Appendix F. Supplementary Material to Support Chapter 6

Table F1 presents tilt volume, eruption efficiency, and magma supply rate for the period 1975–1983.

Figure F1 shows short- and long-period earthquake swarms for all regions.

Figures F2*A*–*H* show short-period earthquake counts and earthquakes of $M>4$ at 1-year intervals from 1 February 1975 to 1 February 1983.

Figure F2*I*–*P* show long-period earthquake counts and earthquakes of $M>4$ at 1-year intervals from 1 February 1975-1 February 1983.

Figure F3 shows time series plots at 1-year intervals for 1975–1983.

Figure F4 presents the $M7.2$ south flank earthquake of 29 November 1975. Aftershocks are shown through 5 December 1975.

Figures F5–F38 show locations of earthquakes for eruptions and intrusions between June 1976 and December 1982.

Table F1. Tilt volume, eruption efficiency and magma supply rate 1975-1983

Cycle	Event[1]	begin date	End date	Δt (yrs)	T_{mag}[2]	T_{az}	T_{vol}[3]	E_{vol}[4]	E_{eff}[5]	Msr[6]	Comment
1975-1983	net	11/27/1975	1/1/1983	7.0965							deflation
		11/27/1975	11/28/1975		2.7	108.4	0.0012				
		11/28/1975	11/30/1975		178.2	133. 9	0.0801				
		11/30/1975	12/10/1975		56.9	154.2	0.0256				
		12/10/1975	3/5/1976		39.2	198.4	0.0176				
	sum						0.1225				
		6/20/1976	6/22/1976		4.8	119.5	0.0034				
		7/14/1976	7/15/1976		6.6	107.7	0.0030				
	ks I	1/20/1977	1/24/1977		5.3	299.4	0.0024				
		2/7/1977	2/11/1977		6.6	107.7	0.0030				
		9/11/1977	9/13/1977		43.7	107.2	0.0197				
		9/13/1977	9/14/1977		26.3	122.5	0.0118				
		9/14/1967	9/16/1967		30.8	130.8	0.0139				
		9/16/1967	9/22/1977		12.9	163.2	0.0058				
		9/26/1977	10/9/1977		14.4	144.7	0.0065				
	sum						0.0577				
	erz E	9/13/1977	10/1/1977				0.0000	0.0263	0.46		
							0.0000				
		5/28/1979	5/30/1979		4.3	133.3	0.0019				
		8/11/1979	8/13/1979		3.5	99.5	0.0016				
		11/15/1979	11/16/1979		8.2	100.1	0.0037				
	erz E	11/16/1979	11/17/1979				0.0000	0.0005	0.13		
		3/1/1980	3/3/1980		2.7	122.0	0.0012				
		3/10/1980	3/11/1980		13.0	112.0	0.0059				
	erz E	3/11/1980	3/11/1980				0.0000				
		8/26/1980	8/27/1980		9.7	112.8	0.0044				
		10/20/1980	10/22/1980		9.0	135.0	0.0040				
		11/2/1980	11/3/1980		8.5	122.6	0.0038				
		1/20/1981	1/21/1981		2.7	147.4	0.0012				
		2/9/1981	2/10/1981		2.9	126.9	0.0013				
	ks I	2/12/1981	2/18/1981		13.4	104.4	0.0060				
	ks I	6/23/1981	6/29/1981		13.8	301.4	0.0062				
		8/1/1981	8/7/1981		7.0	289.2	0.0032				
		8/10/1981			28.9	86.0	0.0130				
		8/10/1981			22.2	117.9	0.0100				
		8/10/1981			46.6	127.7	0.0210				
		8/11/1981	8/14/1981		20.3	157.4	0.0091				
	ks I	3/22/1982	3/25/1982		8.3	313.6	0.0037				
		4/30/1982	5/2/1982		10.1	323.1	0.0045				
	ks E	4/30/1982	5/1/1982					0.0004	0.09		
	ks I	6/8/1982	6/9/1982		8.6	340.4	0.0039				
		6/21/1982	6/23/1982		21.0	120.4	0.0095				
		6/23/1982	6/24/1982		32.8	141.4	0.0147				
		6/24/1982	6/30/1982		9.6	134.4	0.0043				
	ks I	9/23/1982	9/25/1982		23.3	329.6	0.0105				
	ks I	9/25/1982			10.1	319.9	0.0046				
	sum							0.0150			
	ks E	9/25/1982	9/26/1982				0.0000	0.0024	0.16		
	ks I	9/27/1982	10/3/1982		6.0	334.7	0.0027				
		12/9/1982	12/11/1982		4.4	148.4	0.0020				
	total	11/27/1975	1/1/1983	7.0965			0.3518	0.0028		0.050	without 1975 eq dilation
1975 eq dil							0.7200			0.151	Owen, 2006

[1]inf=inflation; def=deflation; trans=transfer; I=intrusion; E=eruption; ks=Kīlauea's summit; erz=East rift zone; swr=Southwest rift zone; kfz=Koa'e fault zone
[2]Uwekahuna tilt magnitude in microradians
[3]Tilt volume in cubic kilometers=Uwēkahuna tilt magnitude*.00045 (see text for explanation)
[4]Values are equivalent magma volume obtained by multiplying published volumes by 0.8 to account for vesiculation
[5]Eruption efficiency calculated for non-sustained rift eruptions as erupted volume/deflation volume associated with the eruption. For consistency eruption efficiencies are only calculated using the Uwēkahuna tilt.
[6]Minimum magma supply rate calculated as described in text. The volume equivalent for pre-eruption inflation is added to the sum of volume equivalents for subsequent deflations and then divided by the elapsed time. Values used in the calculation are shown in **bold** text. The volume equivalent of pre-eruption *deflation* (italics used for emphasis) is not used as it is already included in the deflation sum. The true magma supply rate includes the volume of rift dilation during the 1975 earthquake . These values are not known because of limitations imposed by the early ground deformation network.

Cross references, chapter 6 tables and appendix F map figures

[Table column heads are row "0;" only rows with information are counted; "do," same as above; color coding indicates eruptions (red), traditional intrusions without eruption (blue); inflationary intusions (green), and suspected deep intrusions (magneta)]

Chap. 6 page	Chap. 6 table	Row in table	App. F figure
119	6.1	1	F4
do	do	3	F5A
do	do	4	F5B
do	do	5	F6
do	do	6	F7
do	do	16	F8
do	do	17	F9
do	do	20	F10
do	do	21	F11
do	do	23	F12
do	do	24, 27-29	F13
do	do	30	F14
do	do	31	F15
do	do	33	F16
120	6.1 cont	1	F17
do	do	6	F18
do	do	7	F19
do	do	9	F20
do	do	11	F21
do	do	12	F22A
do	do	14	F22B
do	do	16	F23
do	do	24	F24
do	do	25	F25

Chap. 6 page	Chap. 6 table	Row in table	App. F figure
do	do	28	F26
do	do	31	F27
do	do	33	F28
do	do	36	F29
121	8.1 cont	1	F30
do	do	2	F31
do	do	3	F32
do	do	4	F33
do	do	5	F34
do	do	8	F35
do	do	9	F36
do	do	16	F37
do	do	20	F38

Figure F1. Graphs showing Kīlauea short- and long-period earthquake swarms for all regions of the volcano from 1 November 1975 to 1 February 1983 (through episode 1 of the Puʻu ʻŌʻo-Kupaianaha eruption). Dates on figure in mm/dd/yyyy format.

Figure F2. Graphs showing Kīlauea activity from 1 February 1975 to 1 February 1983. Dates on figure in mm/dd/yyyy format. *A–H*, Short-period earthquake counts and earthquakes of M>4 at 1-year intervals. *J–P*, Long-period earthquake counts and earthquakes of M>4 at 1-year intervals.

Figure F3. 1975–1983. *A–H*, Time series plots at 1-year intervals for 1975–1983. Shown are Uwēkahuna tilt, times of eruption and intrusion, occurrence of earthquakes by region.

Figure F4. Map showing Kīlauea activity around the *M*7.2 south flank earthquake on 29 November 1975. Aftershocks are shown through 5 December 1975. Black polygons show zones of earthquakes defining slow intrusions defined in chapter 5 (fig. 5.2). These are parallel or coincident with preferred concentrations of aftershocks, indicating a similarity in south flank stress regime for slow intrusions and large earthquakes. Dates on figure in mm/dd/yyyy format.

Figure F5. Maps showing Kīlauea activity around the June 1976 and July 1976 traditional east rift intrusions. Dates on figure in mm/dd/yyyy format. *A*, Data from 17–26 June. *B*, Data from 9–19 July.

Figure F6. Map showing Kīlauea activity around the January 1977 traditional east rift intrusion. South flank seismicity extends to south of the vents for the September 1977 eruption. Dates on figure in mm/dd/yyyy format.

Figure F7. Map showing Kīlauea activity around the February 1977 traditional east rift intrusion. South flank seismicity extends to south of the vents for the September 1977 eruption. Dates on figure in mm/dd/yyyy format.

Figure F8. Map showing activity around September 1977 east rift eruption. Data from 13 September to 4 October 1977. Dates on figure in mm/dd/yyyy format.

Figure F9. Map showing activity around May 1979 traditional east rift intrusion that extends to the east of the vents for the later November 1979 eruption and even east of the seismicity associated with that eruption. Data from 28 May to 1 June. Dates on figure in mm/dd/yyyy format.

Figure F10. Map showing activity around August 1979 traditional upper east rift intrusion with almost no south flank accompaniment. Data from 7–16 August. Dates on figure in mm/dd/yyyy format.

Figure F11. Map showing activity during 21–24 September 1979. An intense south flank earthquake swarm is accompanied by a long-period earthquake swarm. Dates on figure in mm/dd/yyyy format.

Figure F12. Map showing activity during 1–14 October 1979, including paired upper east rift/upper seismic southwest rift intrusion. Intense south flank activity both precedes and follows the intrusion. Dates on figure in mm/dd/yyyy format.

Figure F13 .Map showing activity around November 1979 eruption. Data from 14–19 November. Overlapping intrusions precede, accompany, and follow the eruption at short distances uprift and downrift from the erupting vents. No long-period seismicity accompanied this eruption. Dates on figure in mm/dd/yyyy format.

