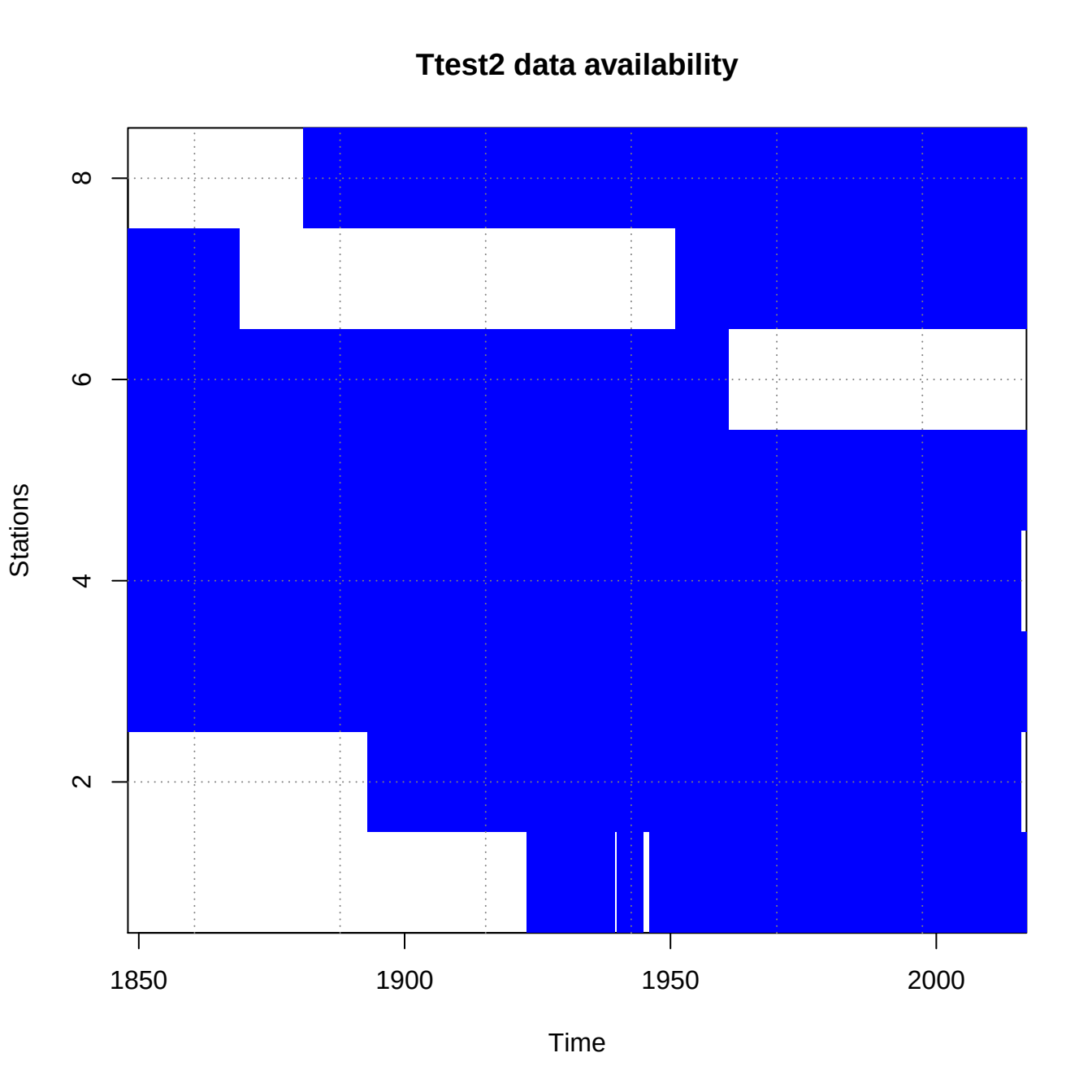
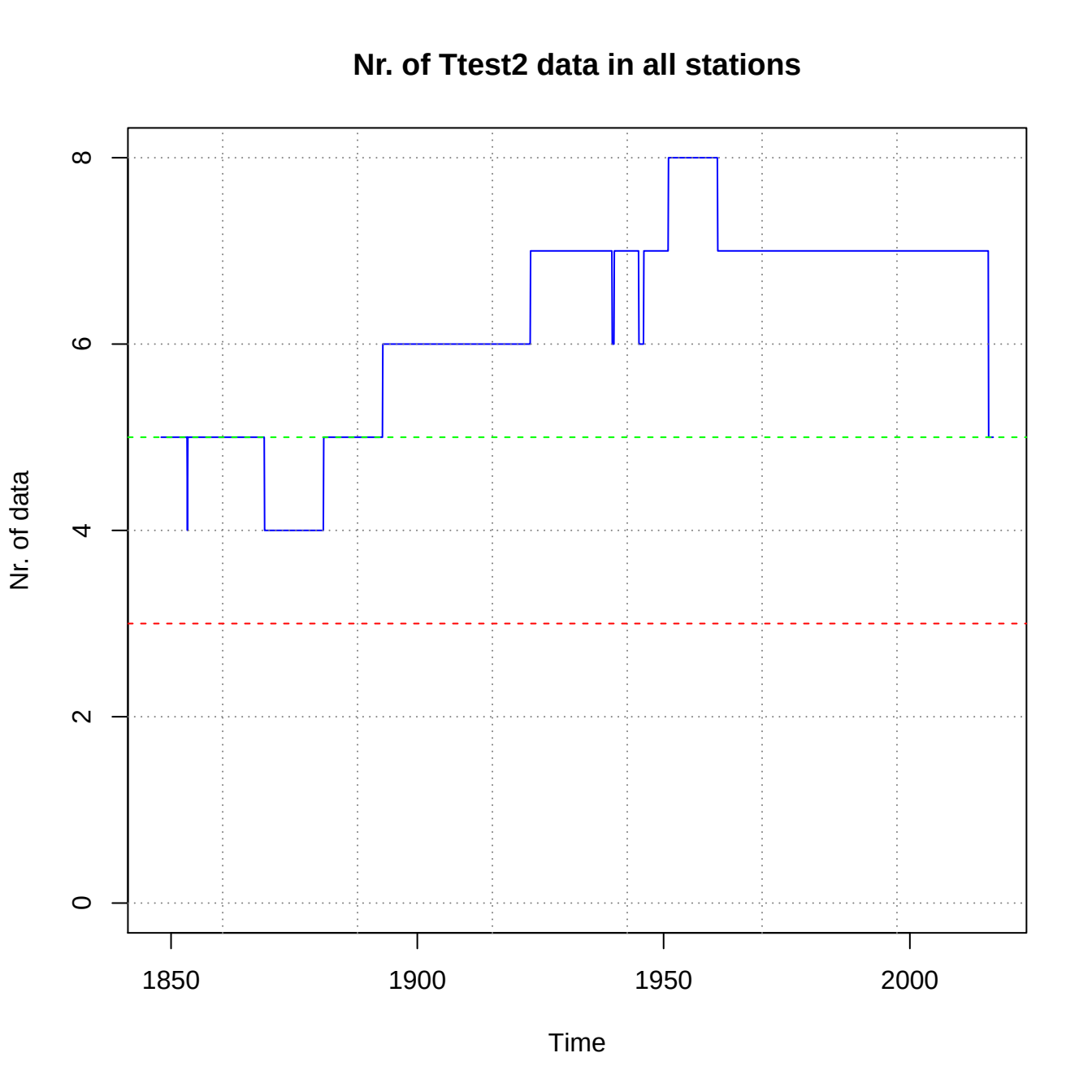
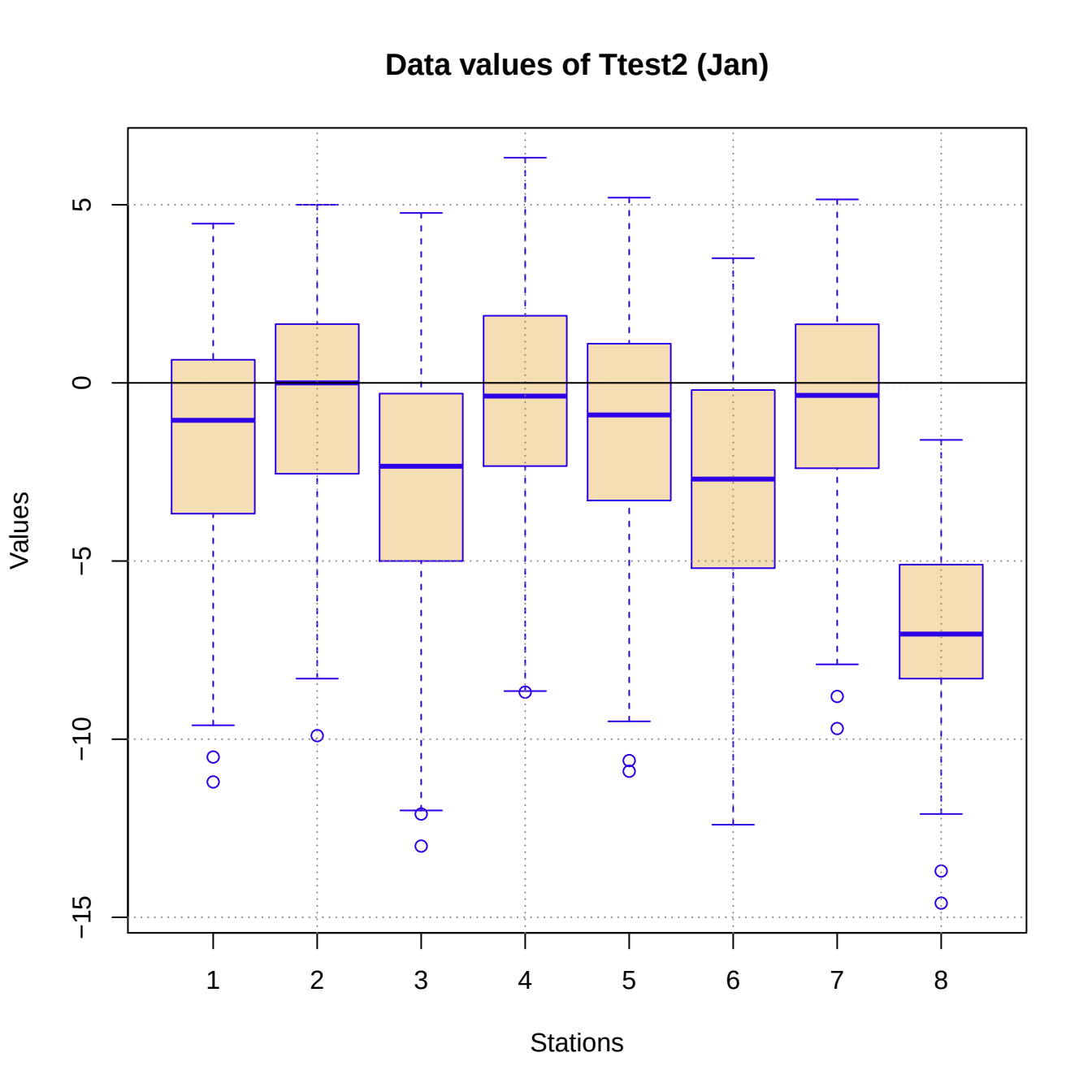
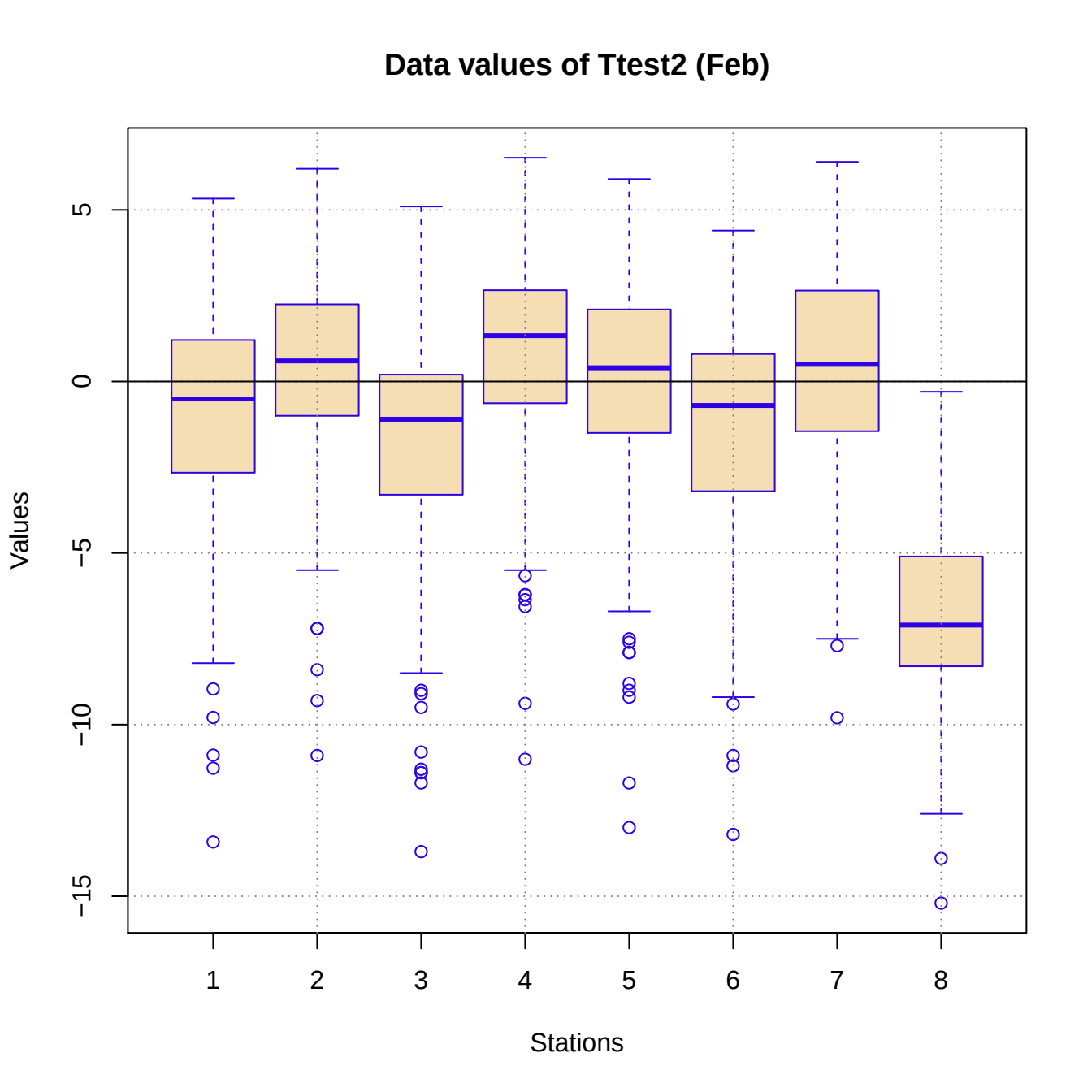
CLIMATOL 3.0

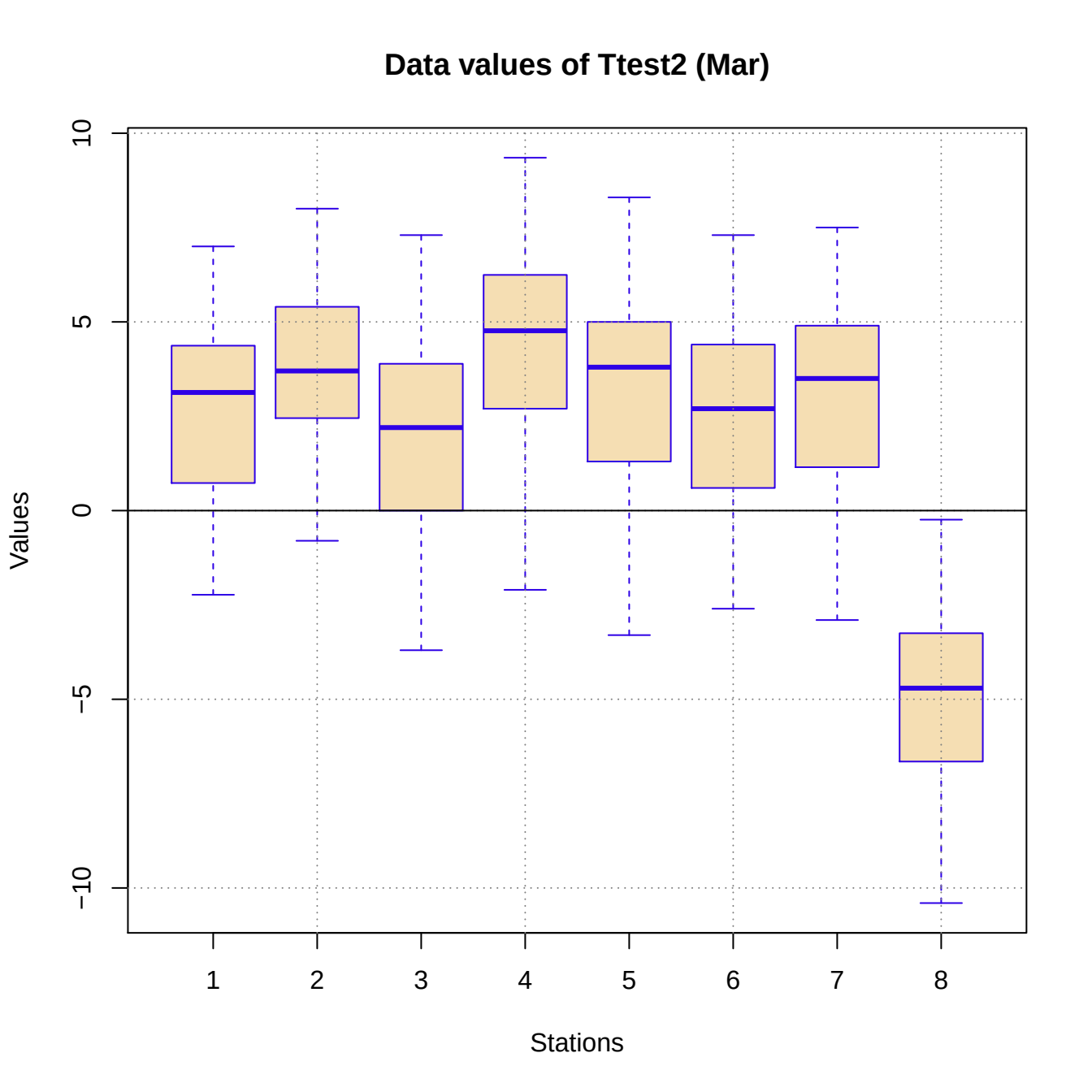
Homogenization
graphic output of
Ttest2
1848−2016

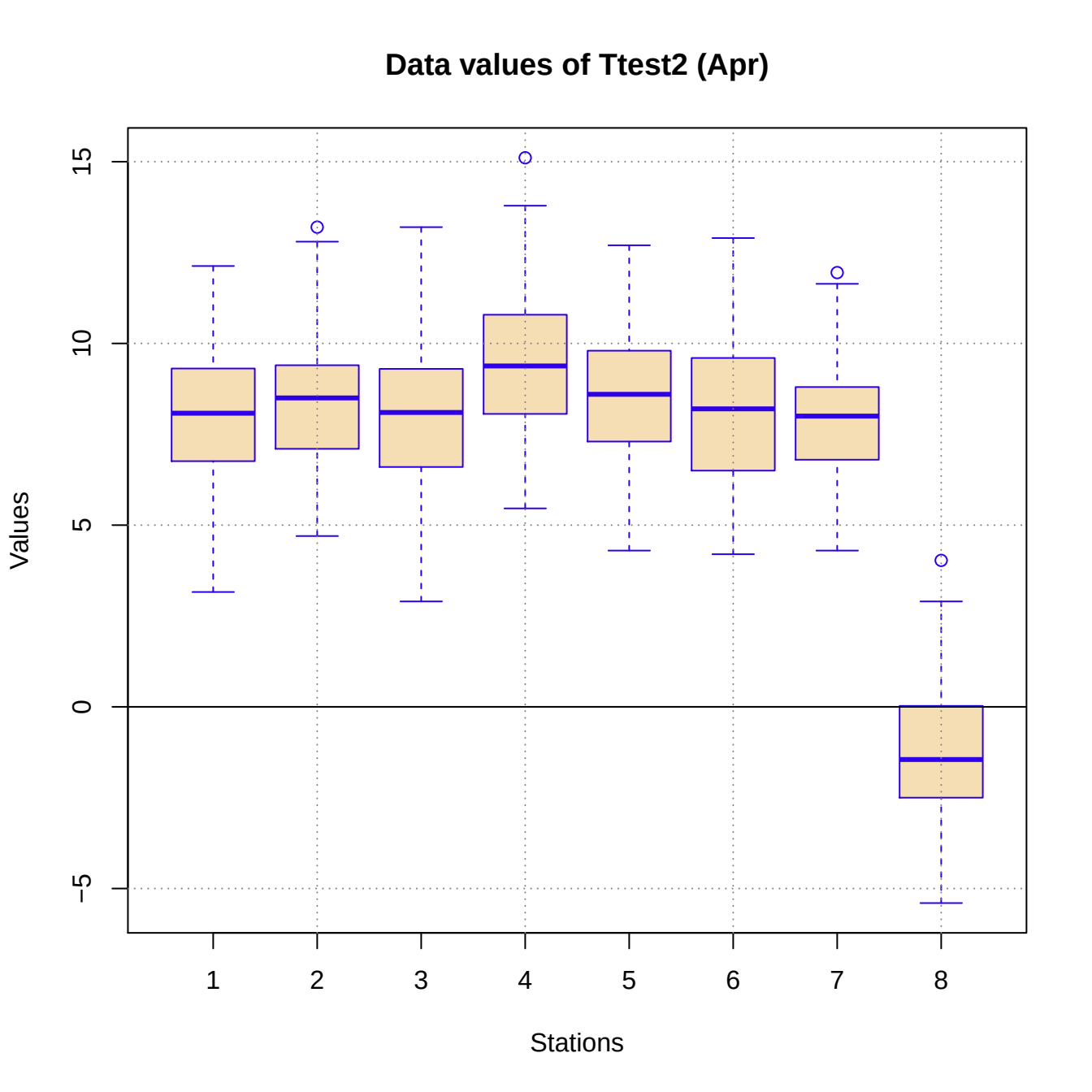

Ttest2 data availability
Stations
2
4
6
8
1850
1900
1950
2000
Time

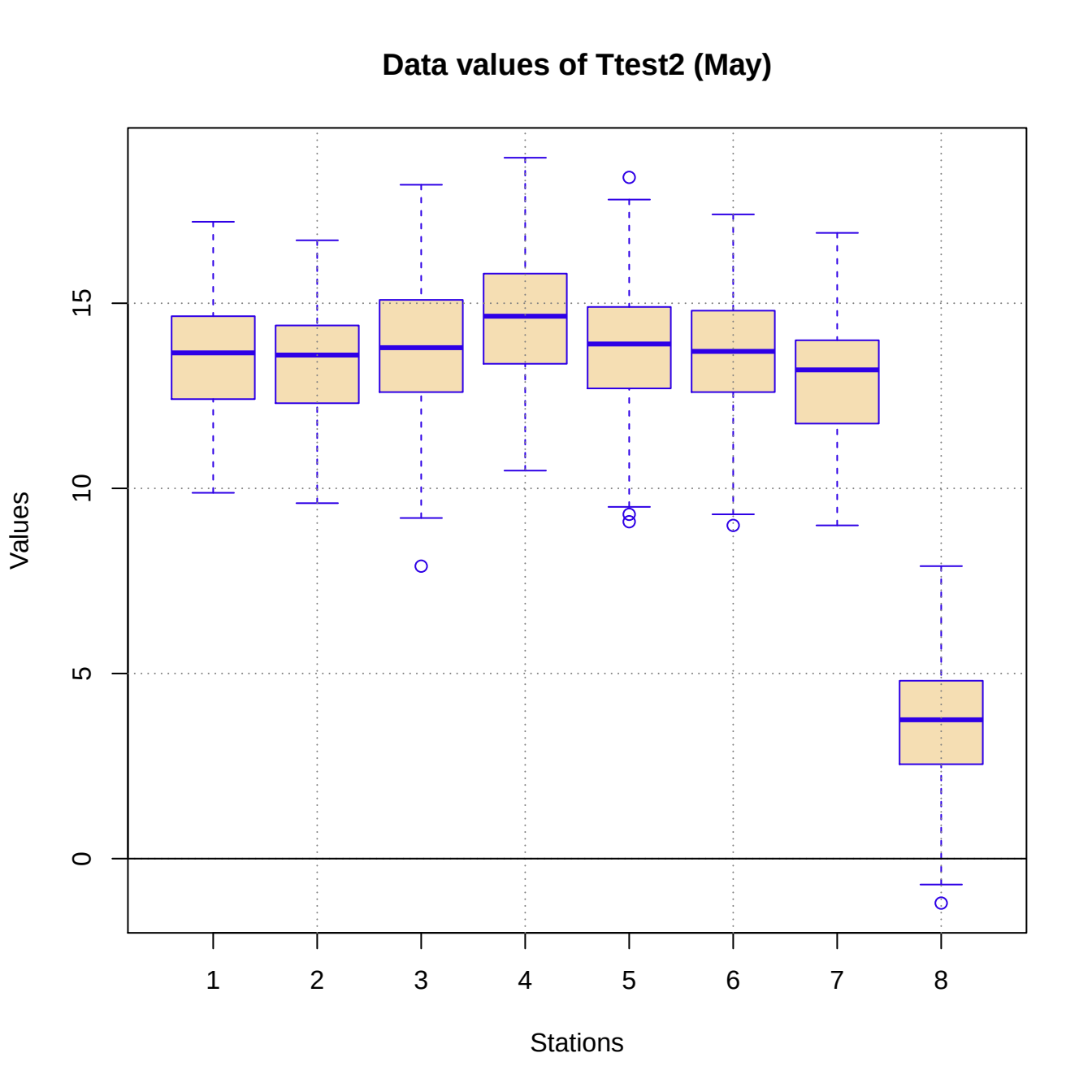

Nr. of Ttest2 data in all stations
Nr. of data
0
2
4
6
8
1850
1900
1950
2000
Time

