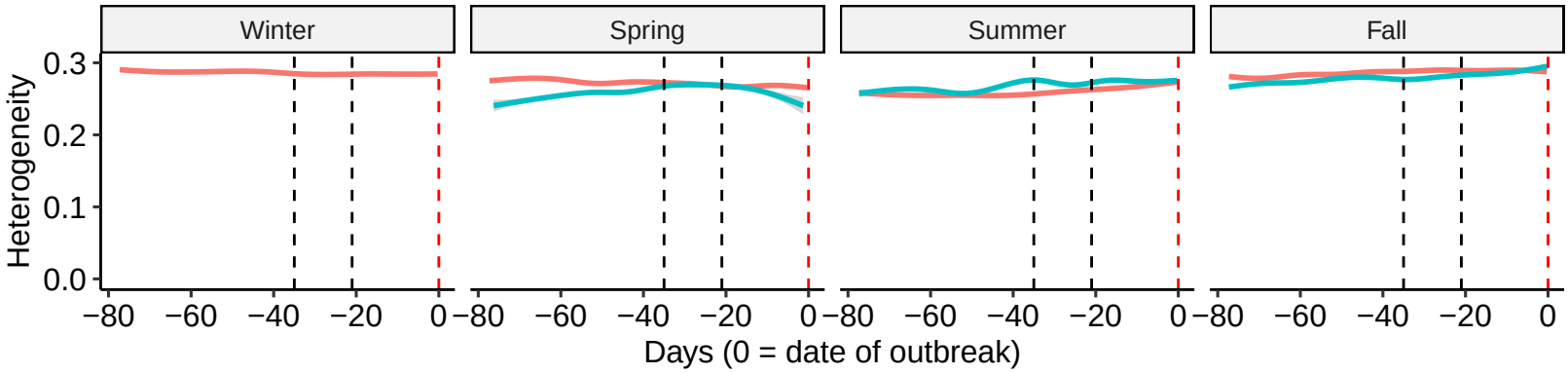
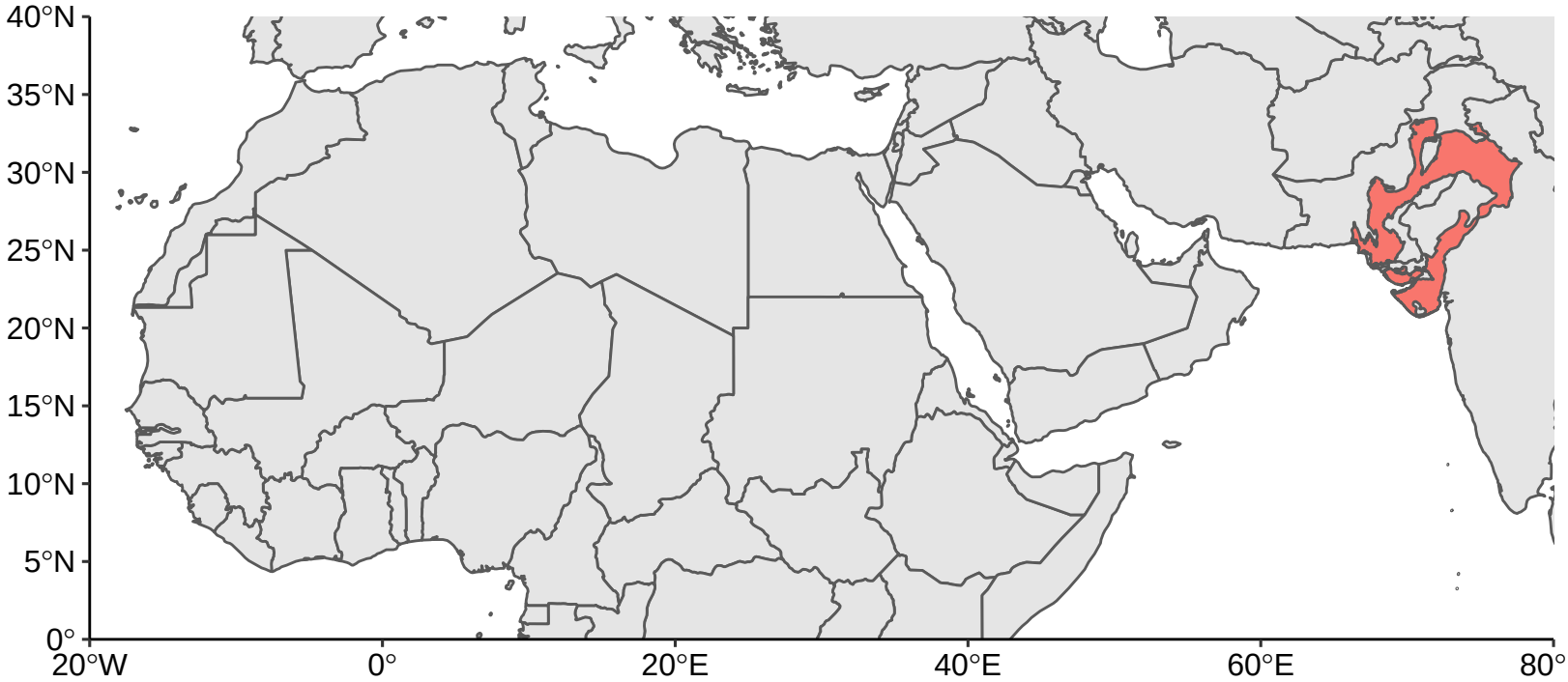
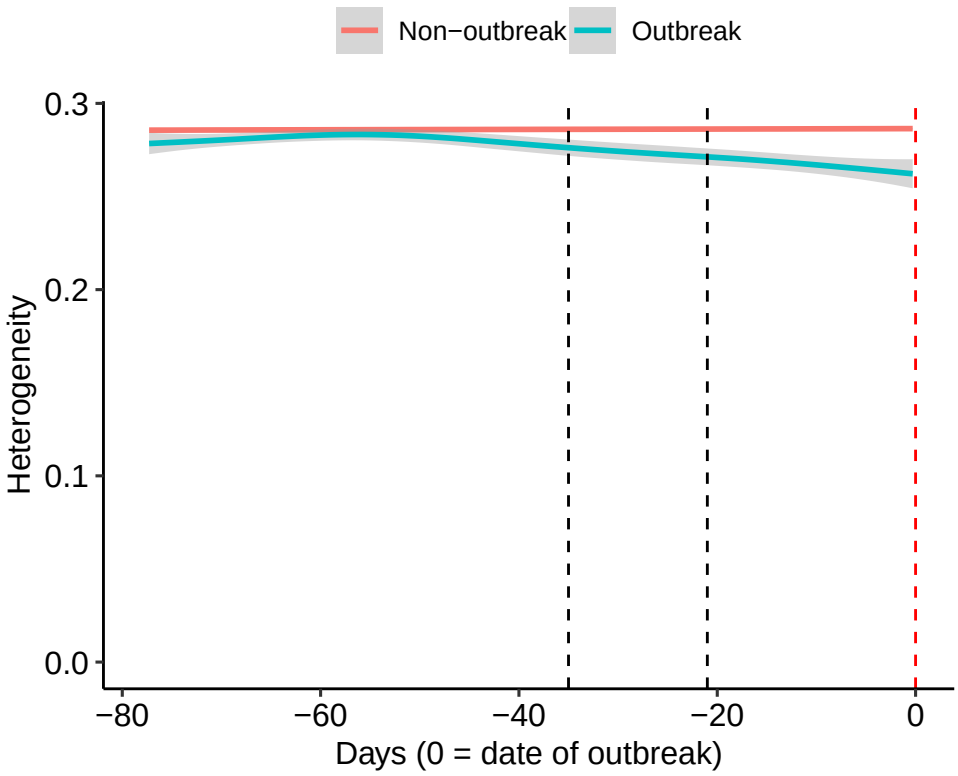
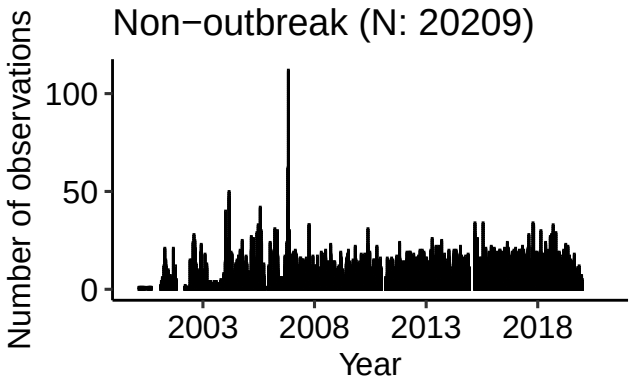
50
100
2003
2008
2013
2018
Year

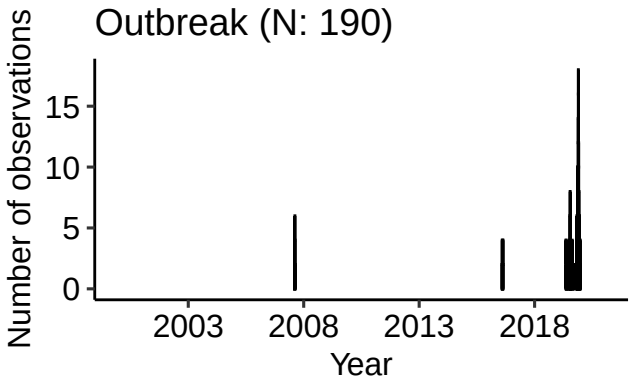

Winter
Spring
Summer
Fall
Heterogeneity
0.0
0.1
0.2
0.3
−80
−60
−40
−20
0
Days (0 = date of outbreak)