Figure F14. Map showing activity around January 1980 traditional east rift intrusion. Data from 13–24 January. Symbols are covered by continued posteruption seismicity. Dates on figure in mm/dd/yyyy format.

Figure F15. Map showing activity around February 1980 traditional east rift intrusion. Data from 31 January to 5 February. Symbols are covered by continued post eruption seismicity. Dates on figure in mm/dd/yyyy format.

Figure F16. Map showing activity around March 1980 traditional east rift intrusion. Data from 1–4 March. Dates on figure in mm/dd/yyyy format.

Figure F17. Map showing activity around March 1980 eruption. A small eruption is accompanied by a large intrusion. Data from 8–14 March. Dates on figure in mm/dd/yyyy format.

Figure F18. Map showing activity around July 1980 traditional east rift intrusion. South flank seismicity occurs before and after the intrusion. Data from 28 July to 7 August. Dates on figure in mm/dd/yyyy format.

Figure F19. Map showing activity around August 1980 traditional east rift intrusion. Data from 26–30 August. Dates on figure in mm/dd/yyyy format.

Figure F20. Map showing activity around October 1980 traditional east rift intrusion. The earthquake swarm extends from upper to lower east rift zone. Data from 20–28 October. Dates on figure in mm/dd/yyyy format.

Figure F21. Map showing activity around November 1980 traditional east rift intrusion. Data from 30 October to 6 November. Dates on figure in mm/dd/yyyy format.

Figure F22. Maps showing activity around January 1981 seismic southwest rift zone intrusion. Dates on figure in mm/dd/yyyy format. *A*, Data from 17–22 January. Intrusive activity shifts to the west. *B*, Data from 23–31 January. Two intrusions during 24–28 January. South flank response remains south of the east rift.

Figure F23. Map showing activity around January-February 1981 seismic southwest rift zone intrusions. Data from 17 January to 18 February. Central and eastern south flank seismicity precedes, accompanies, and follows three closely spaced intrusions within nearly continuous intrusive activity. Intrusion is at the southwest end of the seismic southwest rift zone, overlapped by both pre- and postintrusion seismicity. February intrusion has progressed farther downrift from the location of the January intrusions. Dates on figure in mm/dd/yyyy format.

Figure F24. Map showing activity around April 1981 seismic southwest rift zone suspected slow intrusion. Data from 24–28 April. Dates on figure in mm/dd/yyyy format.

Figure F25. Map showing activity around June 1981 summit intrusion. Data from 23–28 June. Ideal-Arrowsmith tiltmeter shows a sharp inflationary tilt step between 14:00 and 16:00 on 25 June and a more gradual inflation between 17:00 and 24:00 on 26 June. These times do not correspond to specific concentrations of summit earthquakes. Dates on figure in mm/dd/yyyy format.

Figure F26. Map showing activity around July 1981 seismic southwest rift zone intrusion. Data from 17–24 July. Symbols are partly covered by continued post eruption seismicity. Dates on figure in mm/dd/yyyy format.

Figure F27. Map showing activity around the beginning of a migrating sequence of seismic southwest rift zone intrusions during 1–7 August 1981. Data from 31 July to 7 August. South flank seismicity is sparse and located beneath the east rift. Dates on figure in mm/dd/yyyy format.

Figure F28. Map showing activity around 9–15 August 1981 seismic southwest rift zone intrusion. Dates on figure in mm/dd/yyyy format. *A*, Earthquakes from 8–23 August are colored by date and indicate a complex pattern of migration within the seismic southwest rift zone. South flank seismicity occurs adjacent to the rift seismicity. *B*, Earthquakes subdivided by day from 9–15 August. A major intrusion beneath the seismic southwest rift zone that resembles the intrusion following the eruption of 31 December 1974.

Figure F29. Map showing activity around January 1982 seismic southwest rift zone intrusion. Data from 14–17 January. This the first of five intrusions within nearly continuous intrusive activity preceding the April 1982 summit eruption. Dates on figure in mm/dd/yyyy format.

Figure F30. Map showing activity around February 1982 seismic southwest rift zone intrusion. Data from 24 Feburary to 1 March. Dates on figure in mm/dd/yyyy format.

Figure F31. Map showing activity around 3 March 1982 seismic southwest rift zone intrusion. Data from 2–5 March. Dates on figure in mm/dd/yyyy format.

Figure F32. Map showing activity around 9 March 1982 seismic southweast rift zone intrusion. Data from 6–12 March. Dates on figure in mm/dd/yyyy format.

Figure F33. Map showing activity around the 23 March 1982 seismic southwest rift zone intrusion. Data from 21–27 March. This intrusion was the last on the seismic southwest rift zone preceding the April 1982 eruption. Dates on figure in mm/dd/yyyy format.

Figure F34. Map showing activity around April 1982 summit eruption/intrusion. Data from 25 April to 11 May. Following the eruption a small paired intrusion propagates south and southeast. Dates on figure in mm/dd/yyyy format.

Figure F35. Map showing activity around 8–9 June 1982 seismic southwest rift zone intrusion. Data from 4–14 June. This the first of two large intrusions within nearly continuous intrusive activity between the two 1982 summit eruptions. Pre-, syn- and postintrusion data overlap with the postintrusion earthquakes extending farther downrift. Dates on figure in mm/dd/yyyy format.

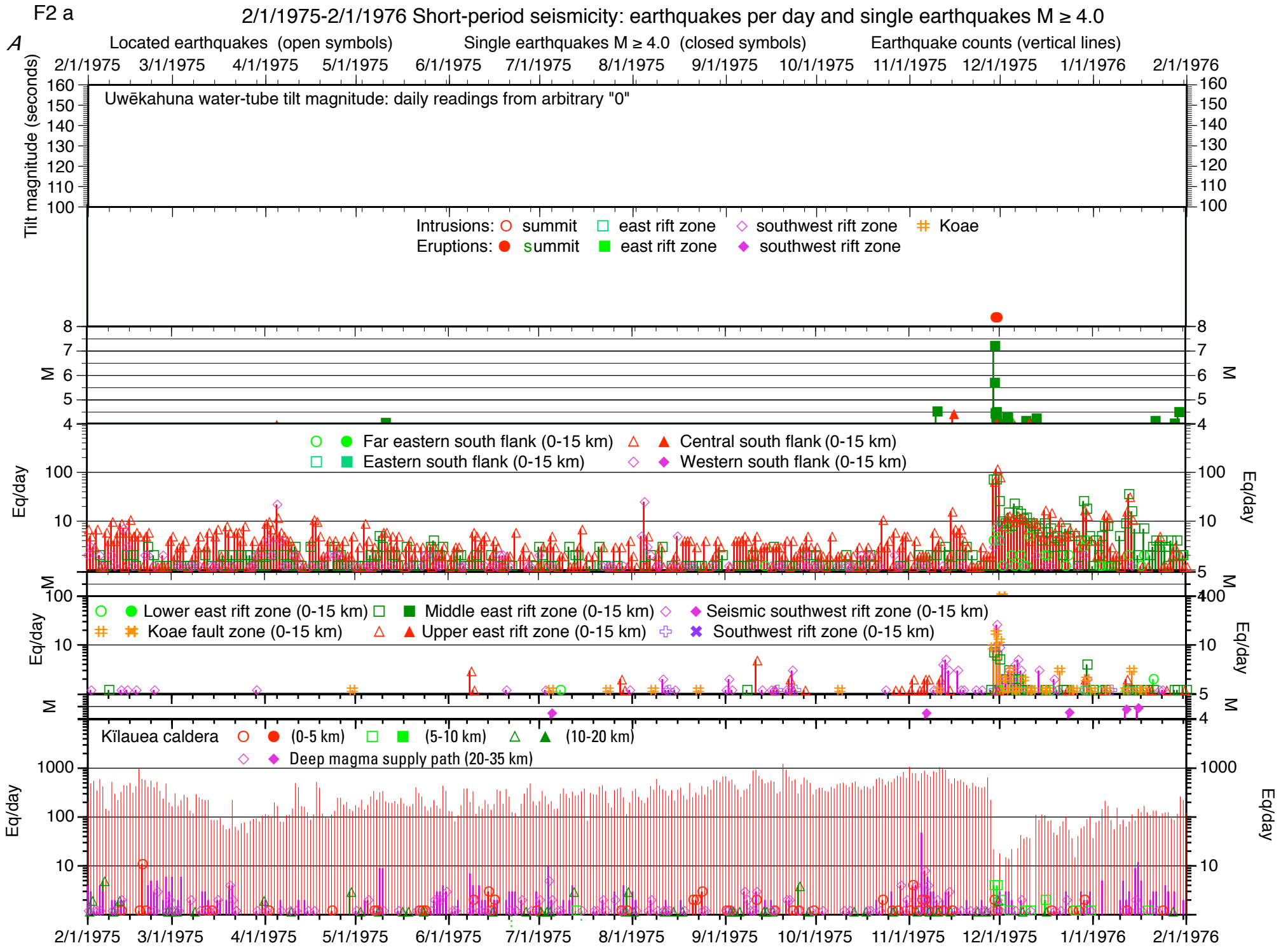
Figure F36. Map showing activity around 22–24 June 1982 seismic southwest rift zone intrusion. Data from 18–28 June. This is the second of two large intrusions within nearly continuous intrusive activity between the two 1982 summit eruptions. This and the preceding intrusion resemble the seismic sequence of August 1981. Dates on figure in mm/dd/yyyy format.