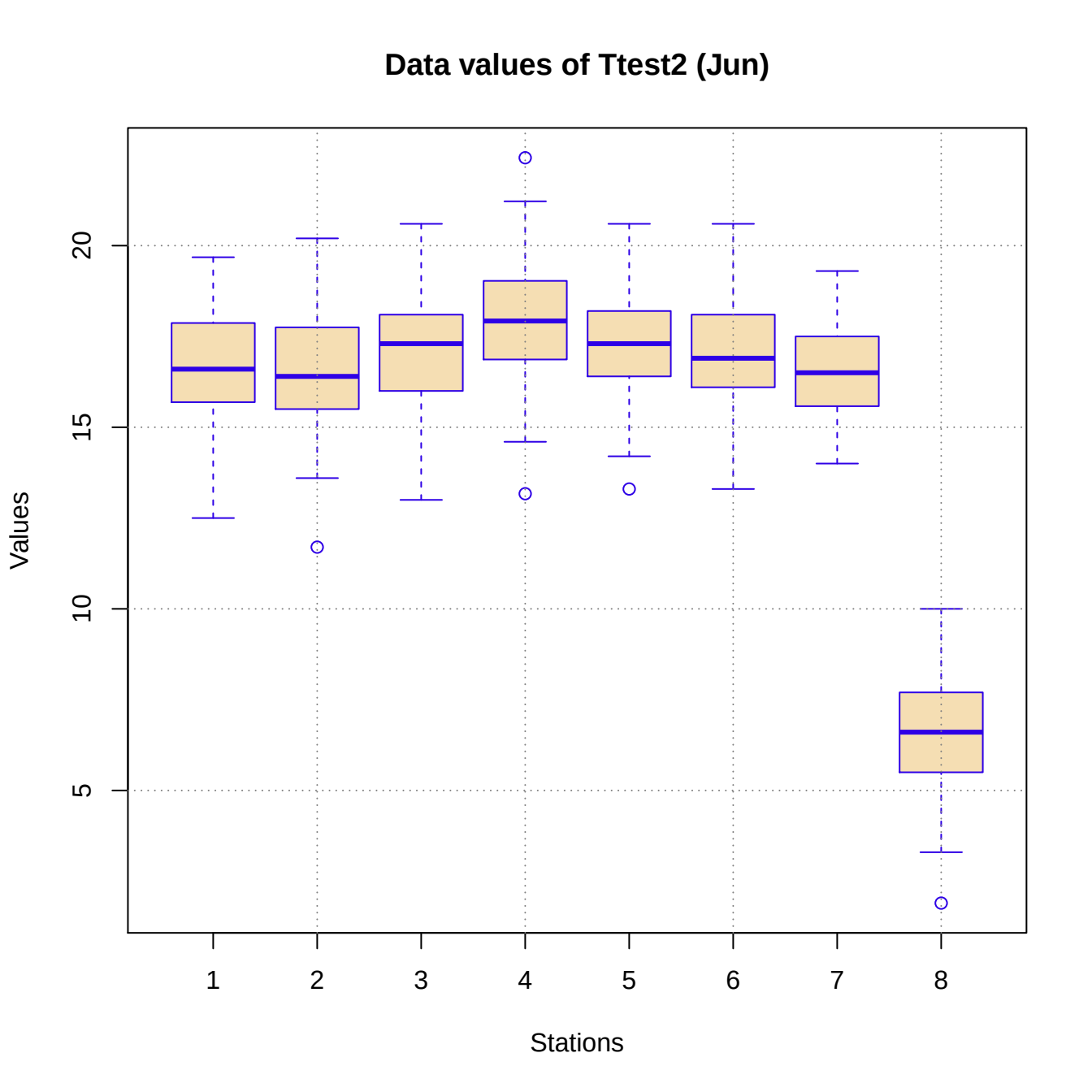

Data values of Ttest2 (Jan)
Values
Stations
5
0
−5
−10
−15
1
2
3
4
5
6
7
8

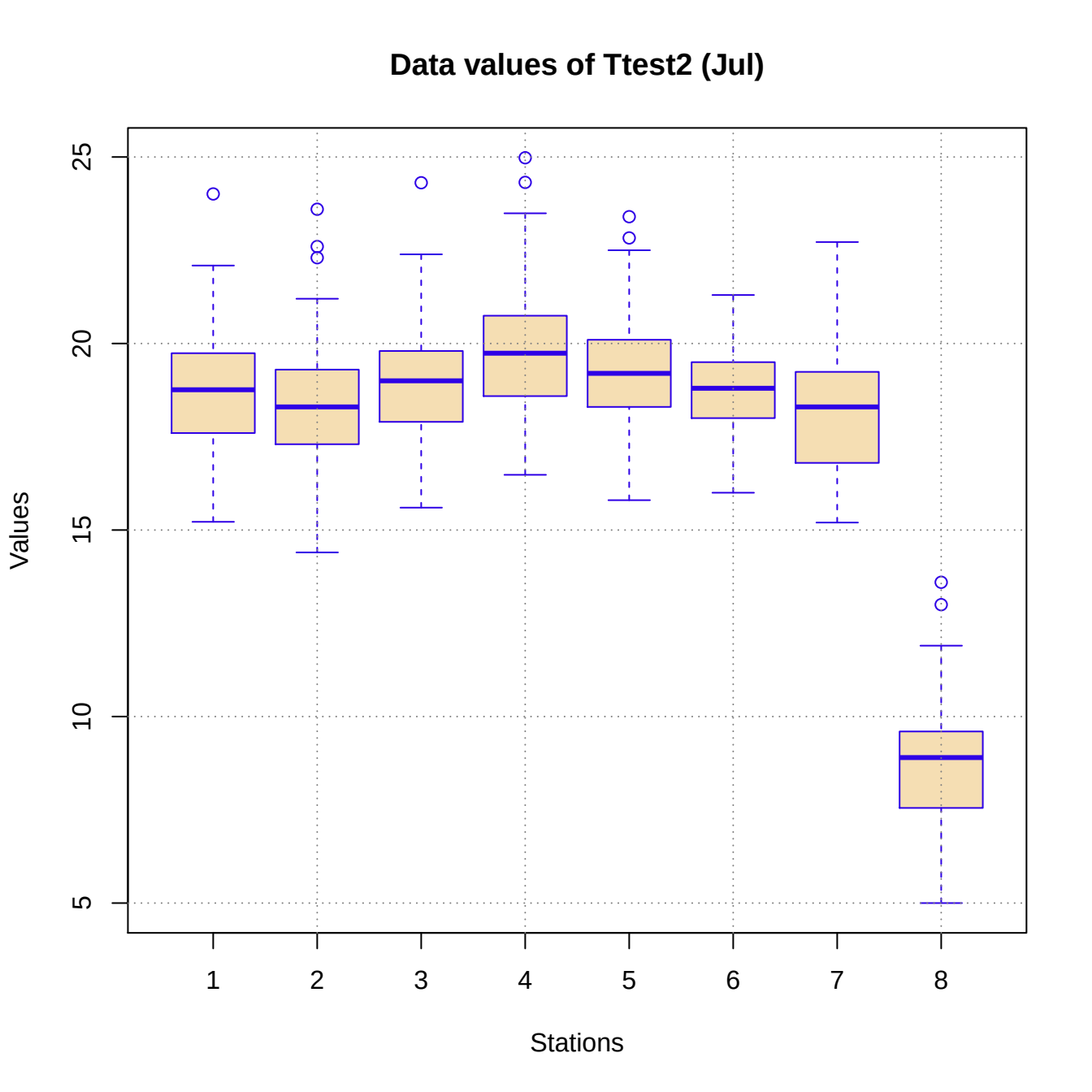

Data values of Ttest2 (Feb)
Values
5
0
−5
−10
−15
1
2
3
4
5
6
7
8
Stations

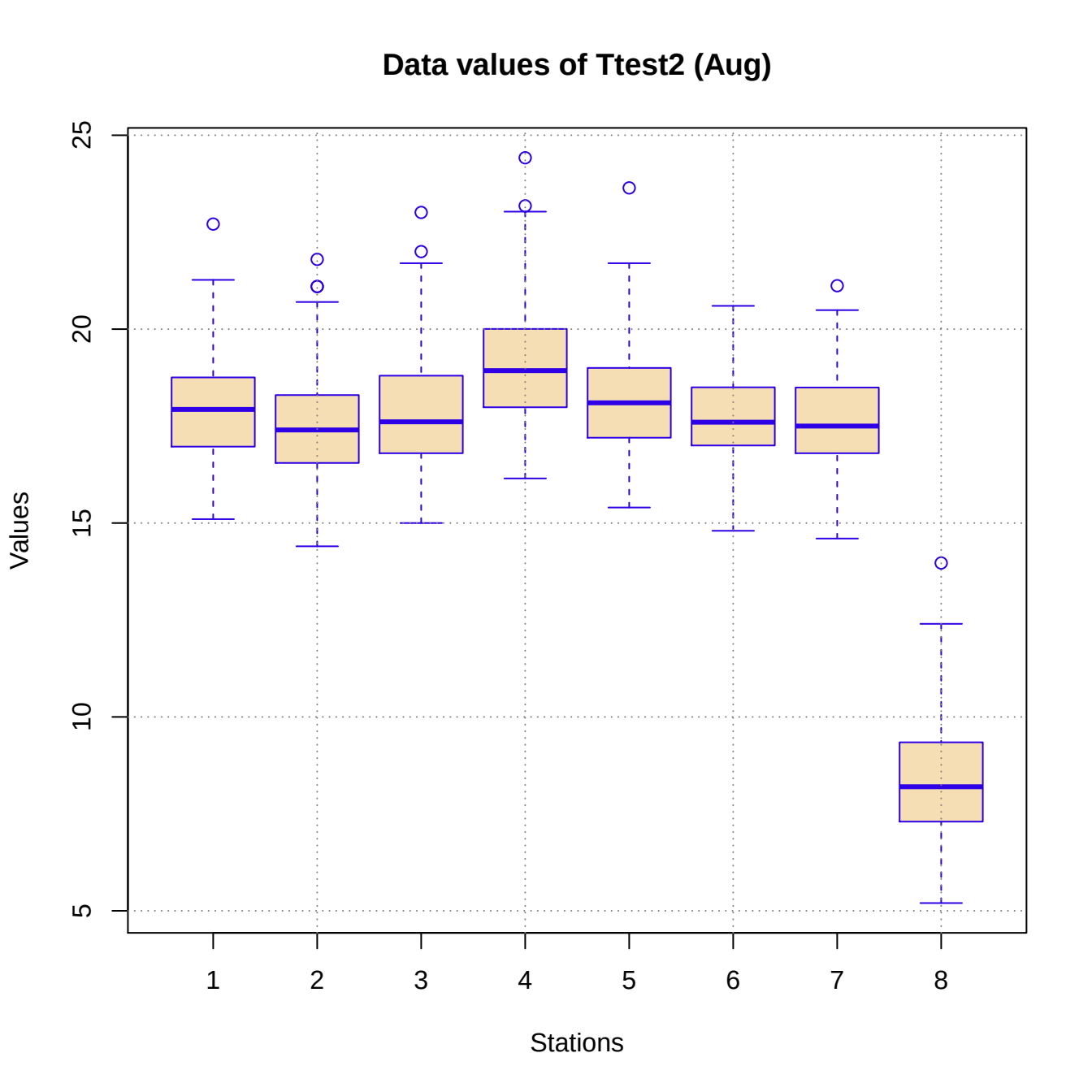

Data values of Ttest2 (Mar)
Values
10
5
0
−5
−10
1
2
3
4
5
6
7
8
Stations

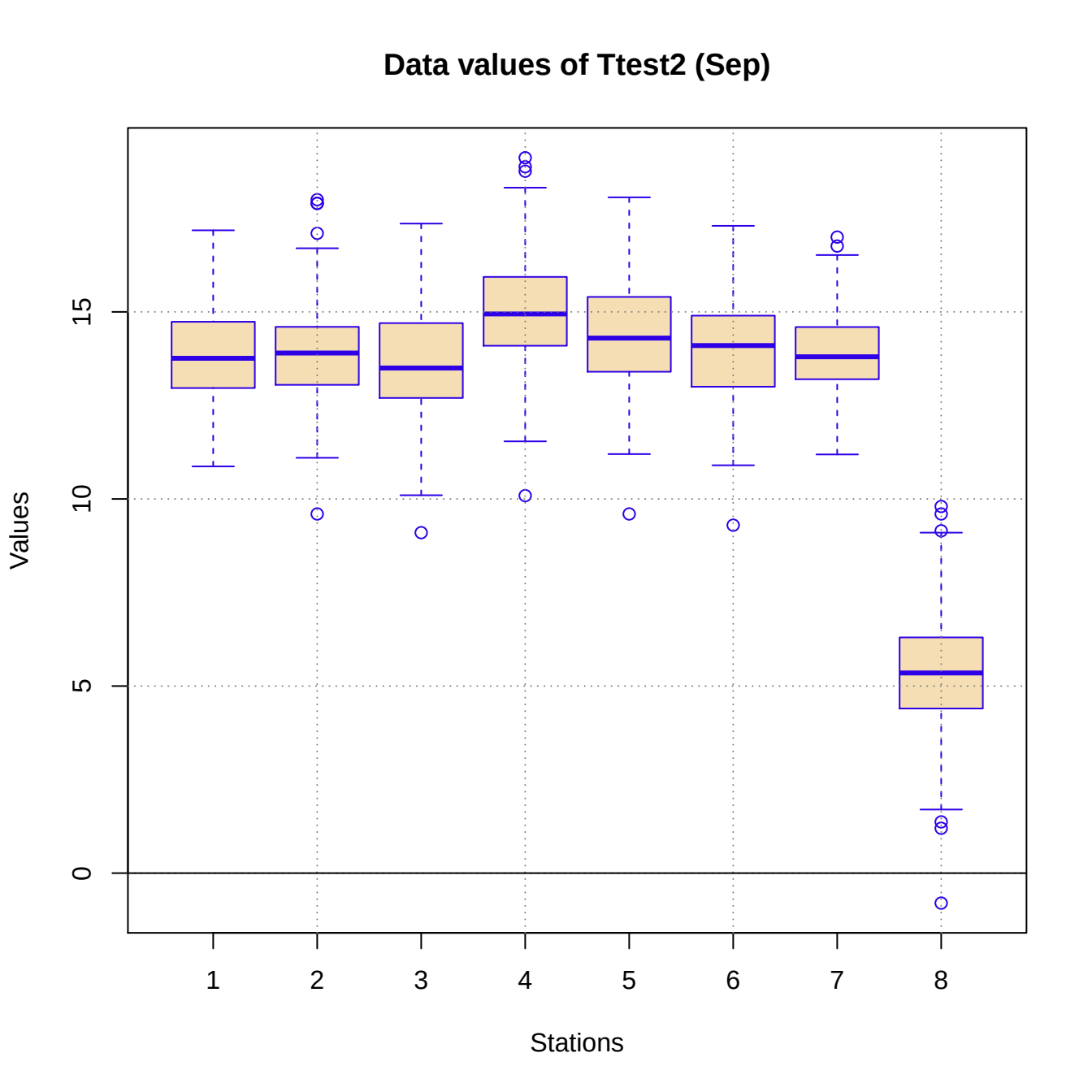

Data values of Ttest2 (Apr)
Values
15
10
5
0
−5
1
2
3
4
5
6
7
8
Stations

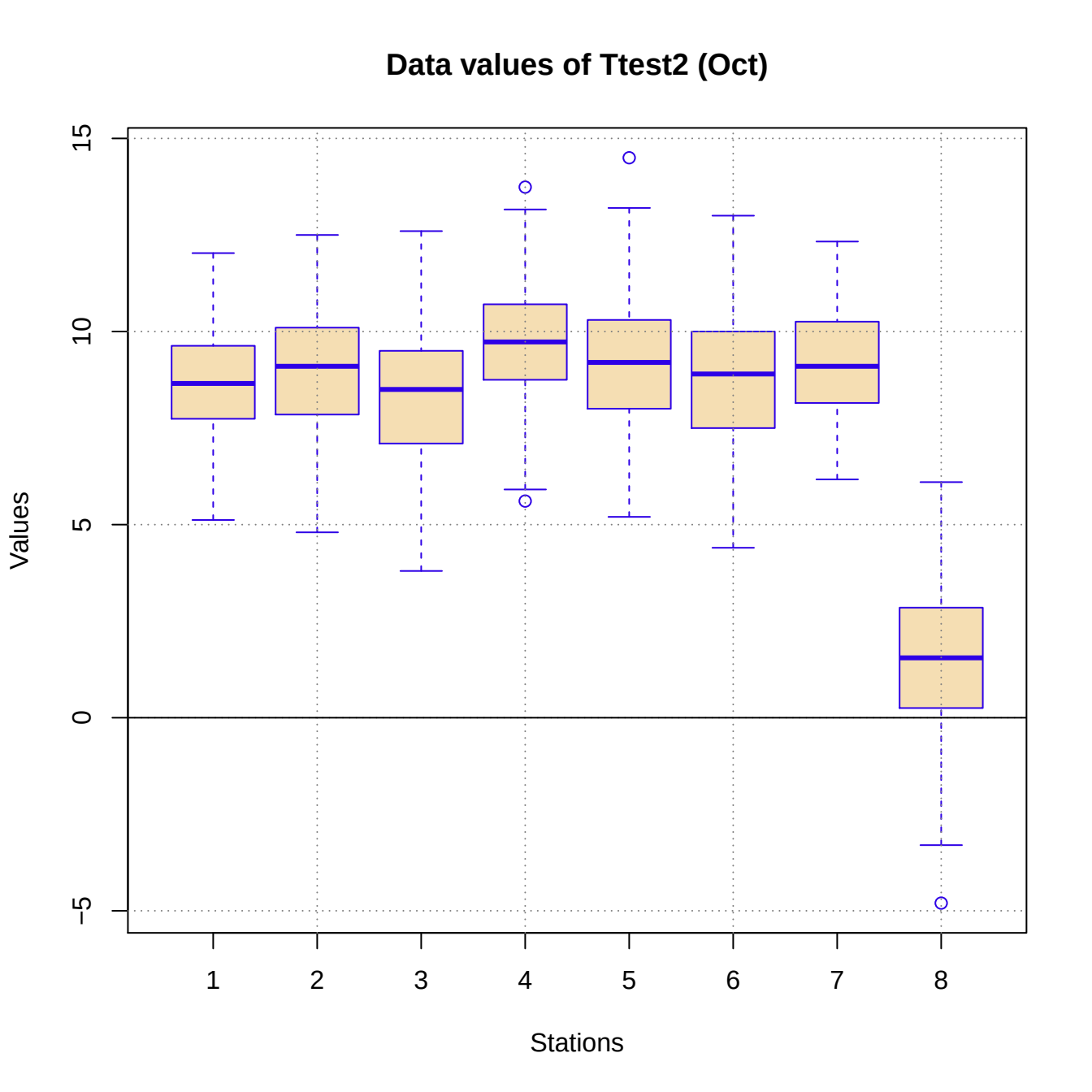

Data values of Ttest2 (May)
Values
0
5
10
15
1
2
3
4
5
6
7
8
Stations

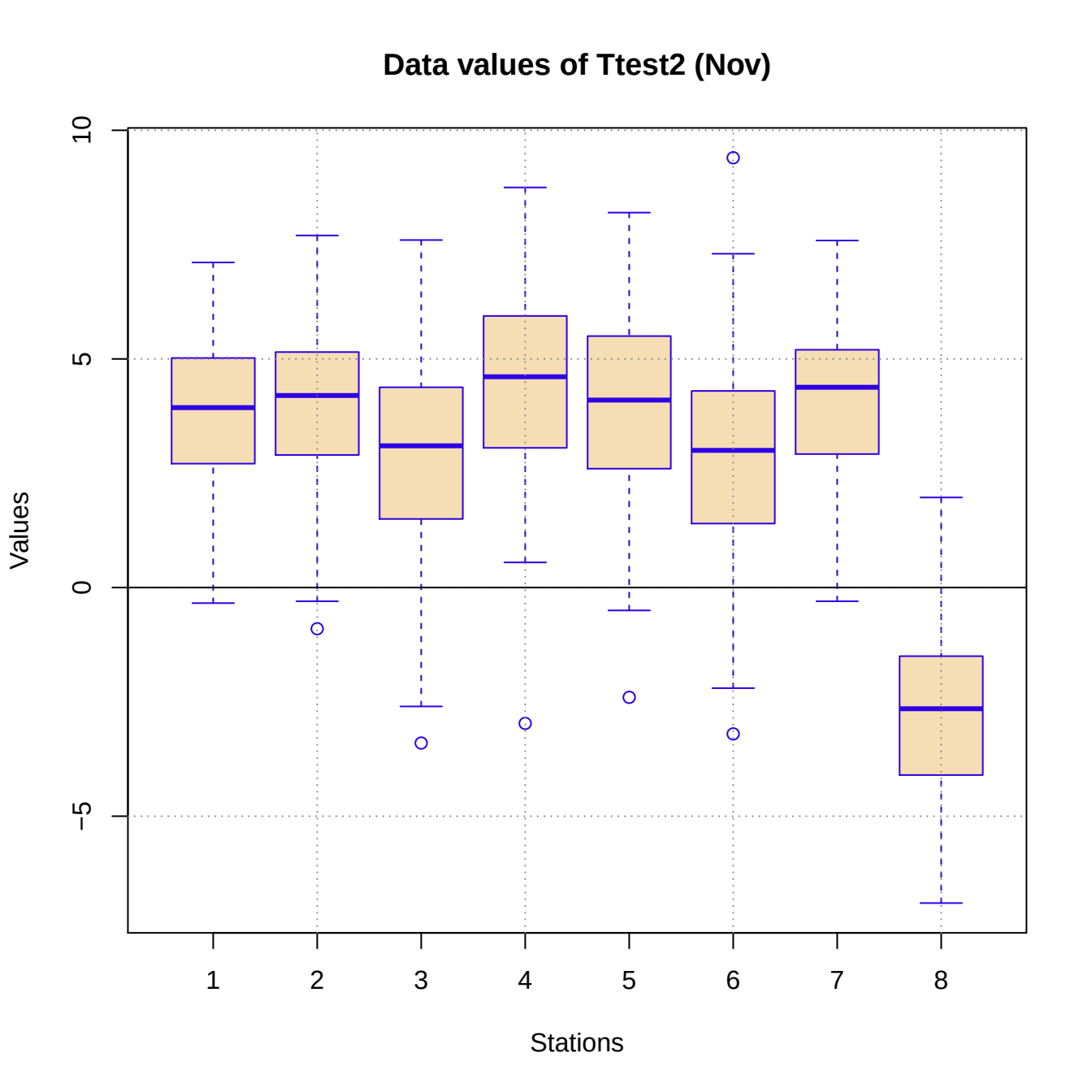

Data values of Ttest2 (Jun)
Values
5
10
15
20
1
2
3
4
5
6
7
8
Stations

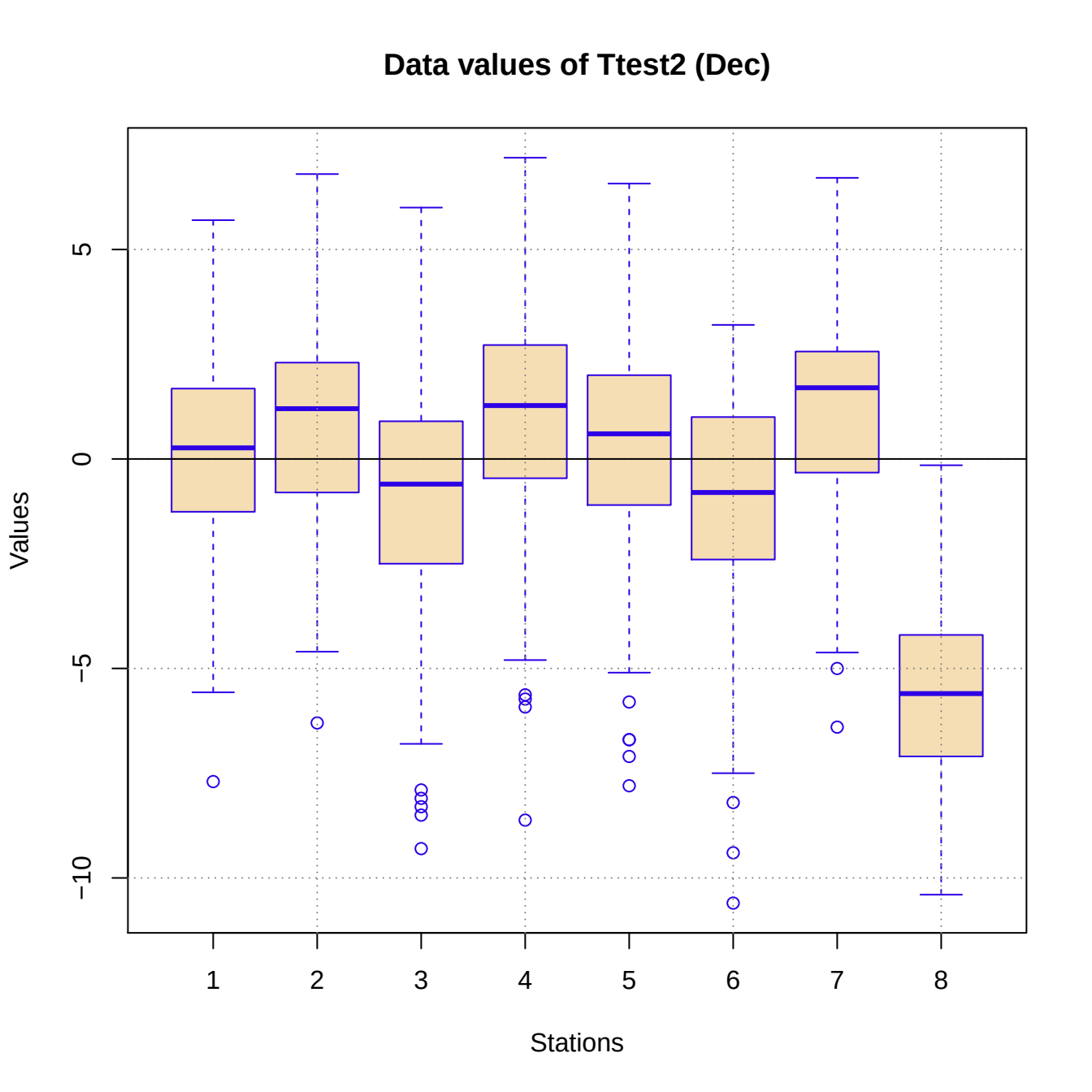

Data values of Ttest2 (Jul)
Values
Stations
5
10
15
20
25
1
2
3
4
5
6
7
8

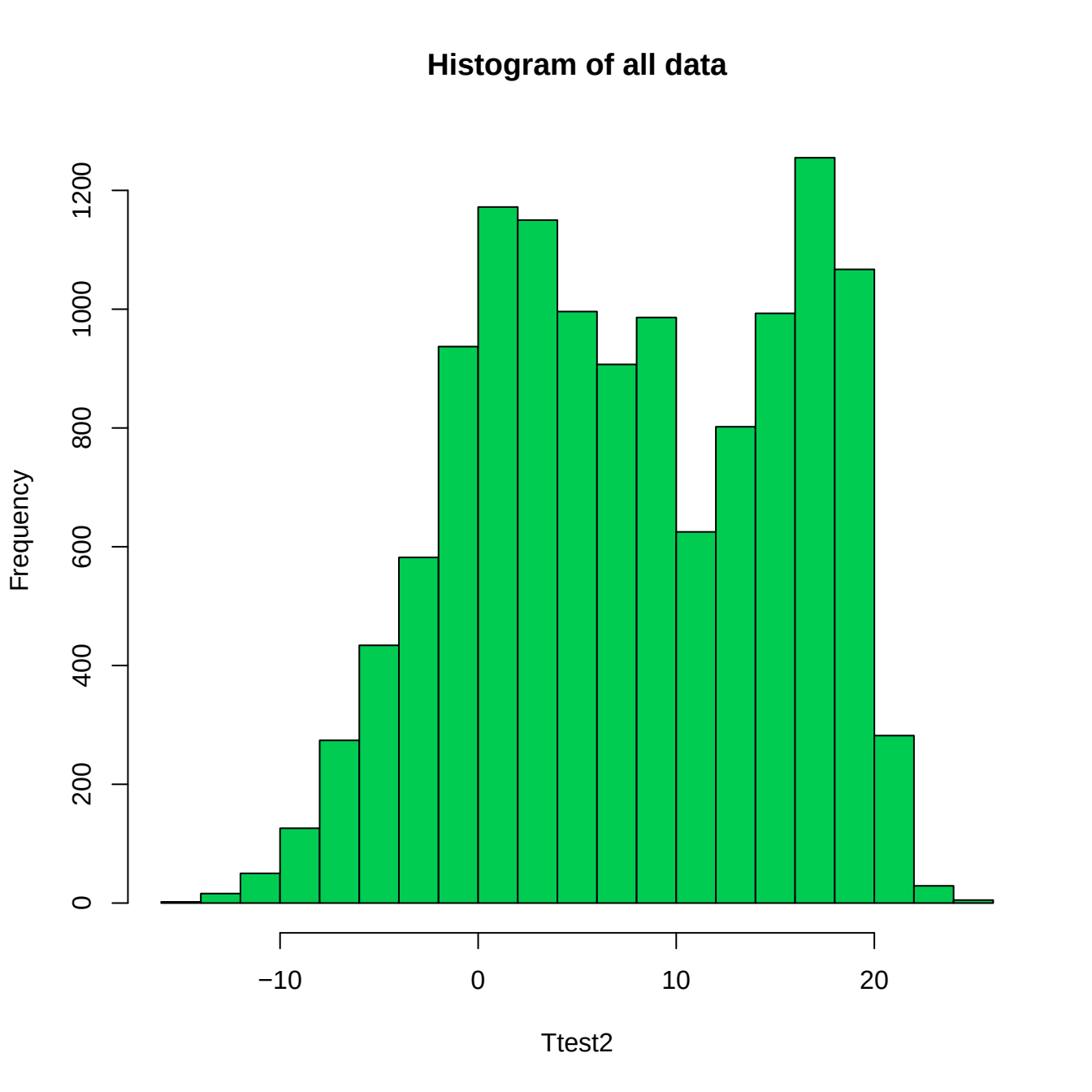

Data values of Ttest2 (Aug)
Values
Stations
5
10
15
20
25
1
2
3
4
5
6
7
8

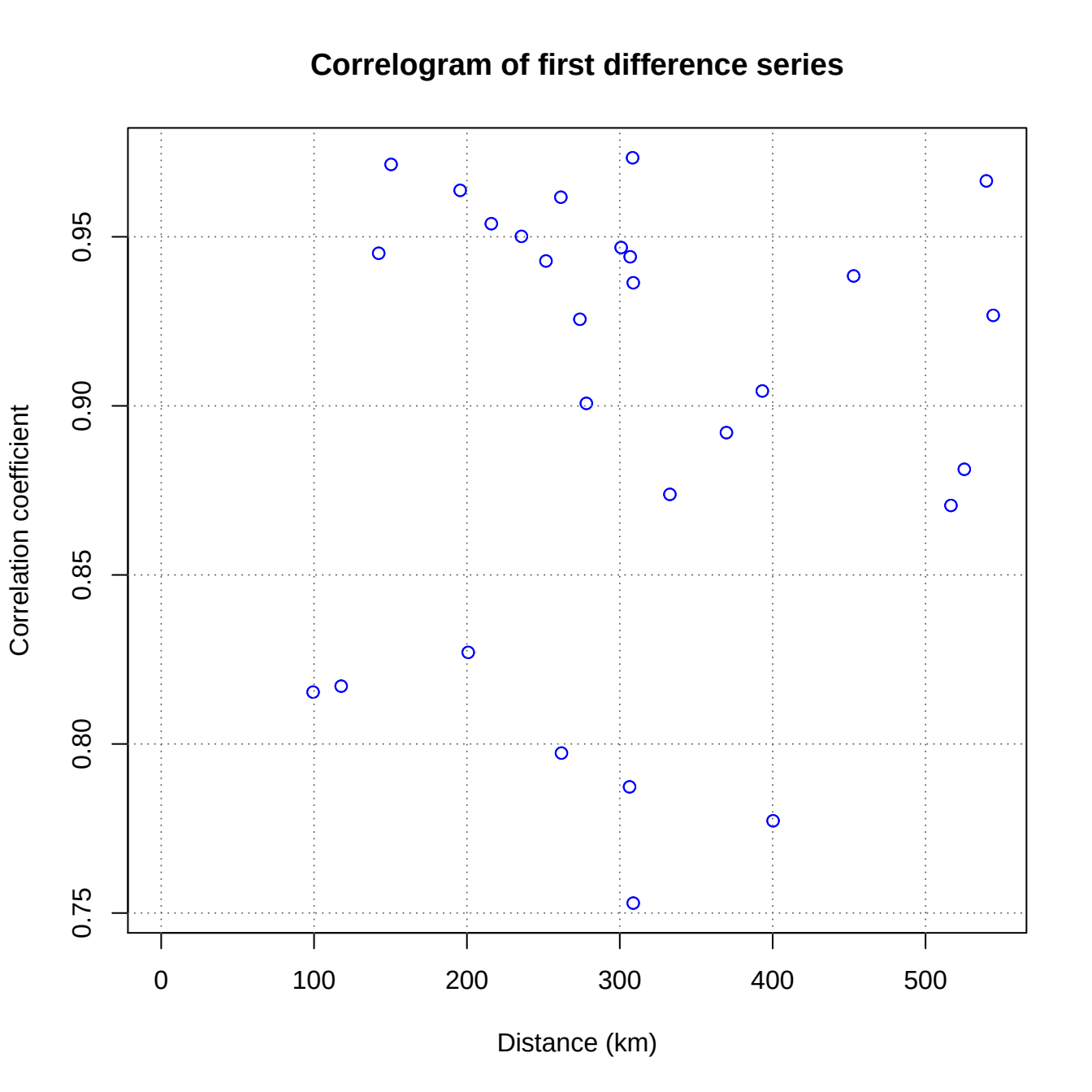

Data values of Ttest2 (Sep)
Values
0
5
10
15
1
2
3
4
5
6
7
8
Stations

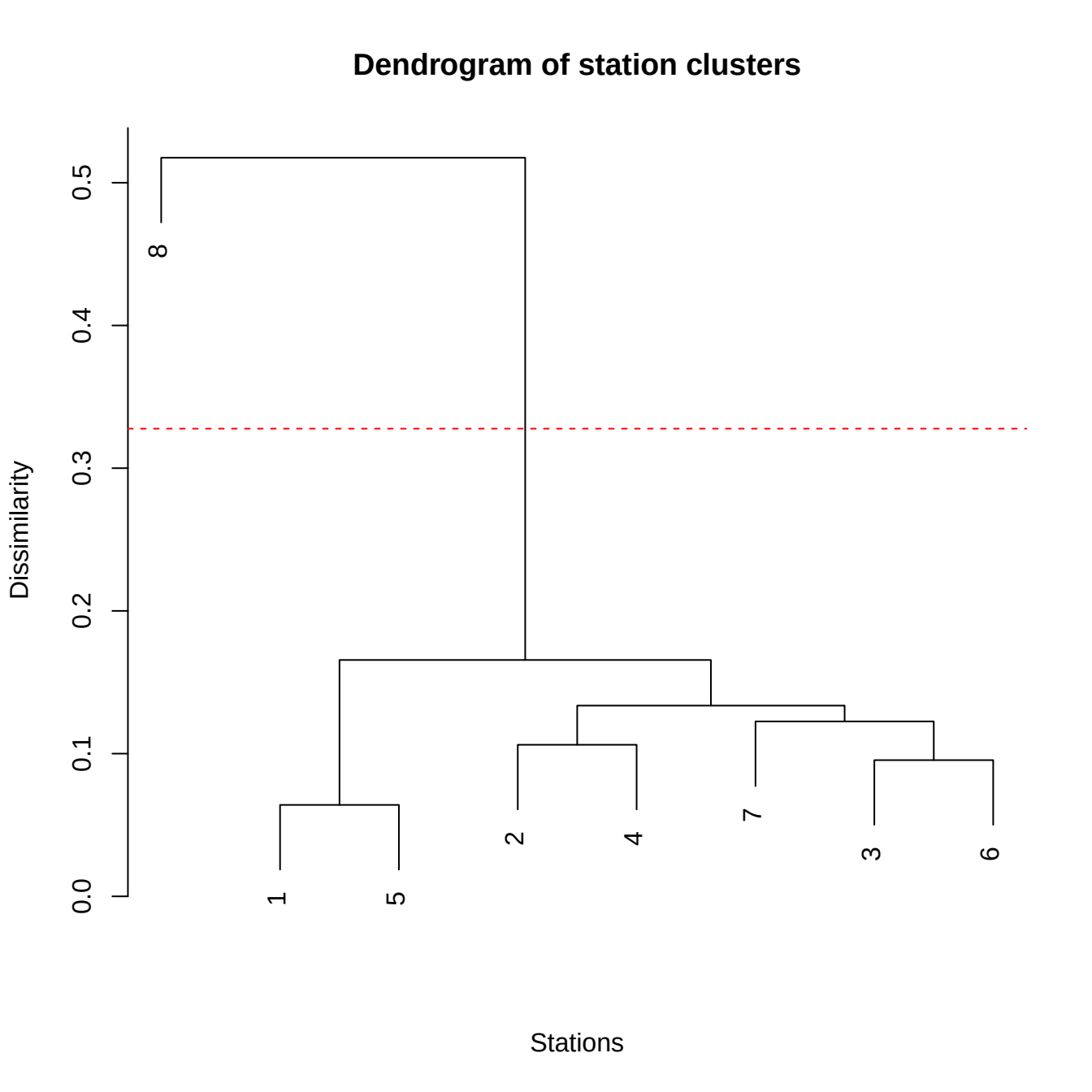

Data values of Ttest2 (Oct)
Values
15
10
5
0
−5
1
2
3
4
5
6
7
8
Stations

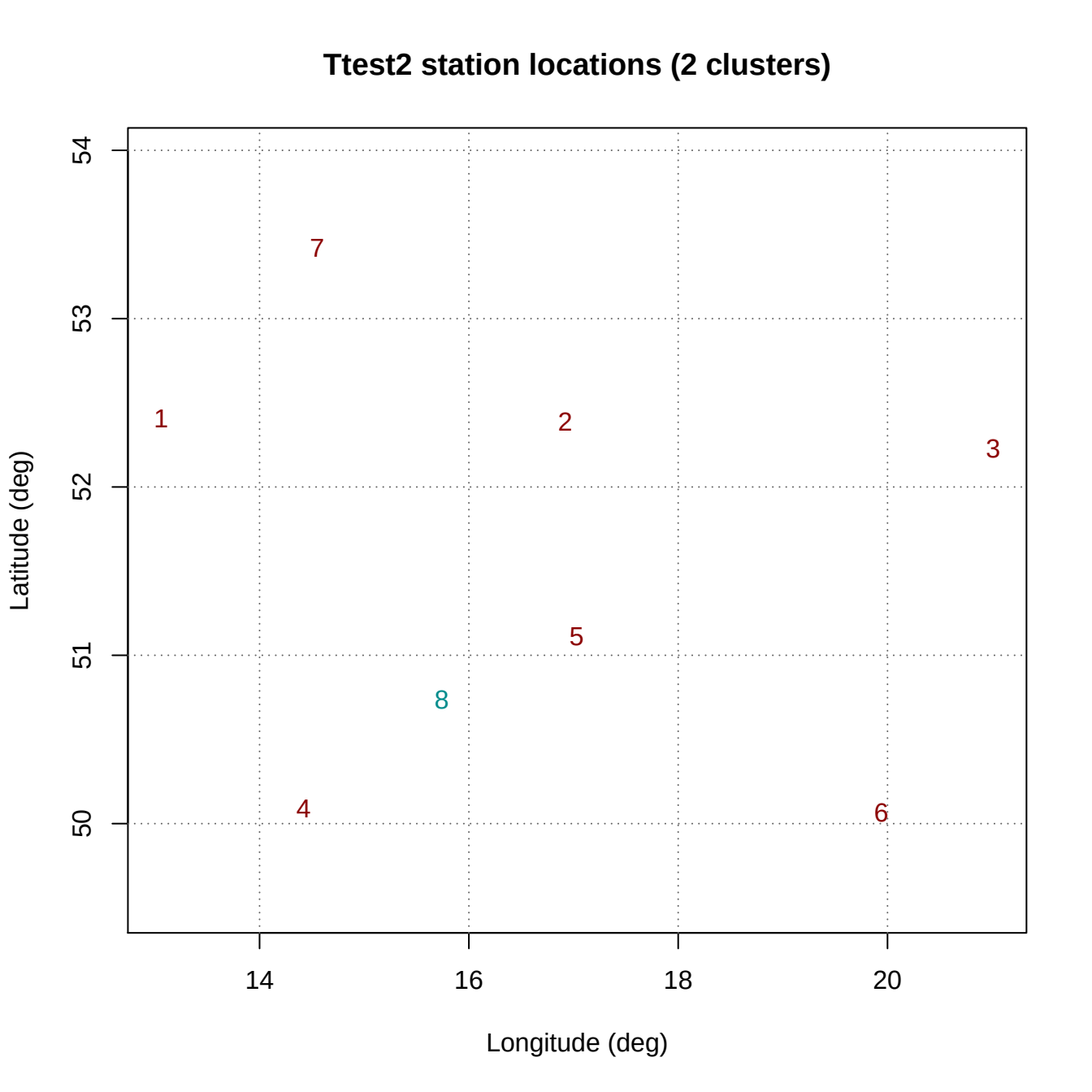

Data values of Ttest2 (Nov)
Values
10
5
0
−5
1
2
3
4
5
6