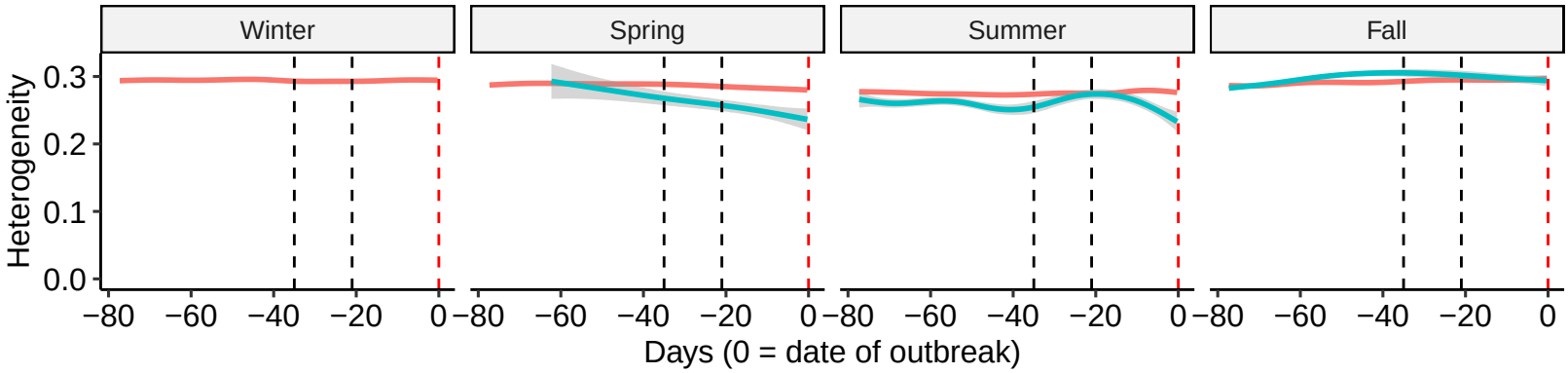
Northwestern thorn scrub forests



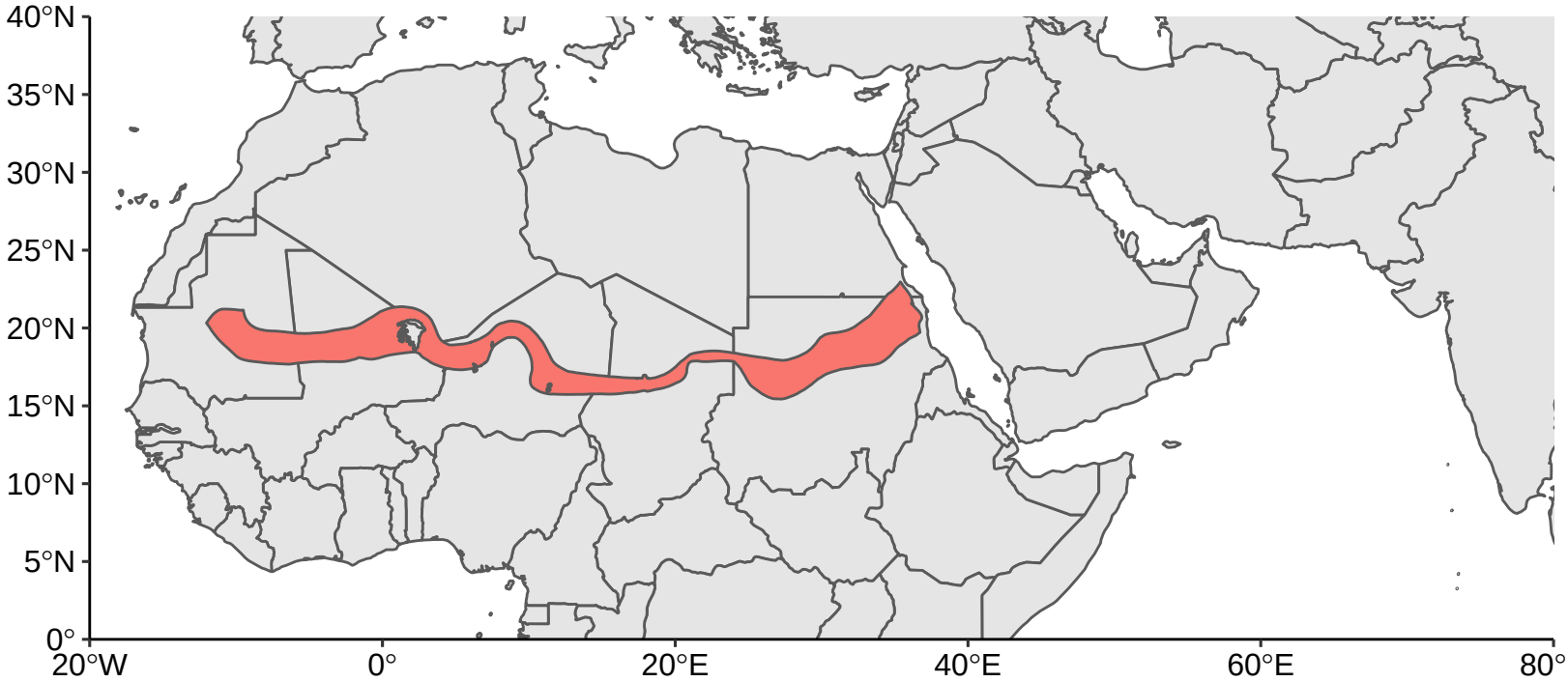


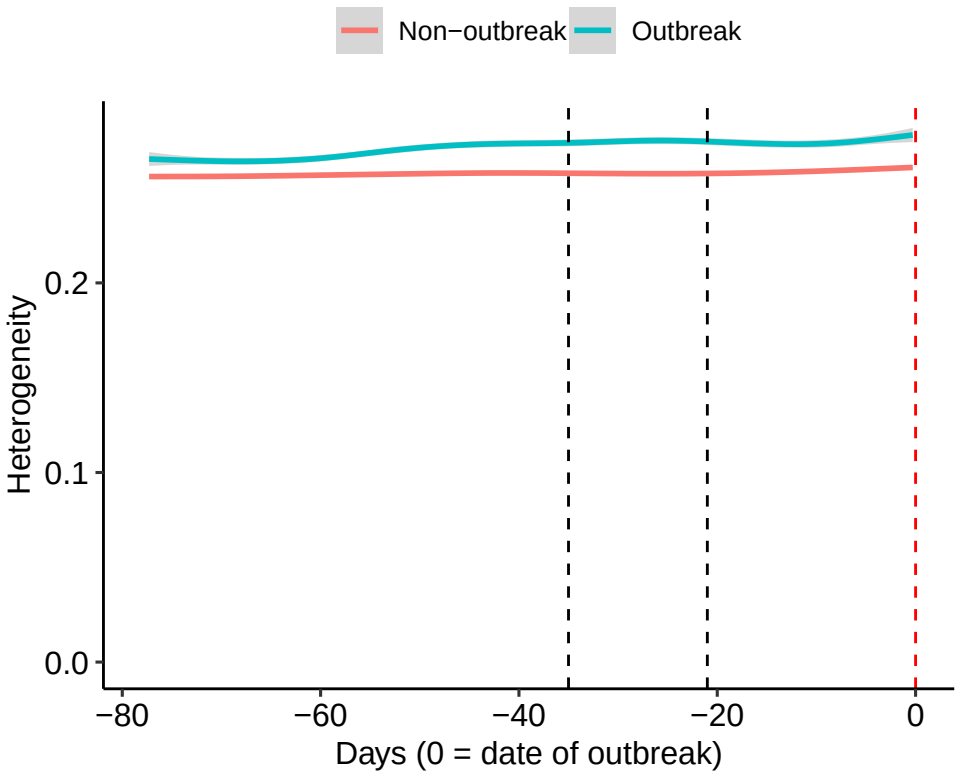


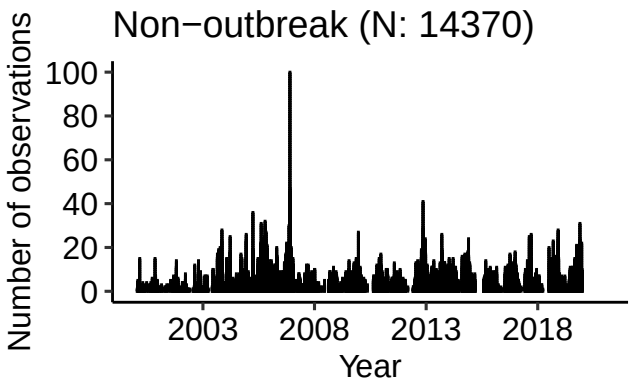


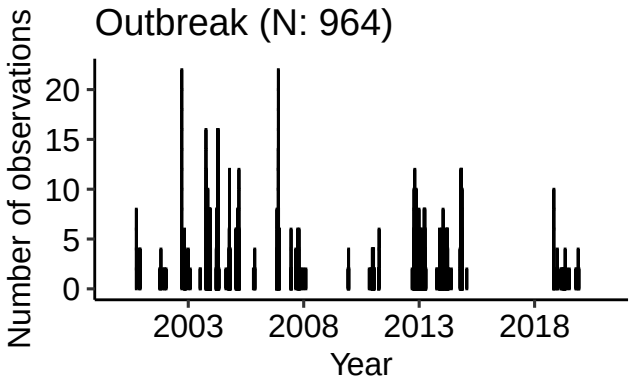


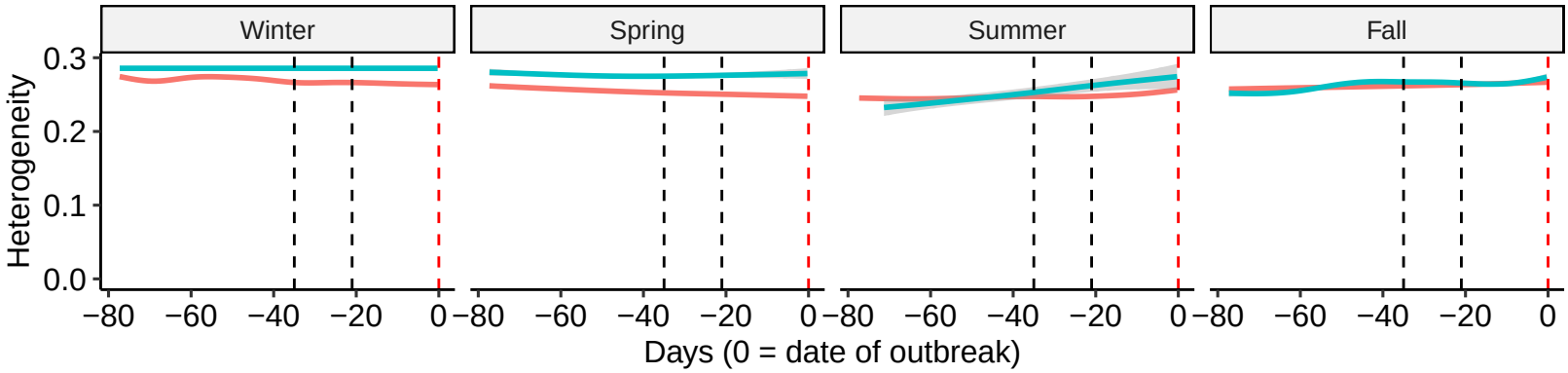
South Saharan steppe and woodlands



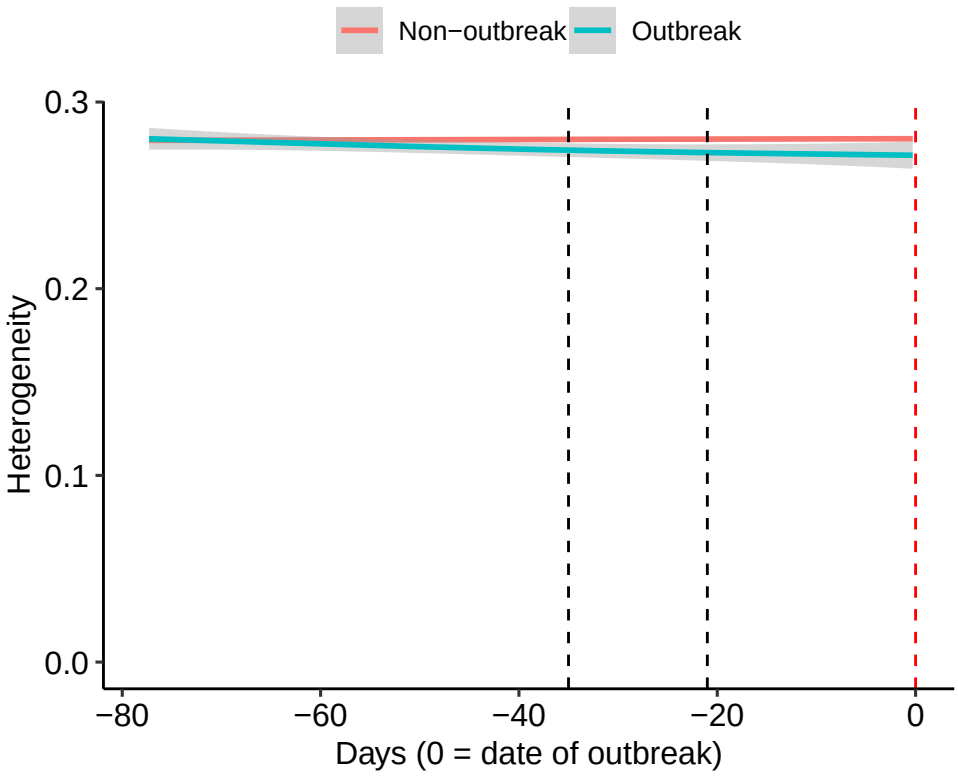


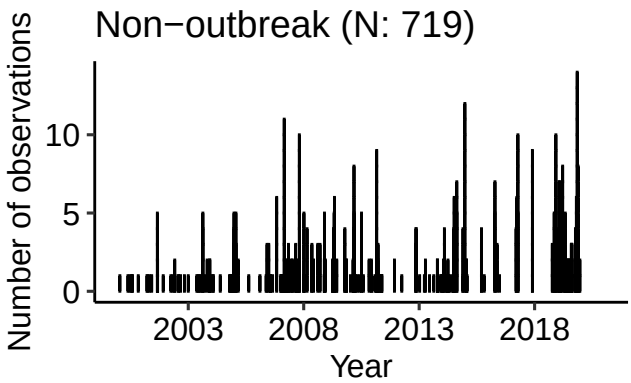


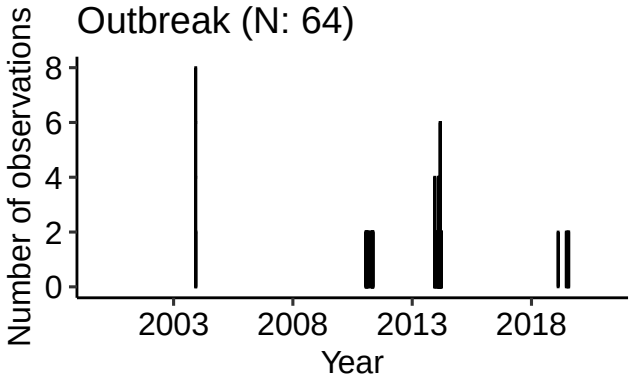


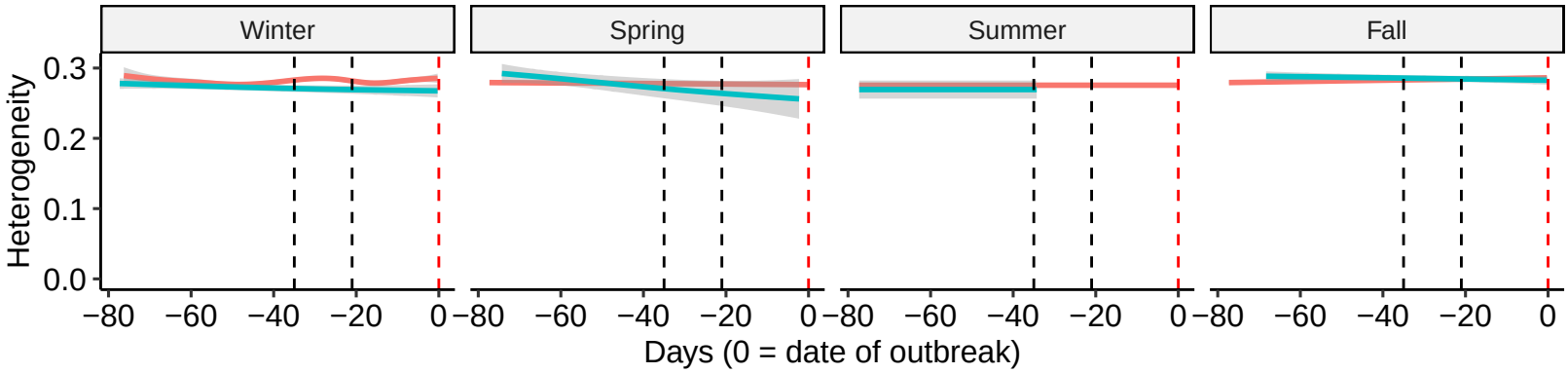


Southwestern Arabian montane woodlands