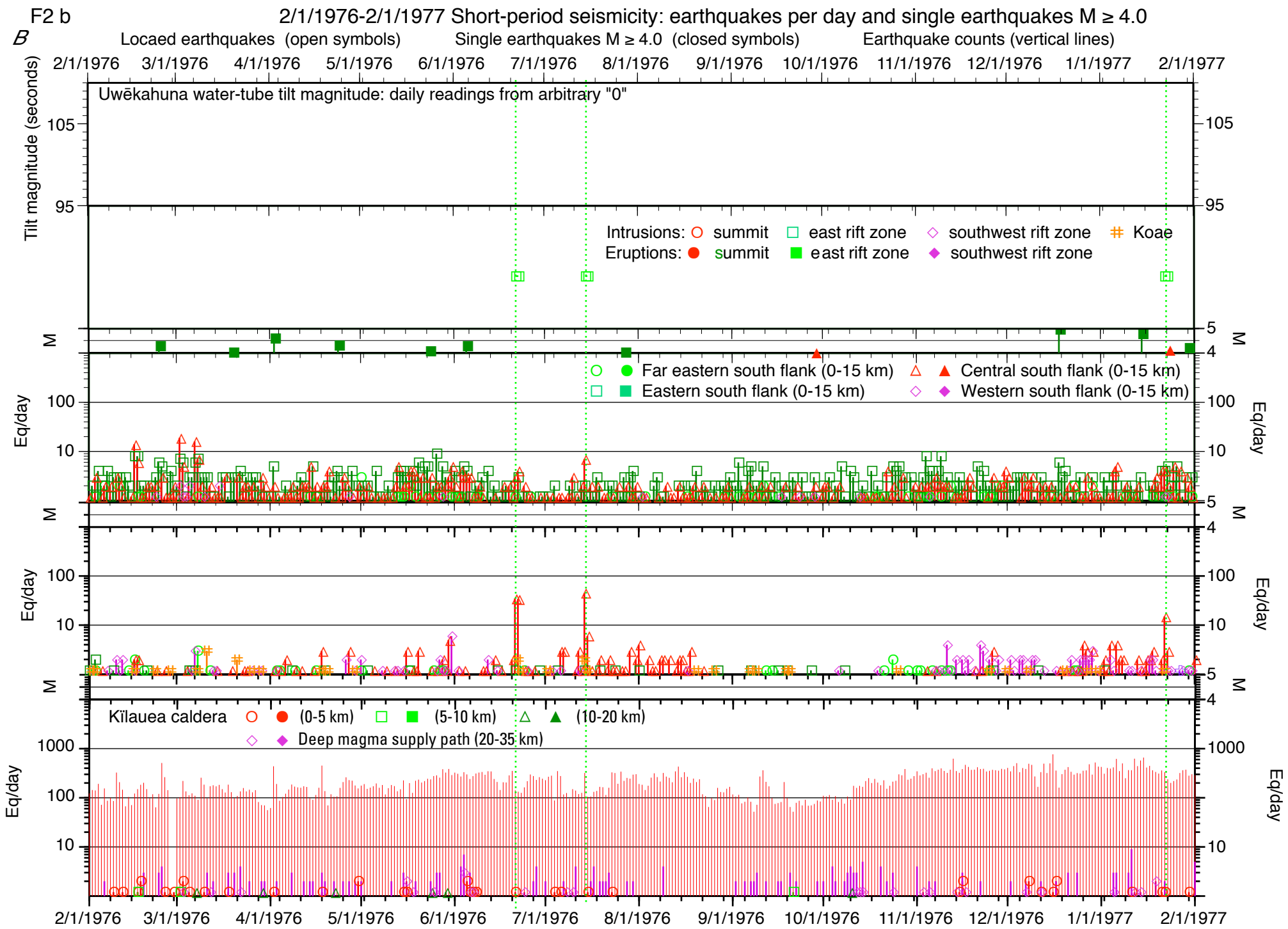
Figure F37. Map showing activity around September 1982 summit eruption/intrusion. Data from 23 September to 8 October. Intrusion precedes eruption and continues beyond the period of eruption. A second small intrusion (30 September-1 October) extends

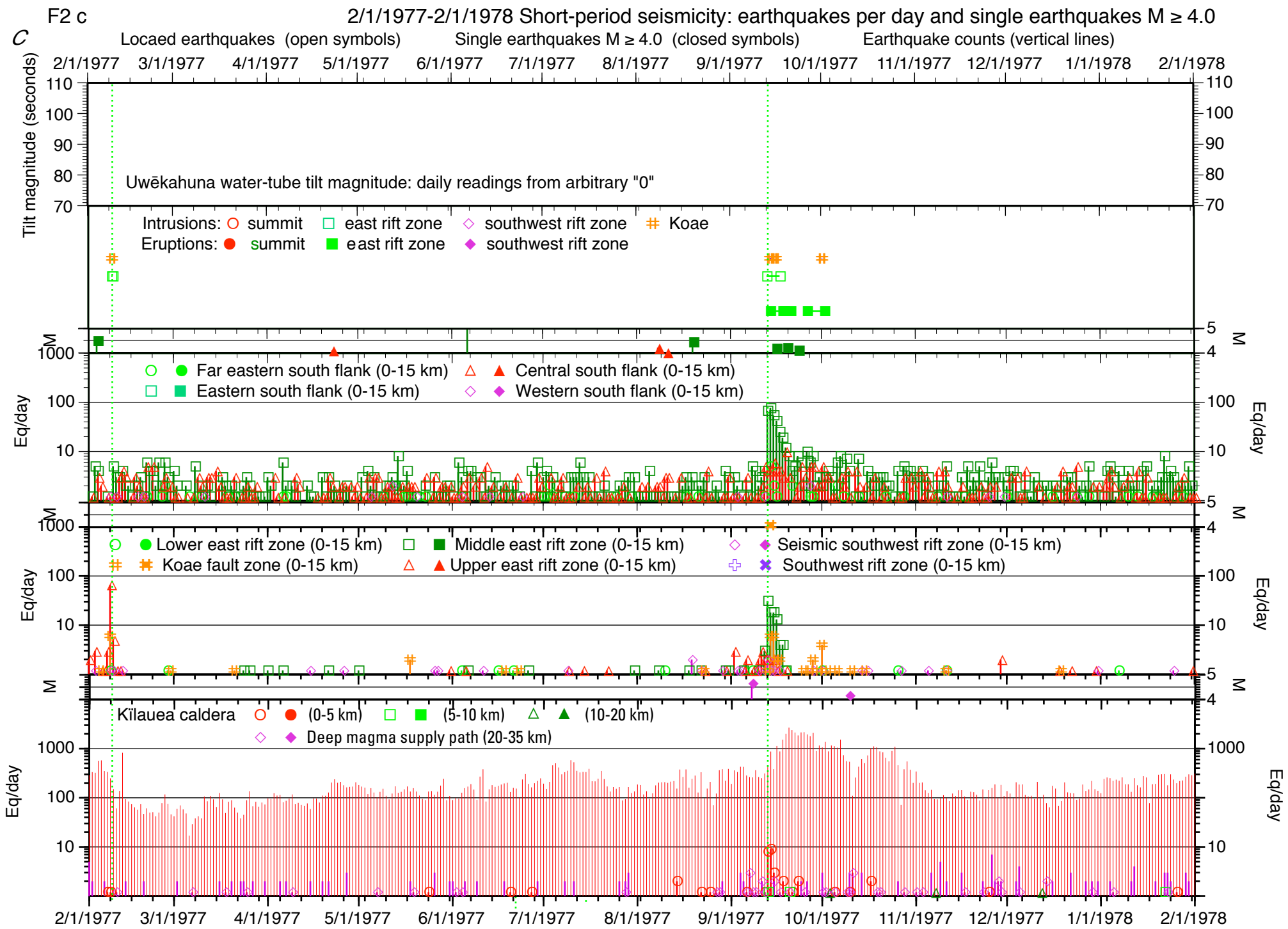
to the south and southeast within the posteruption period. Seismicity beneath the western south flank may indicate a continuation of the June intrusion. Dates on figure in mm/dd/yyyy format.

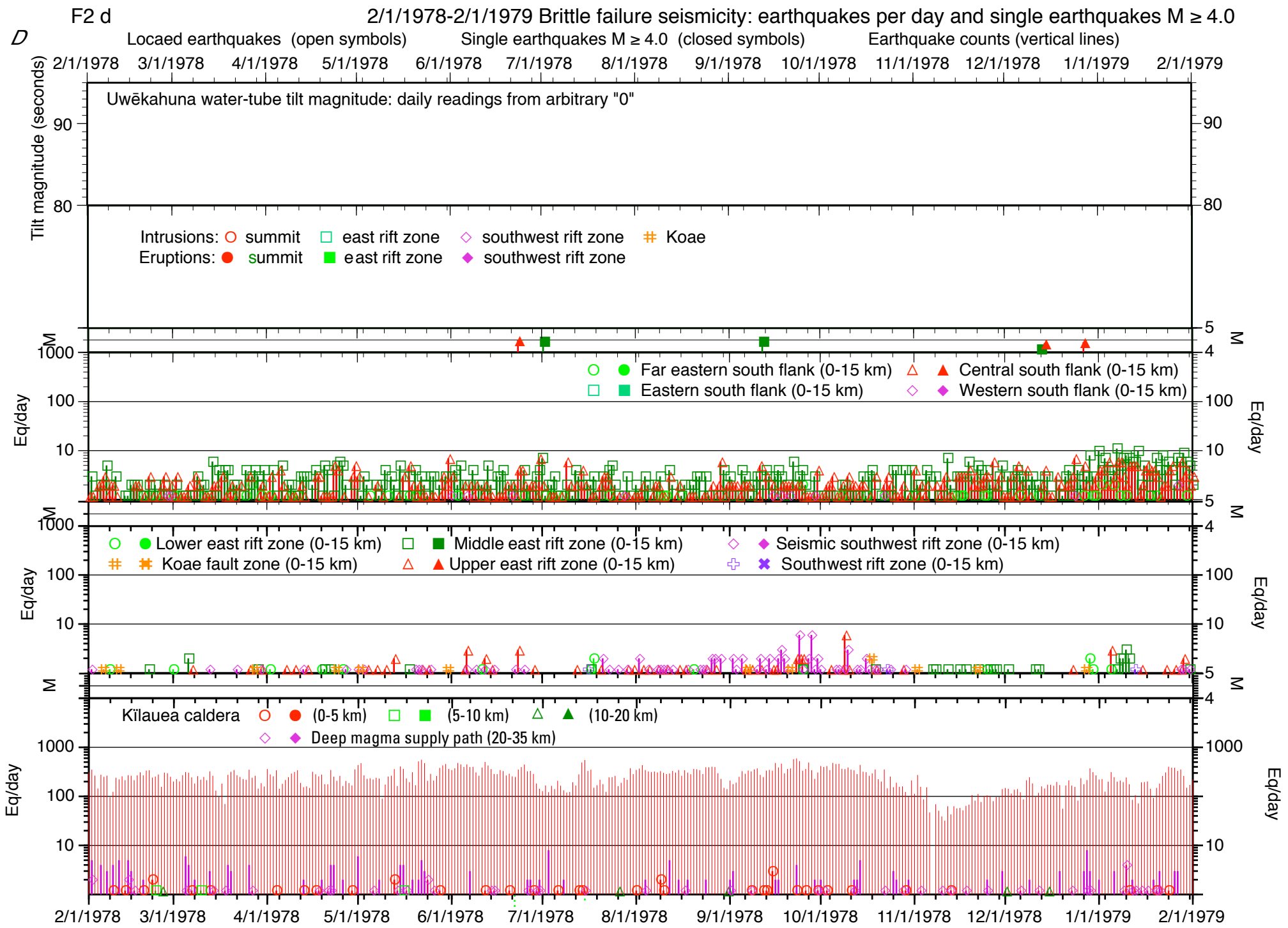
Figure F38. Map shwoing activity around October 1982 east rift zone intrusions. Data from 1–15 October. Four intrusions, mostly beneath the uppermost east rift zone. Seismicity beneath the western south flank may indicate a continuation of the June intrusion. Dates on figure in mm/dd/yyyy format.