7
8
Stations


Data values of Ttest2 (Dec)
Values
5
0
−5
−10
1
2
3
4
5
6
7
8
Stations


Histogram of all data
Frequency
0
200
400
600
800
1000
1200
−10
0
10
20
Ttest2

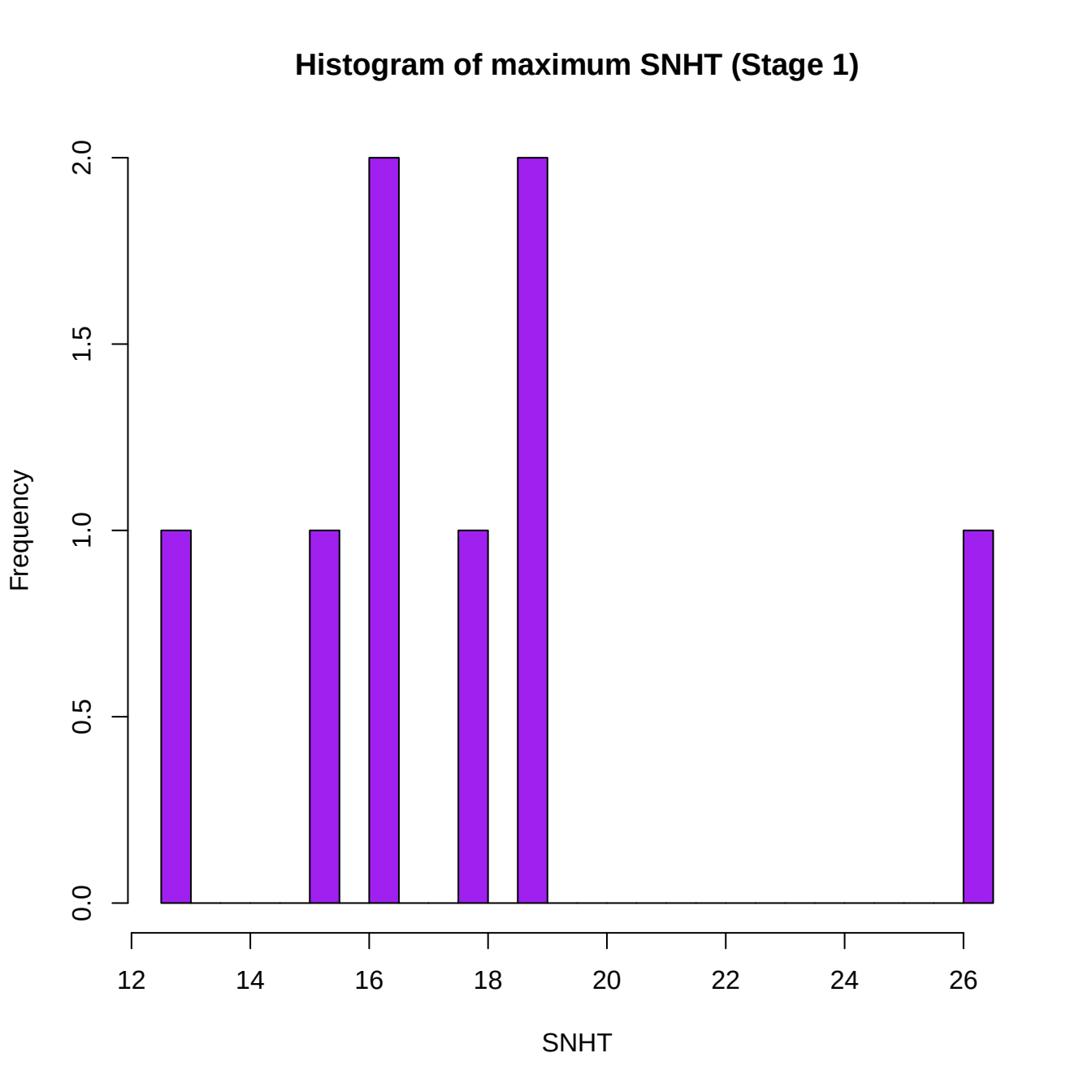

Correlogram of first difference series
Correlation coefficient
0.75
0.80
0.85
0.90
0.95
0
100
200
300
400
500
Distance (km)


Dendrogram of station clusters
Dissimilarity
0.0
0.1
0.2
0.3
0.4
0.5
8
1
5
2
4
7
3
6
Stations


Ttest2 station locations (2 clusters)
Latitude (deg)
54
53
52
51
50
7
1
2
3
5
8
4
6
14
16
18
20
Longitude (deg)

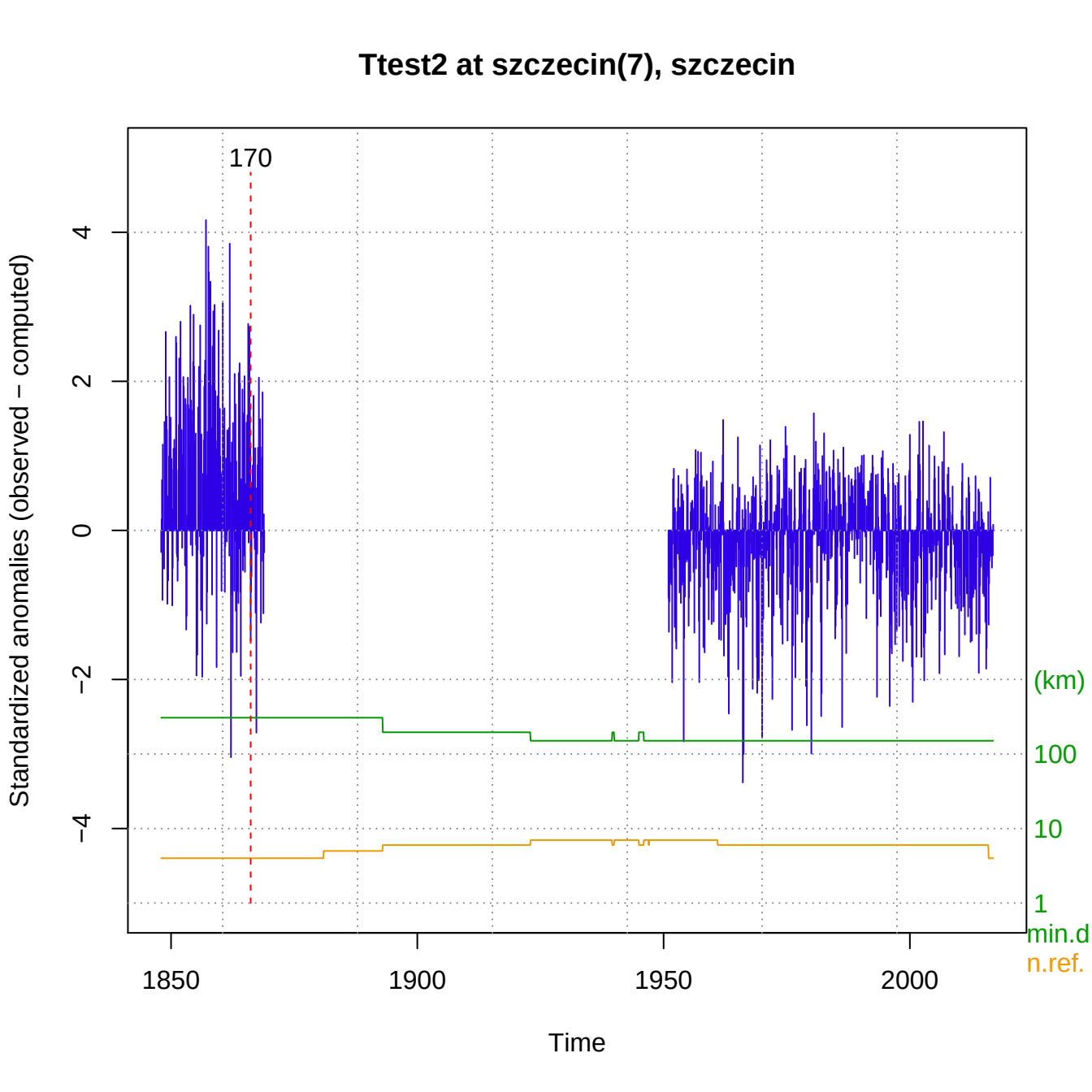
Stage 1

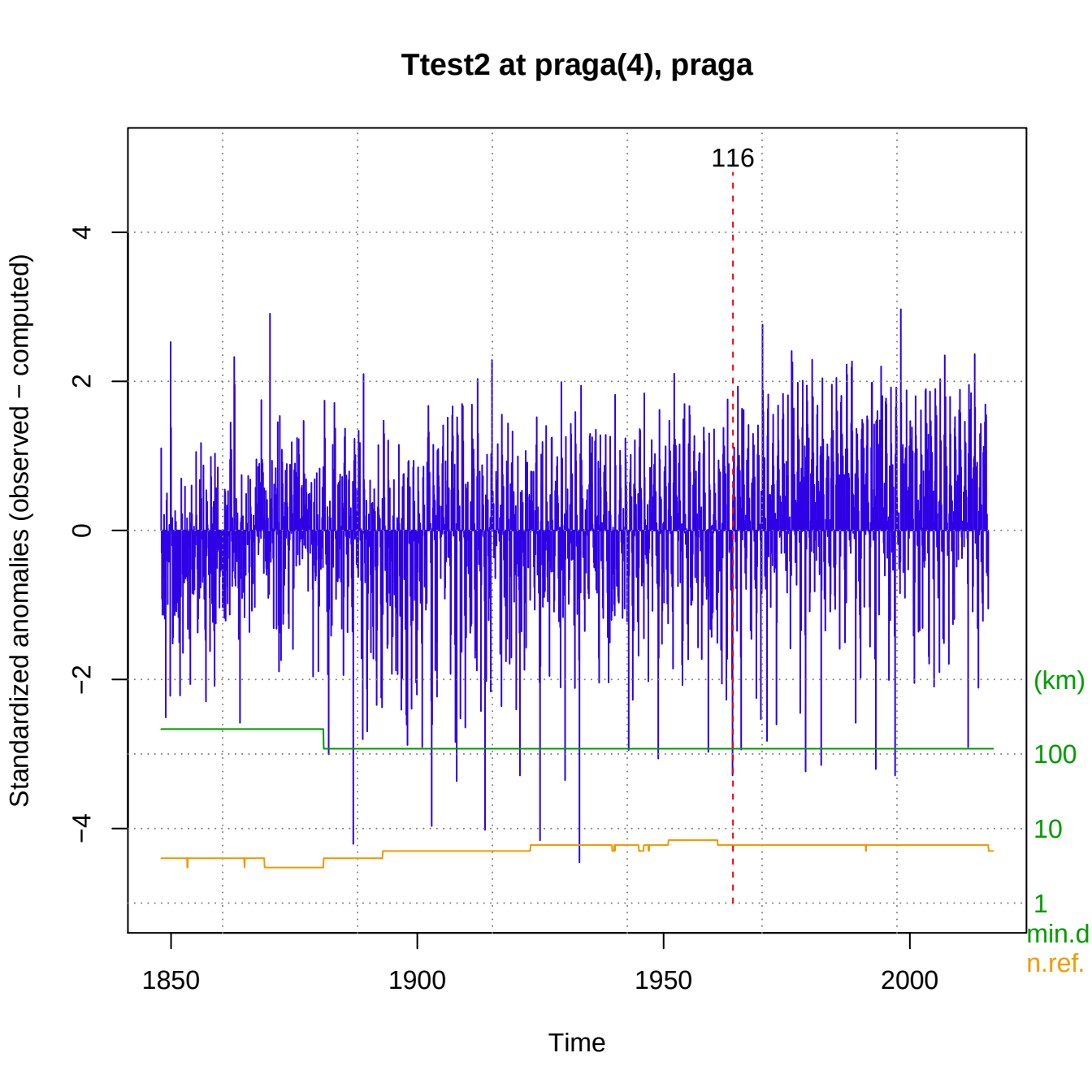
Binary splits on 60 term stepped windows with SNHT > 30 and wd = 0 km

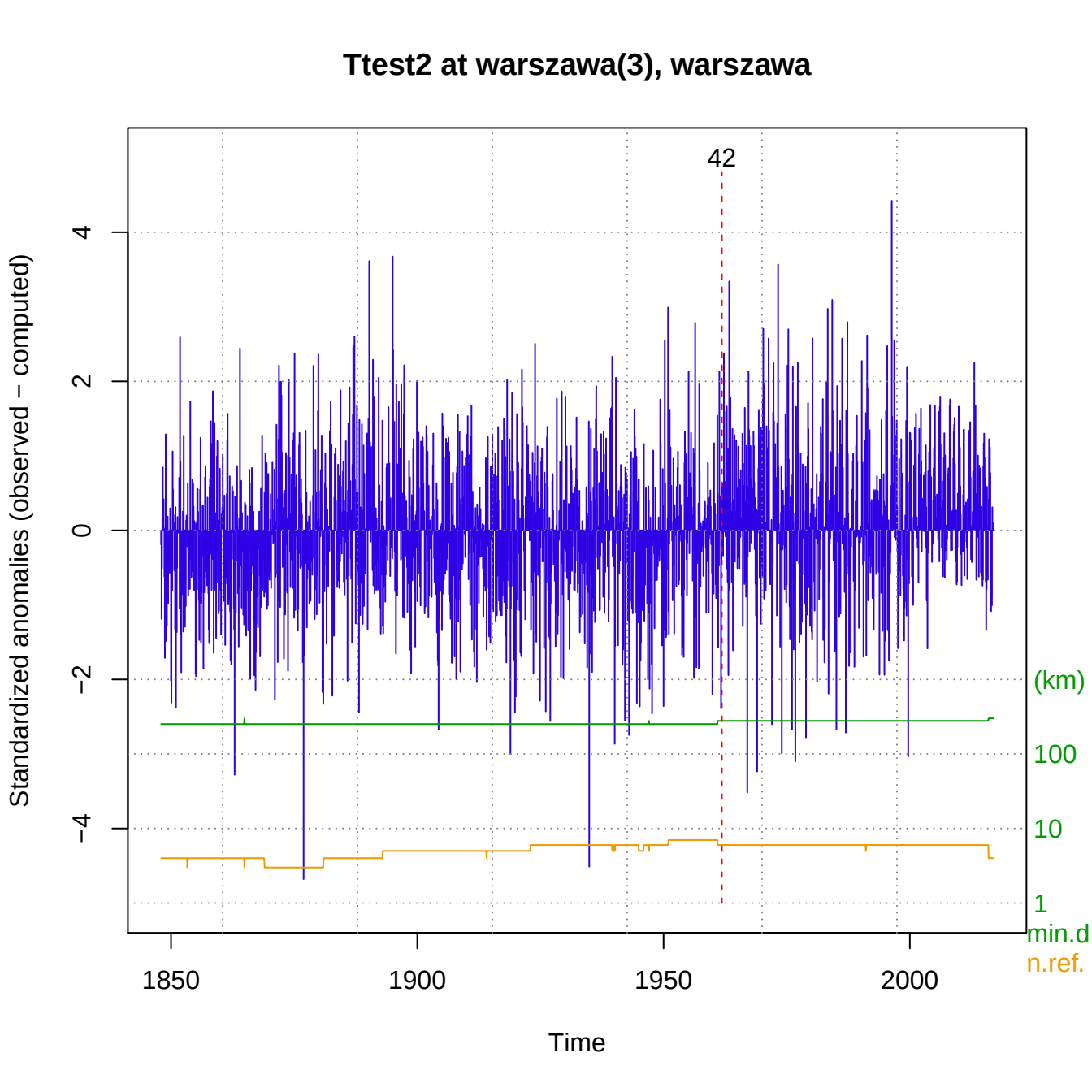

Histogram of maximum SNHT (Stage 1)
Frequency
0.0
0.5
1.0
1.5
2.0
12
14
16
18
20
22
24
26
SNHT

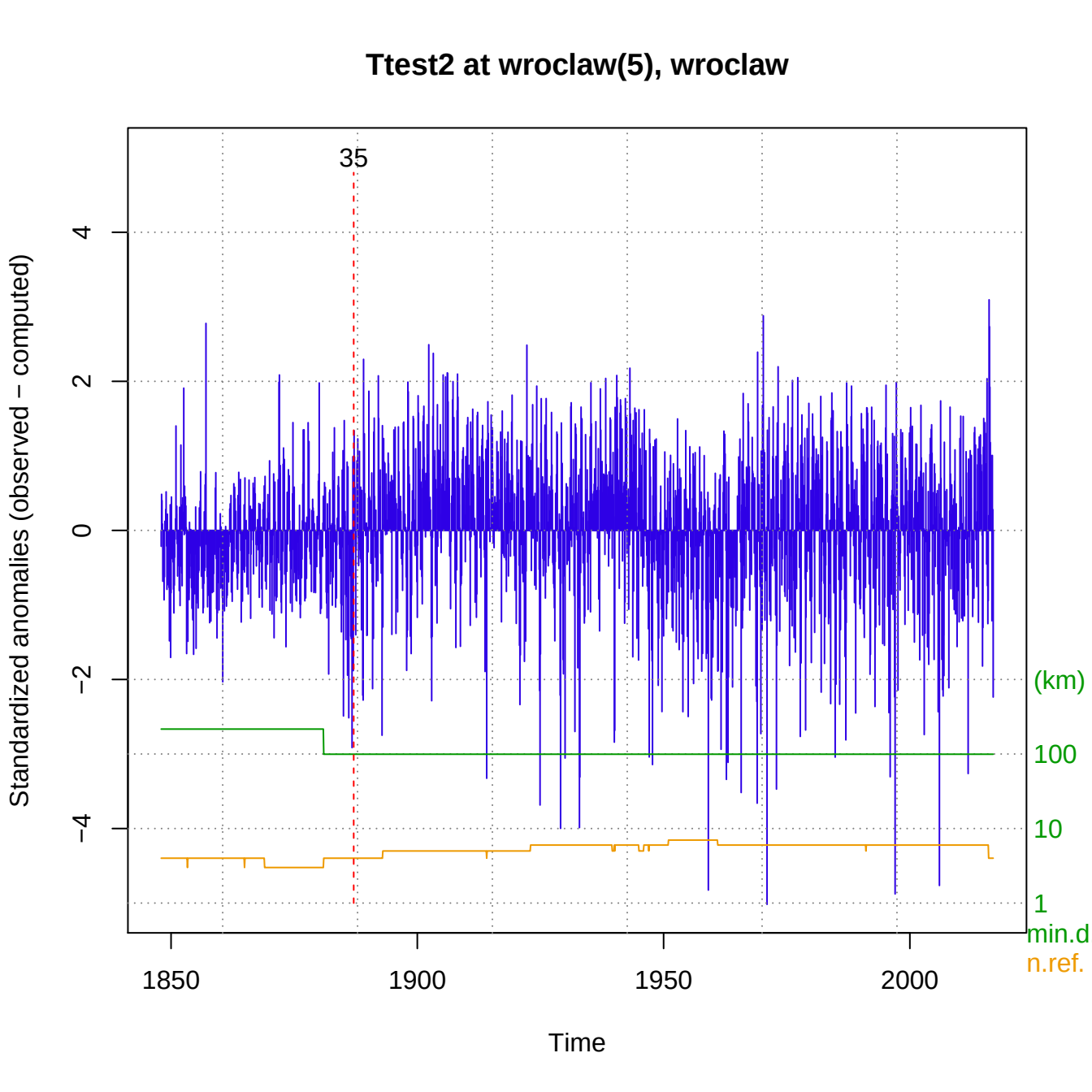
Stage 2

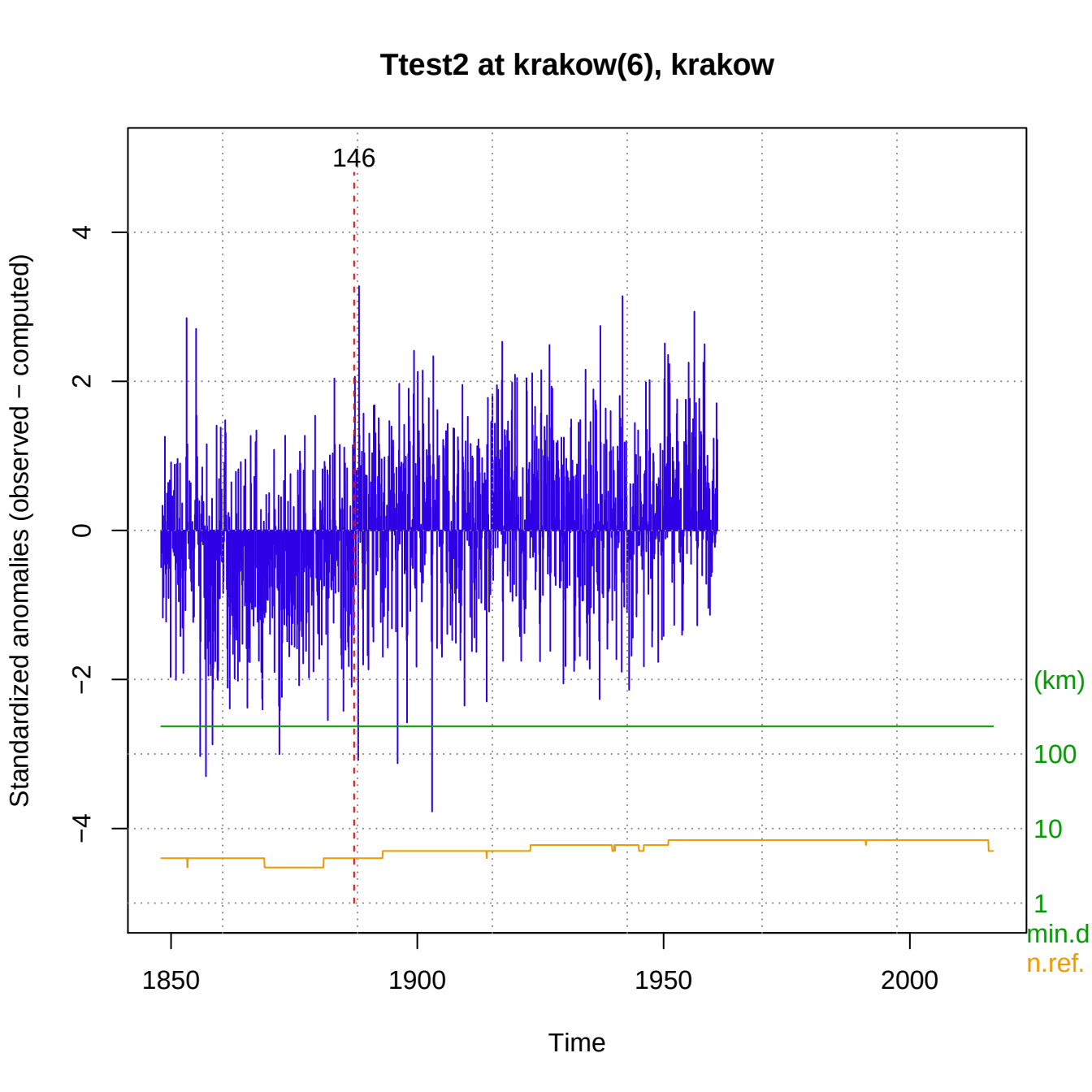
Binary splits on whole series with SNHT > 30 and wd = 100 km

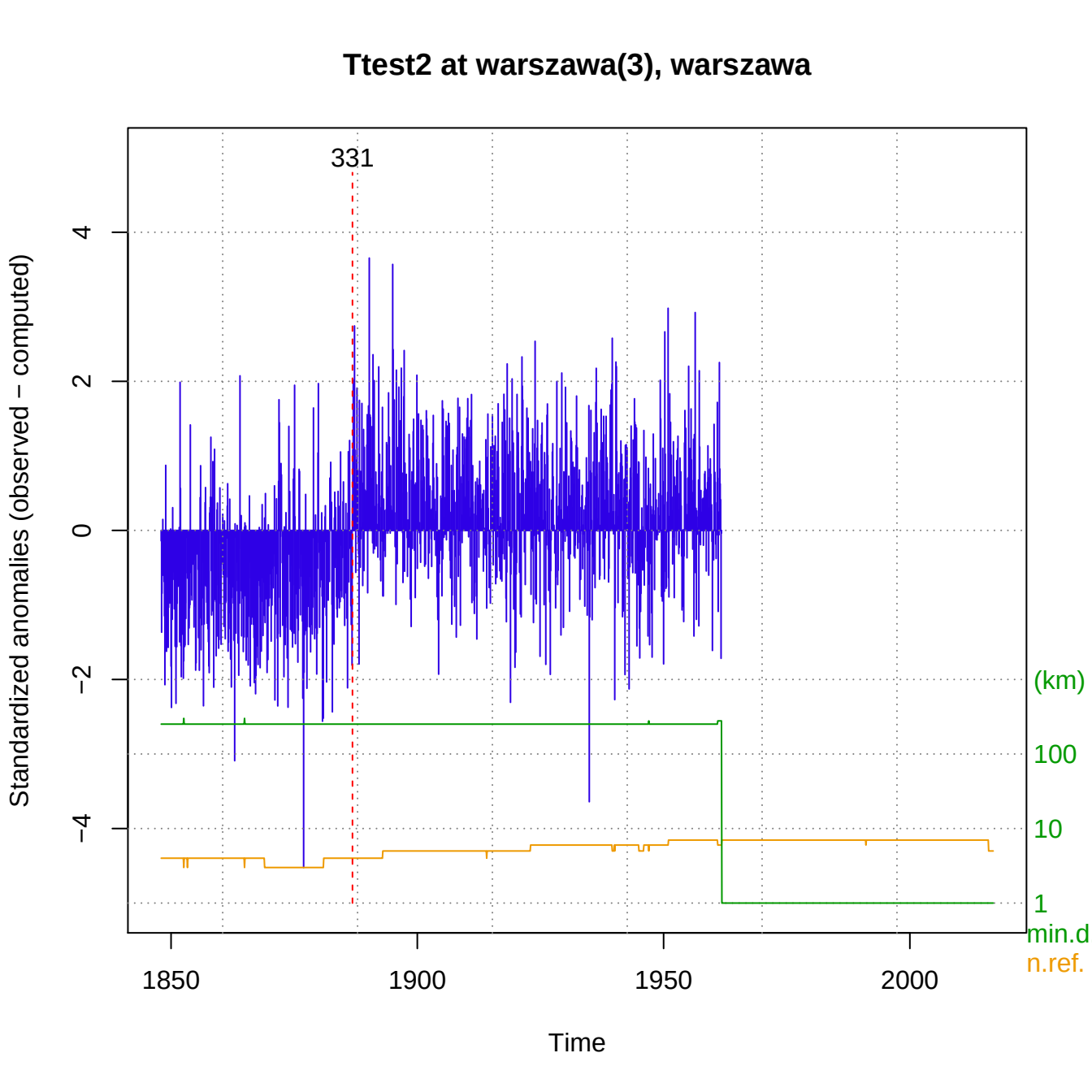

Ttest2 at szczecin(7), szczecin
170
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

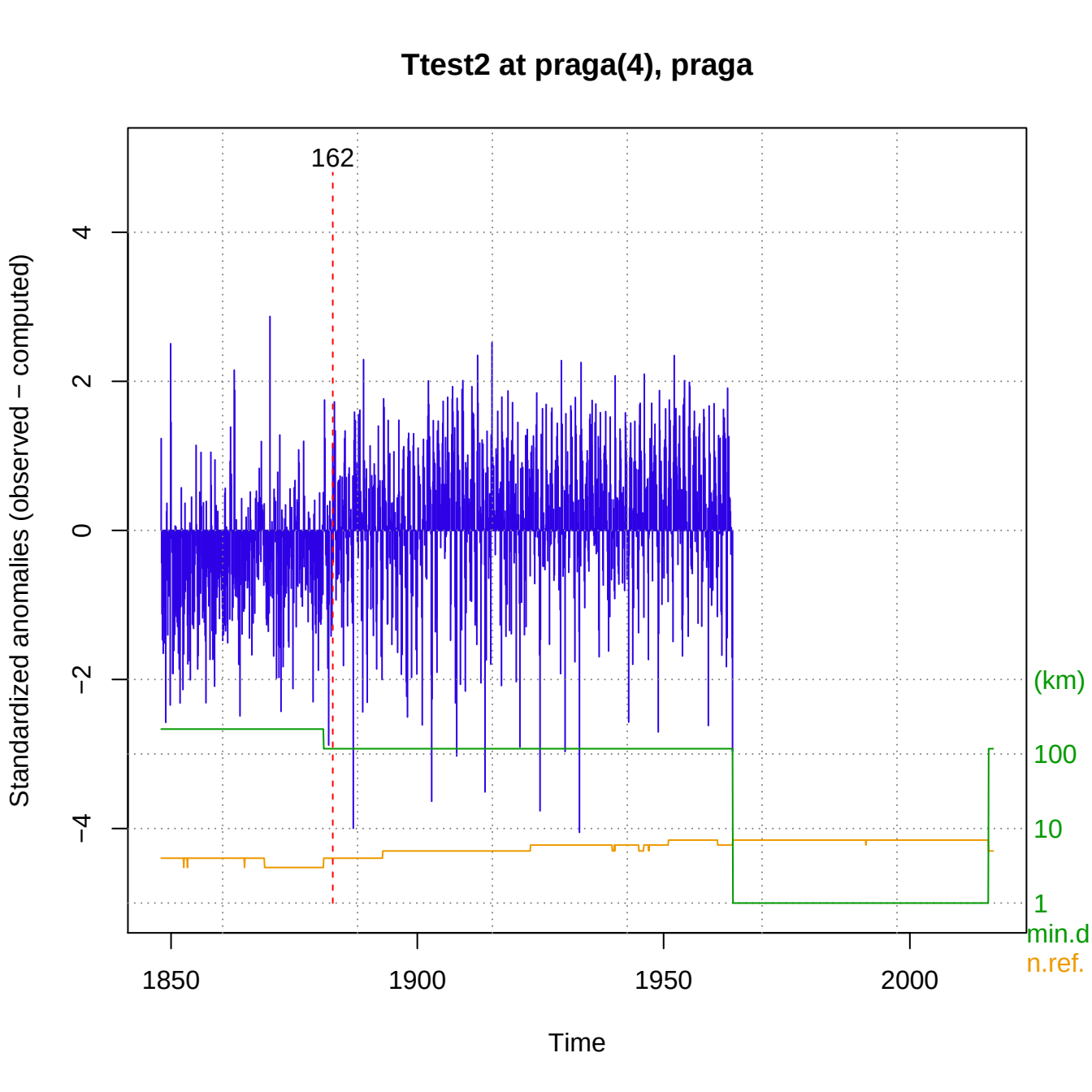

Ttest2 at praga(4), praga
116
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