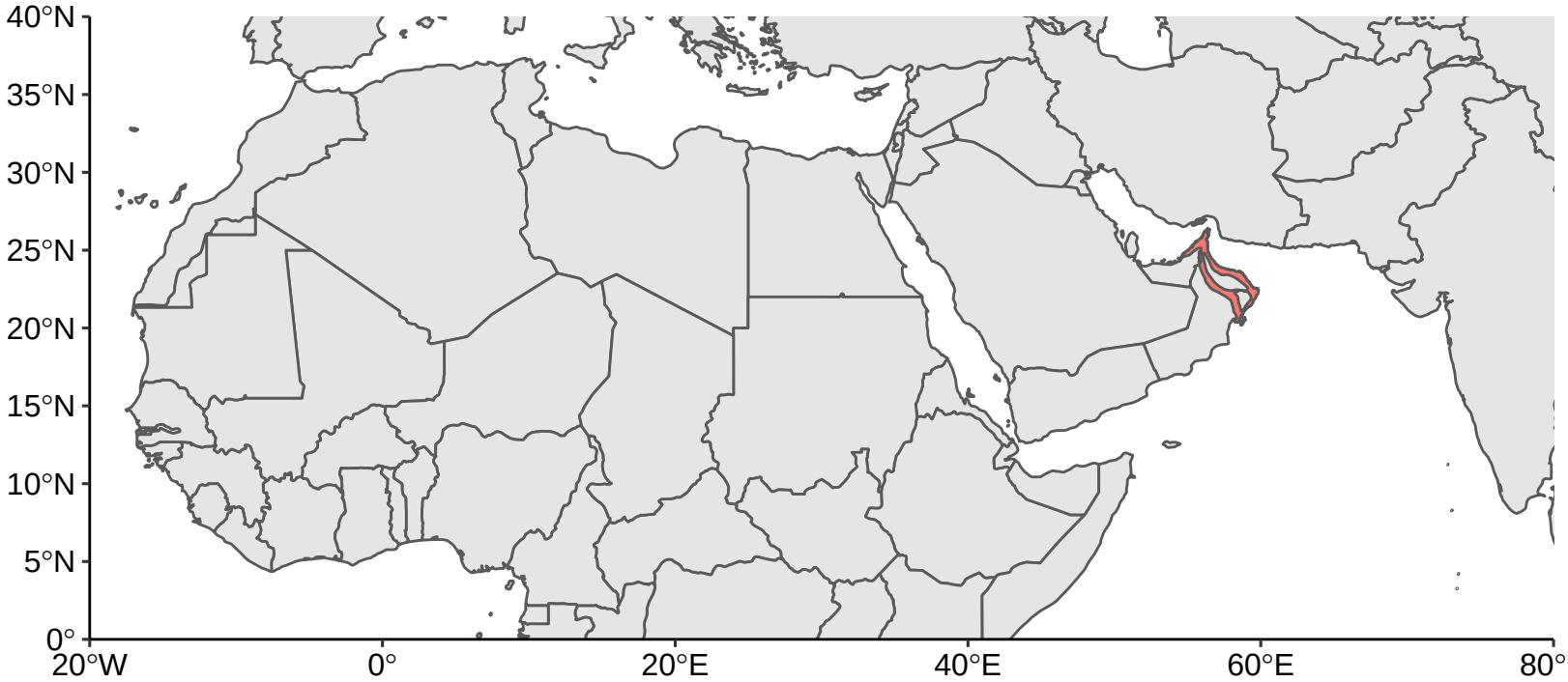


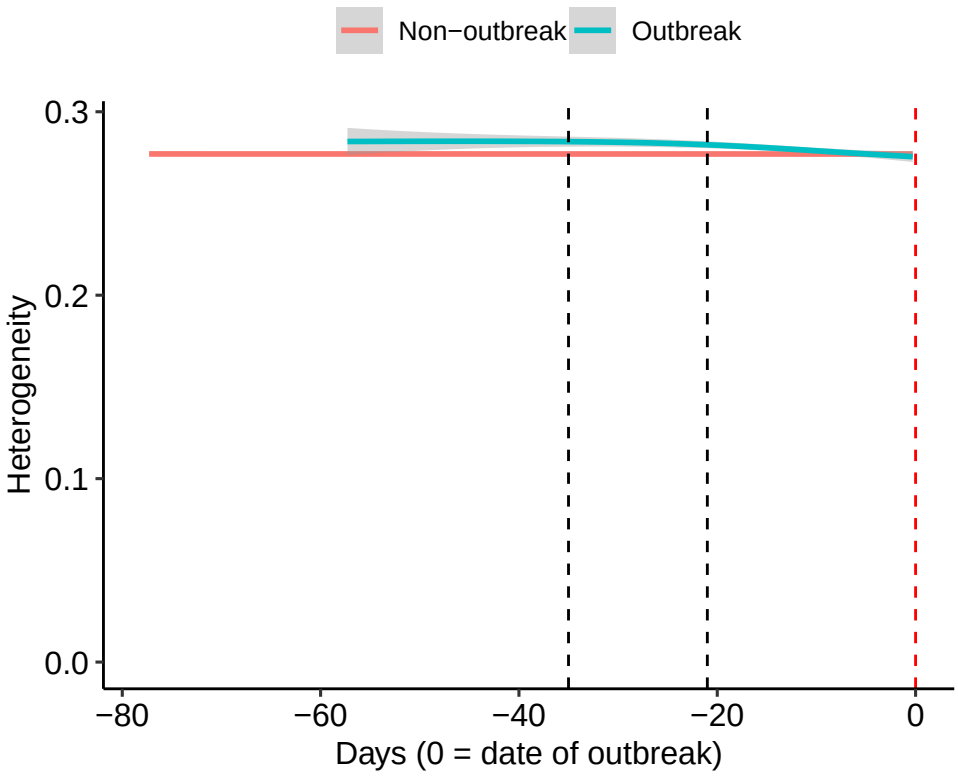


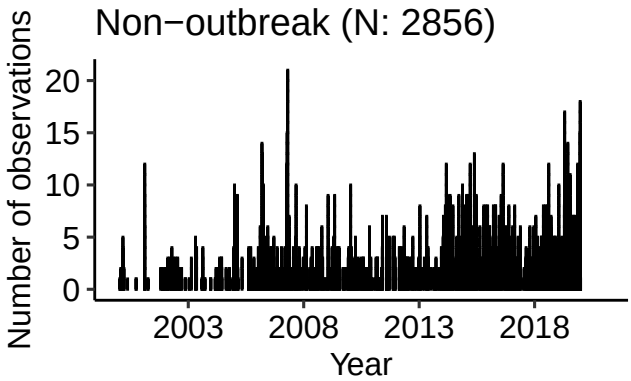


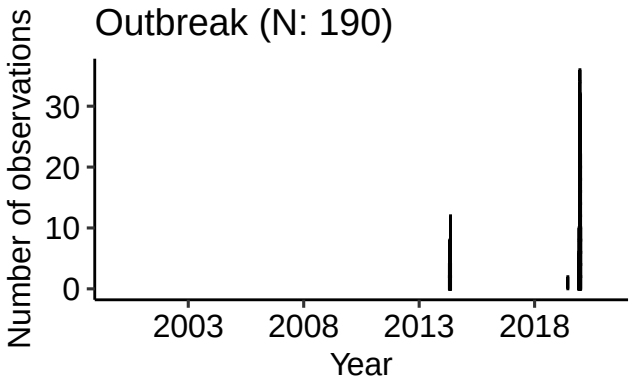


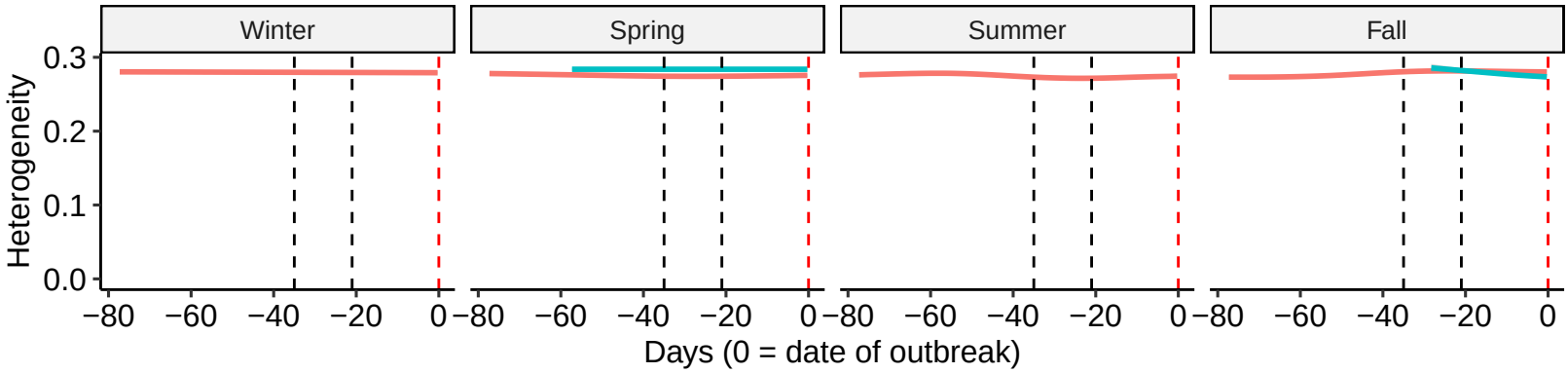
Gulf of Oman desert and semi−desert



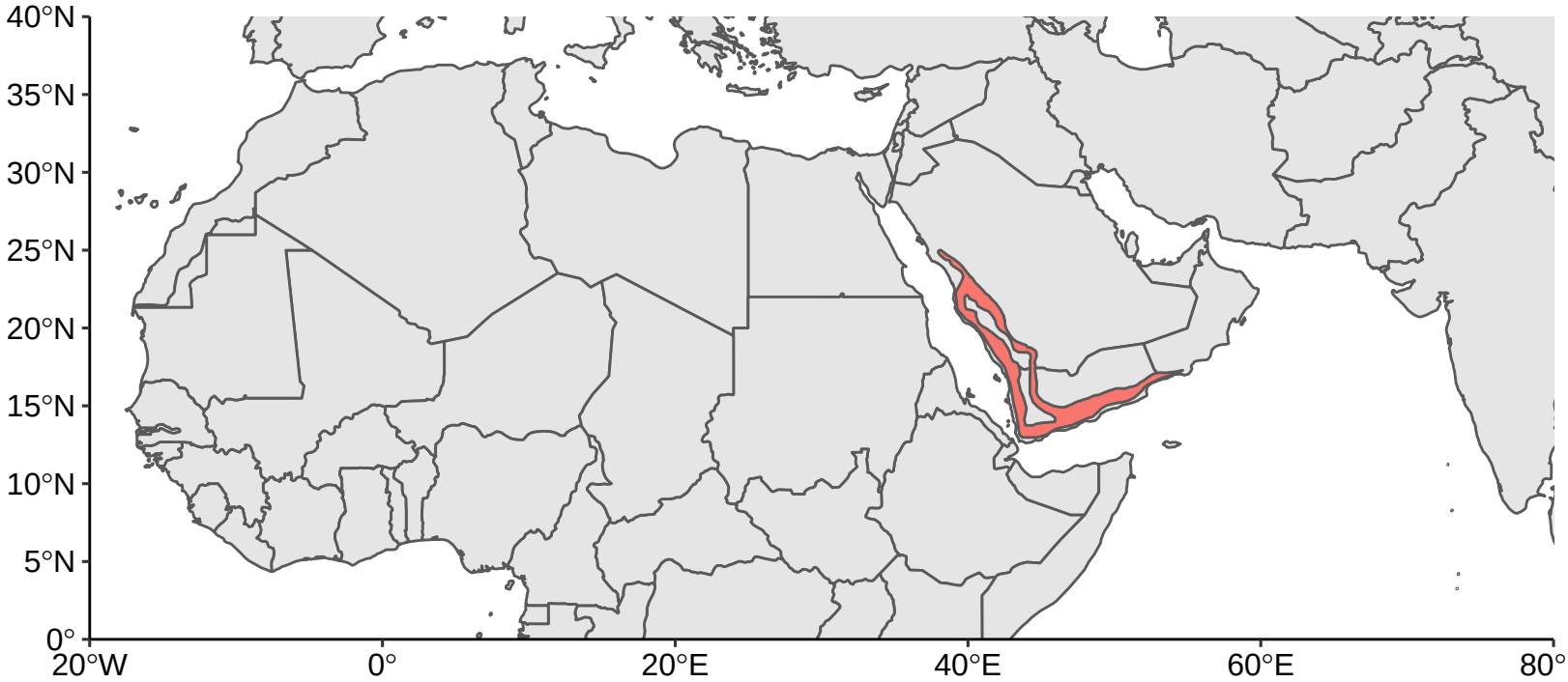


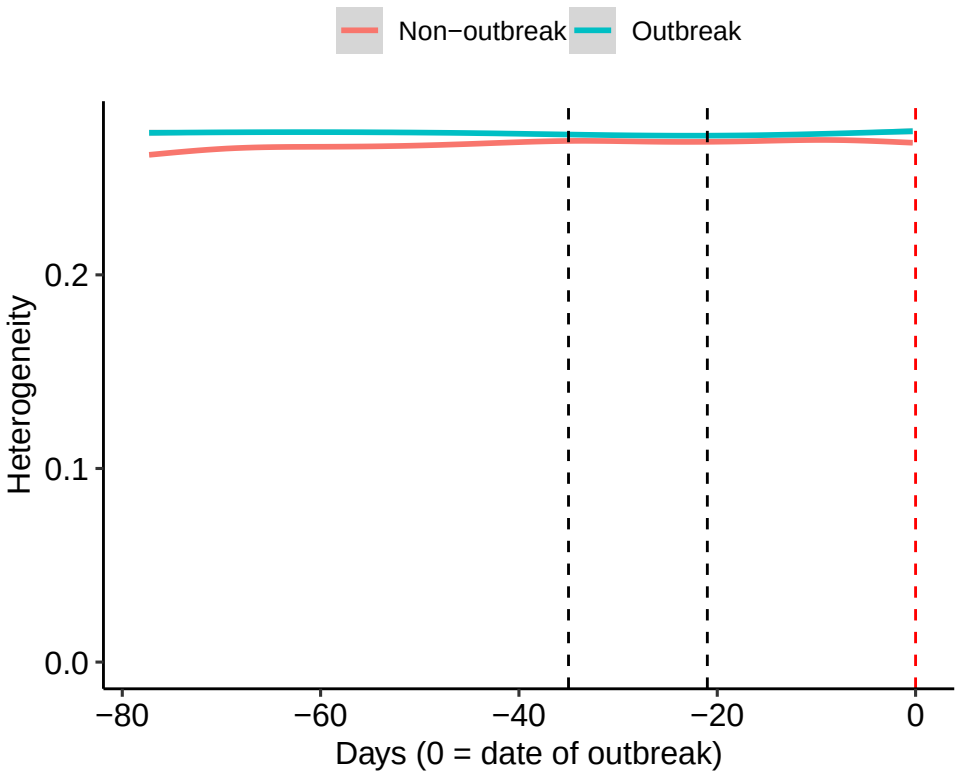


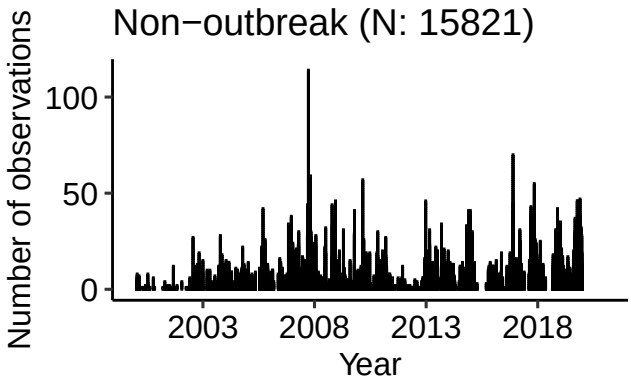


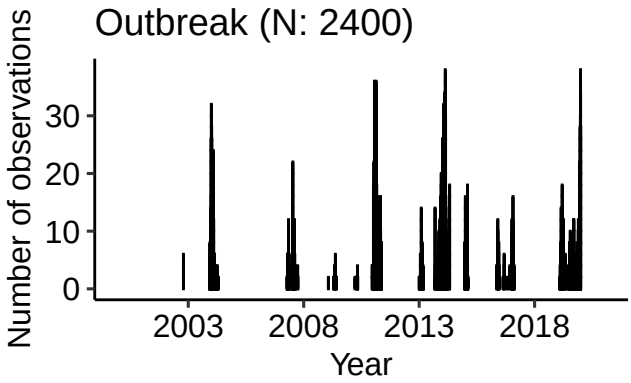


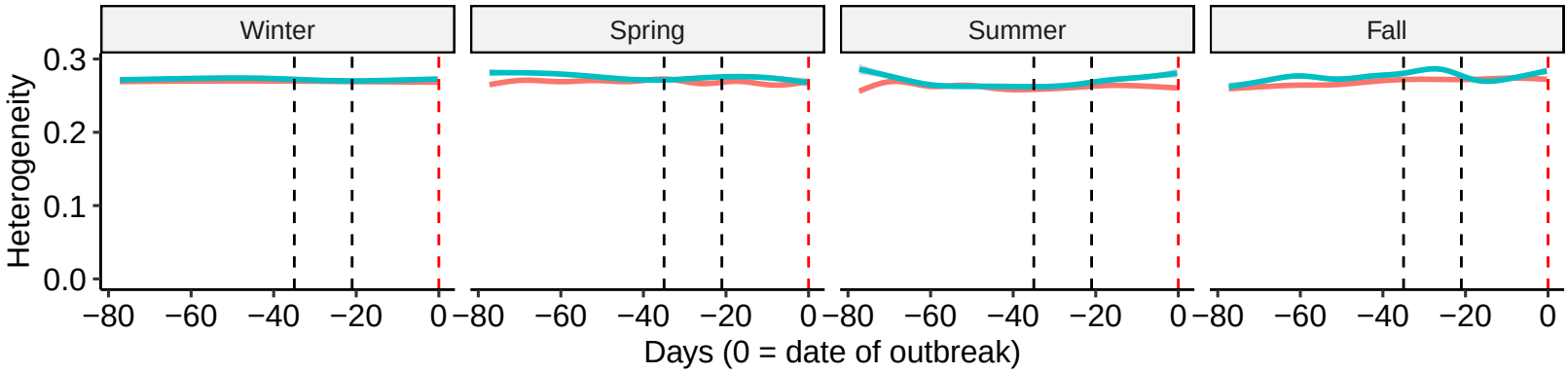
Southwestern Arabian foothills savanna