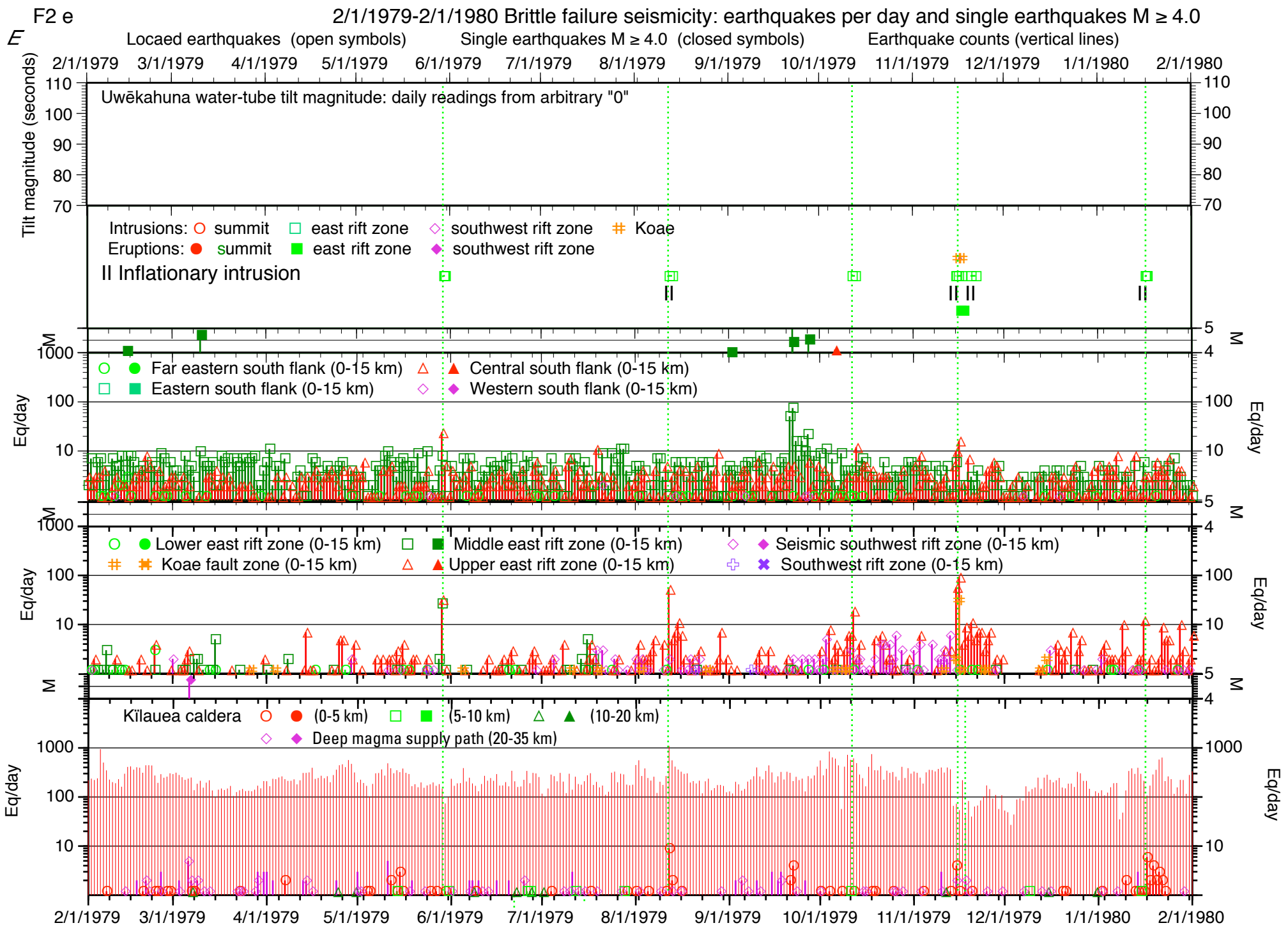
Figure F1. 11/29/1975 earthquake through episode 1 of the Pu'u 'O'o-Kupaianaha eruption

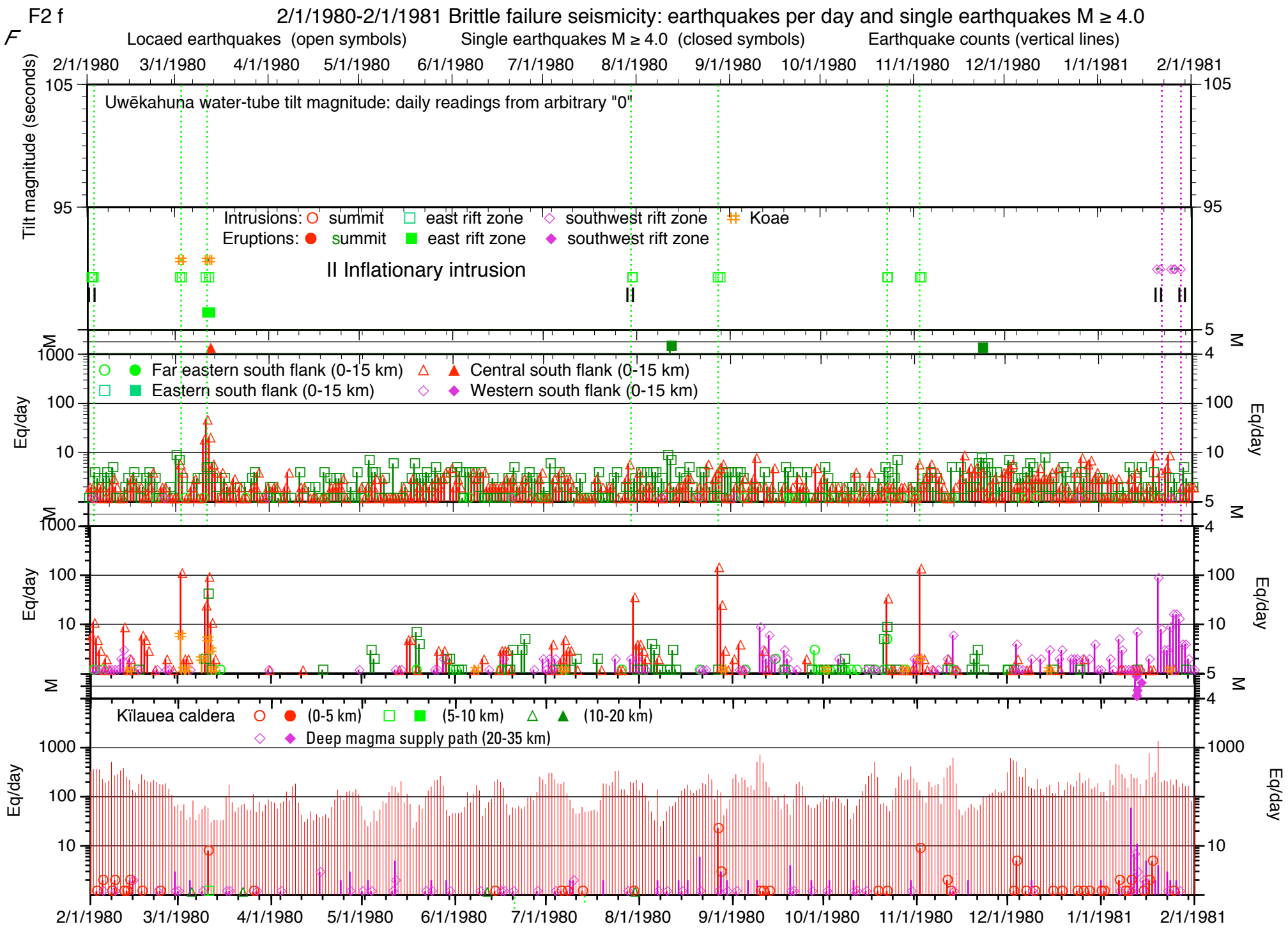

F2 a
2/1/1975-2/1/1976 Short-period seismicity: earthquakes per day and single earthquakes M ≥ 4.0
A
Located earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1975 3/1/1975 4/1/1975 5/1/1975 6/1/1975 7/1/1975 8/1/1975 9/1/1975 10/1/1975 11/1/1975 12/1/1975 1/1/1976 2/1/1976
Tilt magnitude (seconds)
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
M
Eq/day
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Lower east rift zone (0-15 km)
Middle east rift zone (0-15 km)
Seismic southwest rift zone (0-15 km)
Koae fault zone (0-15 km)
Upper east rift zone (0-15 km)
Southwest rift zone (0-15 km)
Kīlauea caldera (0-5 km) (5-10 km) (10-20 km)
Deep magma supply path (20-35 km)