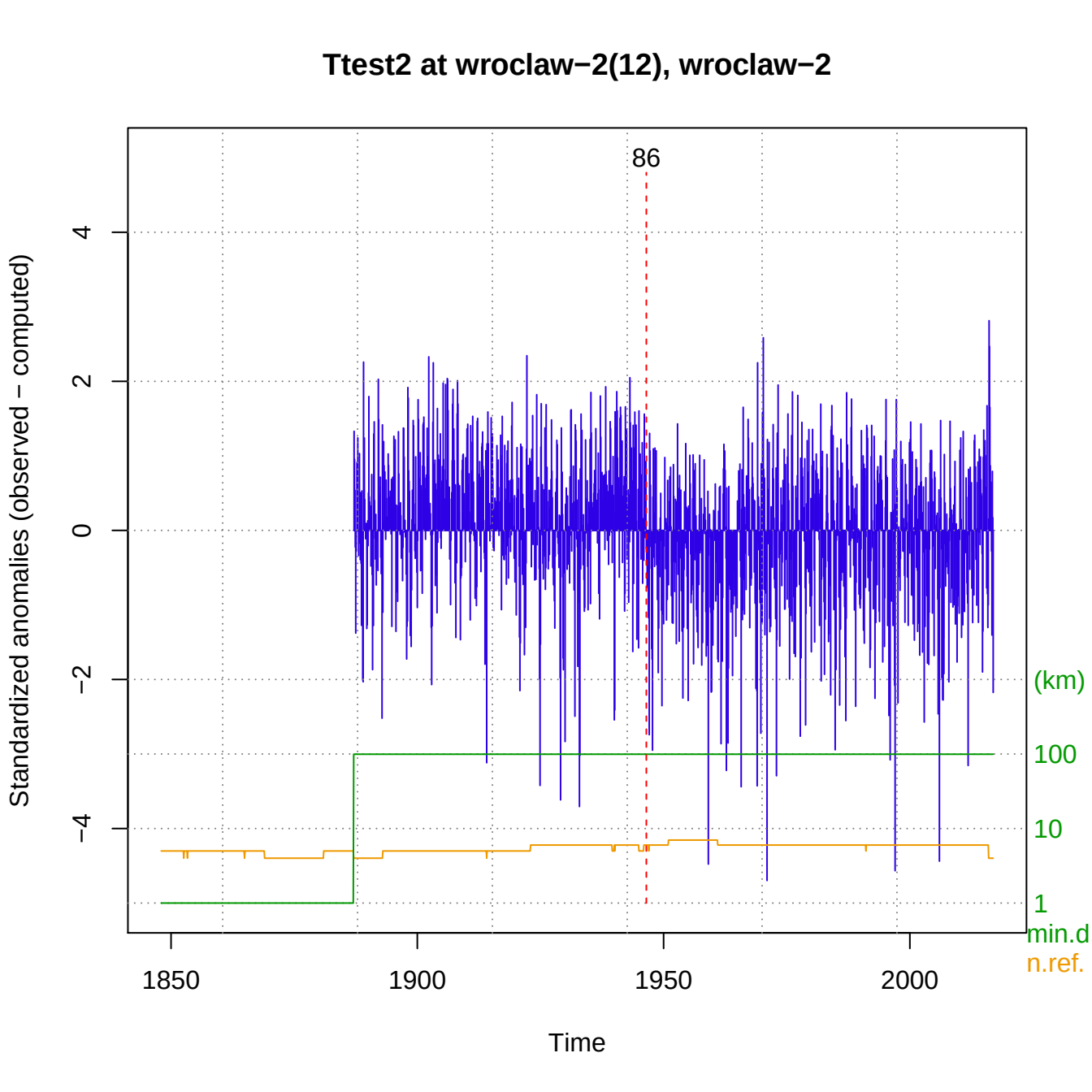

Ttest2 at warszawa(3), warszawa
42
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

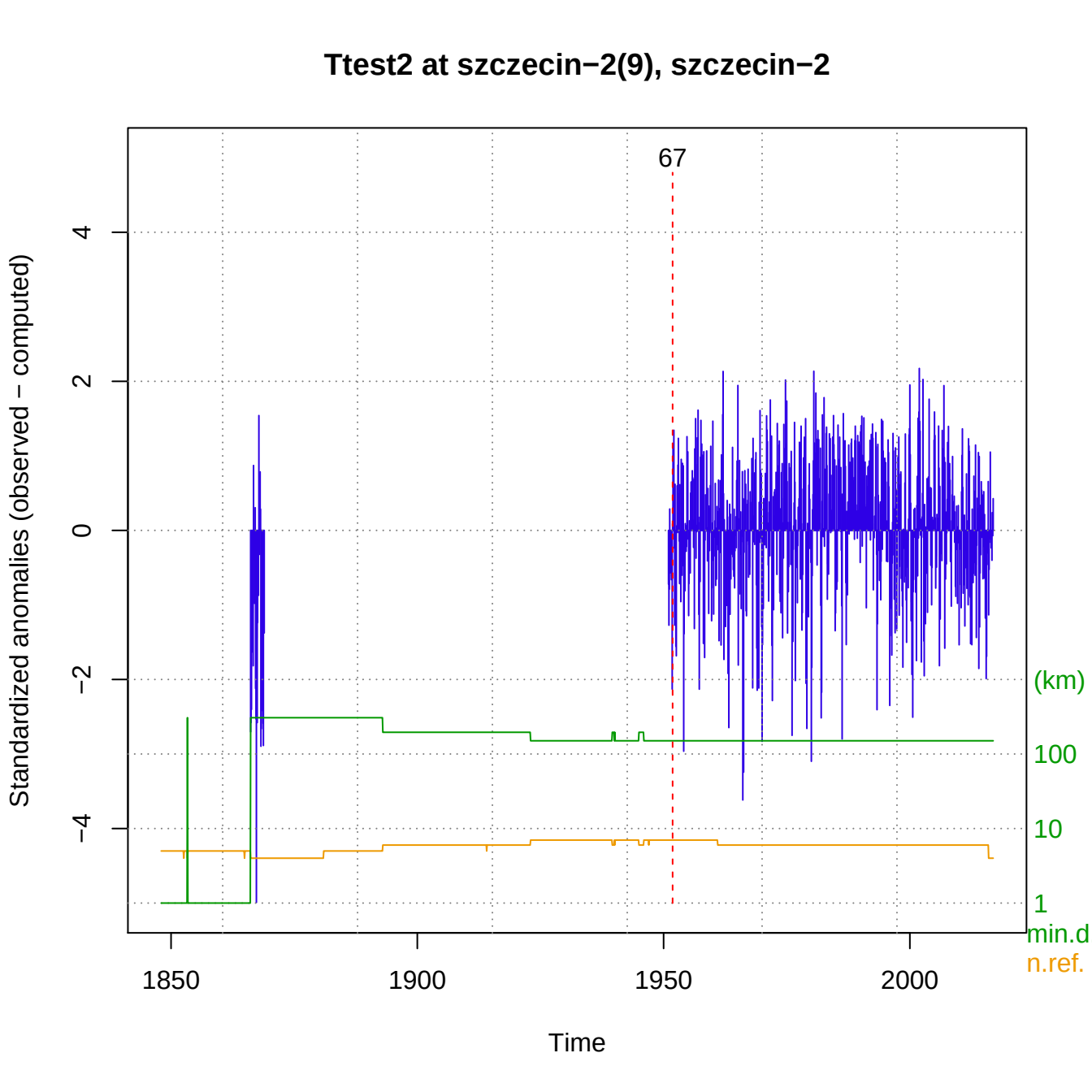

Ttest2 at wroclaw(5), wroclaw
35
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

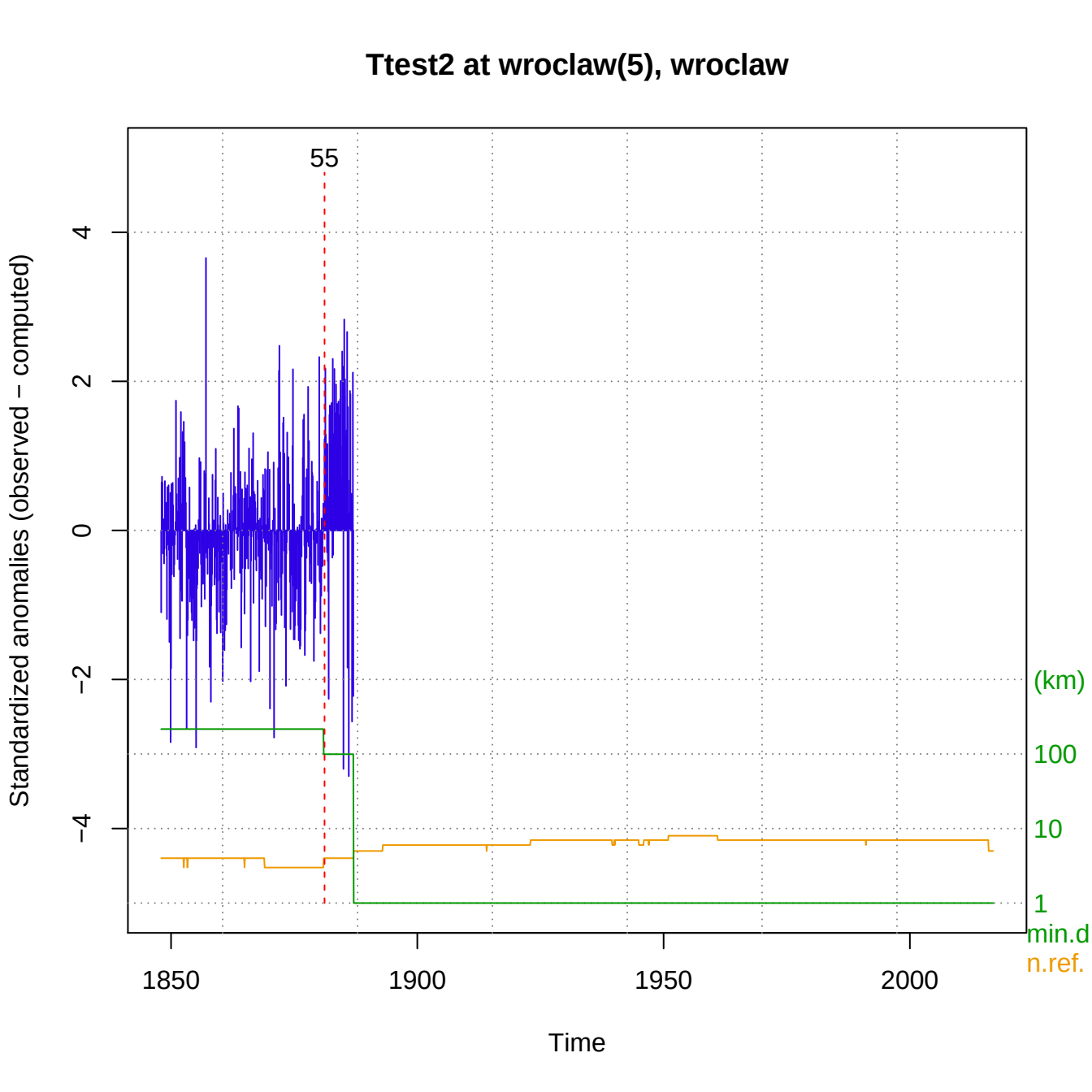

Ttest2 at krakow(6), krakow
146
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

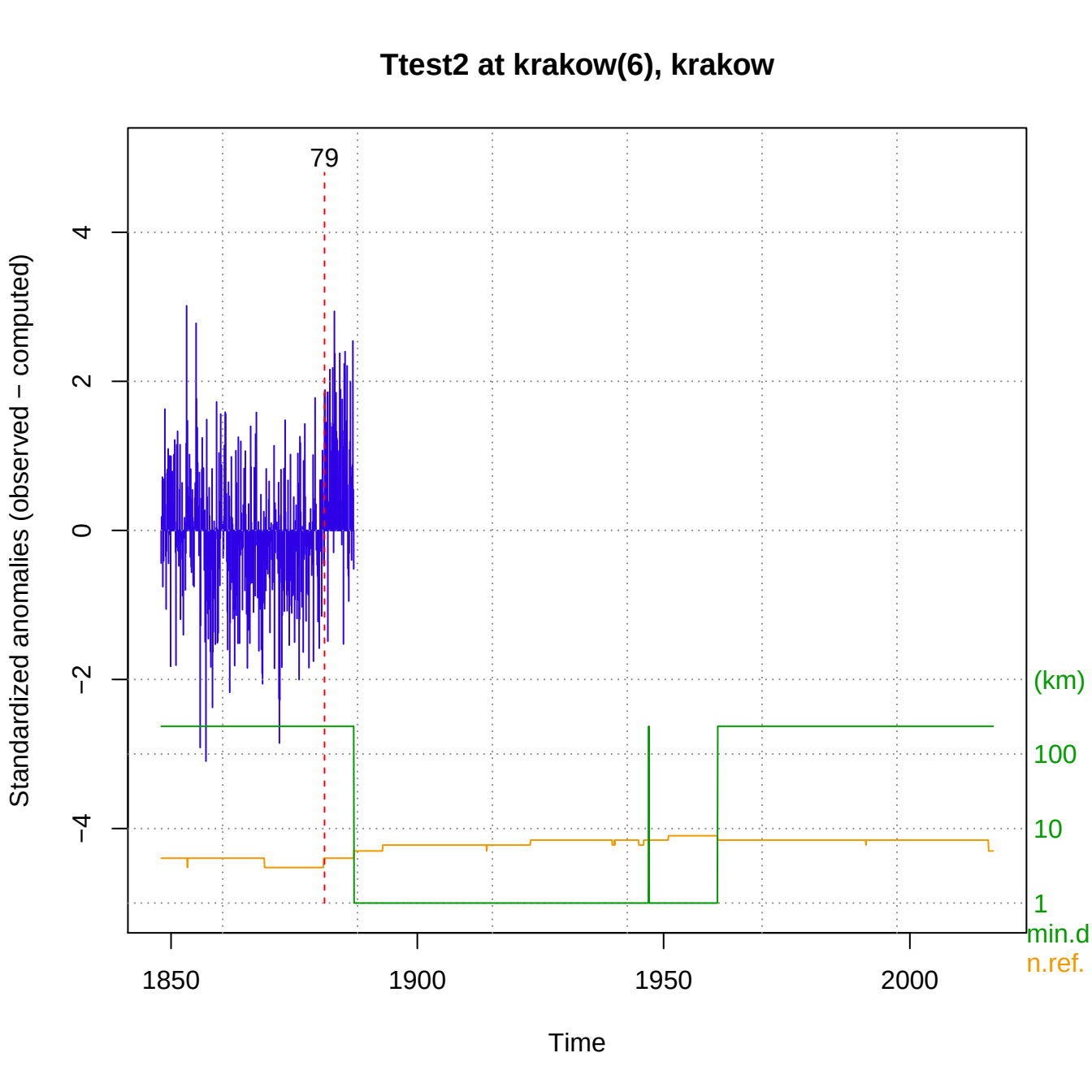

Ttest2 at warszawa(3), warszawa
331
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

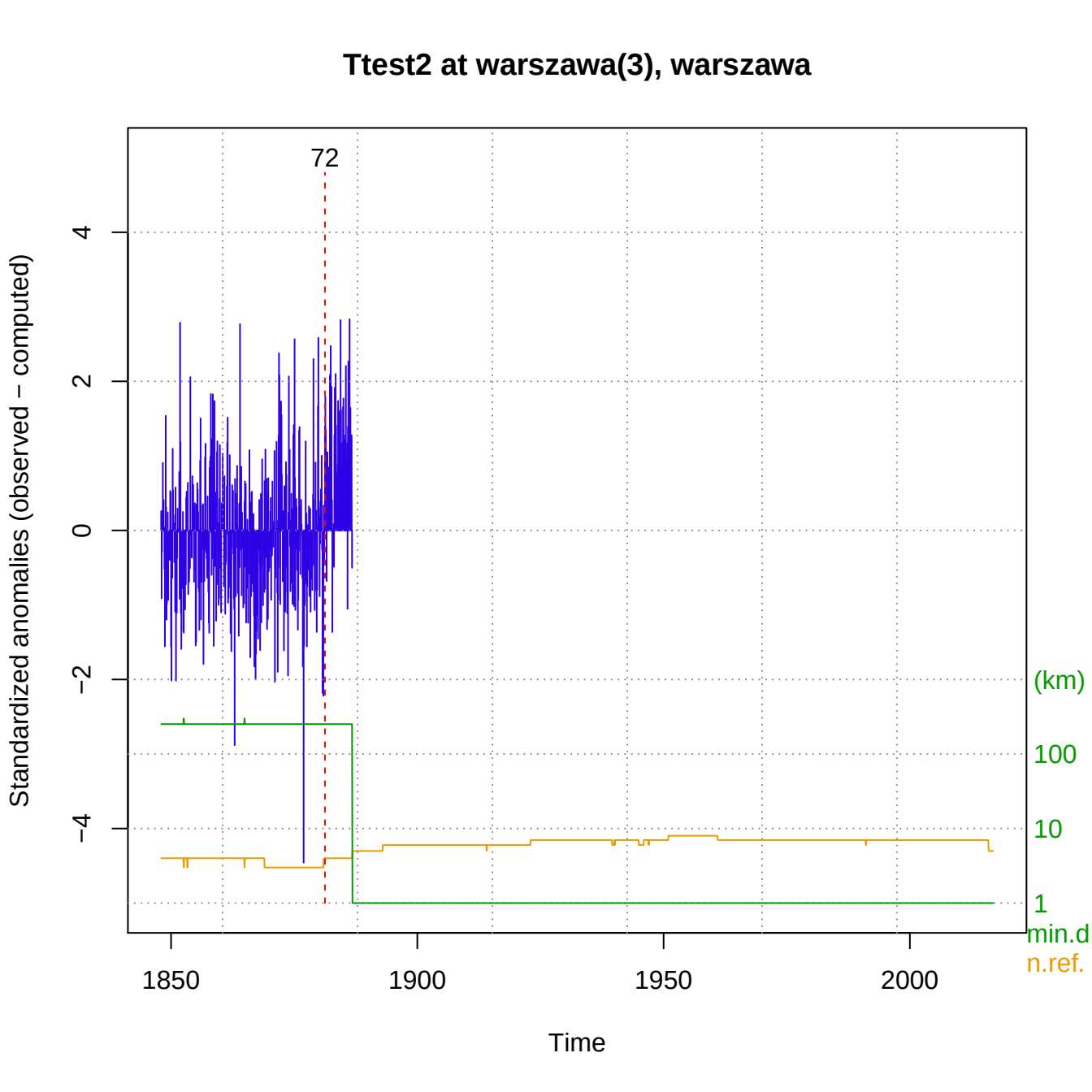

Ttest2 at praga(4), praga
162
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

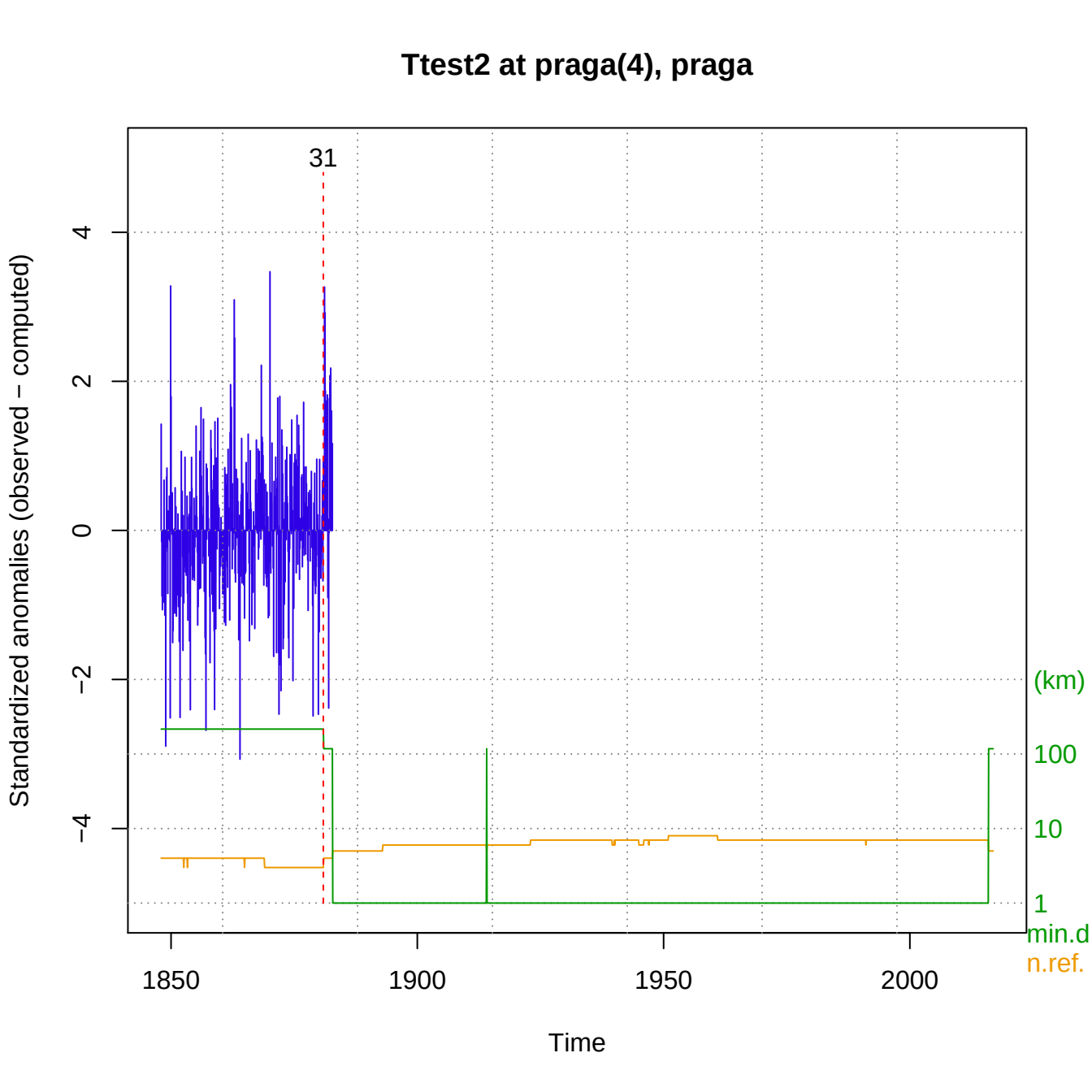

Ttest2 at wroclaw−2(12), wroclaw−2
86
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

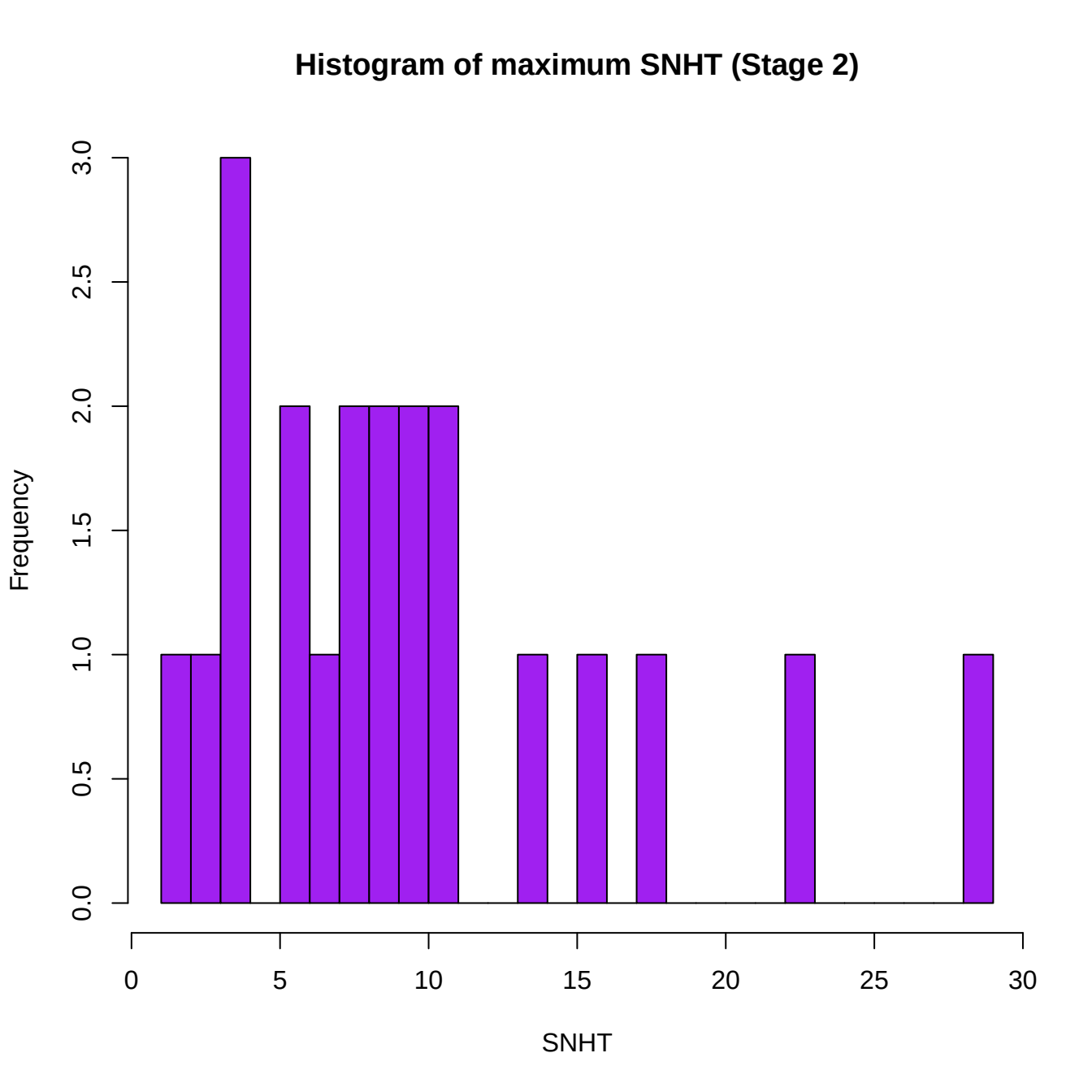

Ttest2 at szczecin−2(9), szczecin−2
67
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

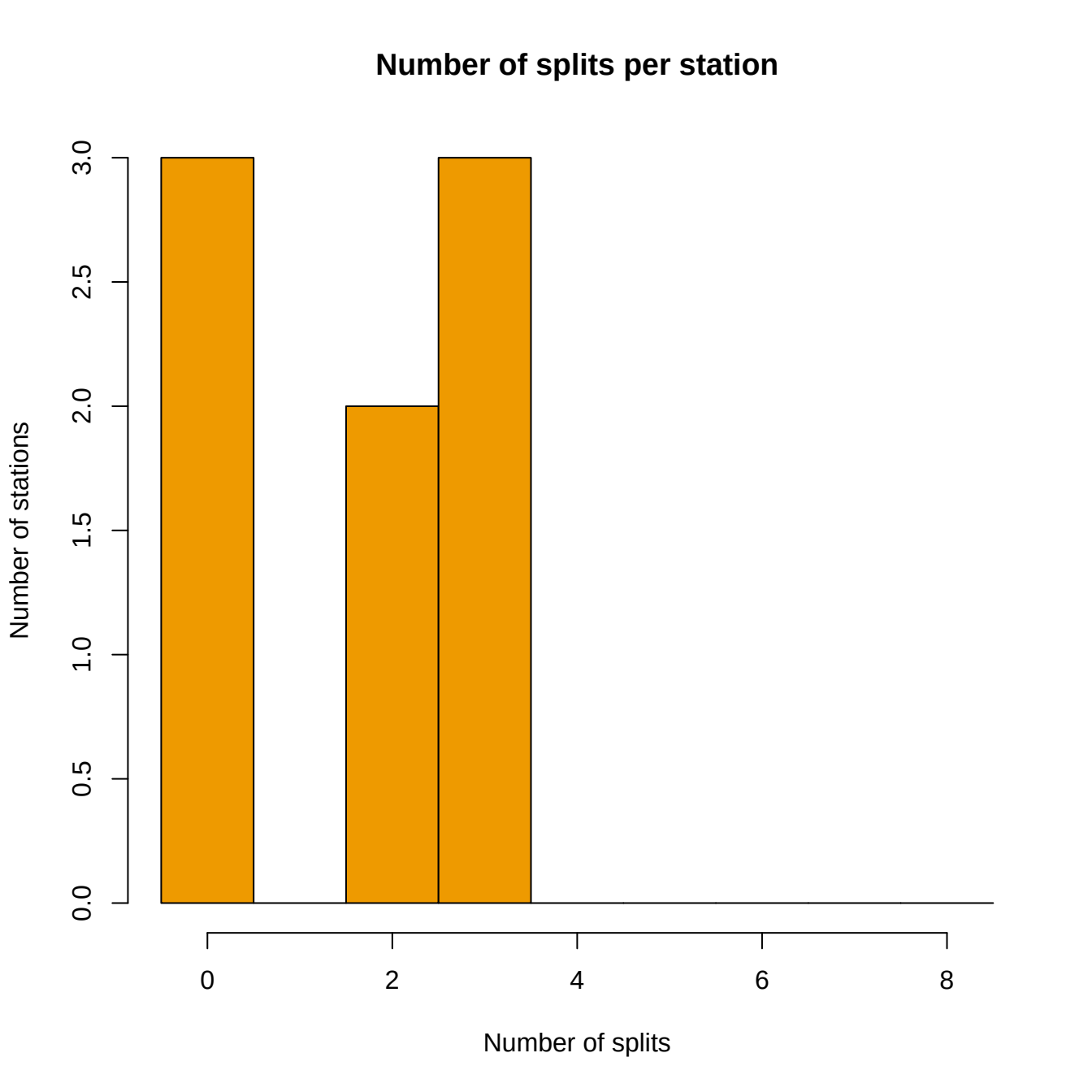

Ttest2 at wroclaw(5), wroclaw
55
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

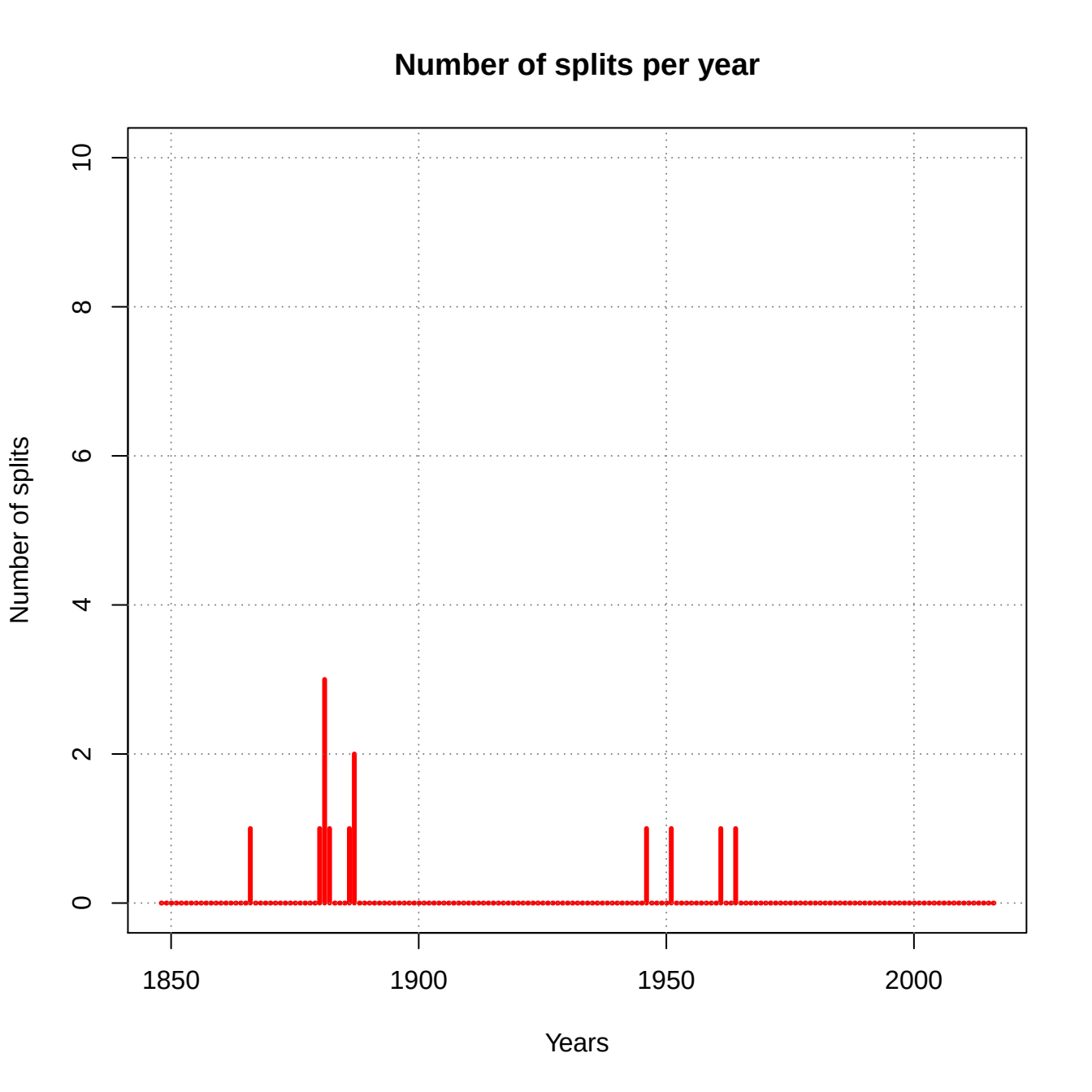

Ttest2 at krakow(6), krakow
79
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.