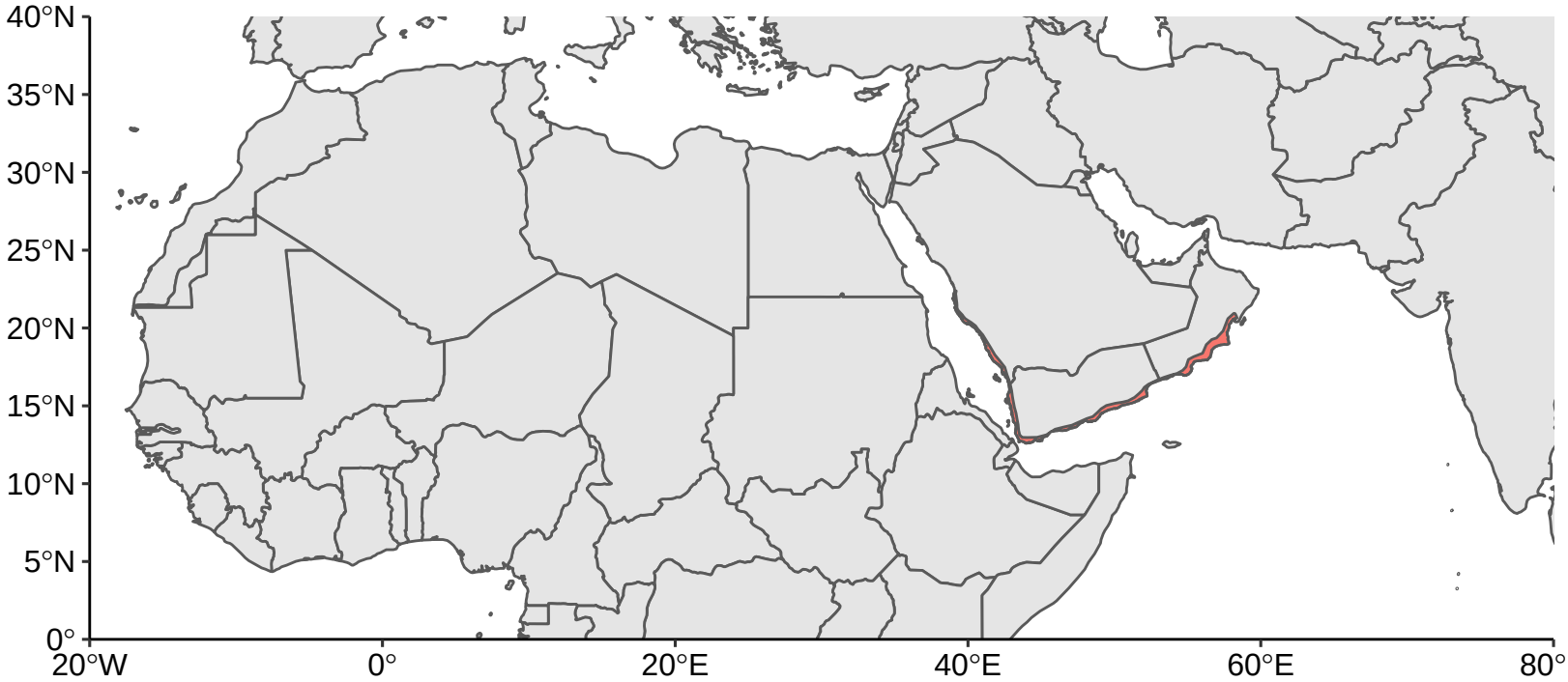


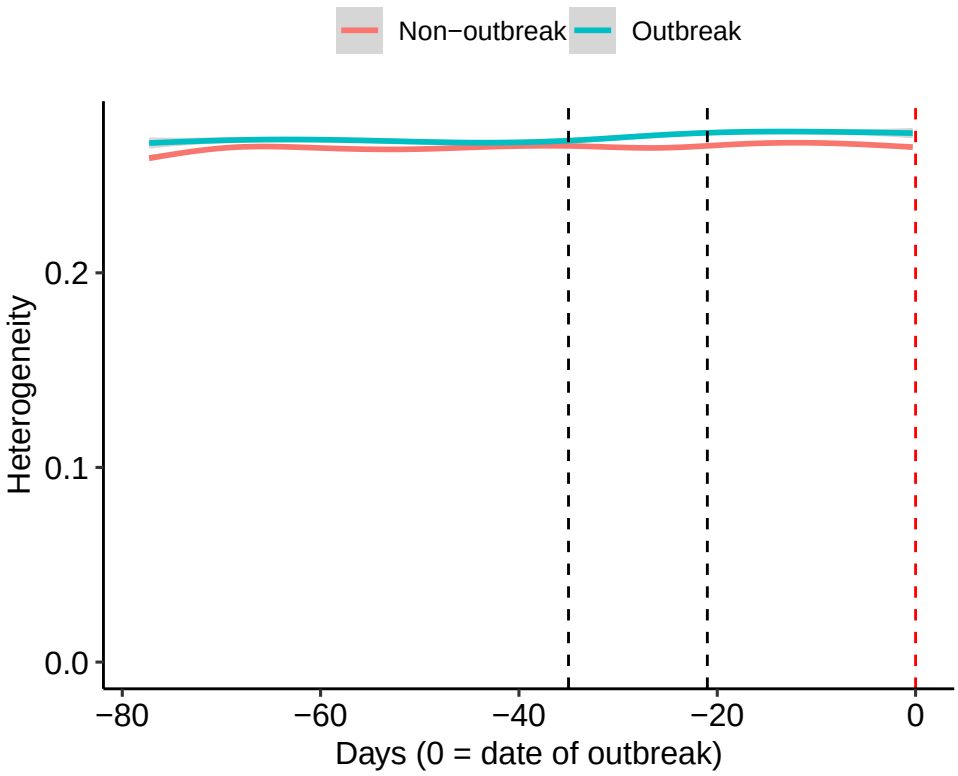


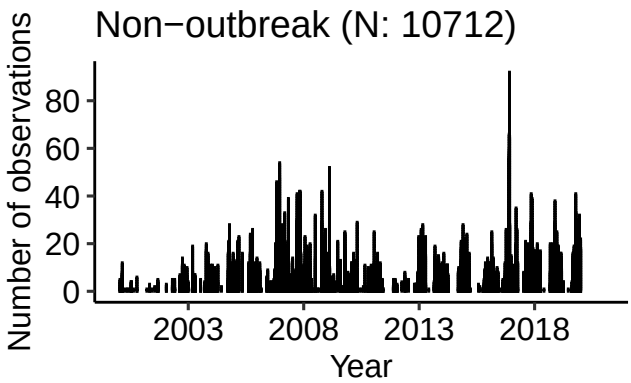


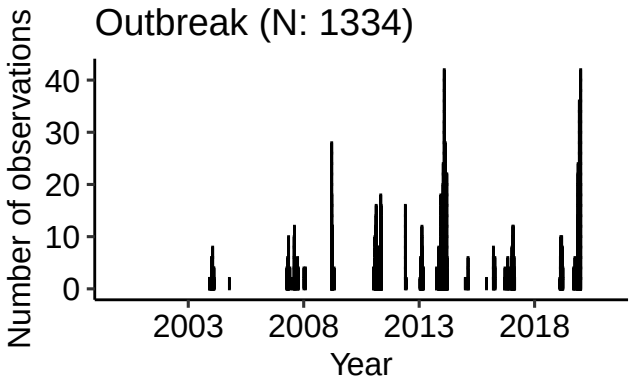


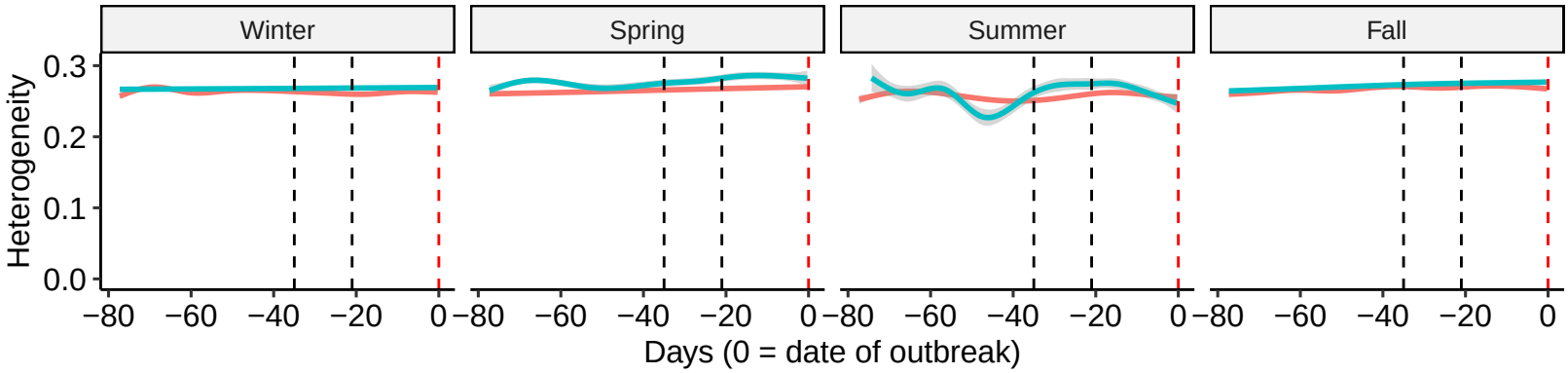
Arabian Peninsula coastal fog desert



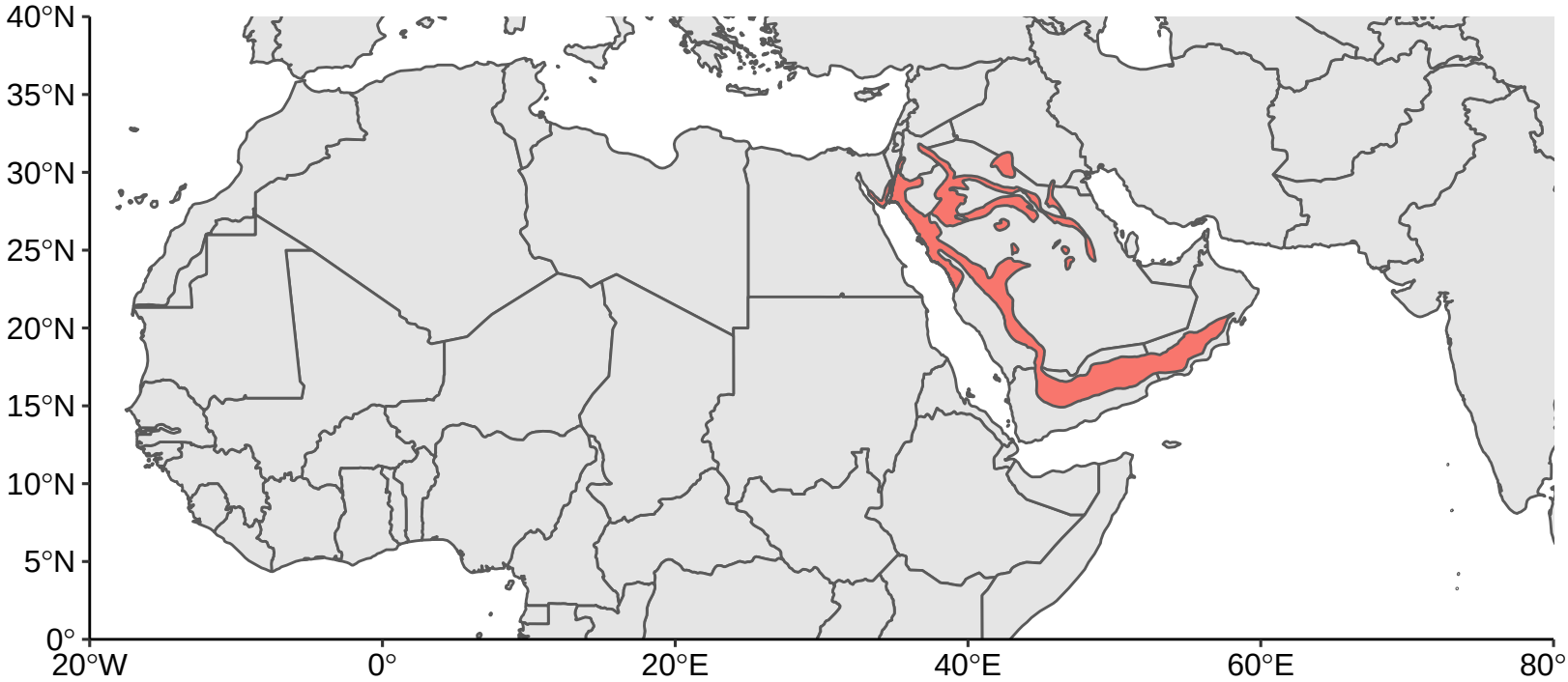


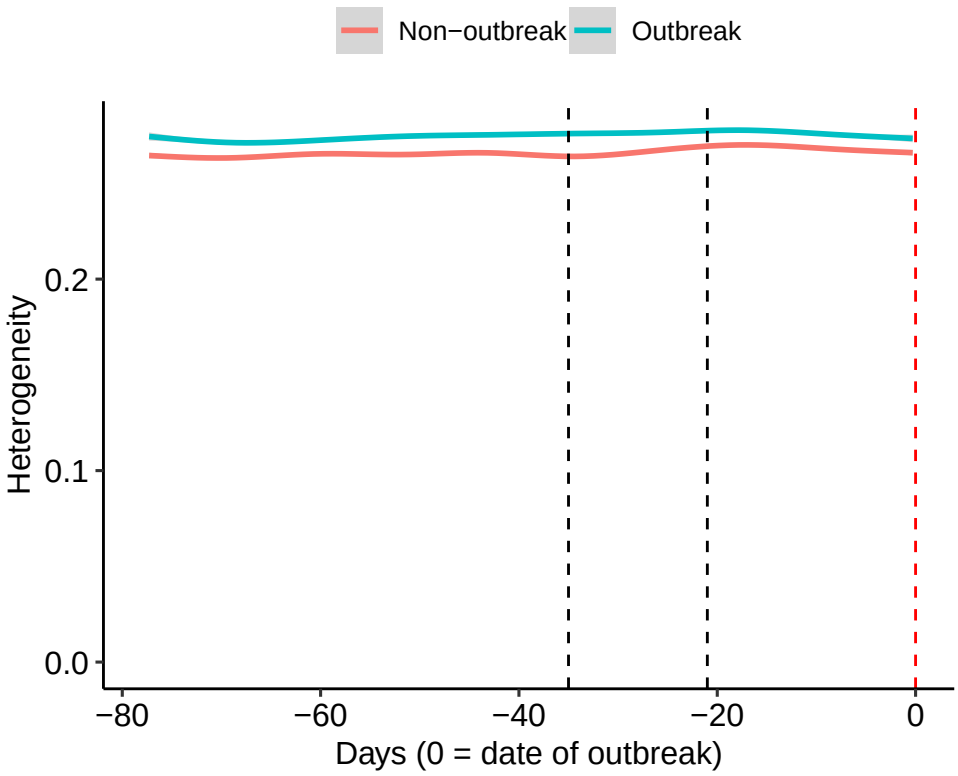


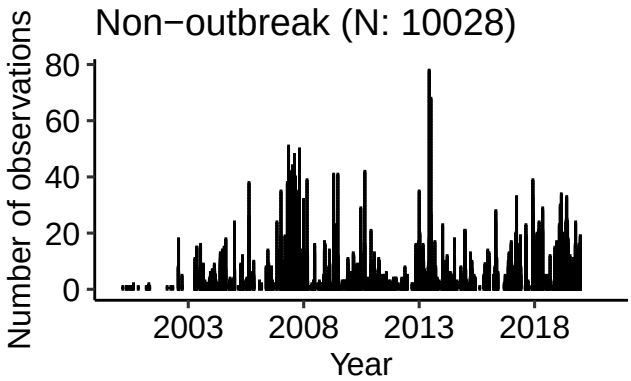


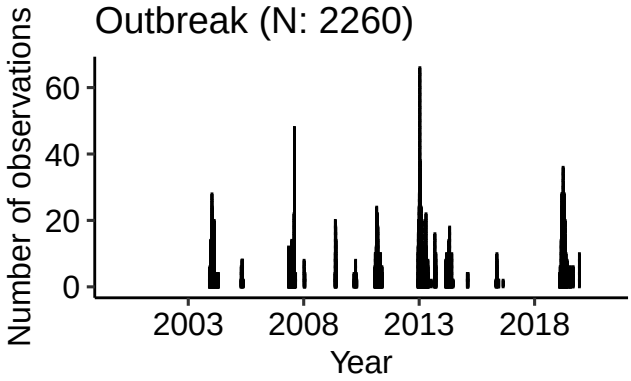


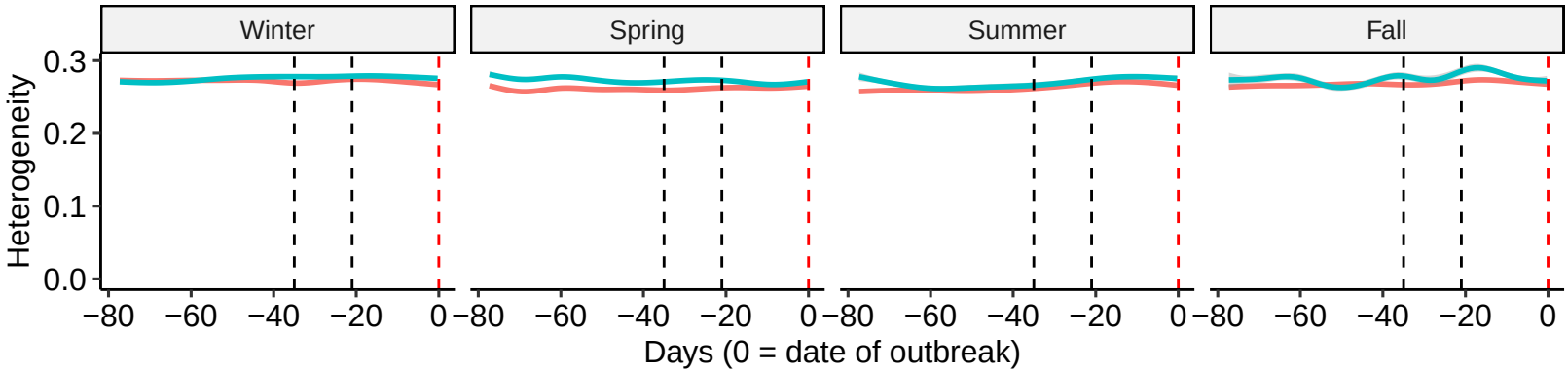
Red Sea Nubo−Sindian tropical desert and semi−desert