F2 b
2/1/1976-2/1/1977 Short-period seismicity: earthquakes per day and single earthquakes M ≥ 4.0
B
Locaed earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1976
3/1/1976
4/1/1976
5/1/1976
6/1/1976
7/1/1976
8/1/1976
9/1/1976
10/1/1976
11/1/1976
12/1/1976
1/1/1977
2/1/1977
Tilt magnitude (seconds)
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
105
95
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
M
5
4
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Eq/day
100
10
Kīlauea caldera
(0-5 km)
(5-10 km)
(10-20 km)
Deep magma supply path (20-35 km)
1000


F2 c
2/1/1977-2/1/1978 Short-period seismicity: earthquakes per day and single earthquakes M ≥ 4.0
C
Locaed earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1977
3/1/1977
4/1/1977
5/1/1977
6/1/1977
7/1/1977
8/1/1977
9/1/1977
10/1/1977
11/1/1977
12/1/1977
1/1/1978
2/1/1978
Tilt magnitude (seconds)
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
M
Eq/day
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Lower east rift zone (0-15 km)
Middle east rift zone (0-15 km)
Seismic southwest rift zone (0-15 km)
Koae fault zone (0-15 km)
Upper east rift zone (0-15 km)
Southwest rift zone (0-15 km)
Kīlauea caldera (0-5 km) (5-10 km) (10-20 km)
Deep magma supply path (20-35 km)

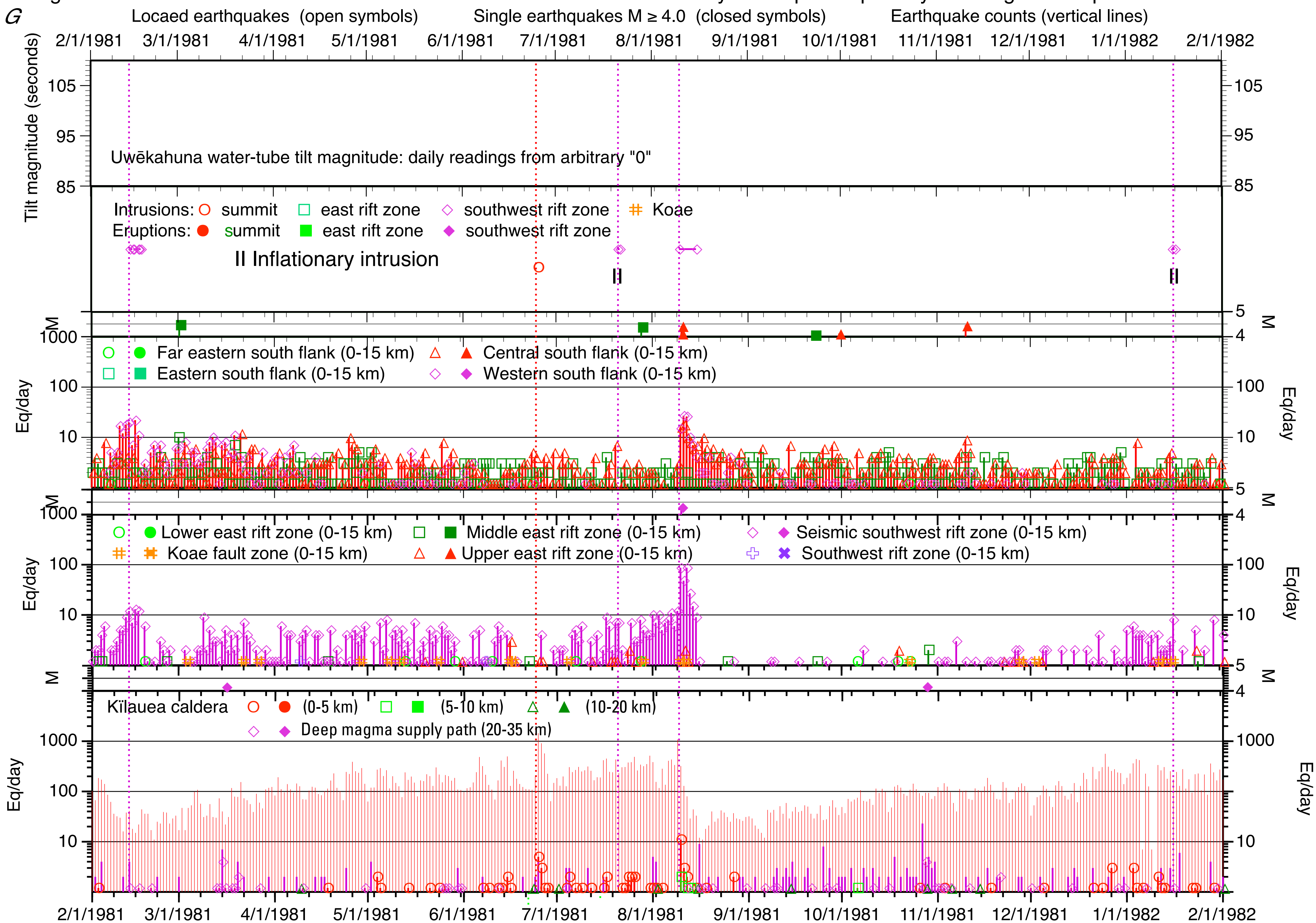

F2 d
2/1/1978-2/1/1979 Brittle failure seismicity: earthquakes per day and single earthquakes M ≥ 4.0
D
Locaed earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1978
3/1/1978
4/1/1978
5/1/1978
6/1/1978
7/1/1978
8/1/1978
9/1/1978
10/1/1978
11/1/1978
12/1/1978
1/1/1979
2/1/1979
Tilt magnitude (seconds)
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
M
Eq/day
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Lower east rift zone (0-15 km)
Middle east rift zone (0-15 km)
Seismic southwest rift zone (0-15 km)
Koae fault zone (0-15 km)
Upper east rift zone (0-15 km)
Southwest rift zone (0-15 km)
Kīlauea caldera (0-5 km) (5-10 km) (10-20 km)
Deep magma supply path (20-35 km)


F2 e
2/1/1979-2/1/1980 Brittle failure seismicity: earthquakes per day and single earthquakes M ≥ 4.0
Locaed earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1979
3/1/1979
4/1/1979
5/1/1979
6/1/1979
7/1/1979
8/1/1979
9/1/1979
10/1/1979
11/1/1979
12/1/1979
1/1/1980
2/1/1980
Tilt magnitude (seconds)
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
II Inflationary intrusion
M
Eq/day
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Lower east rift zone (0-15 km)
Middle east rift zone (0-15 km)
Seismic southwest rift zone (0-15 km)
Koae fault zone (0-15 km)
Upper east rift zone (0-15 km)
Southwest rift zone (0-15 km)
Kīlauea caldera
(0-5 km)
(5-10 km)
(10-20 km)
Deep magma supply path (20-35 km)


F2 f
2/1/1980-2/1/1981 Brittle failure seismicity: earthquakes per day and single earthquakes M ≥ 4.0
Locaed earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1980
3/1/1980
4/1/1980
5/1/1980
6/1/1980
7/1/1980
8/1/1980
9/1/1980
10/1/1980
11/1/1980
12/1/1980
1/1/1981
2/1/1981
Tilt magnitude (seconds)
105
95
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
II Inflationary intrusion
II
II
II
II
M
1000
100
10
5
4
Eq/day
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Kīlauea caldera (0-5 km) (5-10 km) (10-20 km)
Deep magma supply path (20-35 km)

F2 g

2/1/1981-2/1/1982 Brittle failure seismicity: earthquakes per day and single earthquakes M ≥ 4.0