Ttest2 at warszawa(3), warszawa
72
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.


Ttest2 at praga(4), praga
31
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

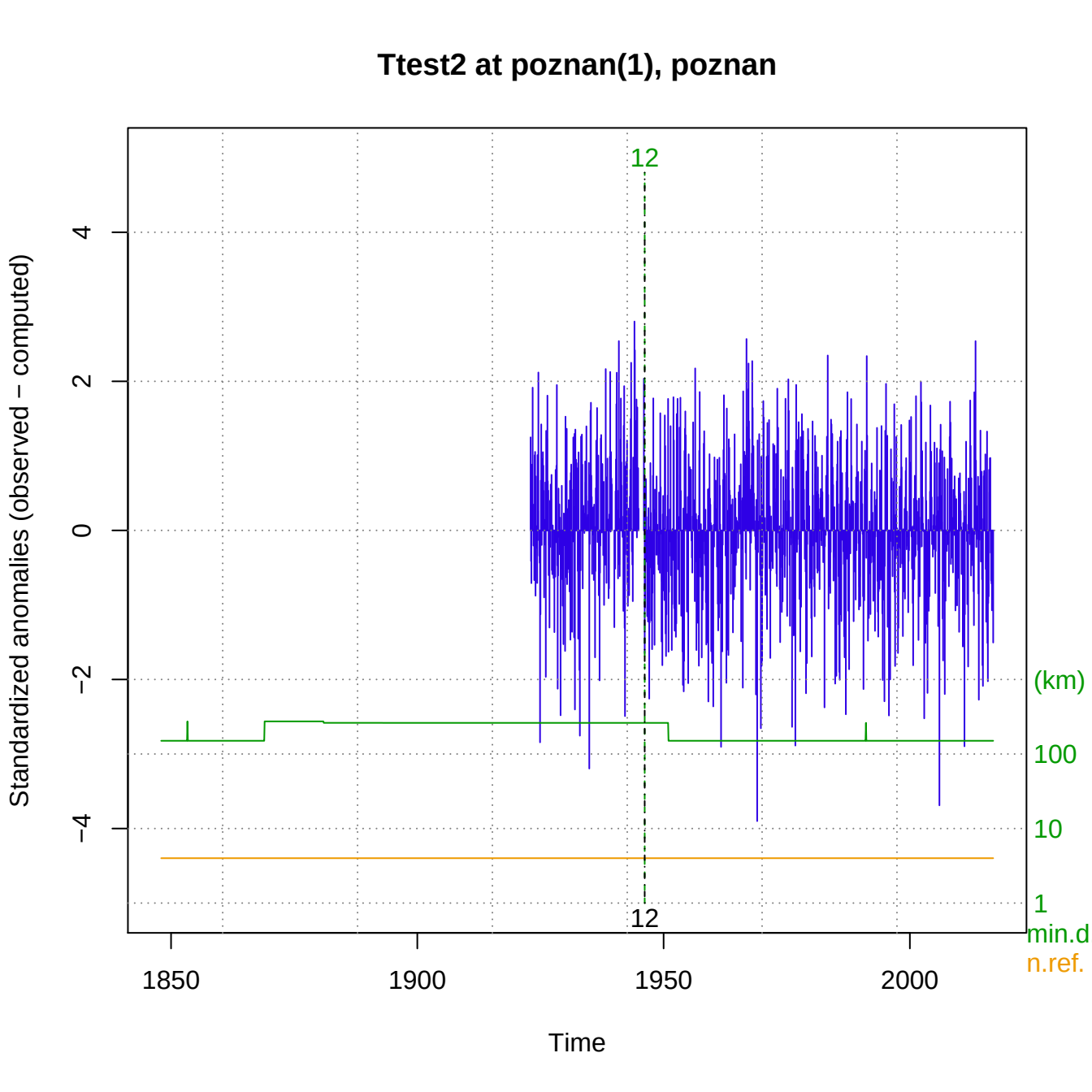

Histogram of maximum SNHT (Stage 2)
Frequency
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0
5
10
15
20
25
30
SNHT

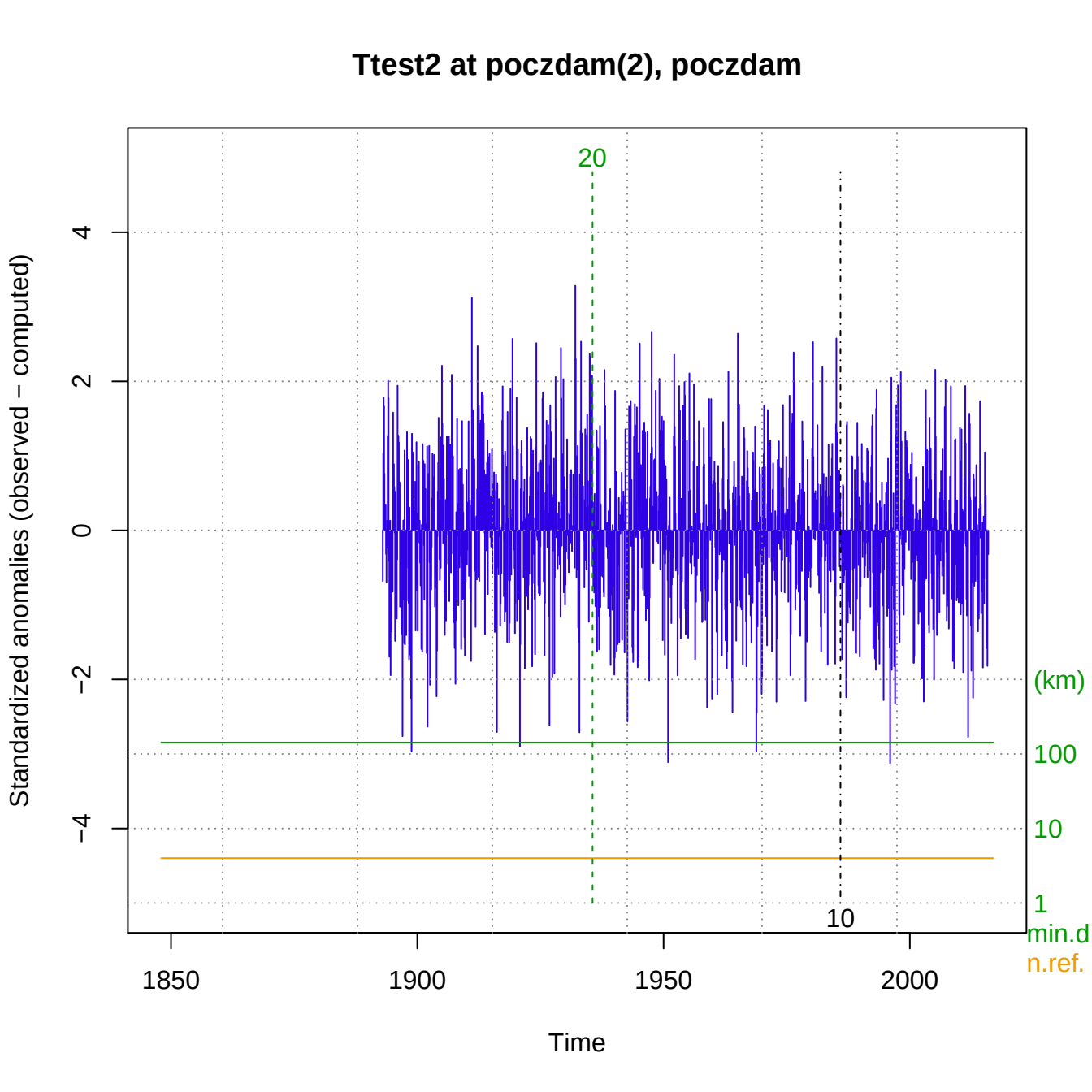

Number of splits per station
Number of stations
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0
2
4
6
8
Number of splits

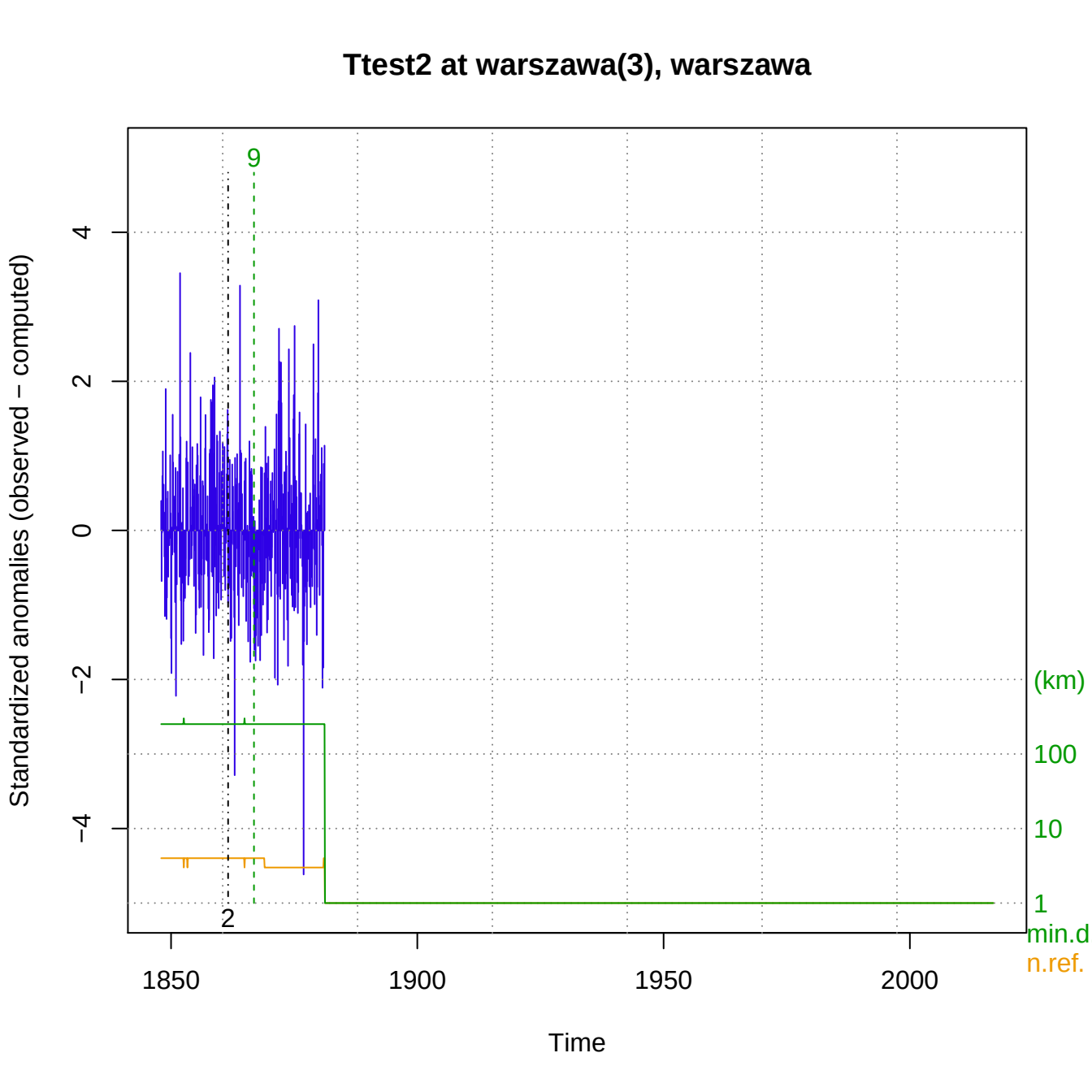

Number of splits per year
Number of splits
0
2
4
6
8
10
1850
1900
1950
2000
Years

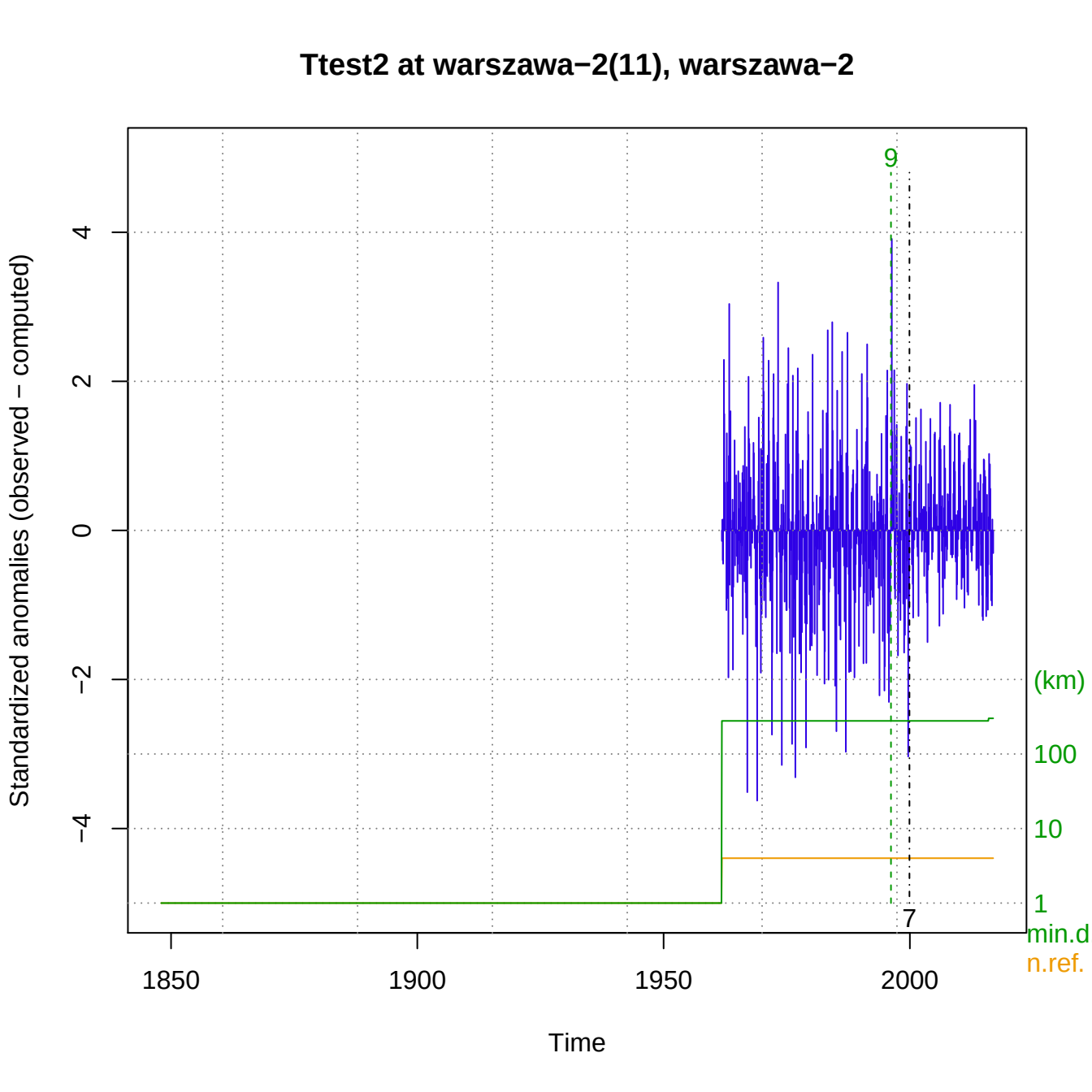
Stage 3

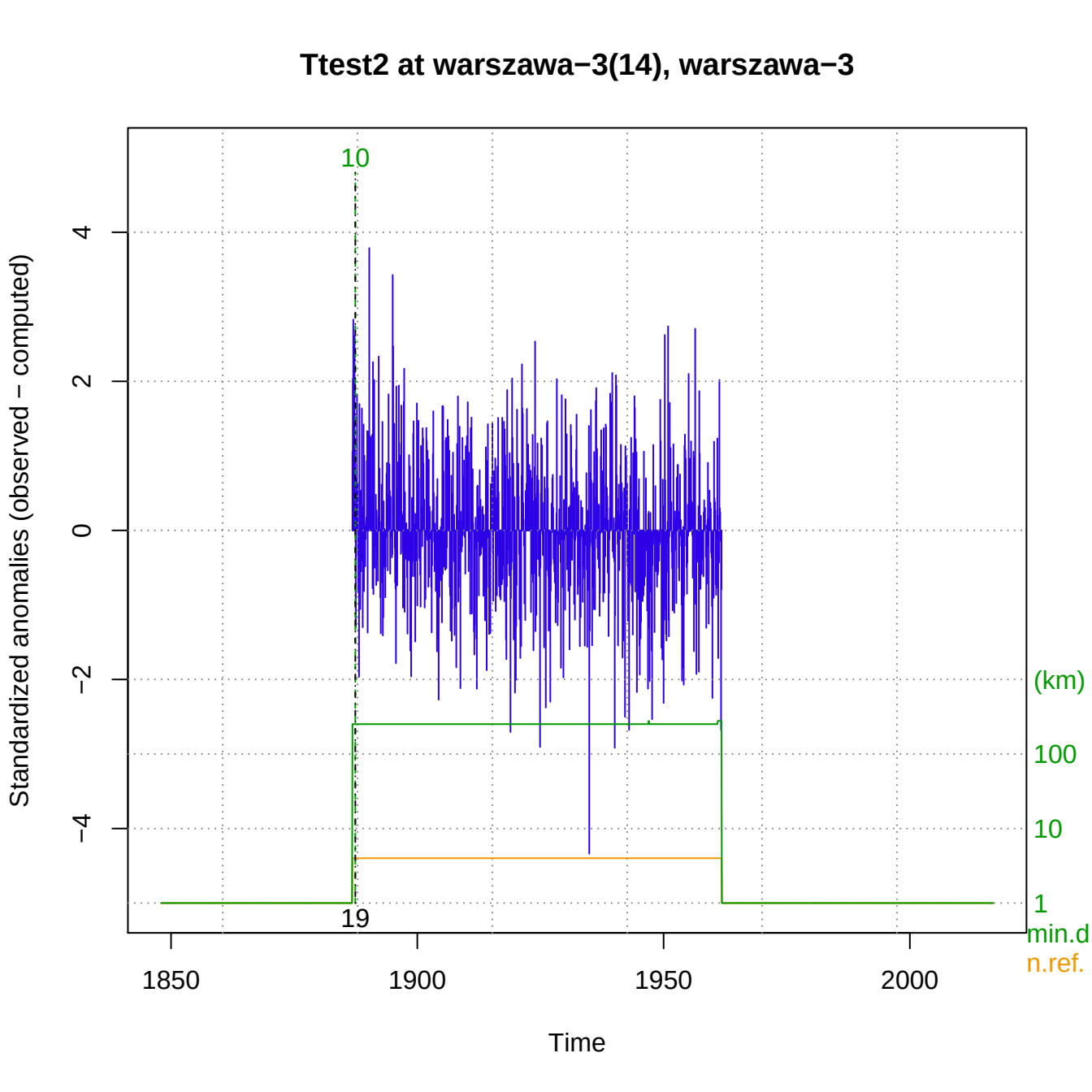
Anomalies after
missing data
recalculation
with wd = 500 km
(swa = 60)

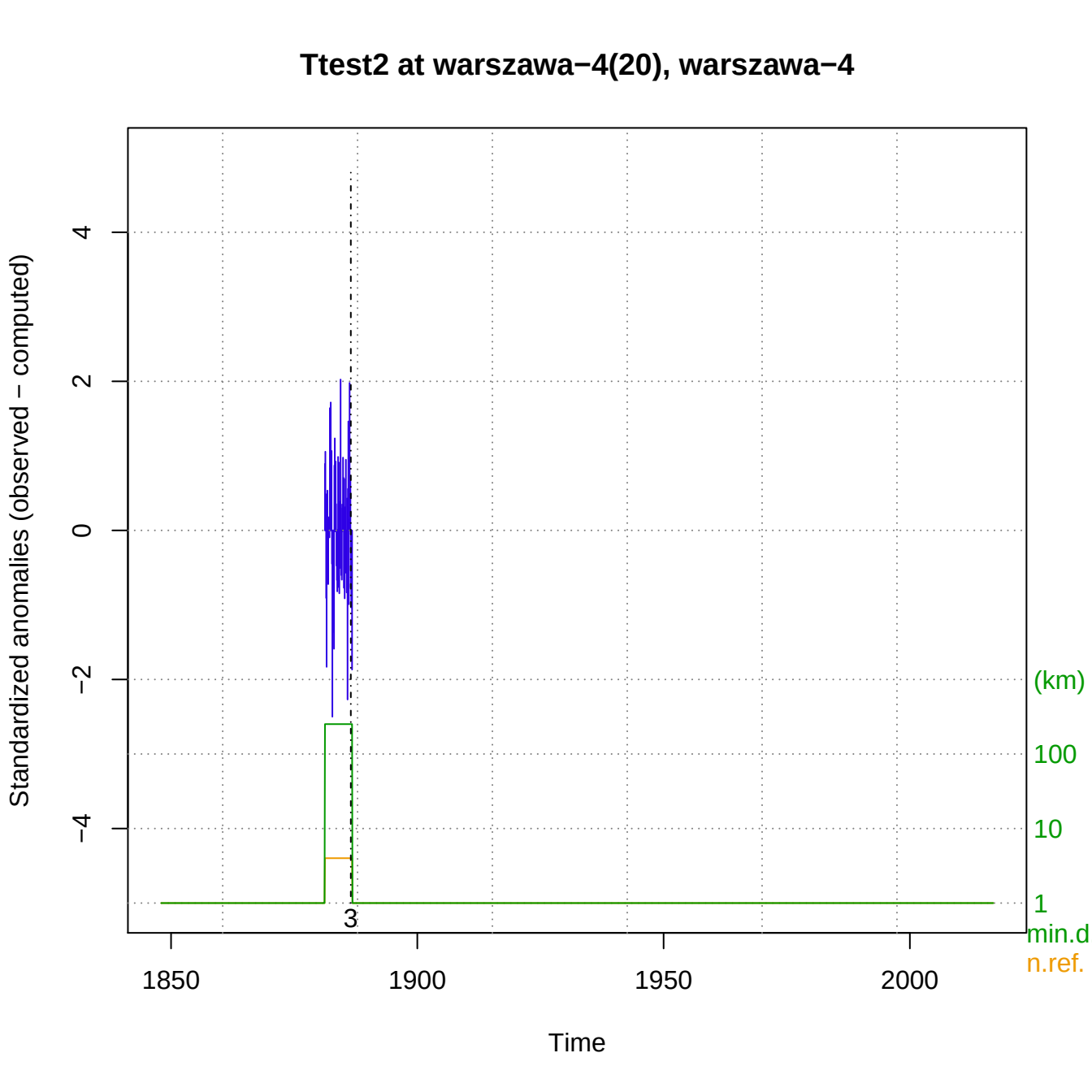

Ttest2 at poznan(1), poznan
12
12
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

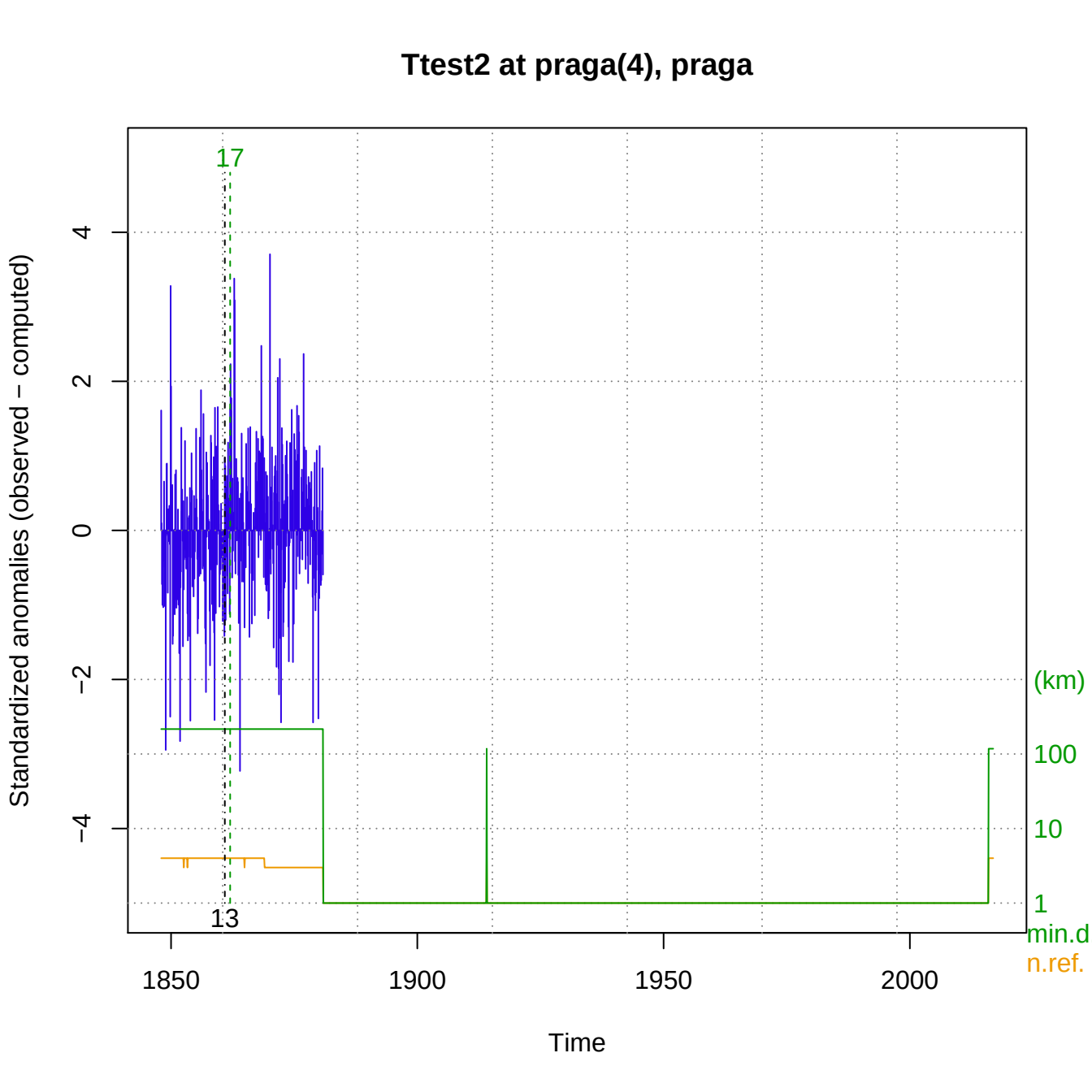

Ttest2 at poczdam(2), poczdam
Standardized anomalies (observed − computed)
4
2
0
−2
−4
20
10
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

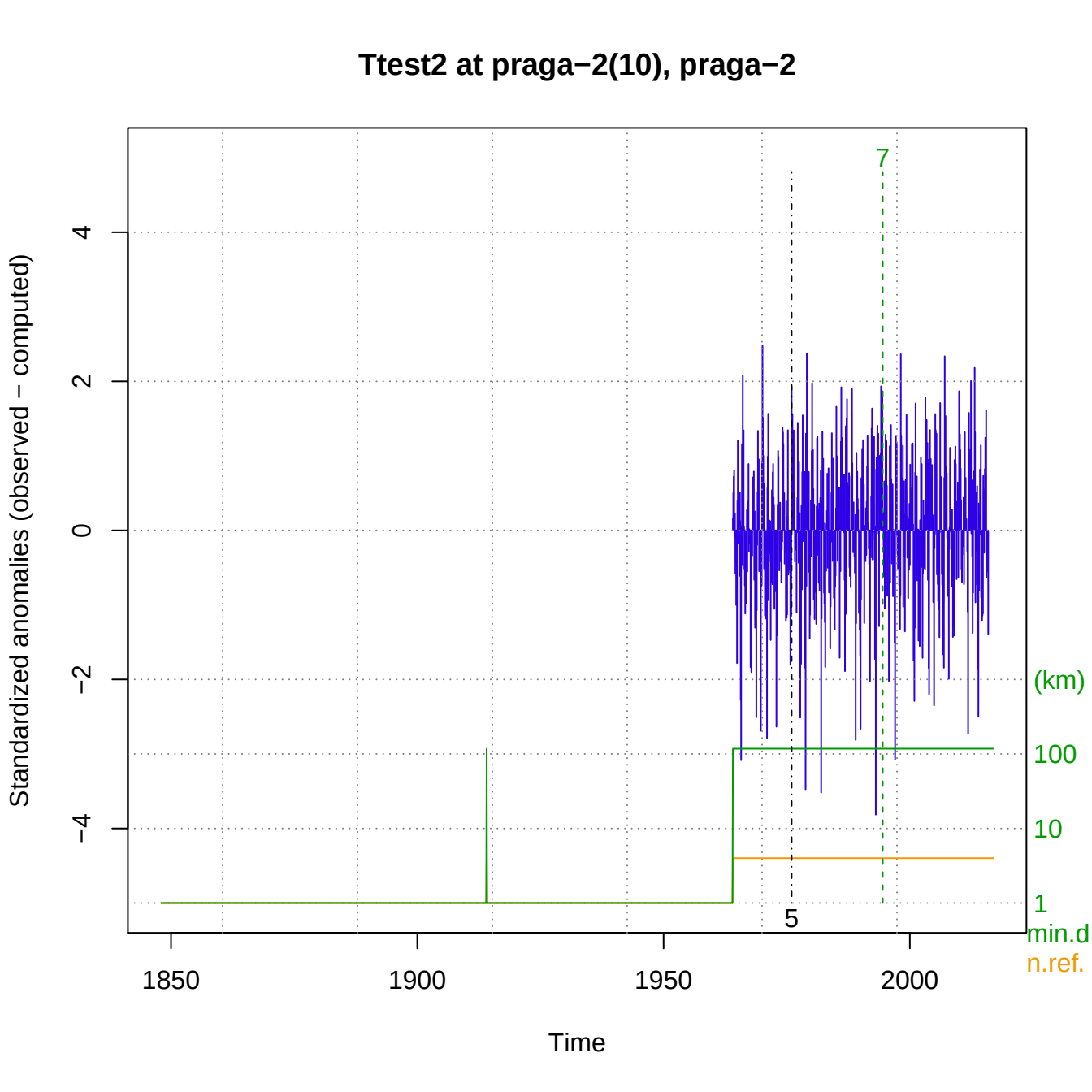

Ttest2 at warszawa(3), warszawa
Standardized anomalies (observed – computed)
4
2
0
−2
−4
9
2
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