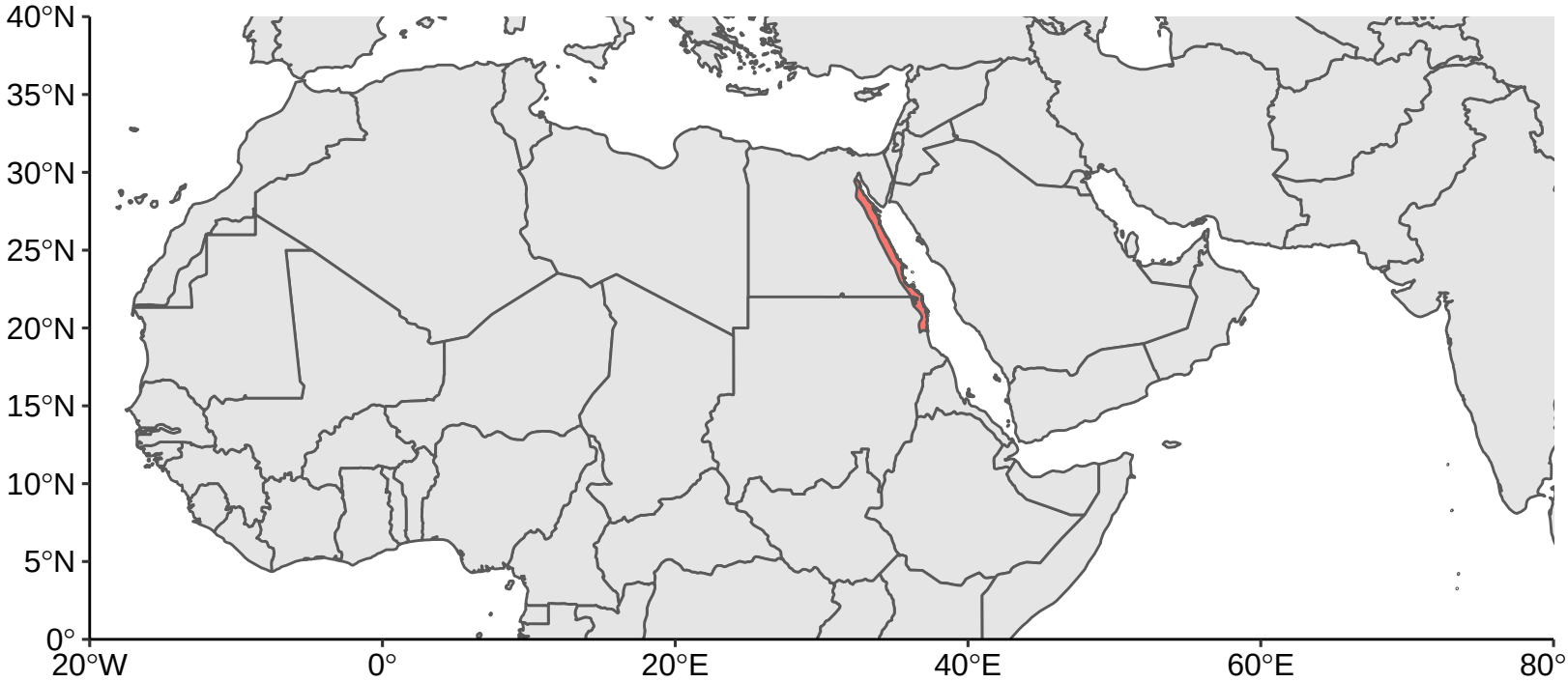


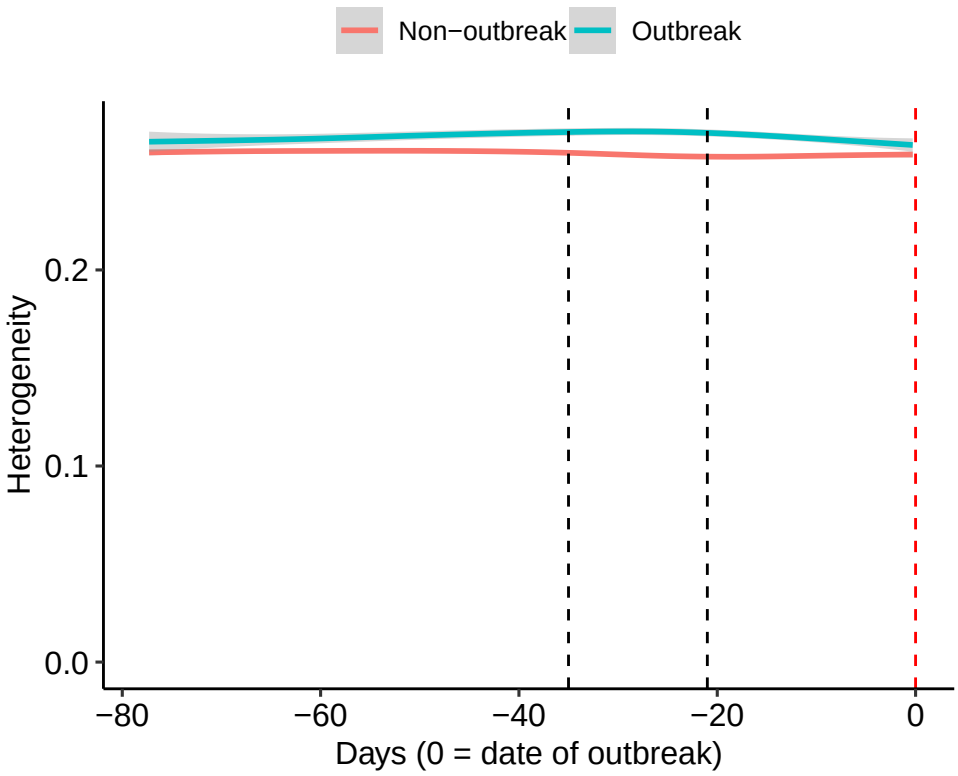


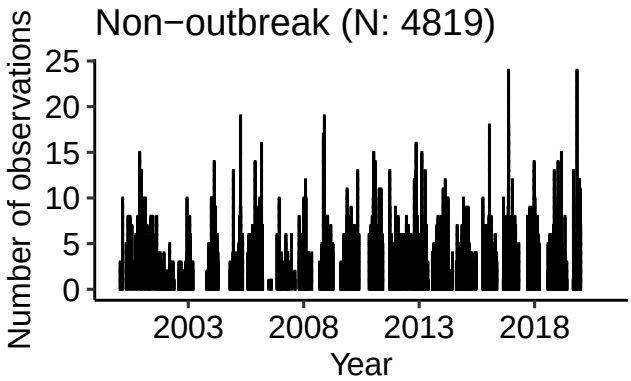


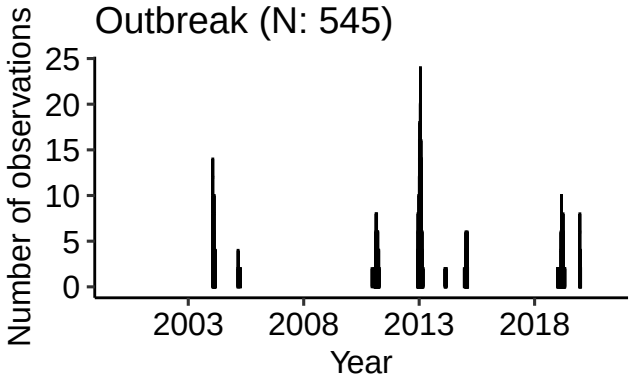


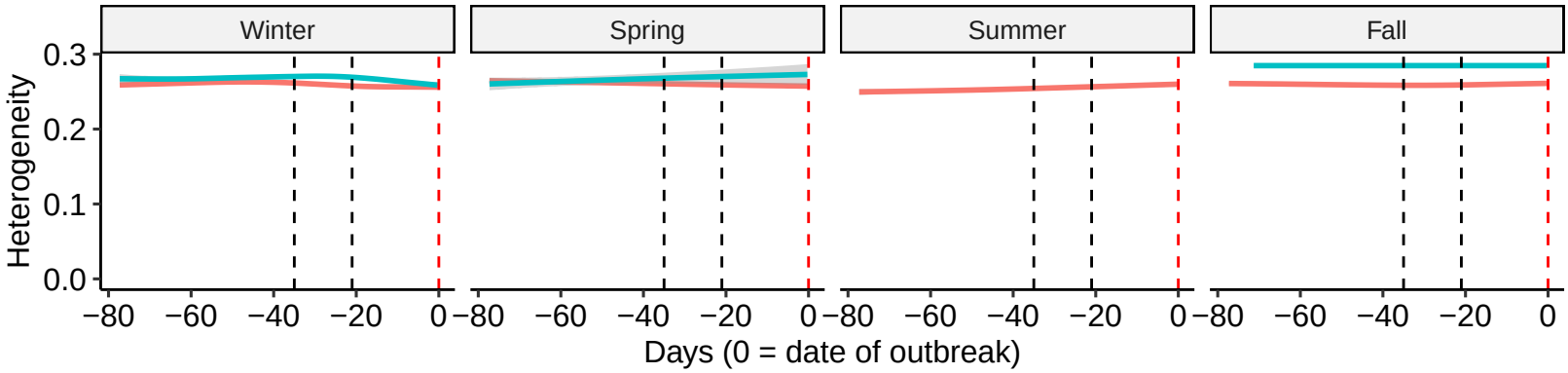
Red Sea coastal desert



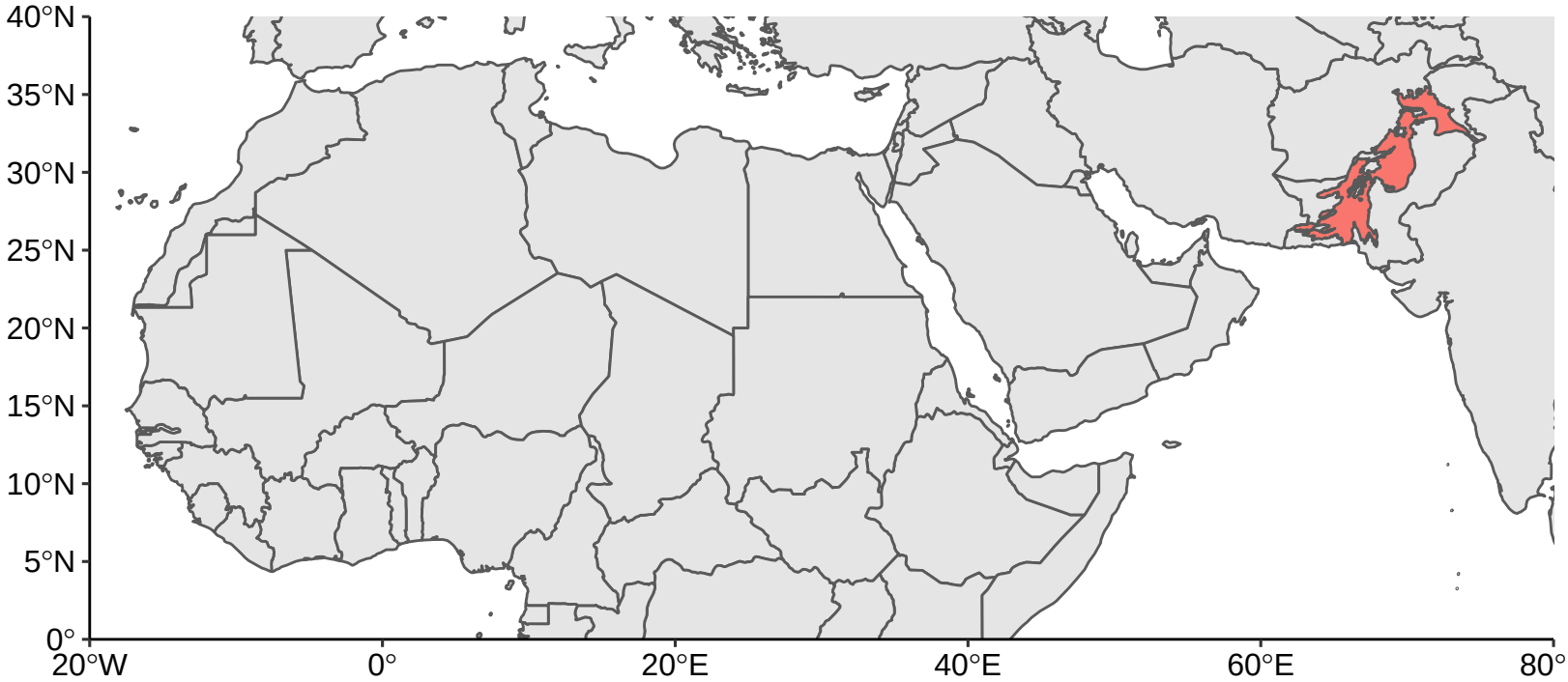


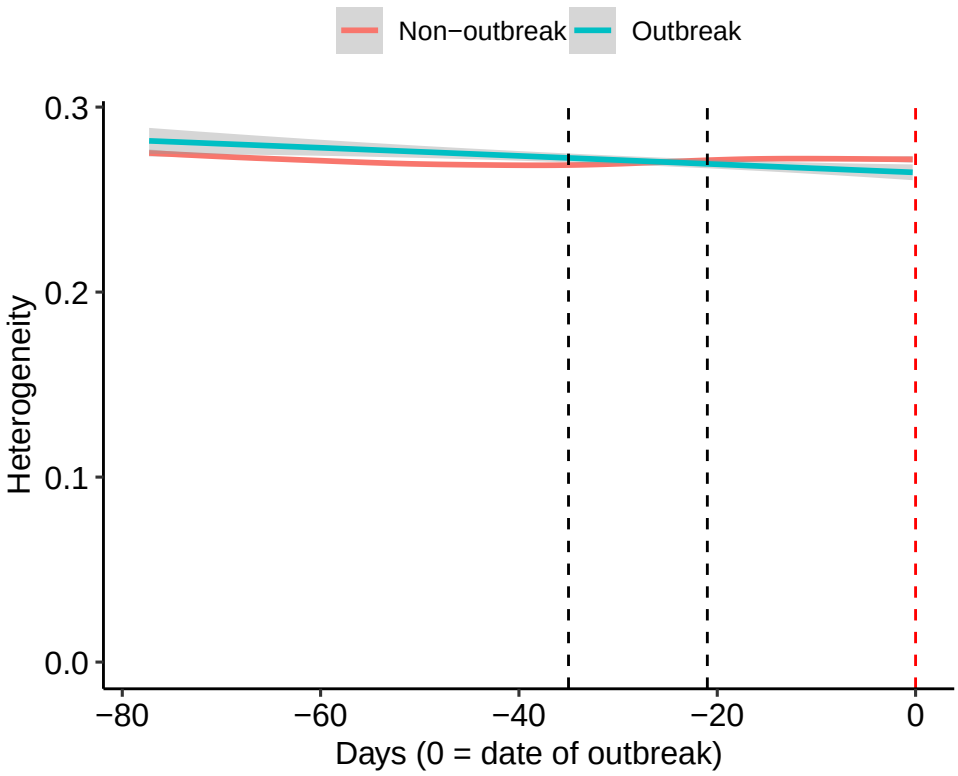


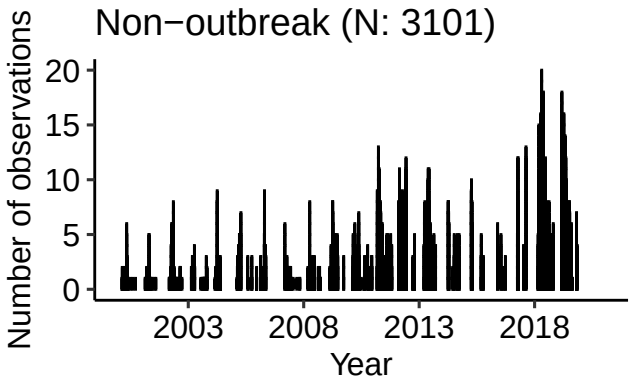


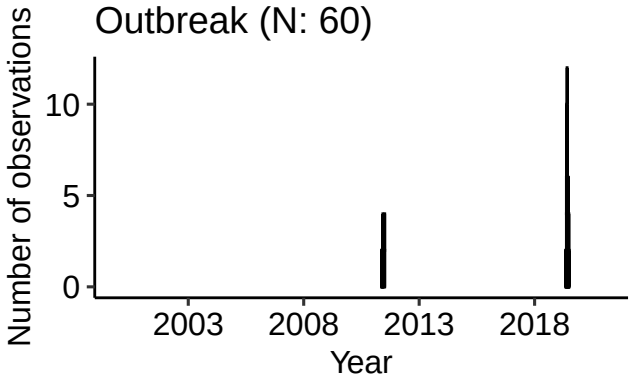