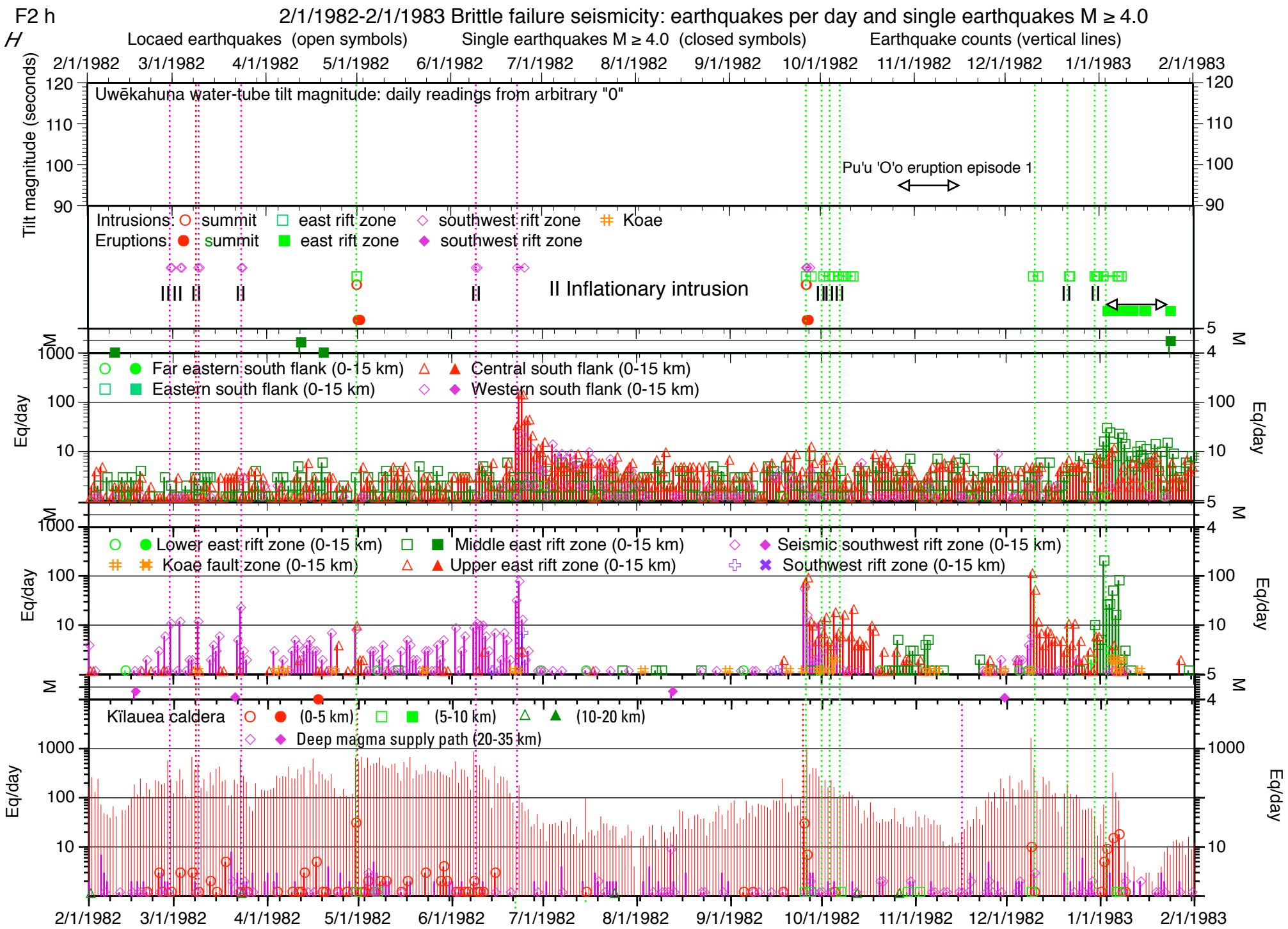

F2 h
2/1/1982-2/1/1983 Brittle failure seismicity: earthquakes per day and single earthquakes M ≥ 4.0
H
Locaed earthquakes (open symbols)
Single earthquakes M ≥ 4.0 (closed symbols)
Earthquake counts (vertical lines)
2/1/1982
3/1/1982
4/1/1982
5/1/1982
6/1/1982
7/1/1982
8/1/1982
9/1/1982
10/1/1982
11/1/1982
12/1/1982
1/1/1983
2/1/1983
Tilt magnitude (seconds)
Uwēkahuna water-tube tilt magnitude: daily readings from arbitrary "0"
Pu'u 'O'o eruption episode 1
Intrusions: summit east rift zone southwest rift zone Koae
Eruptions: summit east rift zone southwest rift zone
II Inflationary intrusion
M
Eq/day
Far eastern south flank (0-15 km)
Central south flank (0-15 km)
Eastern south flank (0-15 km)
Western south flank (0-15 km)
Lower east rift zone (0-15 km)
Middle east rift zone (0-15 km)
Seismic southwest rift zone (0-15 km)
Koae fault zone (0-15 km)
Upper east rift zone (0-15 km)
Southwest rift zone (0-15 km)
Kīlauea caldera (0-5 km) (5-10 km) (10-20 km)
Deep magma supply path (20-35 km)