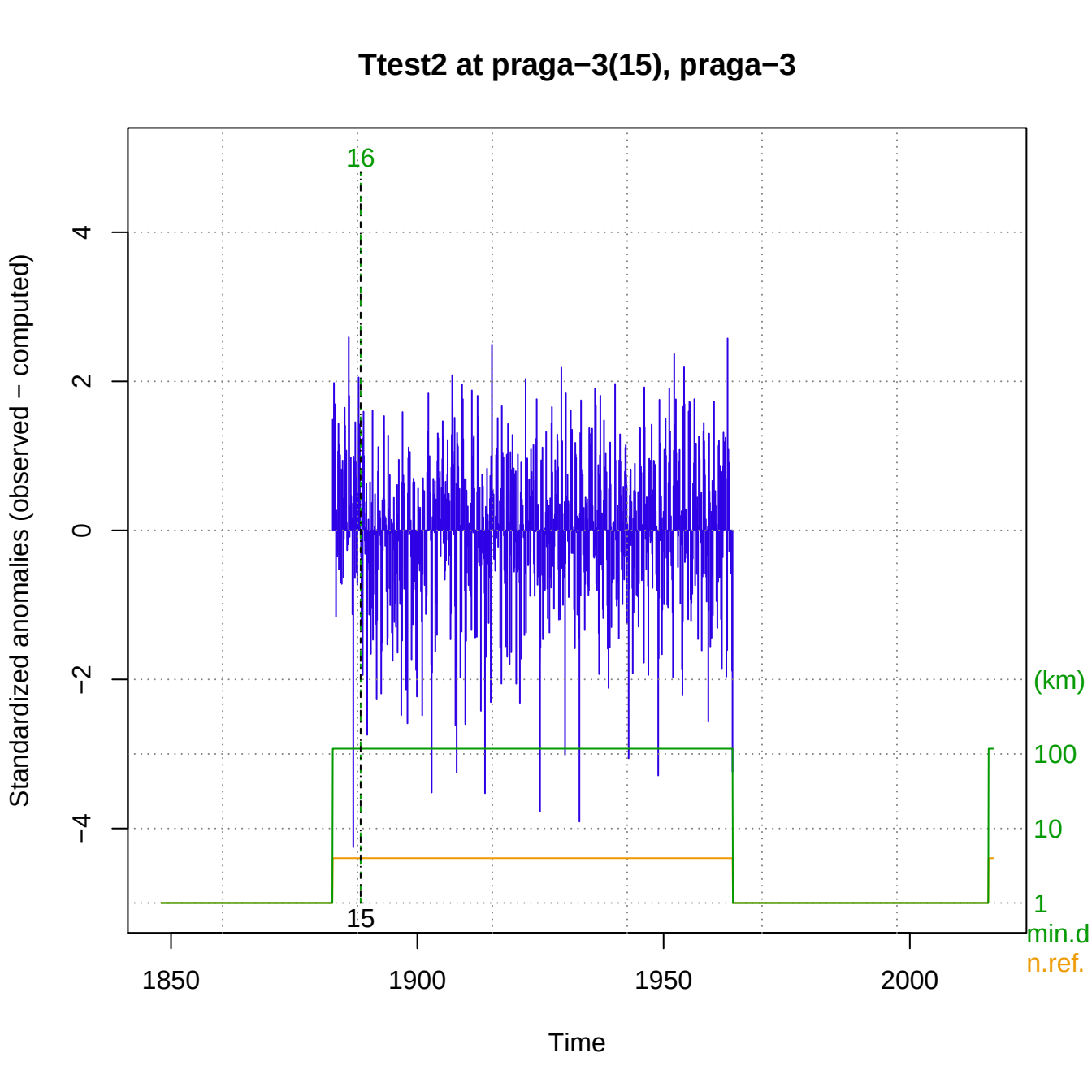

Ttest2 at warszawa−2(11), warszawa−2
Standardized anomalies (observed − computed)
4
2
0
−2
−4
9
7
(km)
100
10
1
min.d
n.ref.
1850
1900
1950
2000
Time

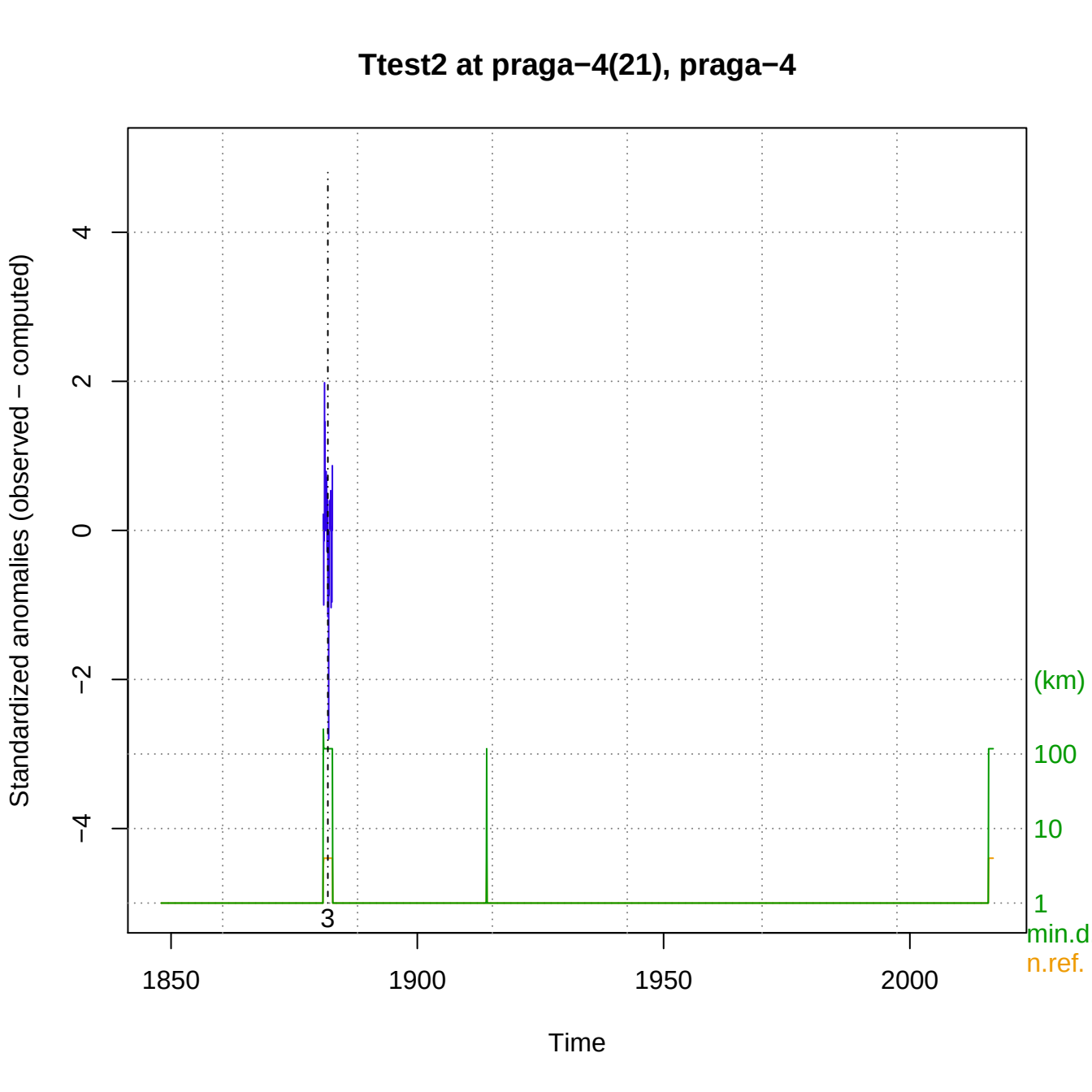

Ttest2 at warszawa−3(14), warszawa−3
10
19
4
2
0
−2
−4
Standardized anomalies (observed − computed)
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

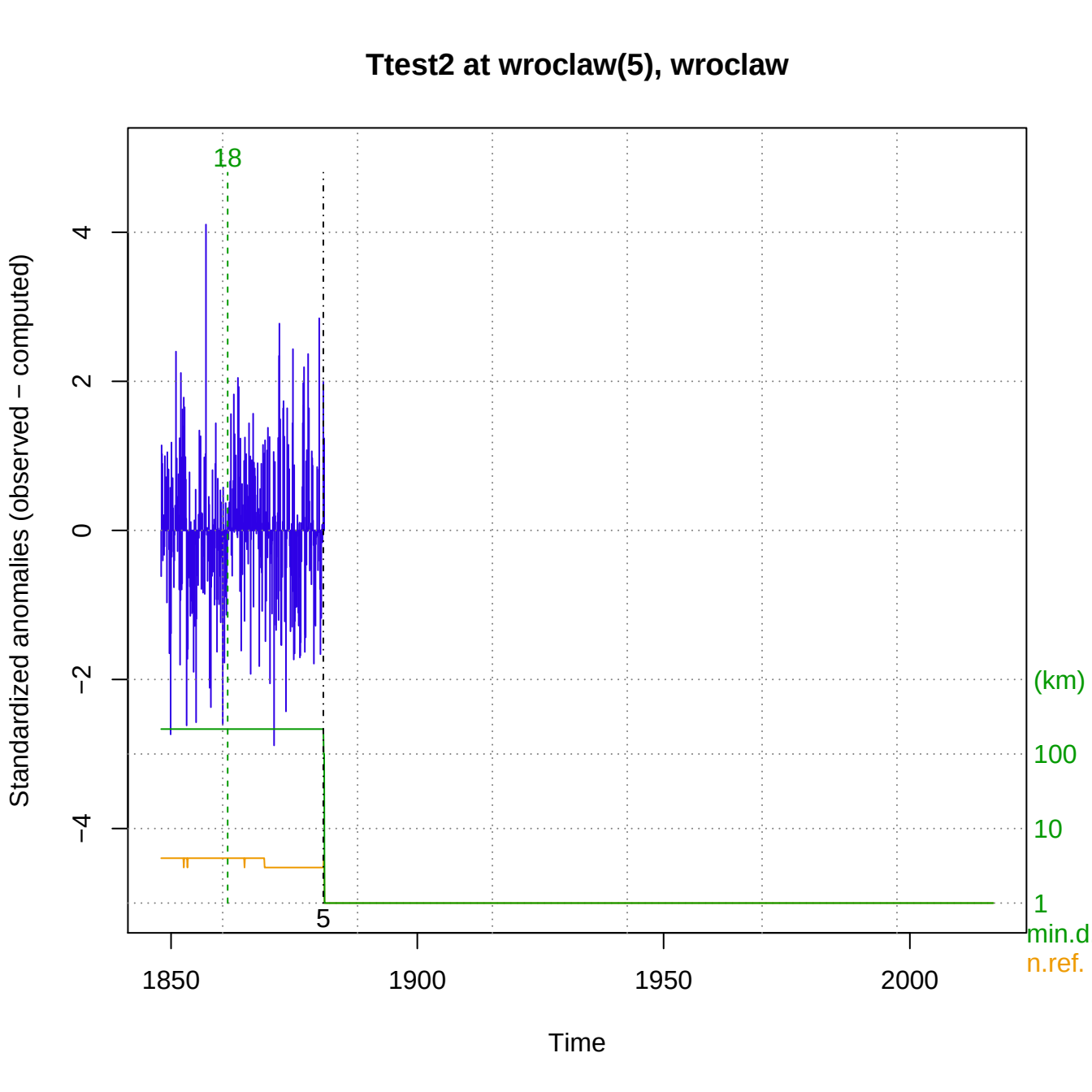

Ttest2 at warszawa−4(20), warszawa−4
Standardized anomalies (observed − computed)
4
2
0
−2
−4
3
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

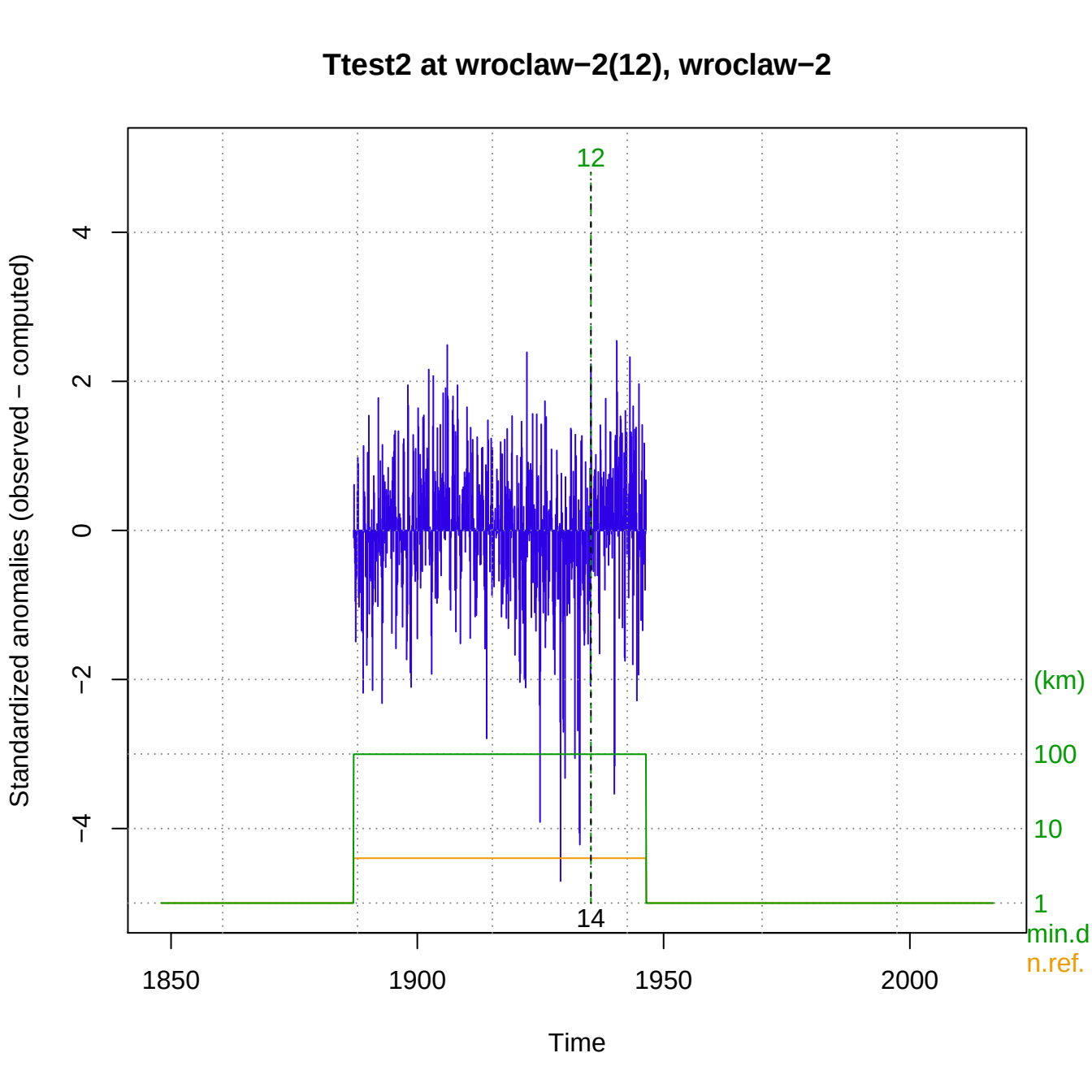

Ttest2 at praga(4), praga
17
13
4
2
0
−2
−4
Standardized anomalies (observed − computed)
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

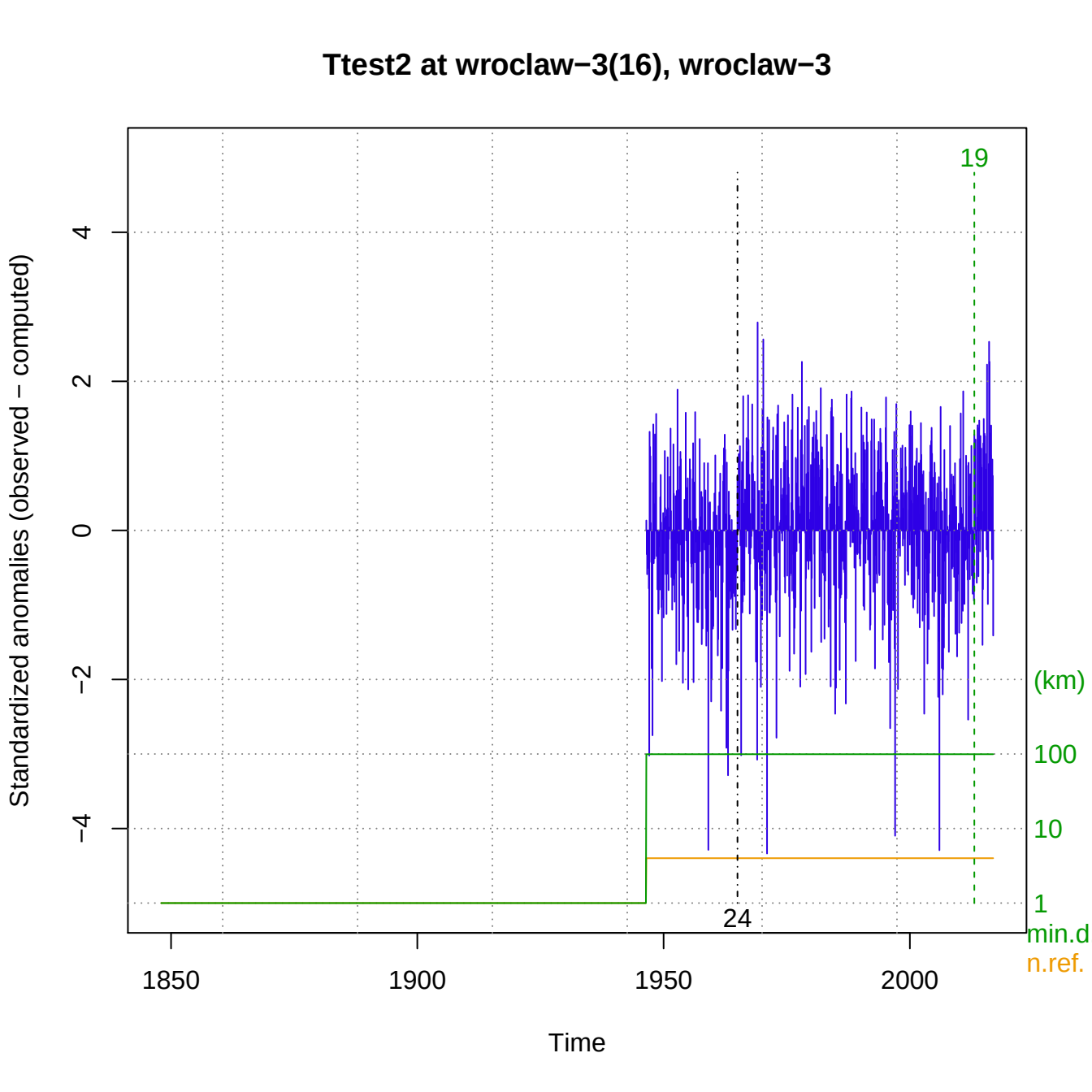

Ttest2 at praga−2(10), praga−2
Standardized anomalies (observed − computed)
4
2
0
−2
−4
7
5
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

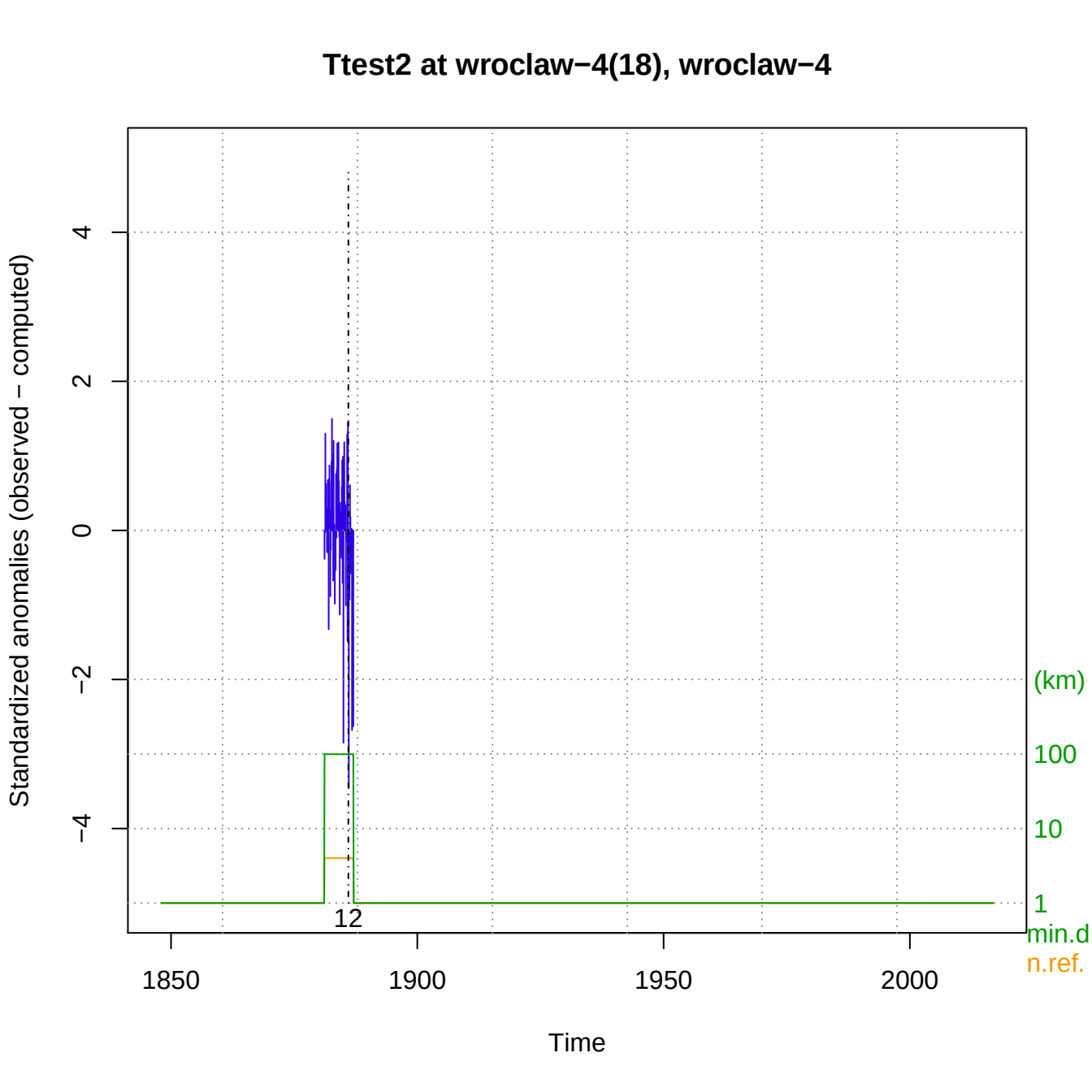

Ttest2 at praga−3(15), praga−3
16
15
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

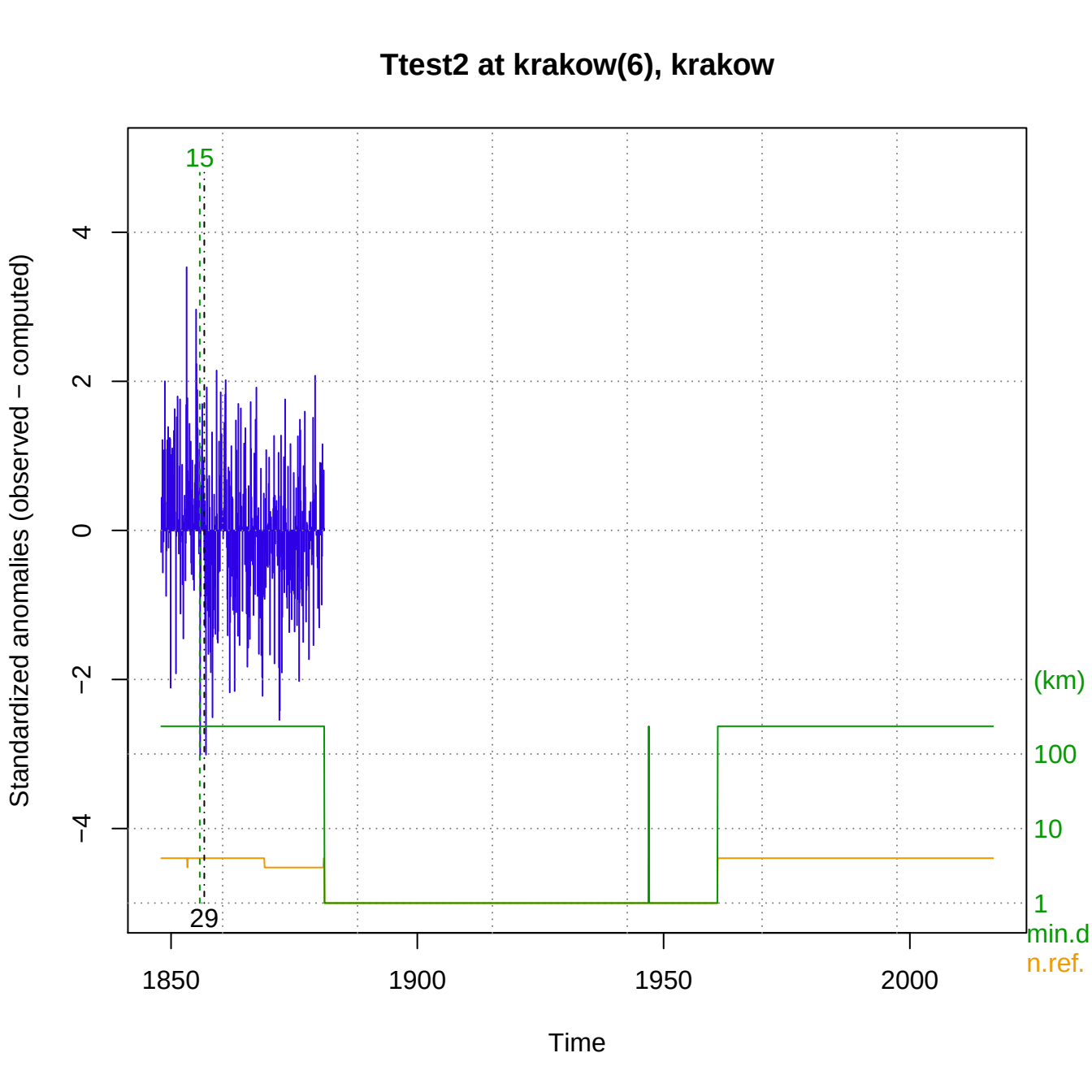

Ttest2 at praga−4(21), praga−4
Standardized anomalies (observed − computed)
4
2
0
−2
−4
3
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

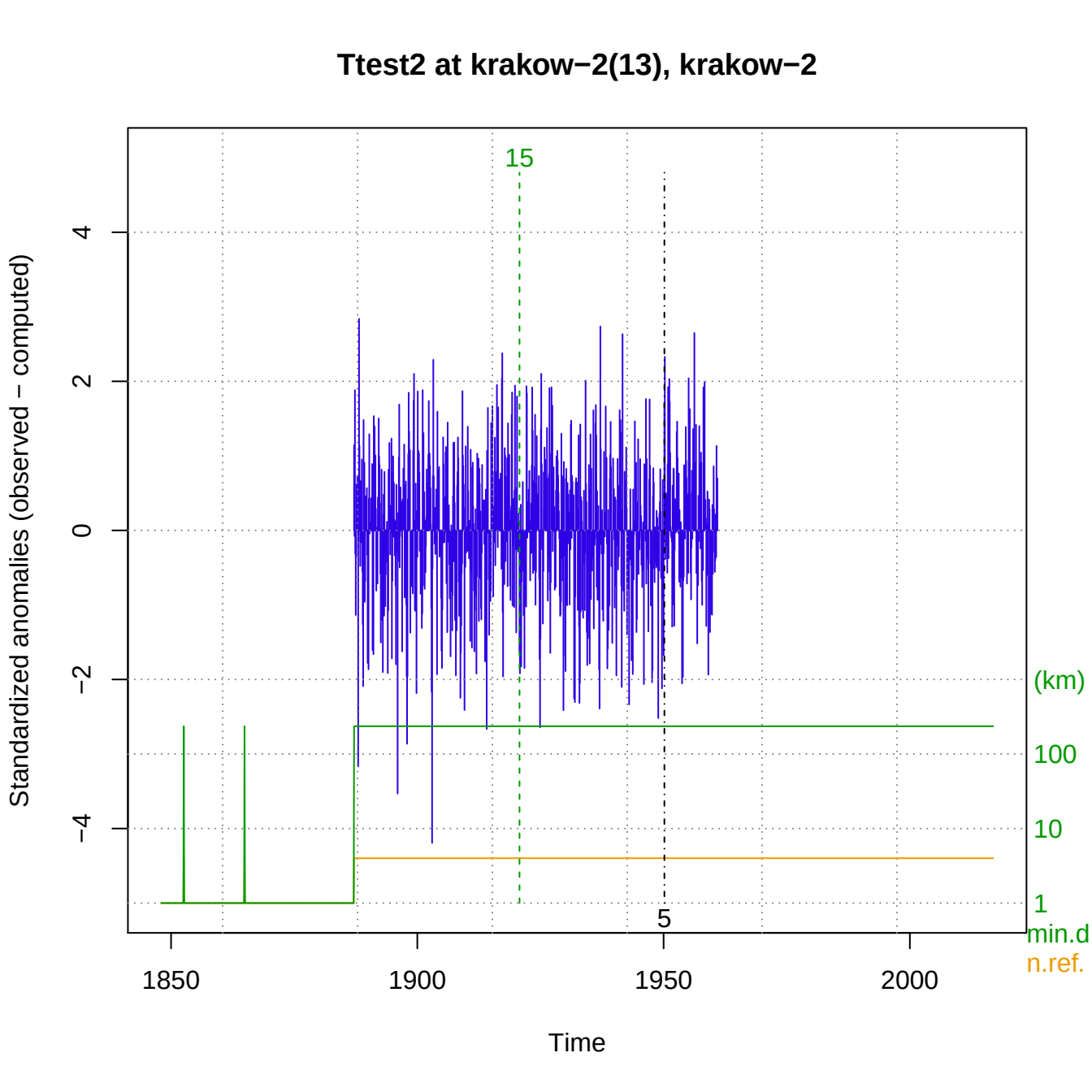

Ttest2 at wroclaw(5), wroclaw
18
5
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