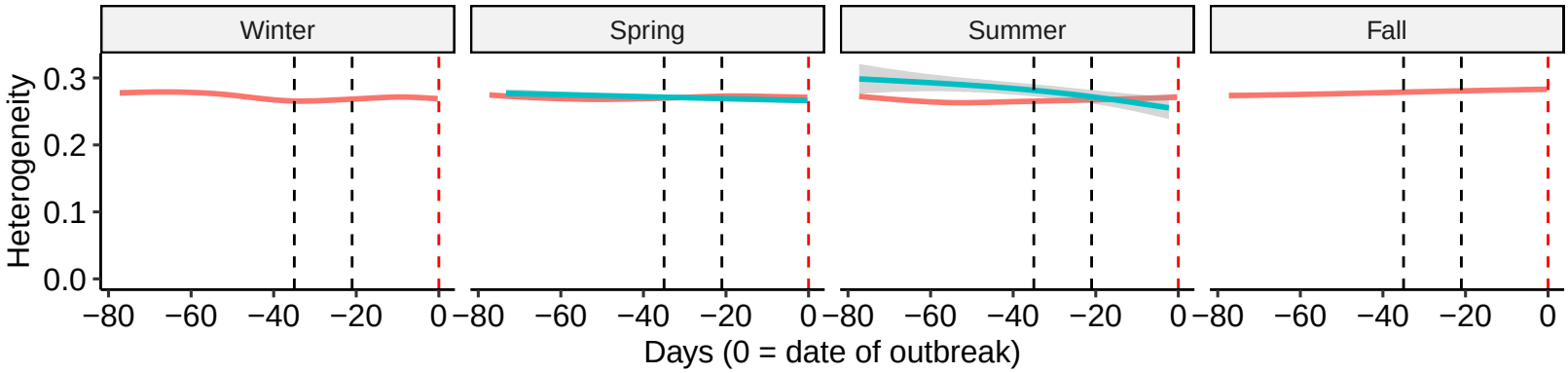
Baluchistan xeric woodlands

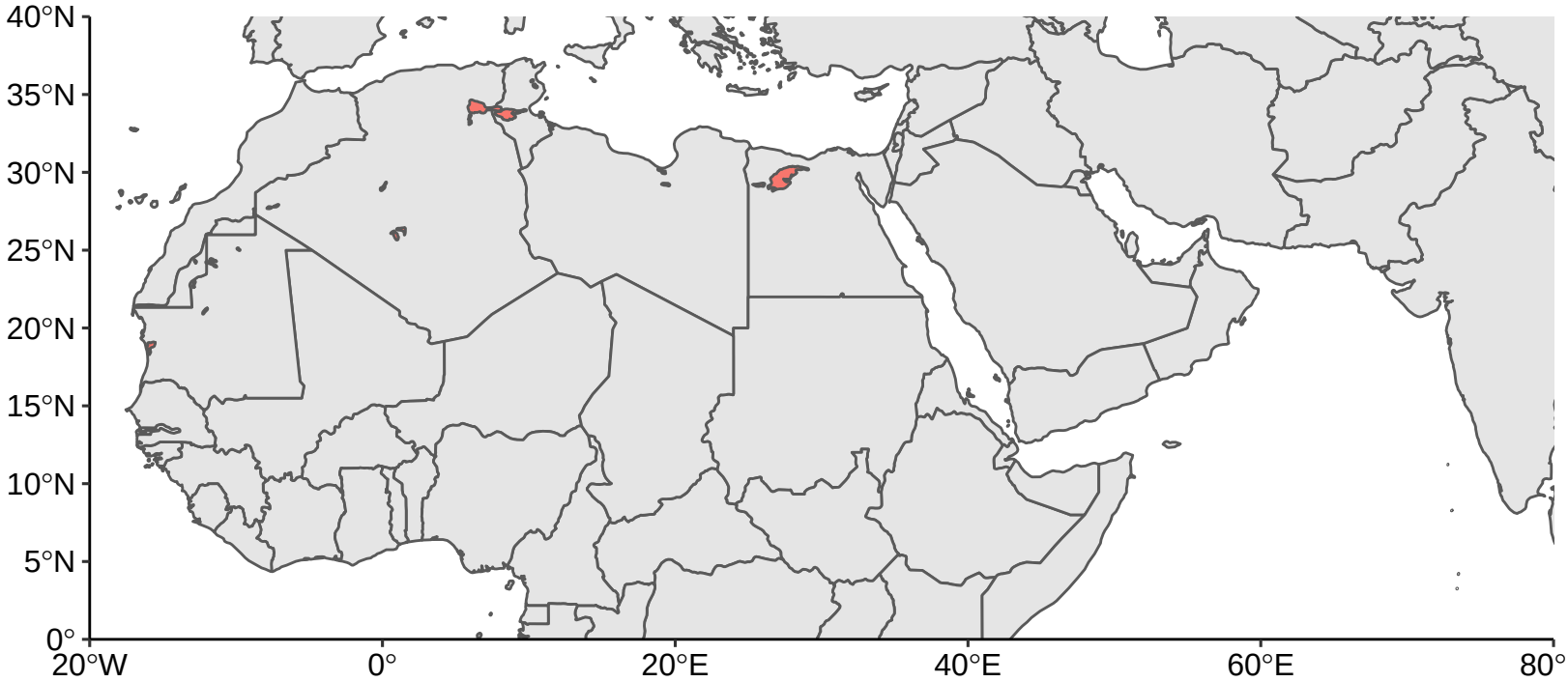


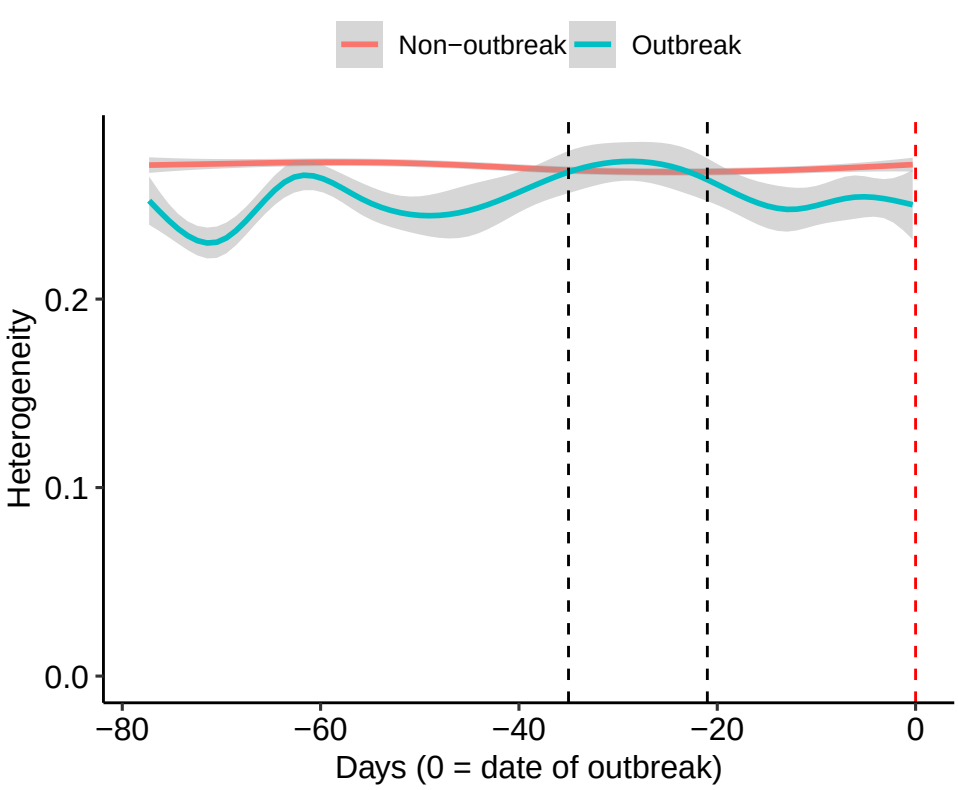


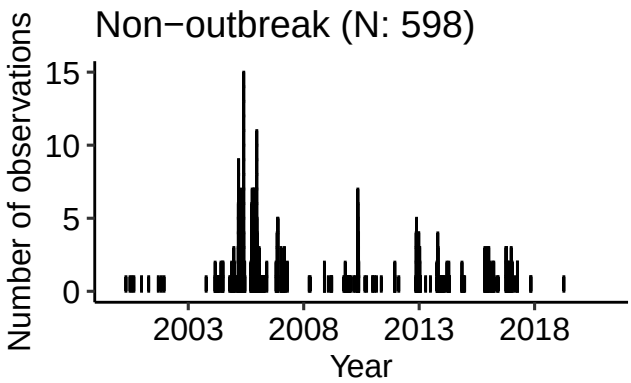


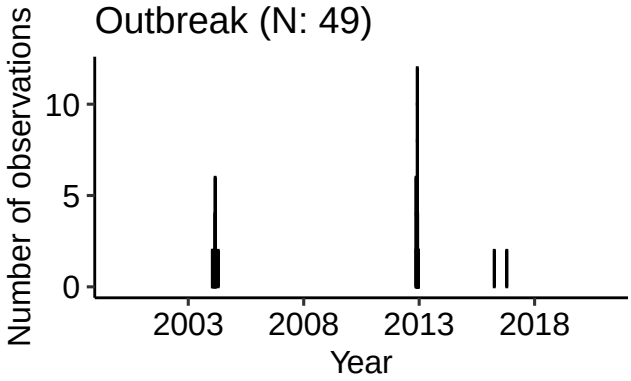





40°N
35°N
30°N
25°N
20°N
15°N
10°N
5°N
0°
20°W
0°
20°E
40°E
60°E
80°


Non−outbreak
Outbreak
Heterogeneity
0.2
0.1
0.0
−80
−60
−40
−20
0
Days (0 = date of outbreak)