Figure F2 i

2/1/1975-2/1/1976 Long-period seismicity

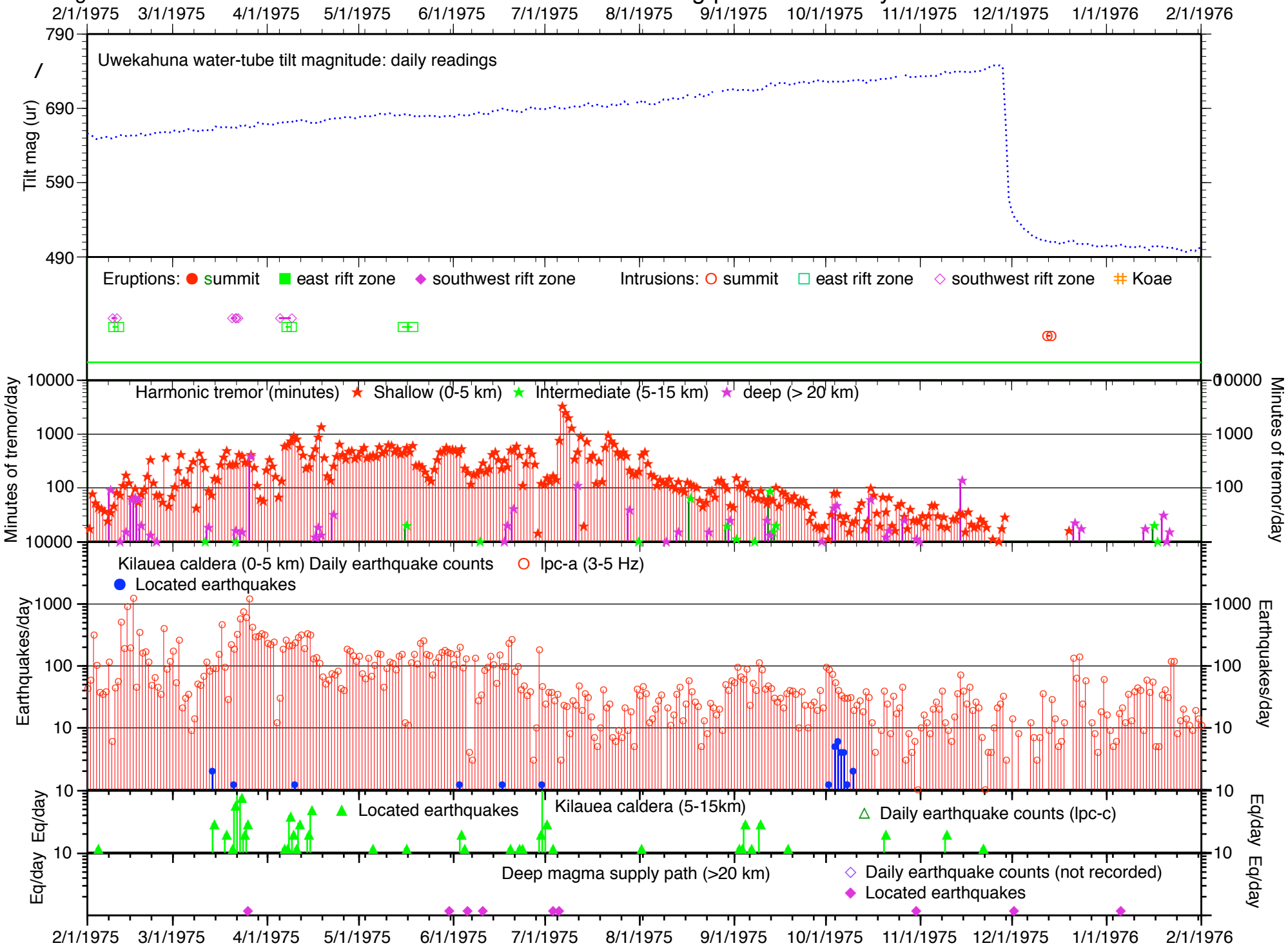


Figure F2 j

2/1/1976-2/1/1977 Long-period seismicity

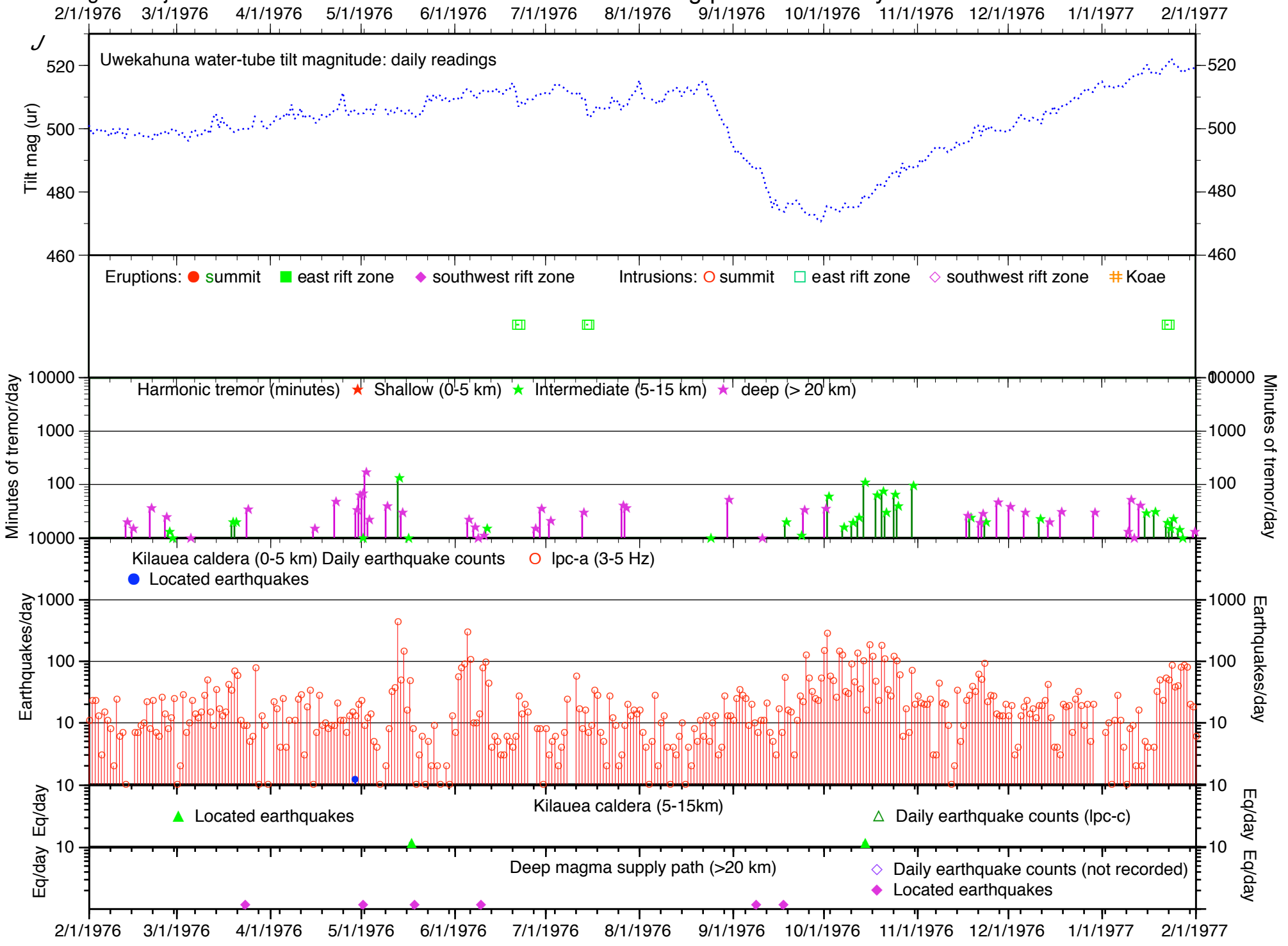


Figure F2 k

2/1/1977-2/1/1978 Long-period seismicity

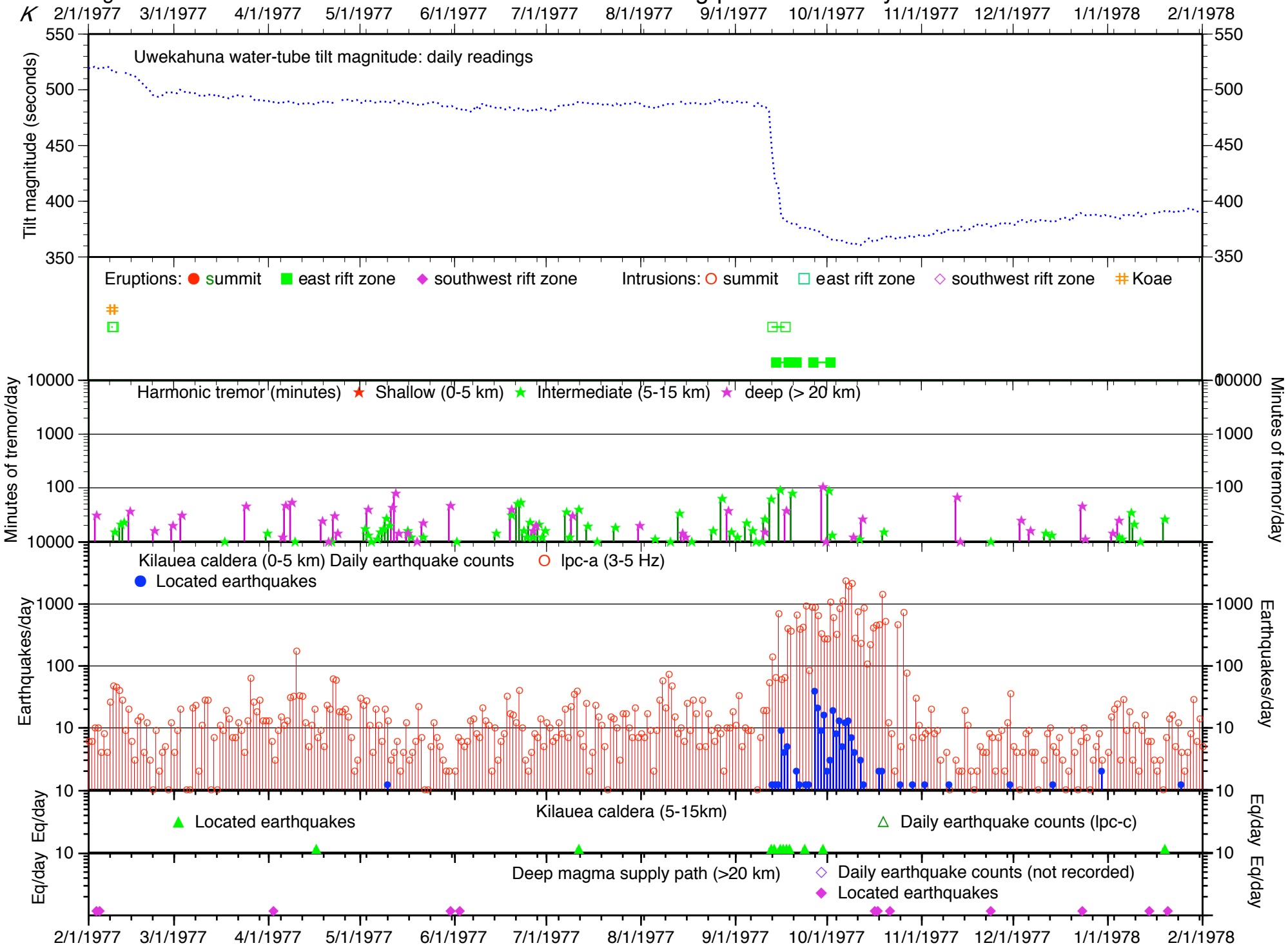


Figure F2 I

2/1/1978-2/1/1979 Long-period seismicity