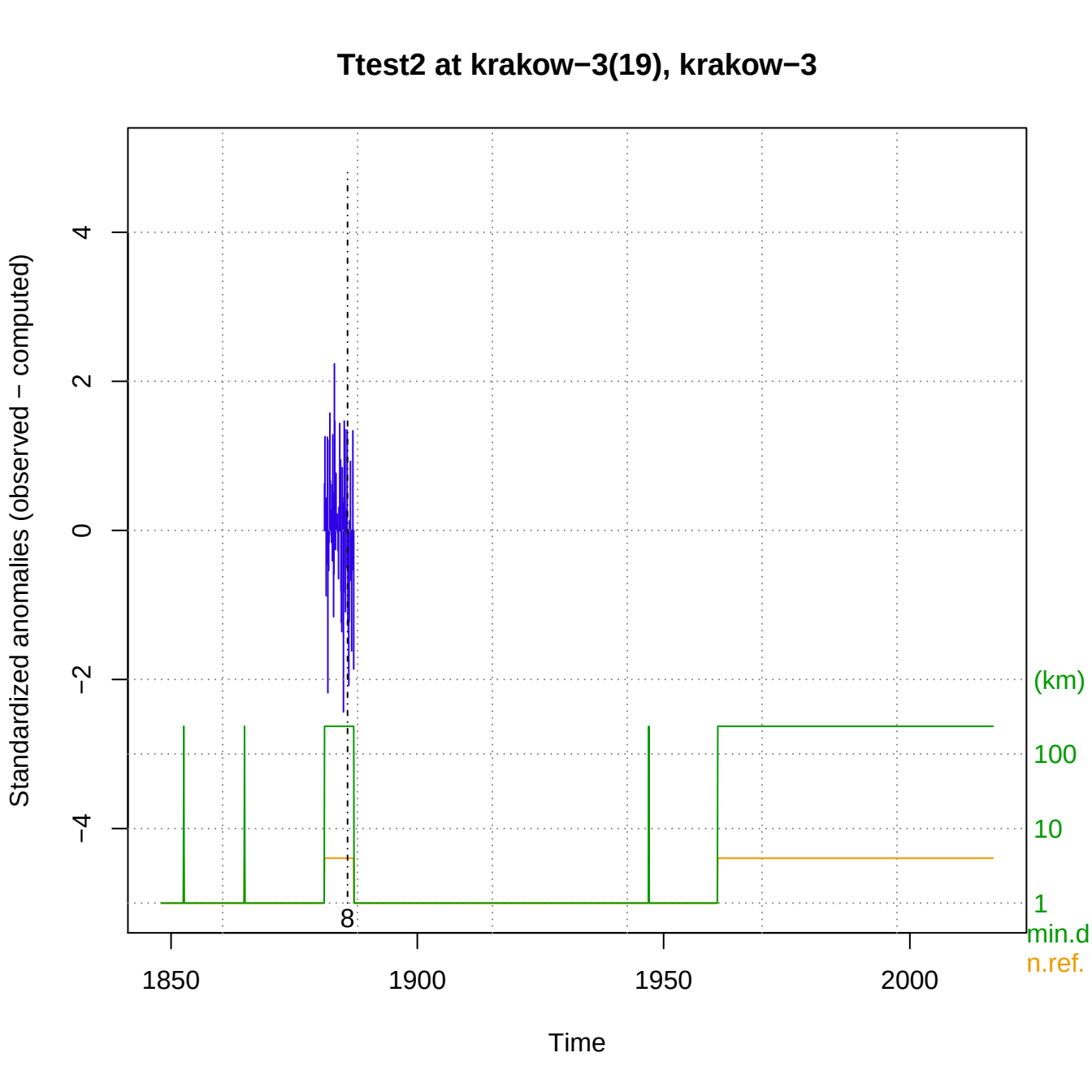

Ttest2 at wroclaw−2(12), wroclaw−2
12
14
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

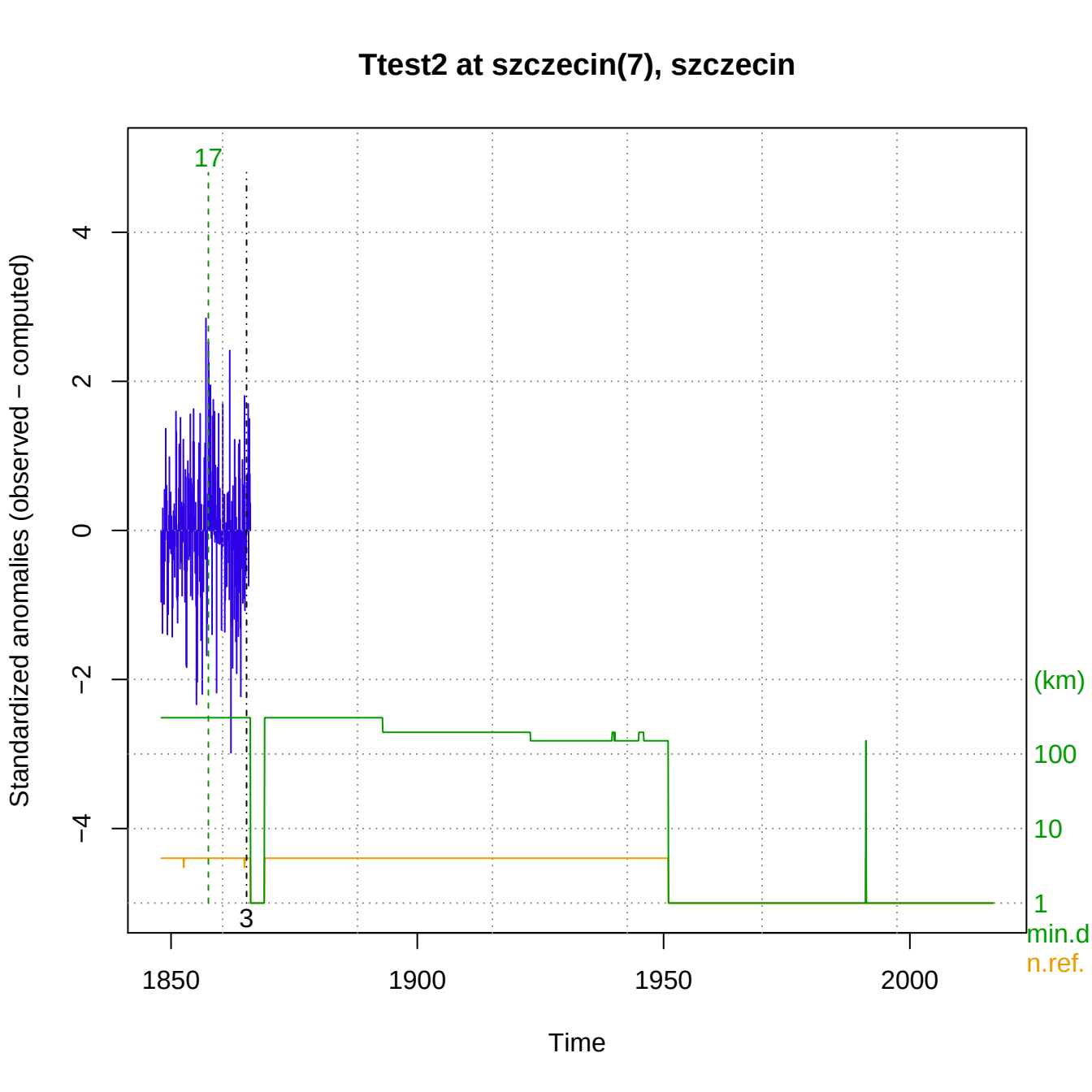

Ttest2 at wroclaw−3(16), wroclaw−3
Standardized anomalies (observed − computed)
4
2
0
−2
−4
19
24
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

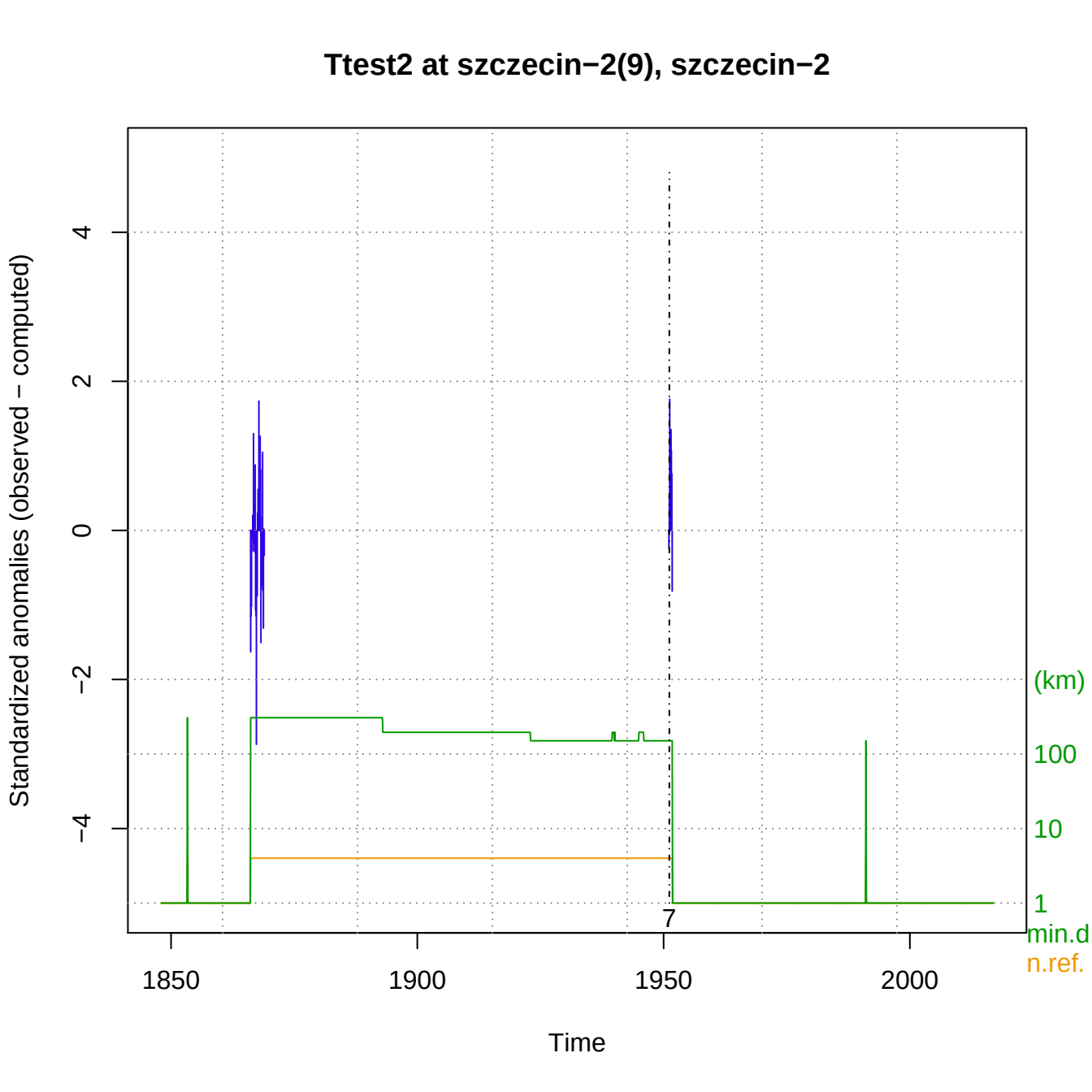

Ttest2 at wroclaw−4(18), wroclaw−4
Standardized anomalies (observed − computed)
4
2
0
−2
−4
12
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

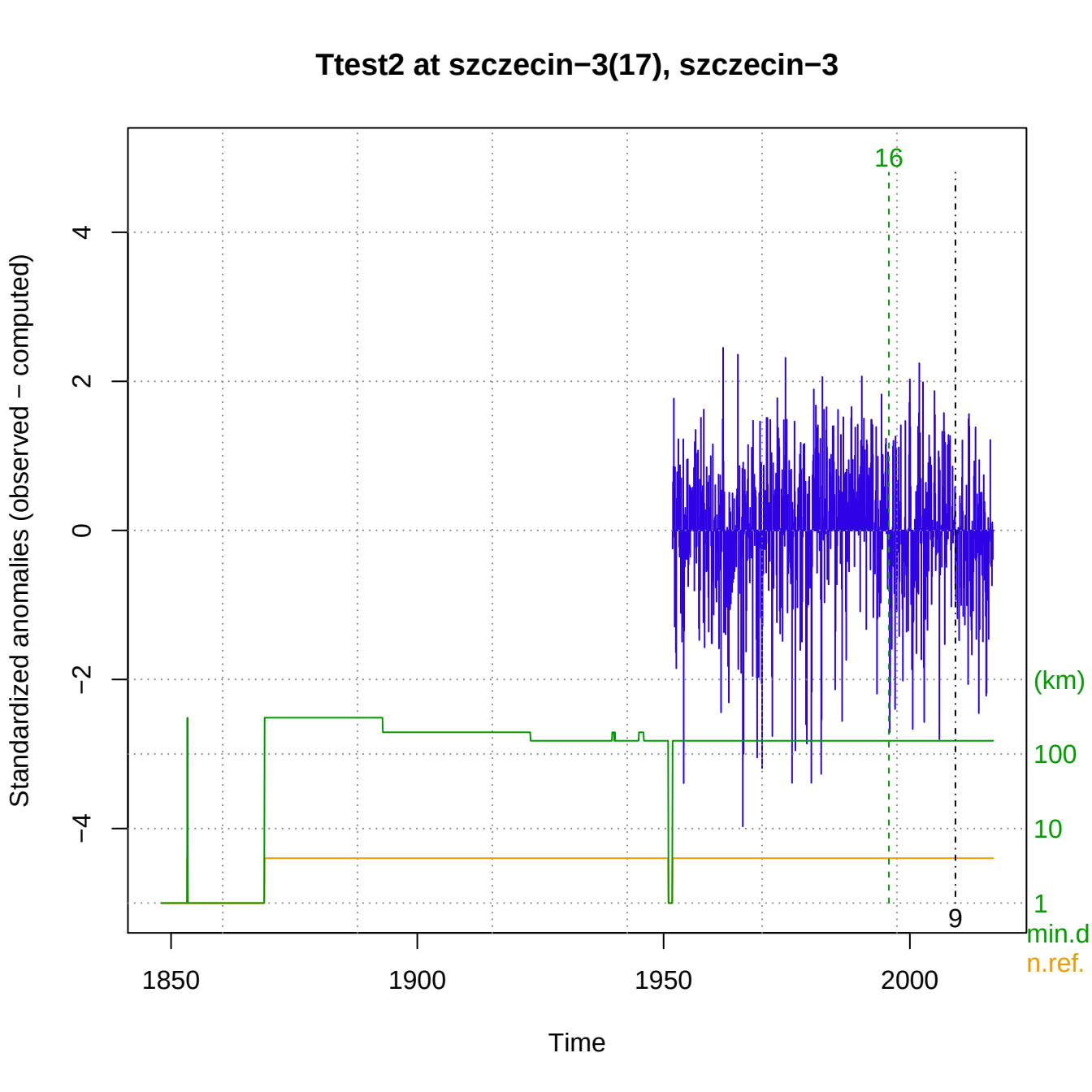

Ttest2 at krakow(6), krakow
15
29
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

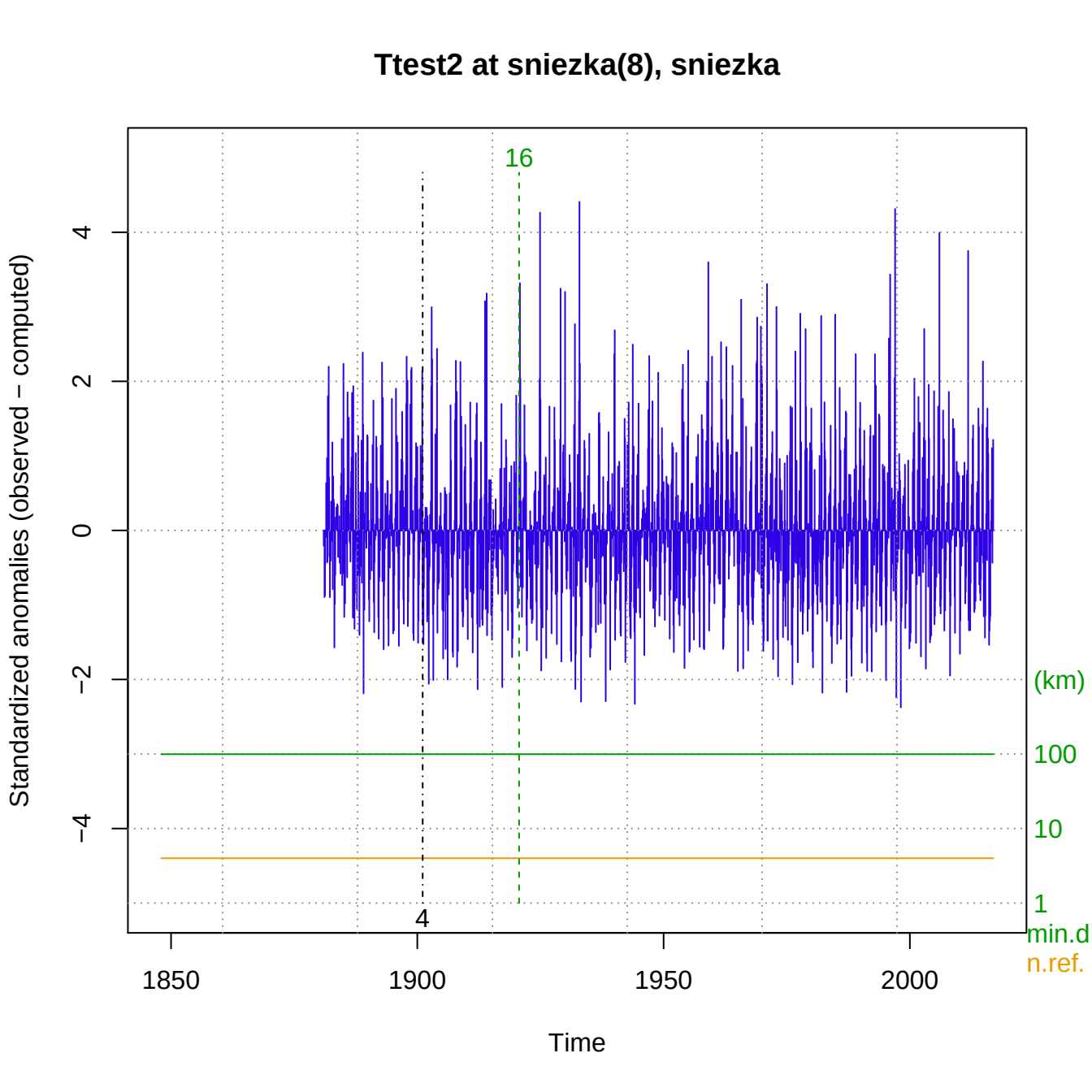

Ttest2 at krakow−2(13), krakow−2
15
5
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.


Ttest2 at krakow−3(19), krakow−3
Standardized anomalies (observed − computed)
4
2
0
−2
−4
8
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.


Ttest2 at szczecin(7), szczecin
17
3
Standardized anomalies (observed – computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

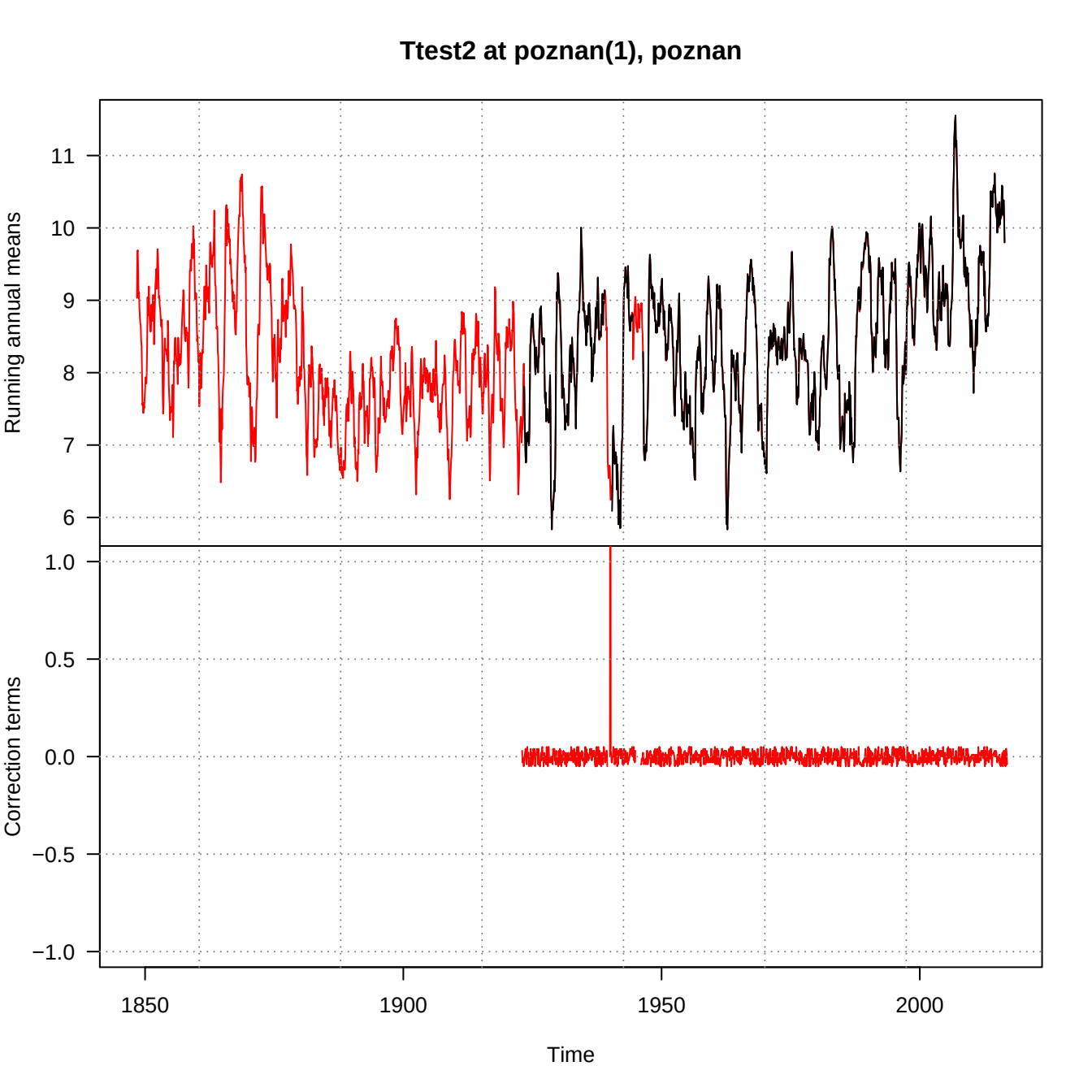

Ttest2 at szczecin−2(9), szczecin−2
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
7
(km)
100
10
1
min.d
n.ref.

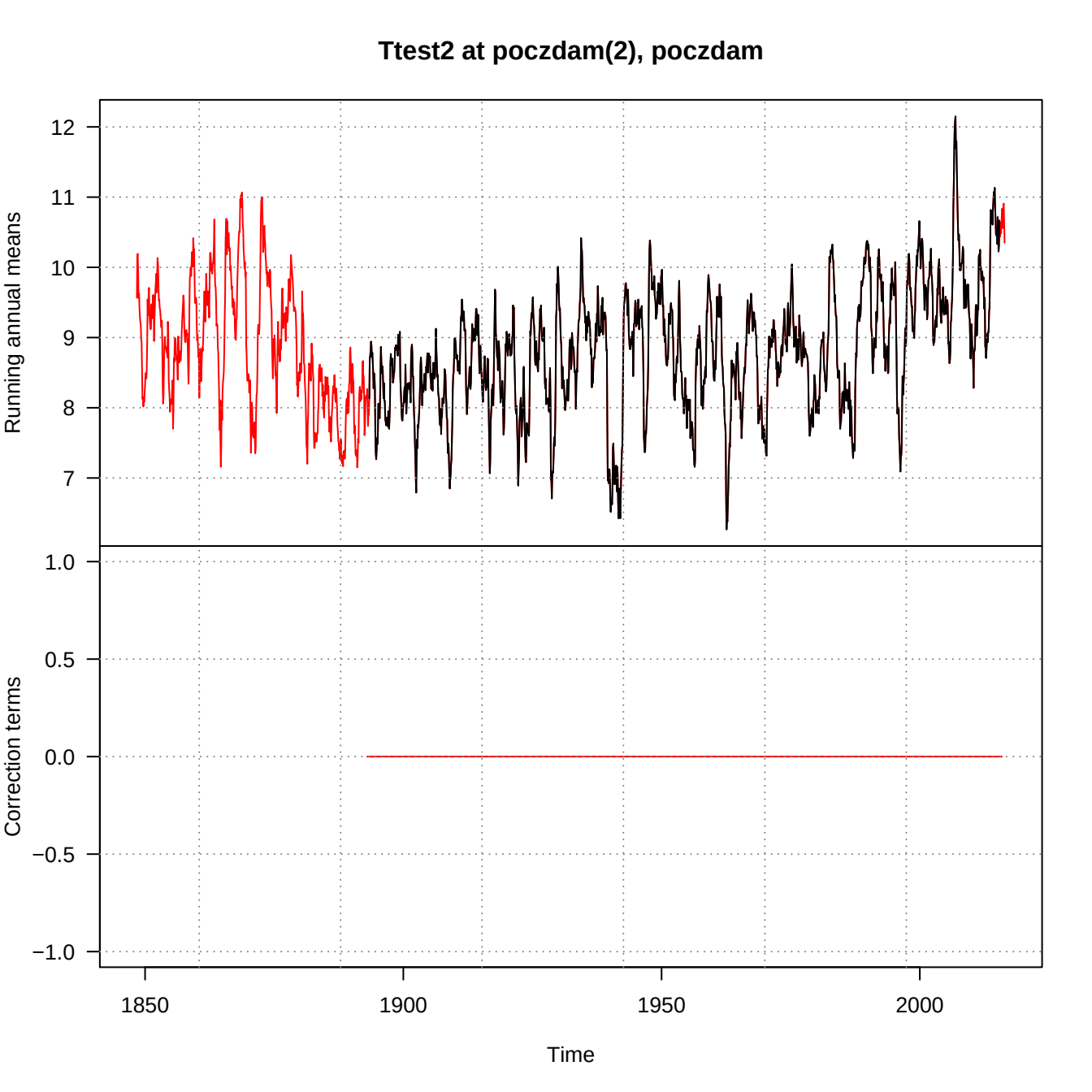

Ttest2 at szczecin−3(17), szczecin−3
16
9
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

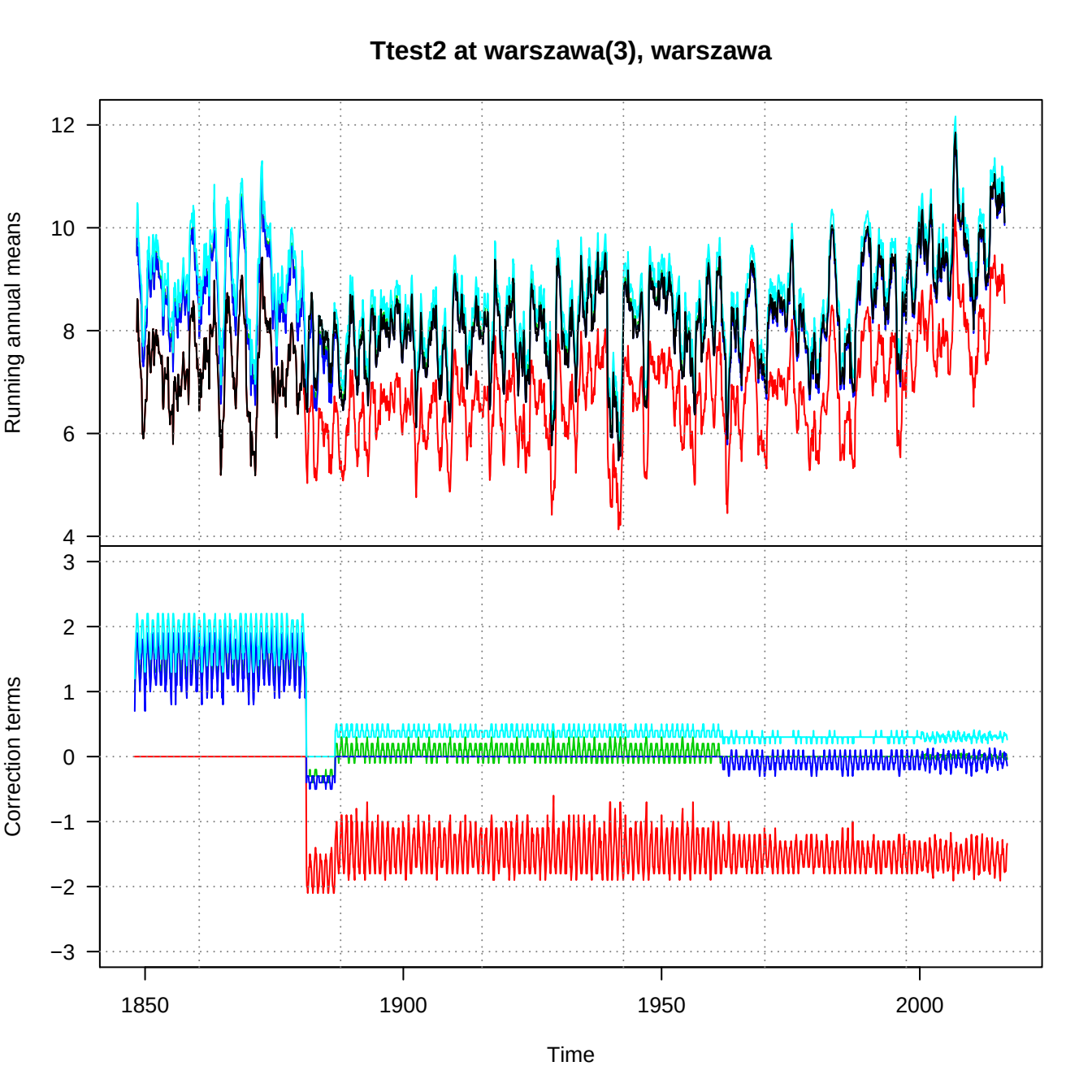

Ttest2 at sniezka(8), sniezka
16
4
Standardized anomalies (observed − computed)
4
2
0
−2
−4
1850
1900
1950
2000
Time
(km)
100
10
1
min.d
n.ref.