Non−outbreak (N: 598)
Number of observations
15
10
5
0
2003
2008
2013
2018
Year


Outbreak (N: 49)
Number of observations
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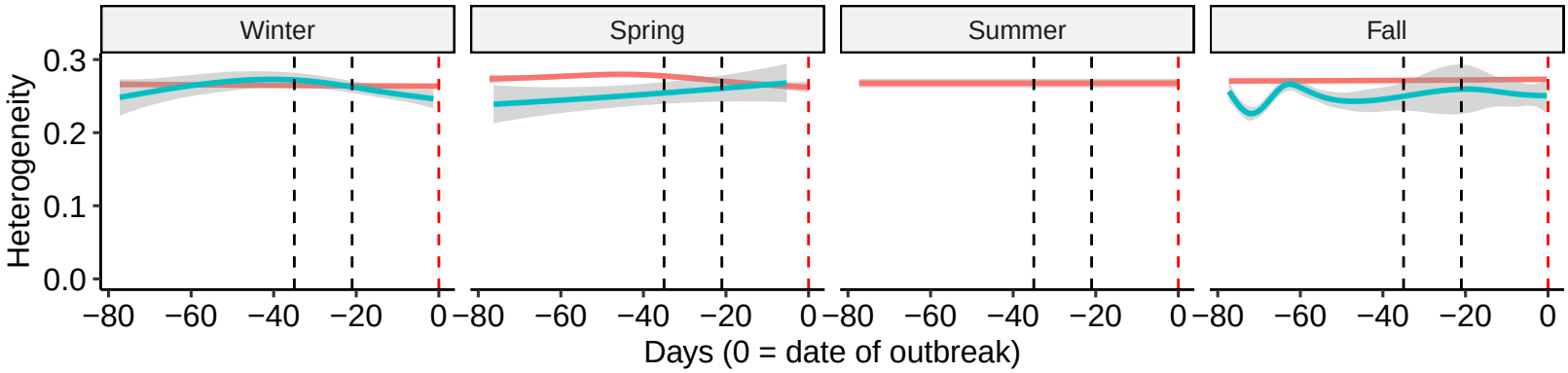
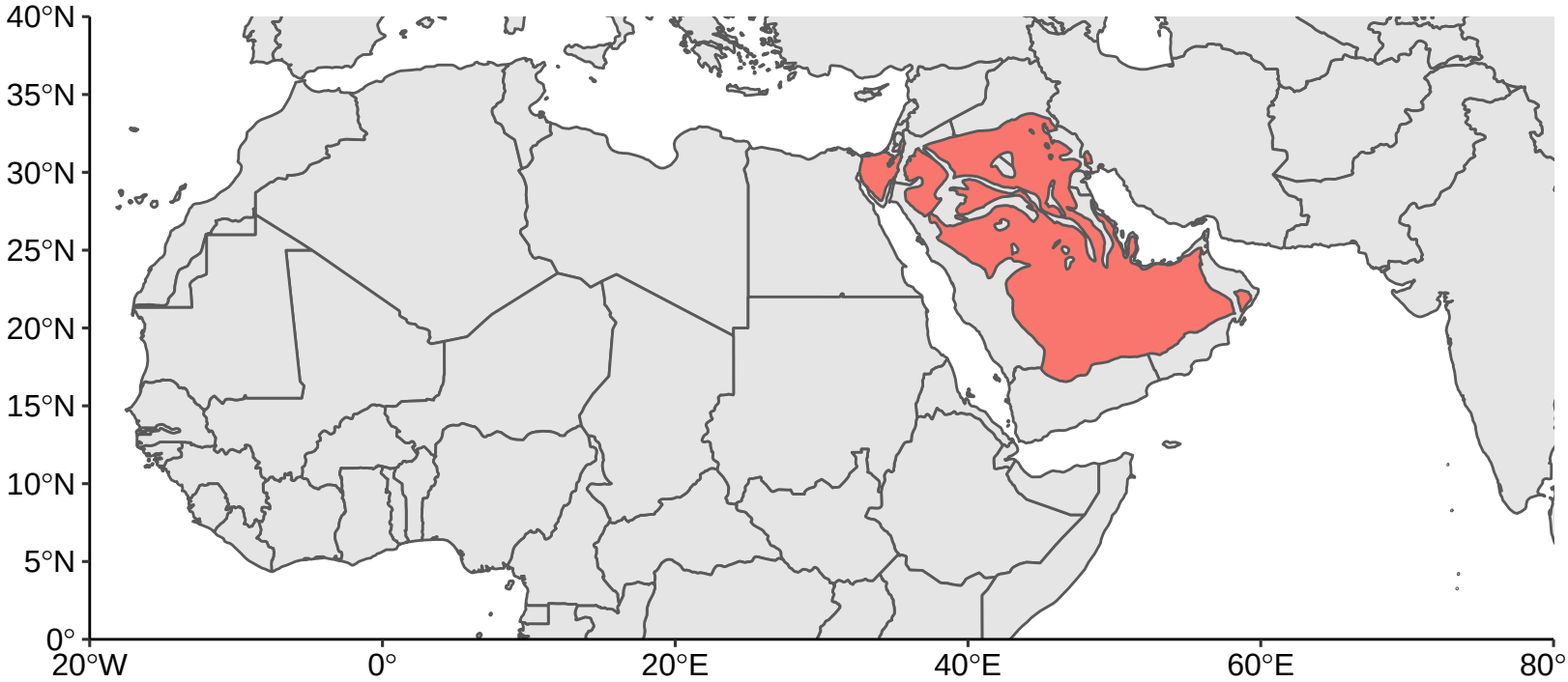
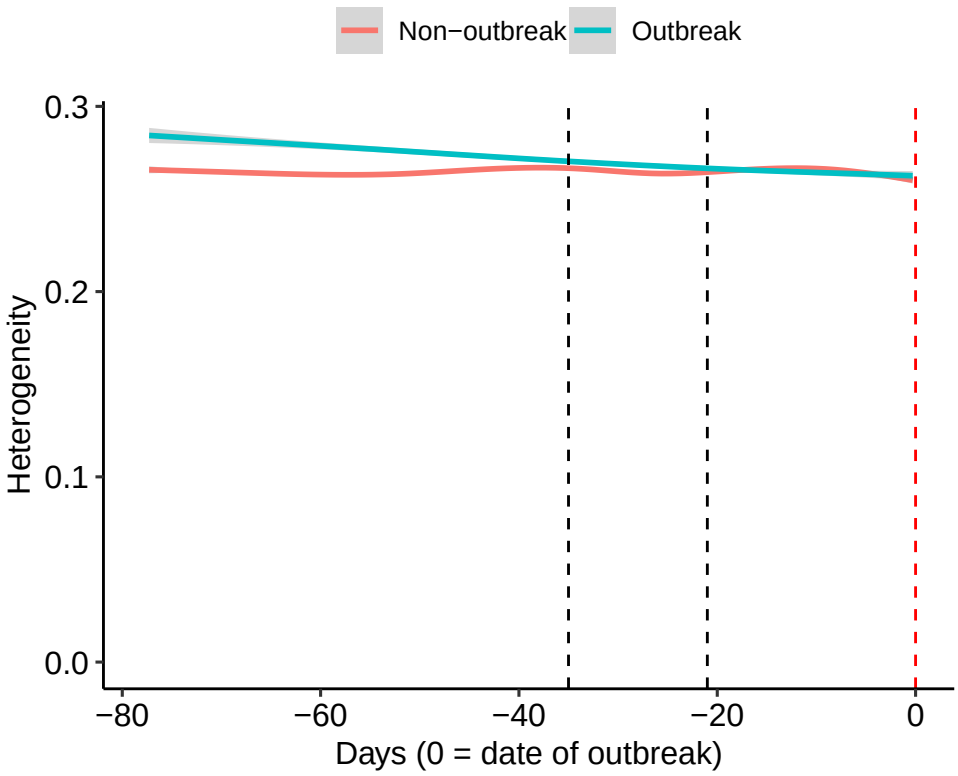
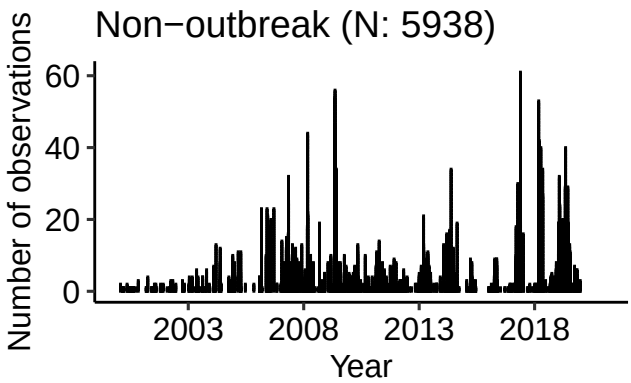
5
0
2003
2008
2013
2018
Year

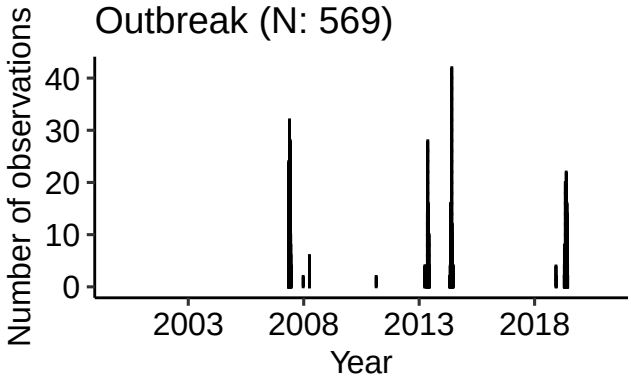

Winter
Spring
Summer
Fall
Heterogeneity
0.3
0.2
0.1
0.0
−80
−60
−40
−20
0
Days (0 = date of outbreak)

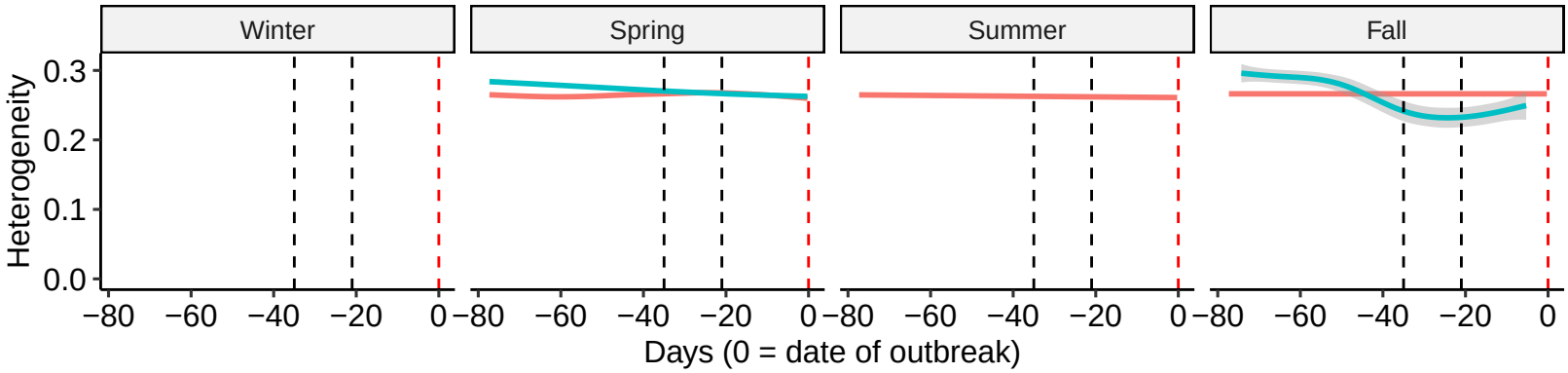
Arabian Desert and East Sahero−Arabian xeric shrublands