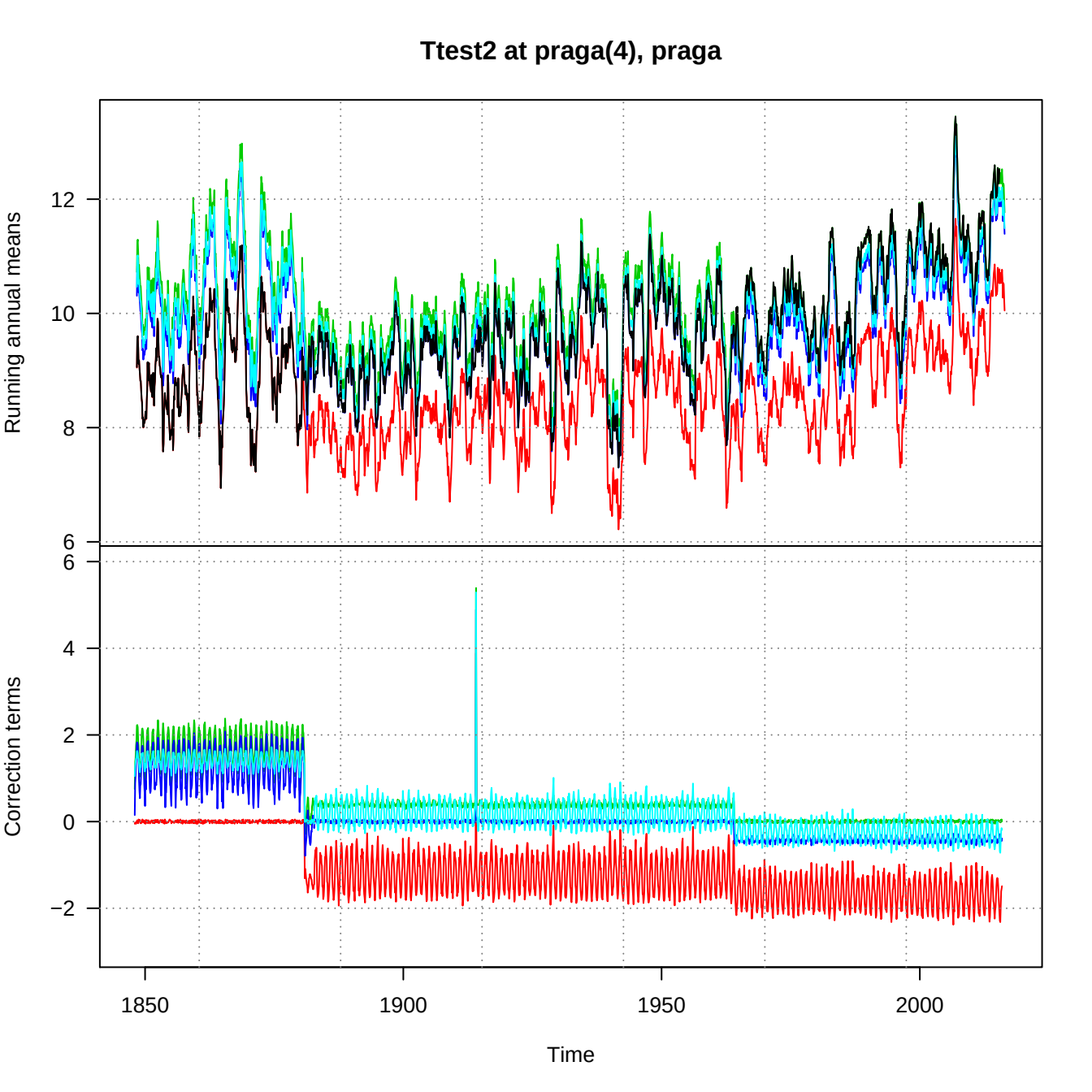
Final graphics

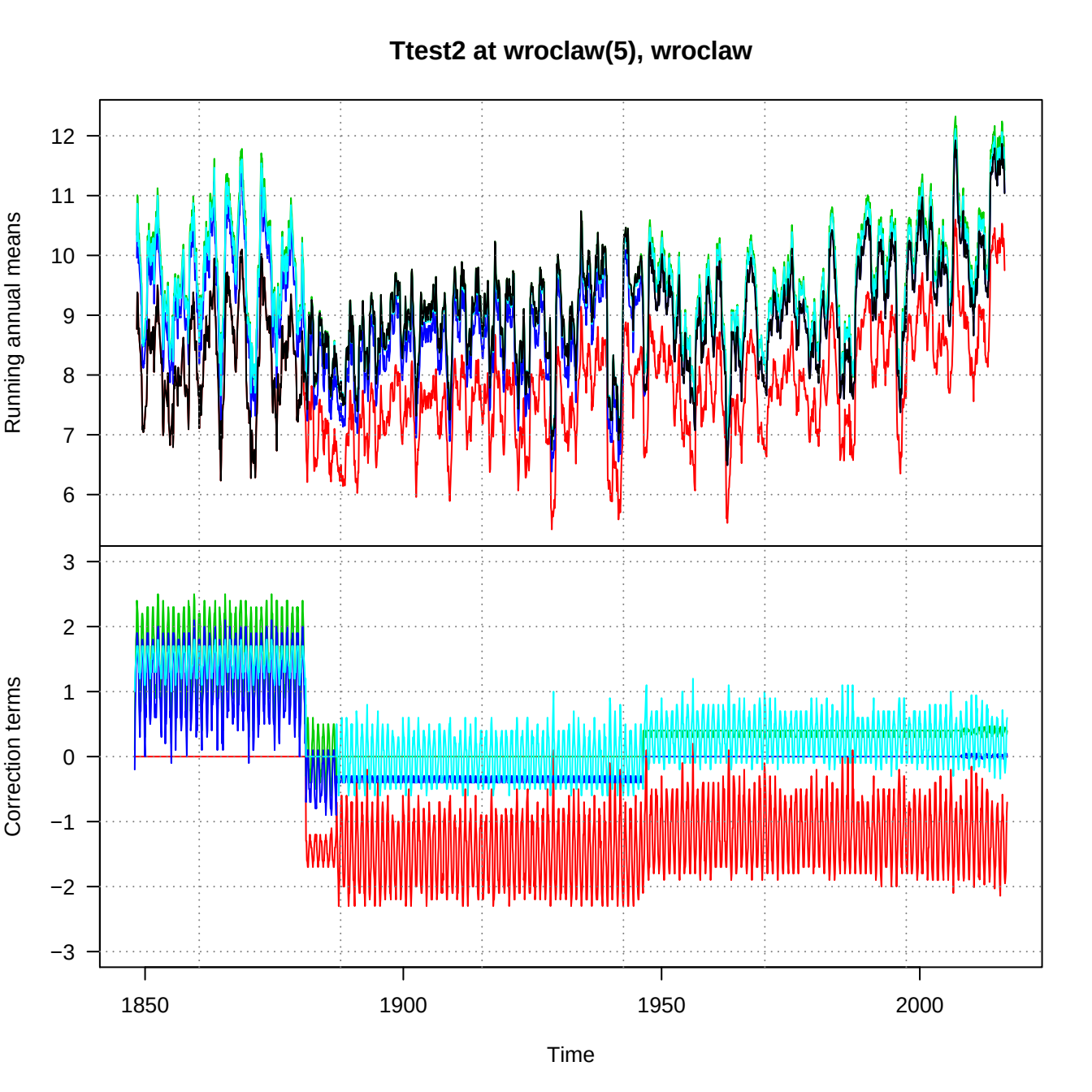
Adjusted series and applied corrections

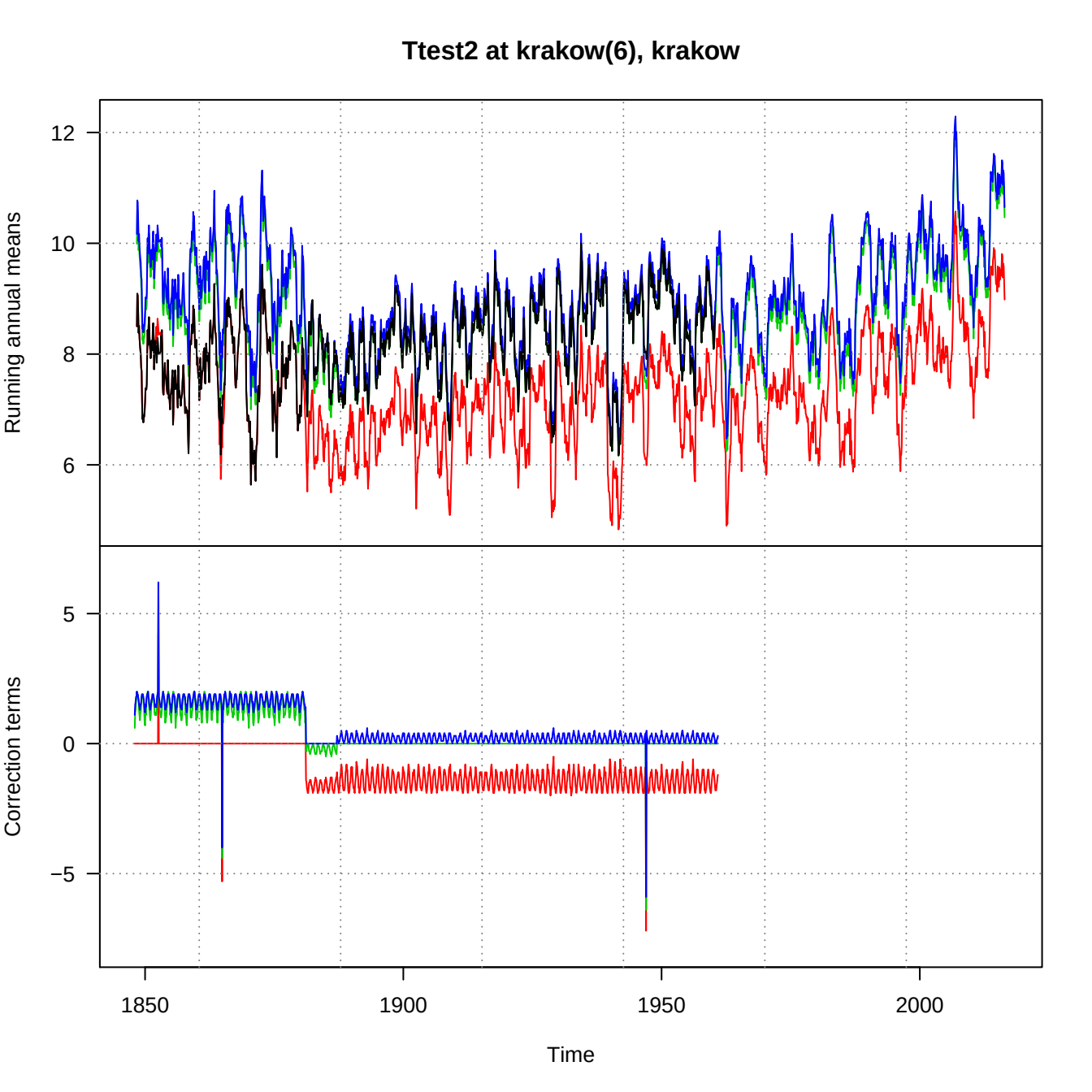

Ttest2 at poznan(1), poznan
Running annual means
11
10
9
8
7
6
Correction terms
1.0
0.5
0.0
−0.5
−1.0
1850
1900
1950
2000
Time

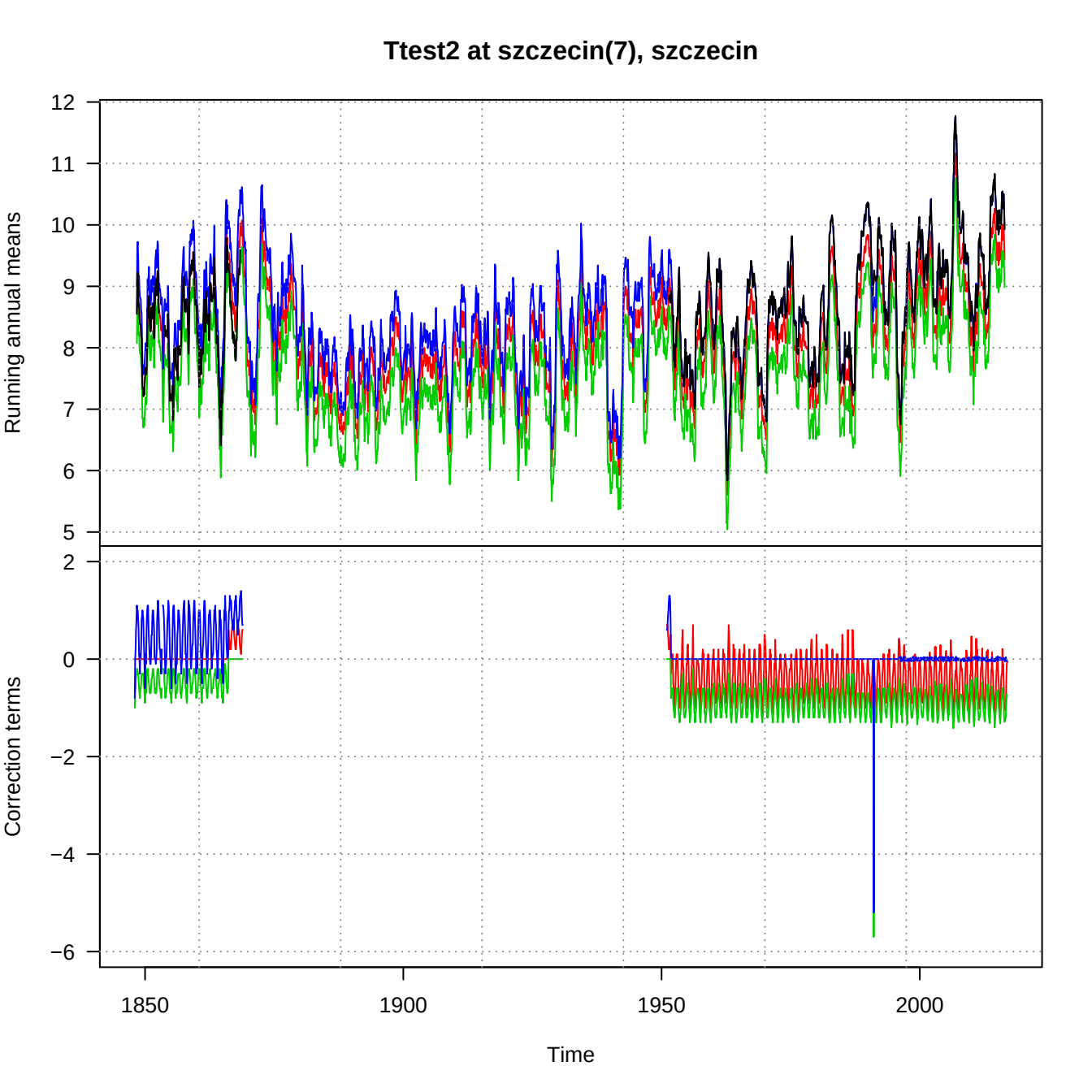

Ttest2 at poczdam(2), poczdam
Running annual means
12
11
10
9
8
7
Correction terms
1.0
0.5
0.0
−0.5
−1.0
1850
1900
1950
2000
Time

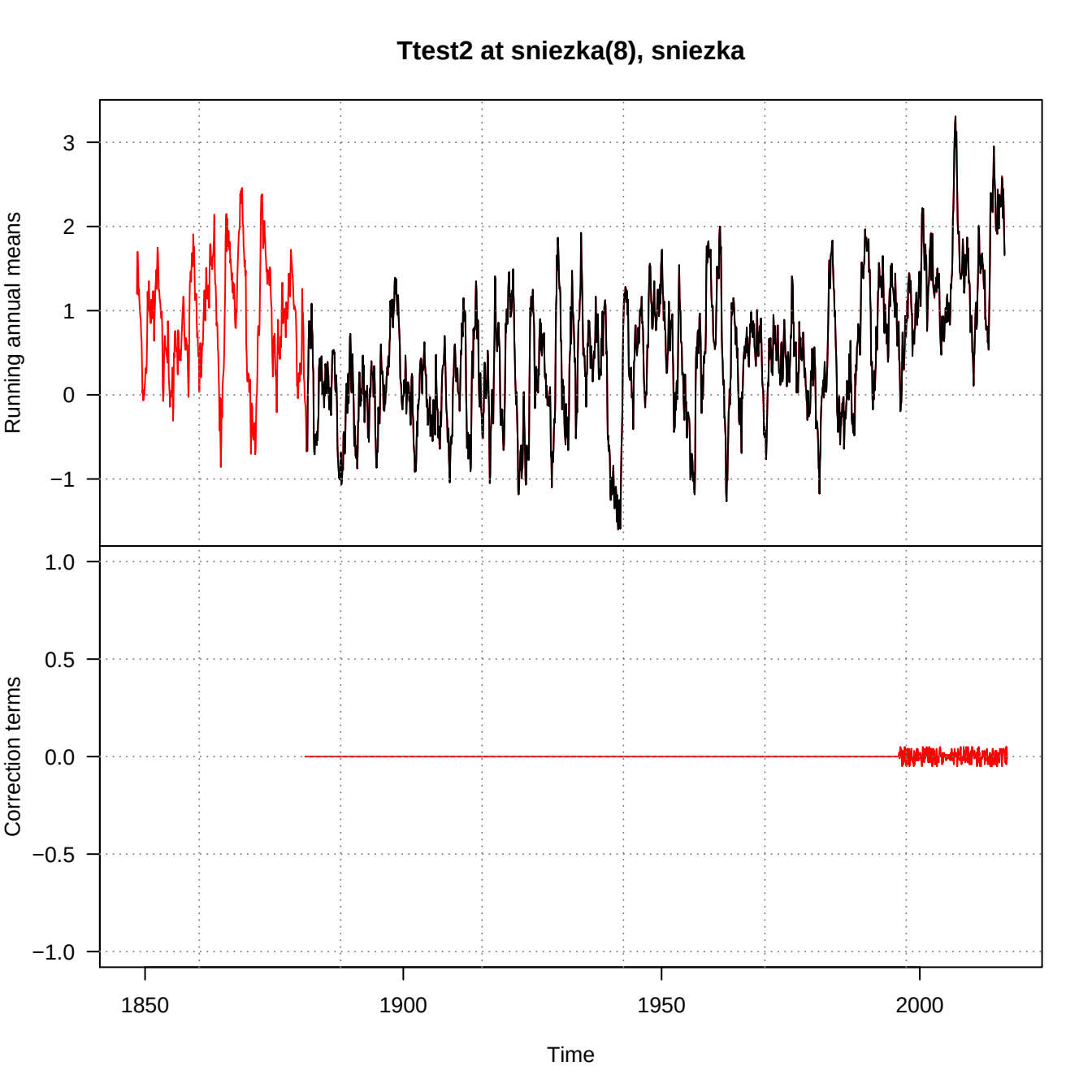

Ttest2 at warszawa(3), warszawa
Running annual means
12
10
8
6
4
Correction terms
3
2
1
0
−1
−2
−3
1850
1900
1950
2000
Time

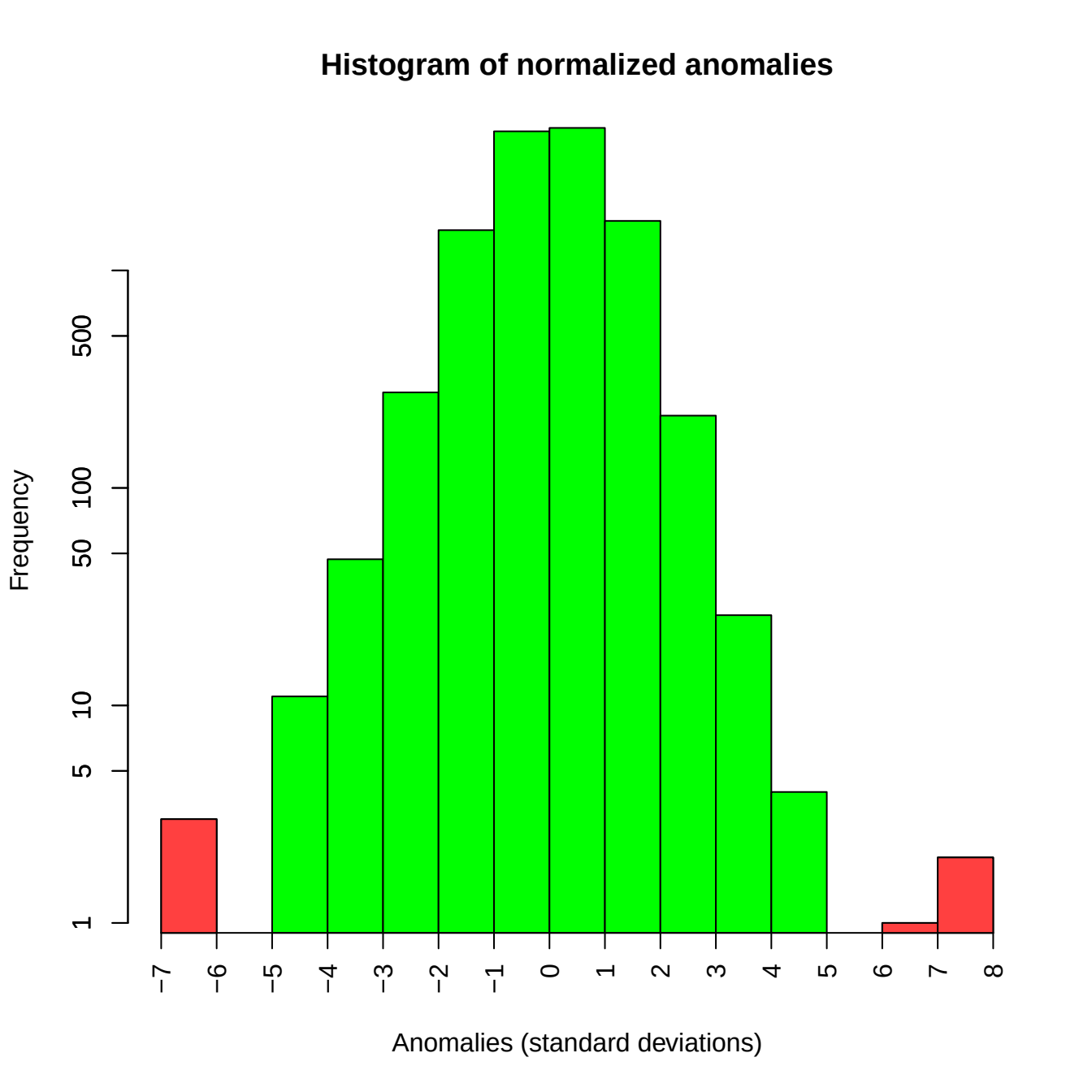

Ttest2 at praga(4), praga
Running annual means
12
10
8
6
Correction terms
6
4
2
0
−2
1850
1900
1950
2000
Time

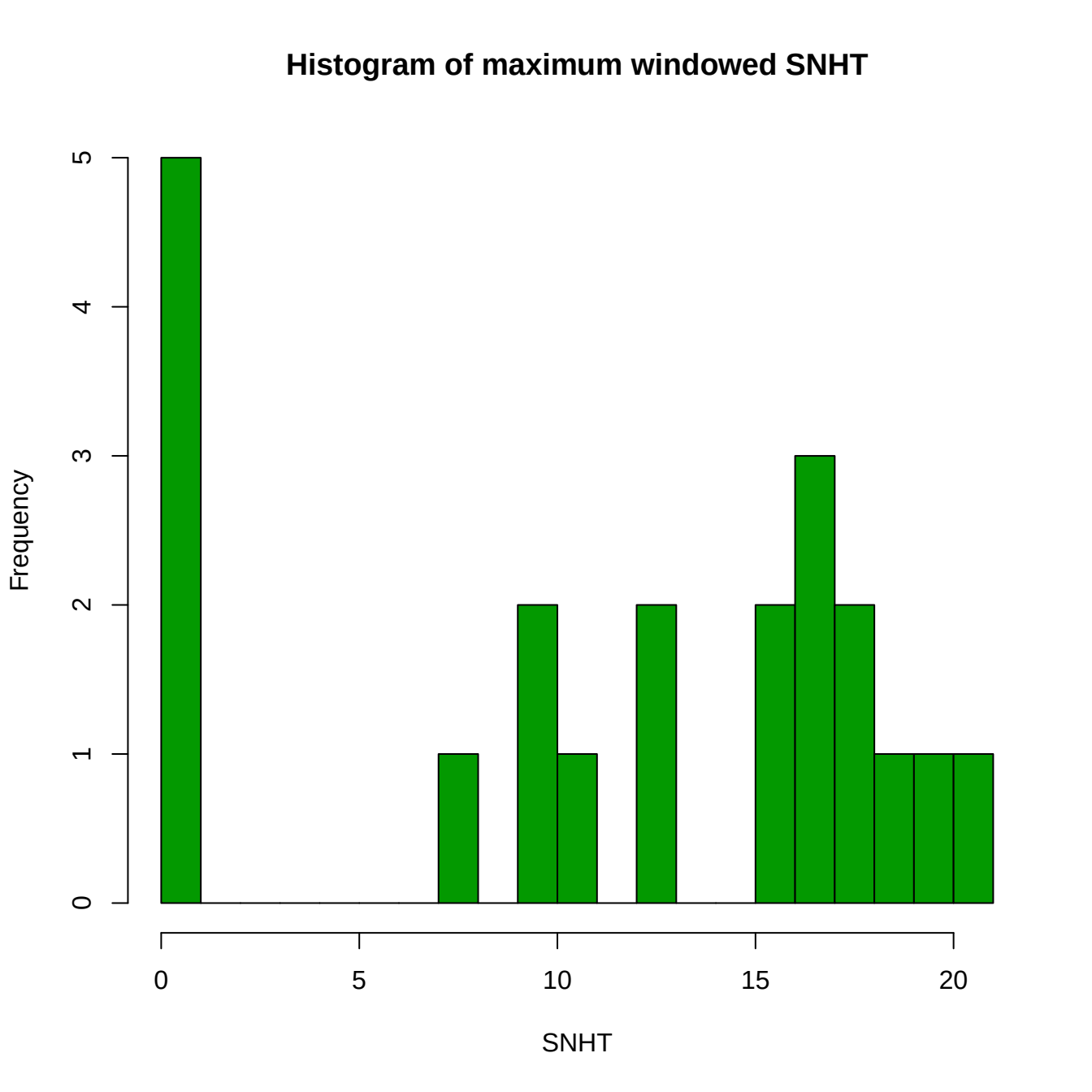

Ttest2 at wroclaw(5), wroclaw
Running annual means
12
11
10
9
8
7
6
Correction terms
3
2
1
0
−1
−2
−3
1850
1900
1950
2000
Time

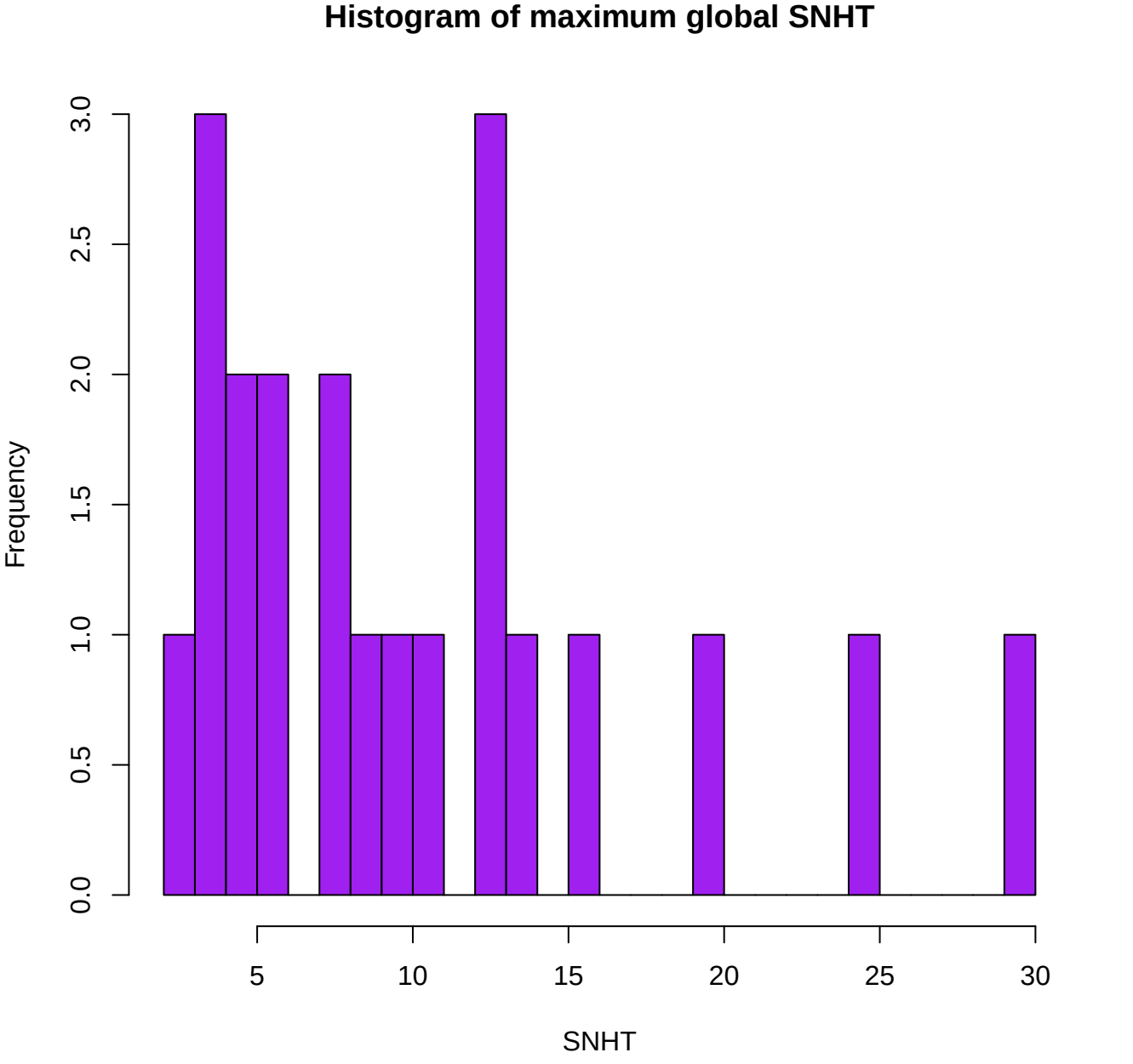

Ttest2 at krakow(6), krakow
Running annual means
12
10
8
6
Correction terms
5
0
−5
1850
1900
1950
2000
Time

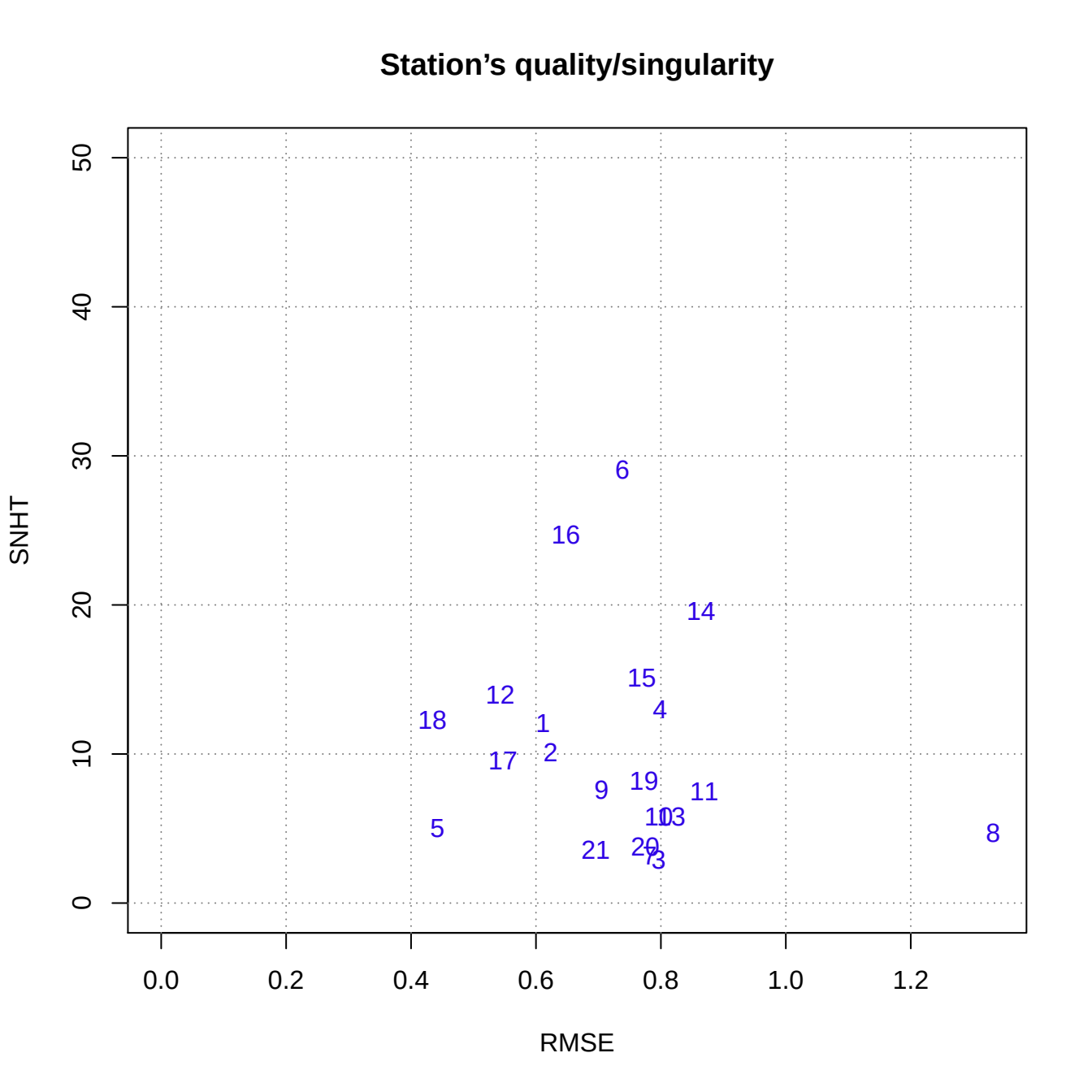

Ttest2 at szczecin(7), szczecin
Running annual means
Correction terms
Time
12
11
10
9
8
7
6
5
2
0
−2
−4
−6
1850
1900
1950
2000


Ttest2 at sniezka(8), sniezka
Running annual means
3
2
1
0
−1
Correction terms
1.0
0.5
0.0
−0.5
−1.0
1850
1900
1950
2000
Time


Histogram of normalized anomalies
Frequency
1
5
10
50
100
500
−7
−6
−5
−4
−3
−2
−1
0
1
2
3
4
5
6
7
8
Anomalies (standard deviations)


Histogram of maximum windowed SNHT
Frequency
0
1
2
3
4
5
0
5
10
15
20
SNHT


Histogram of maximum global SNHT
Frequency
0.0
0.5
1.0
1.5
2.0
2.5
3.0
5
10
15
20
25
30
SNHT


Station’s quality/singularity
SNHT
RMSE
0
10
20
30
40
50
0.0
0.2
0.4
0.6
0.8
1.0
1.2
6
16
14
15
12
4
18
1
2
17
9
19
11
10
3
5
8
21
20
7