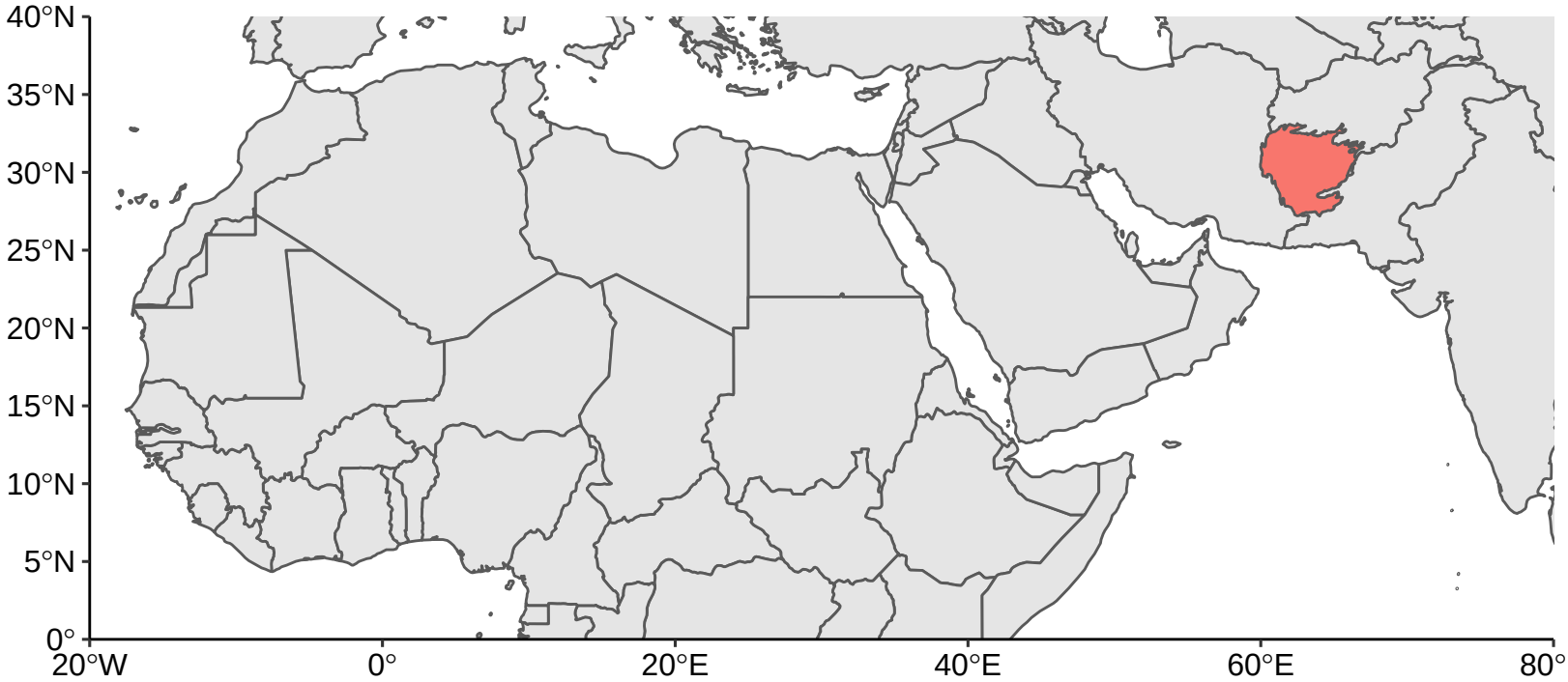


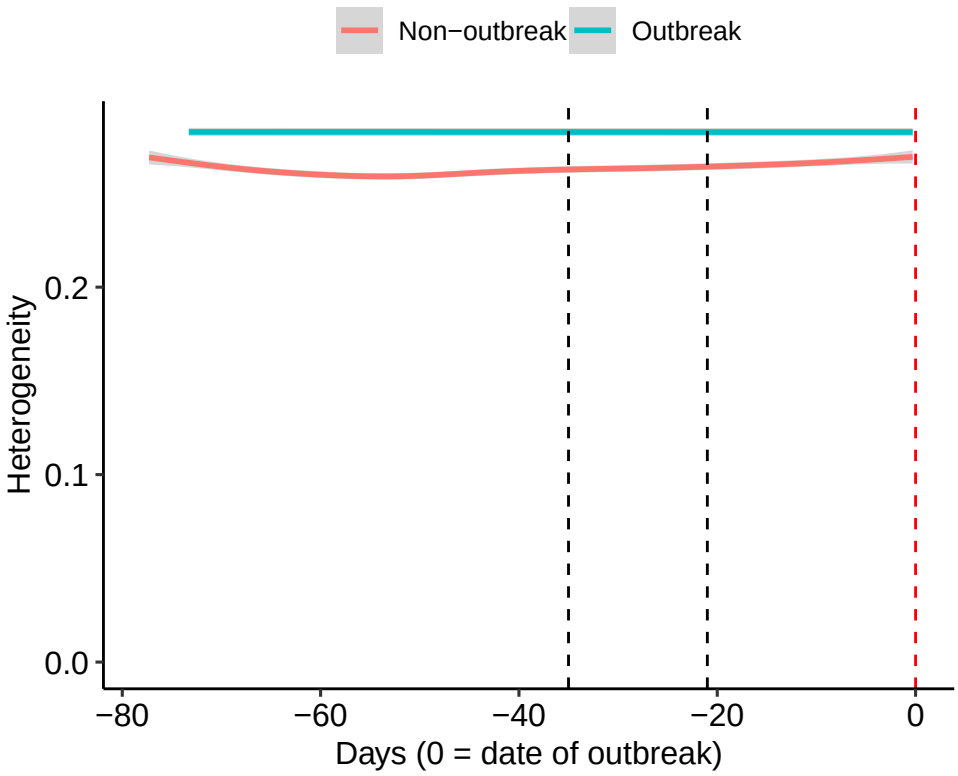


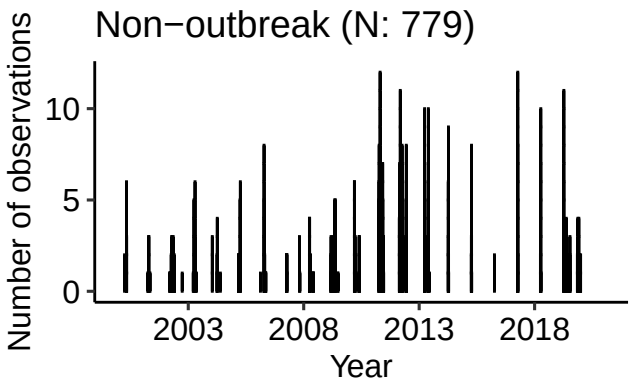


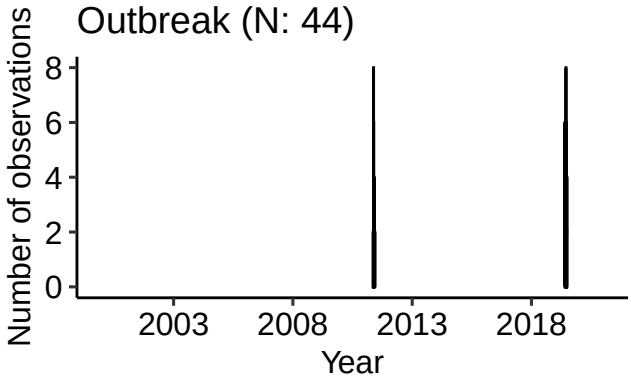


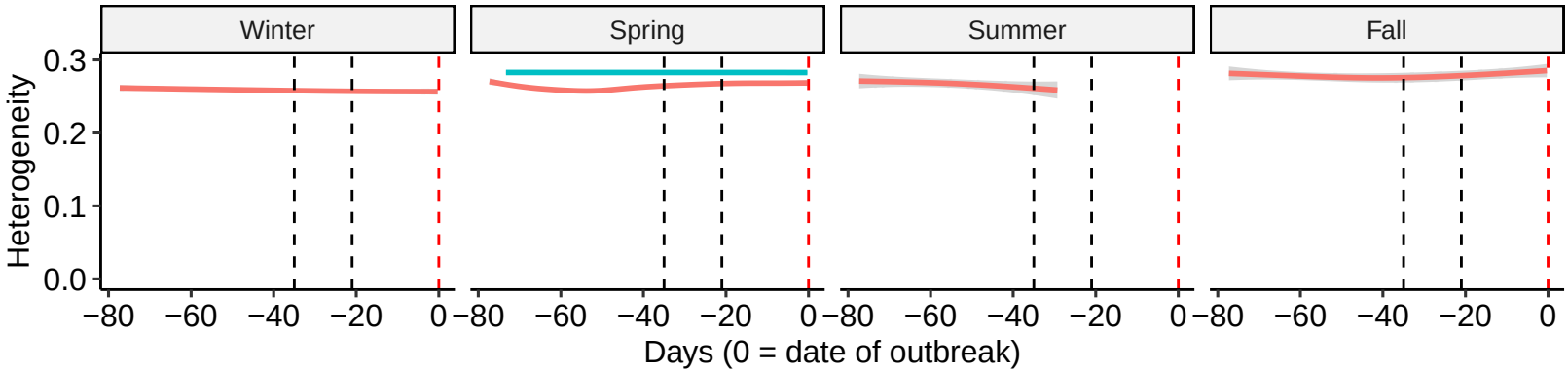
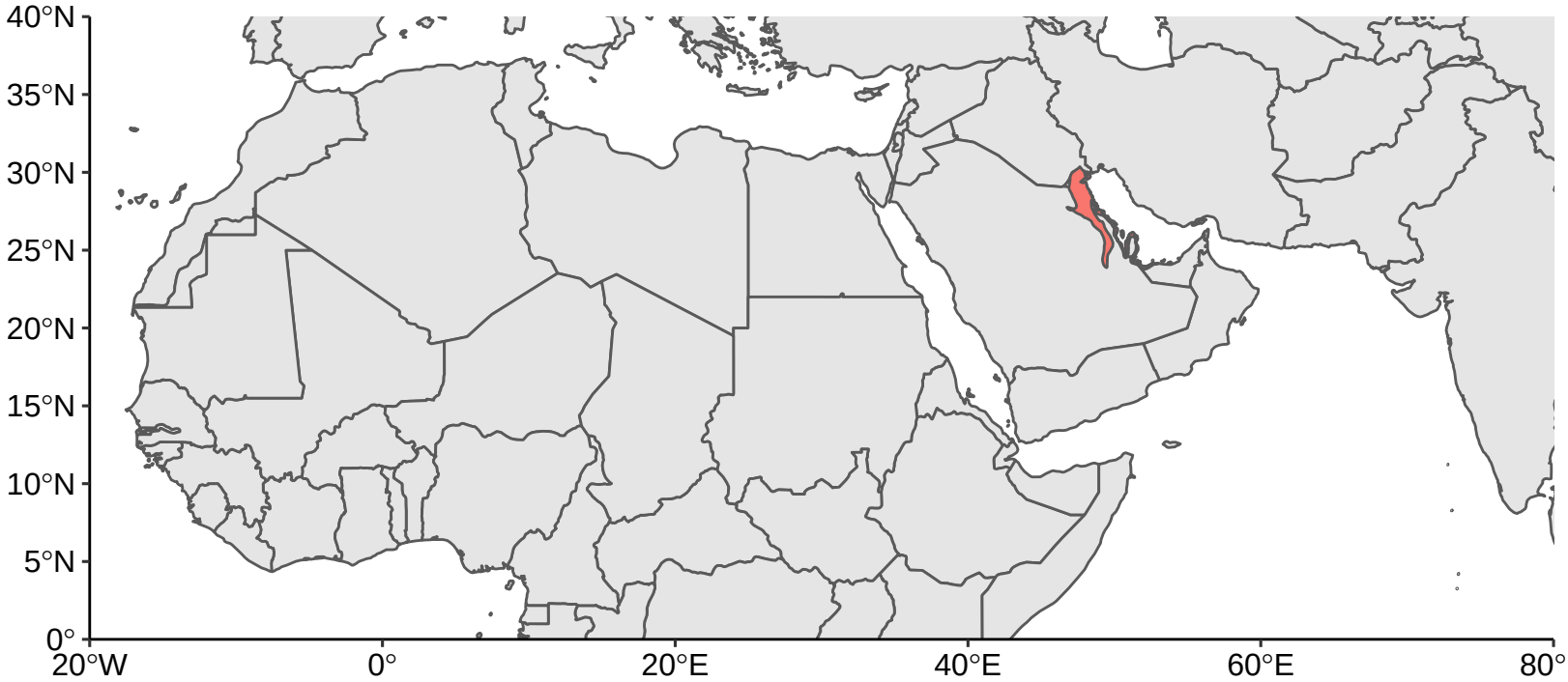
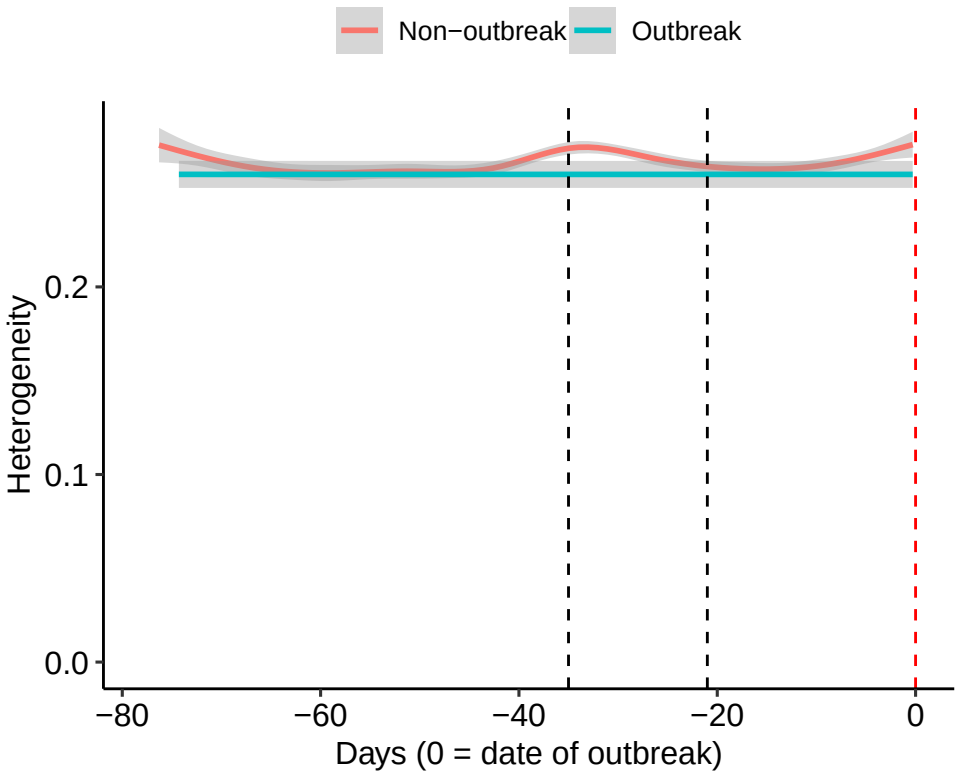
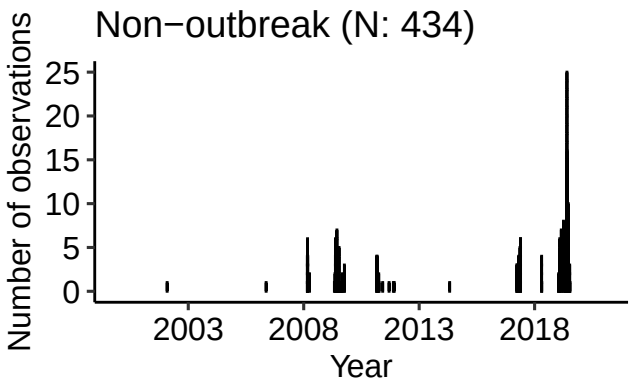
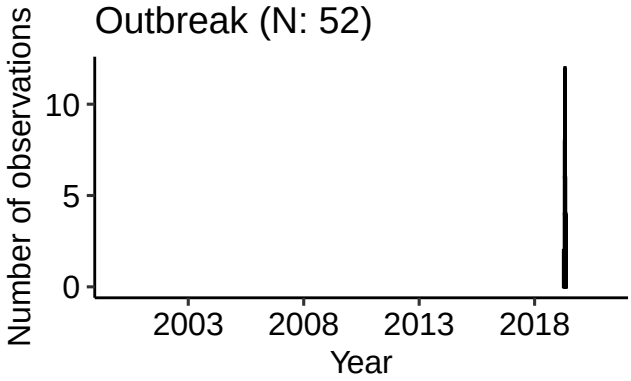
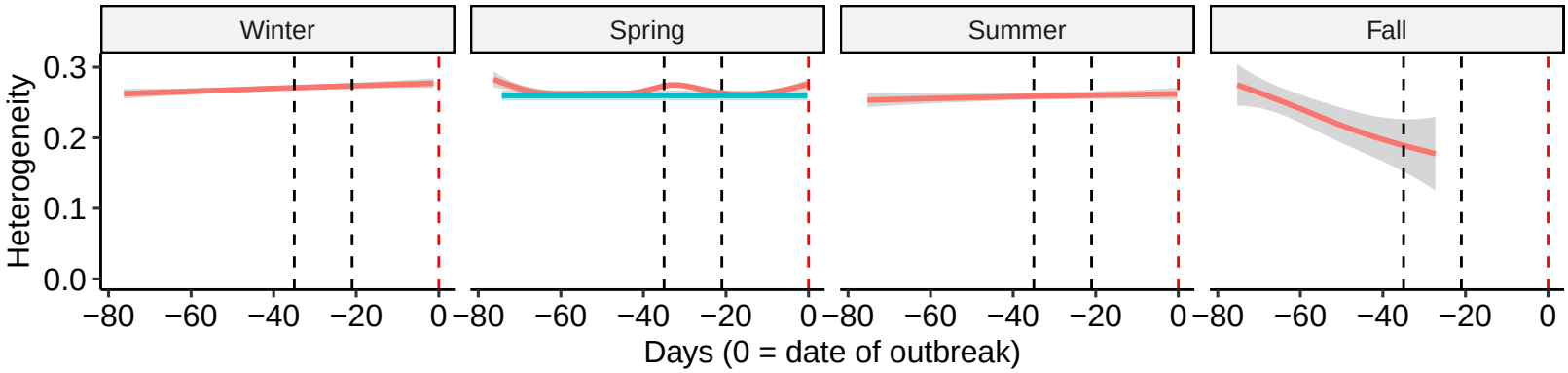
Registan−North Pakistan sandy desert











Persian Gulf desert and semi−desert