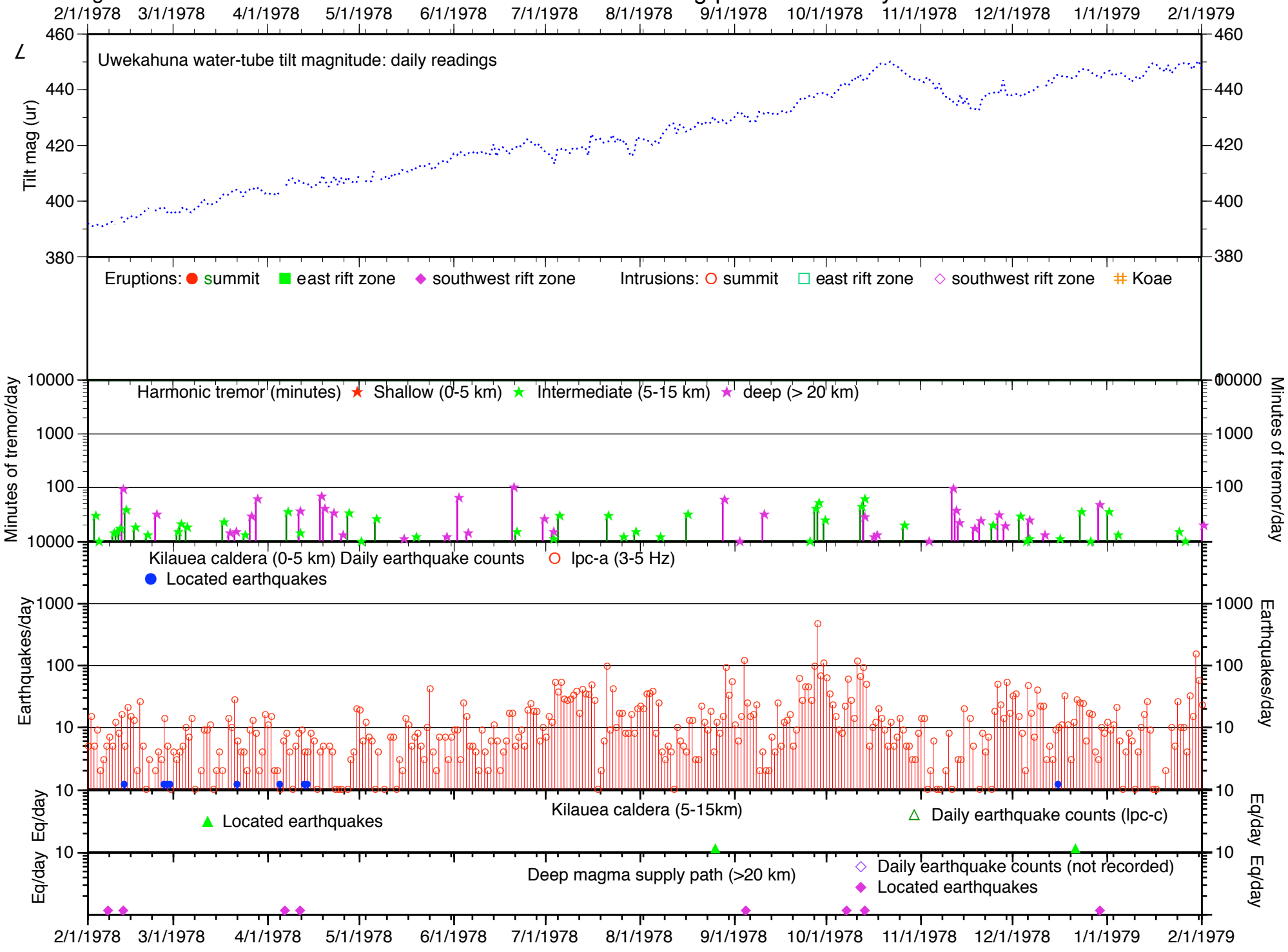


Figure F2 m

2/1/1979-2/1/1980 Long-period seismicity

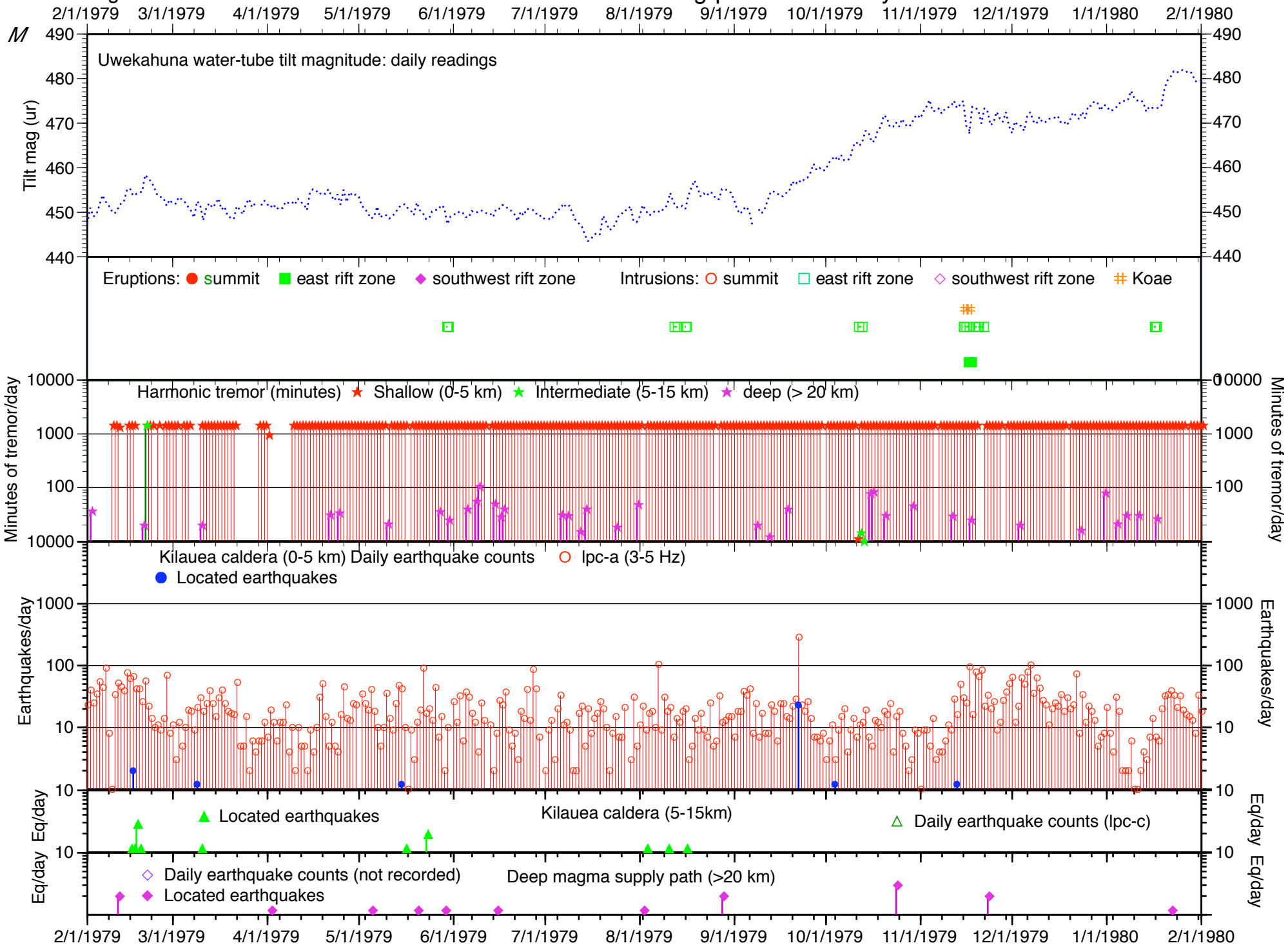


Figure F2 n

2/1/1980-2/1/1981 Long-period seismicity

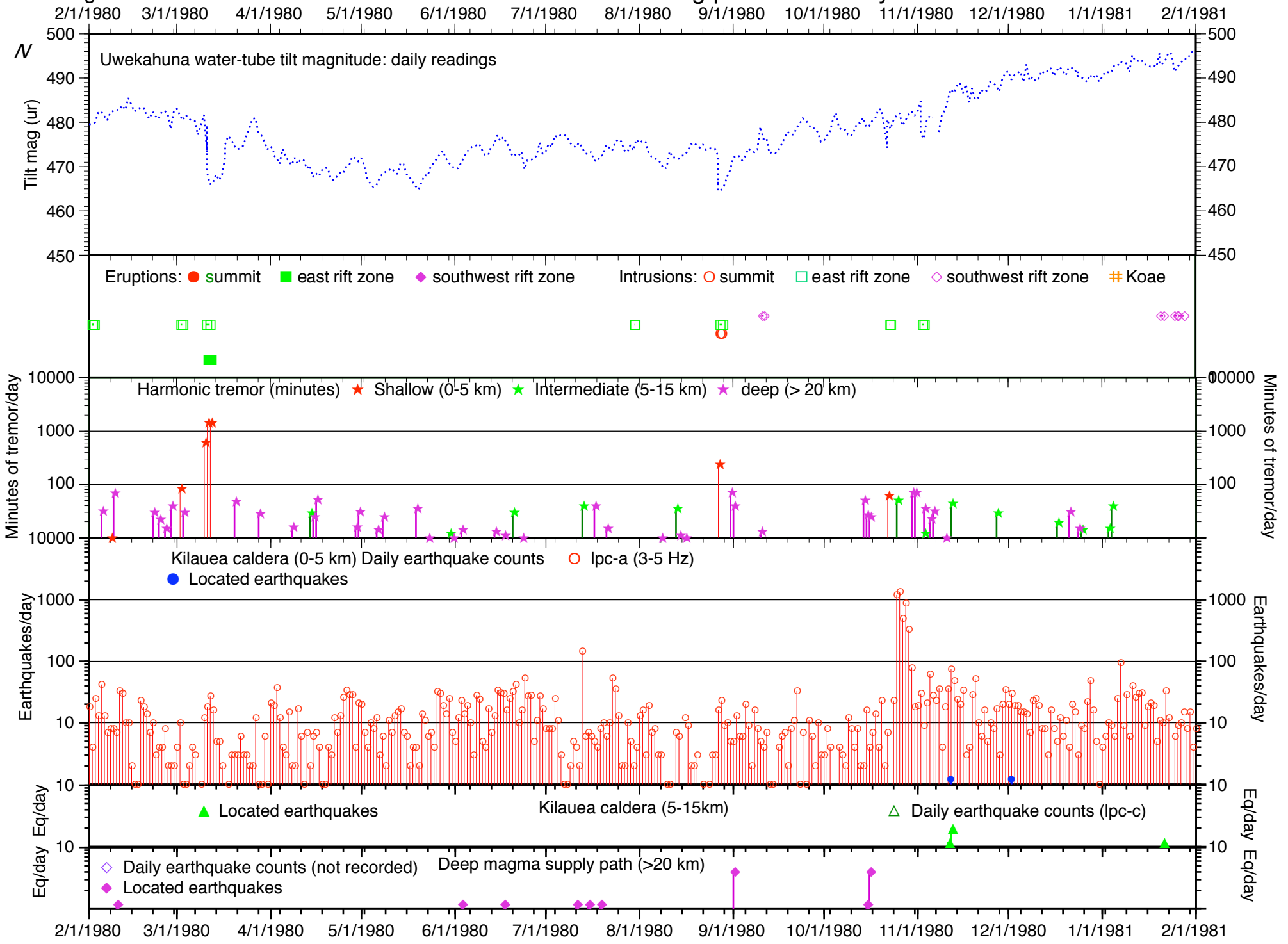
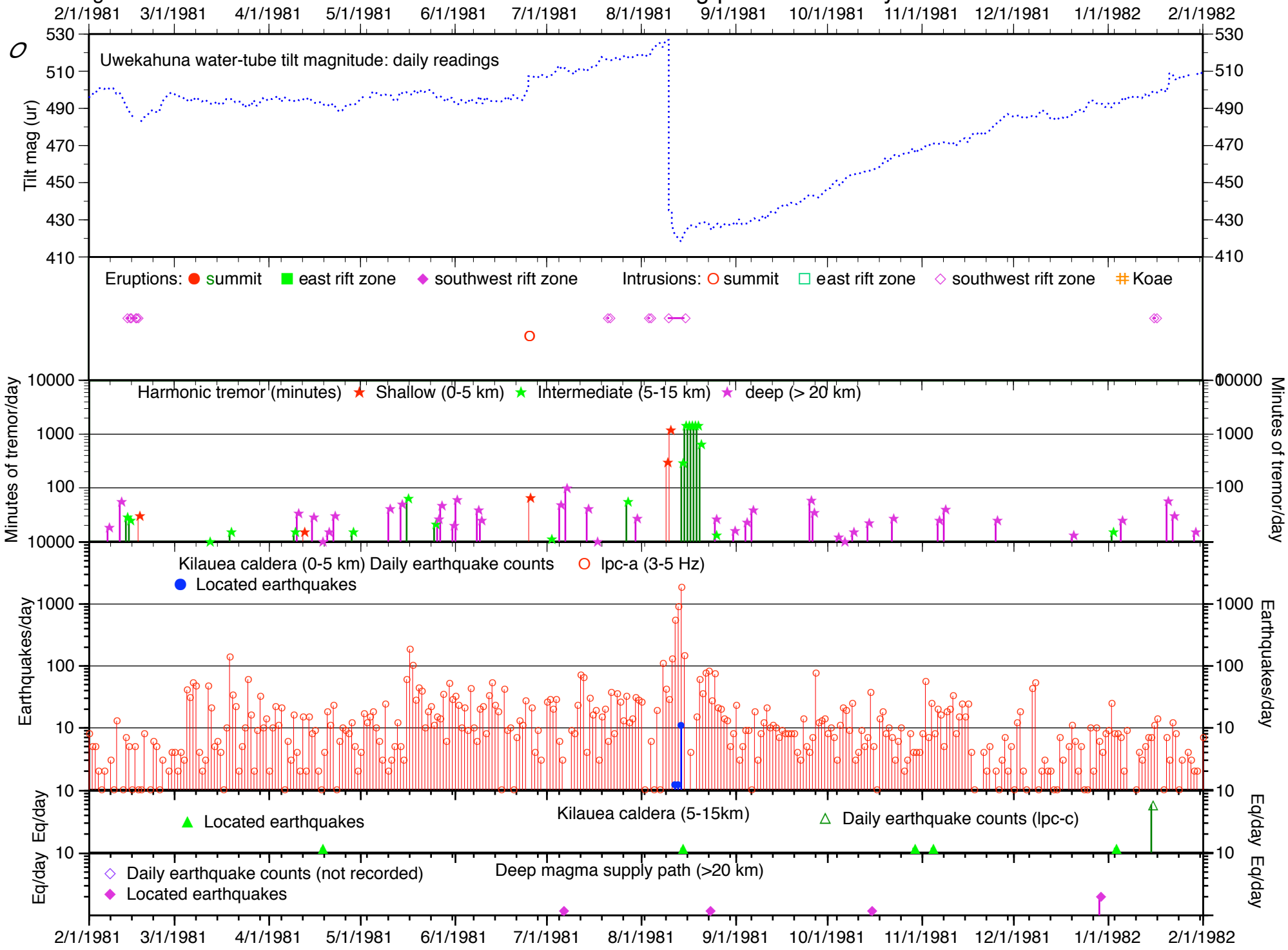


Figure F2 o

2/1/1981-2/1/1982 Long-period seismicity



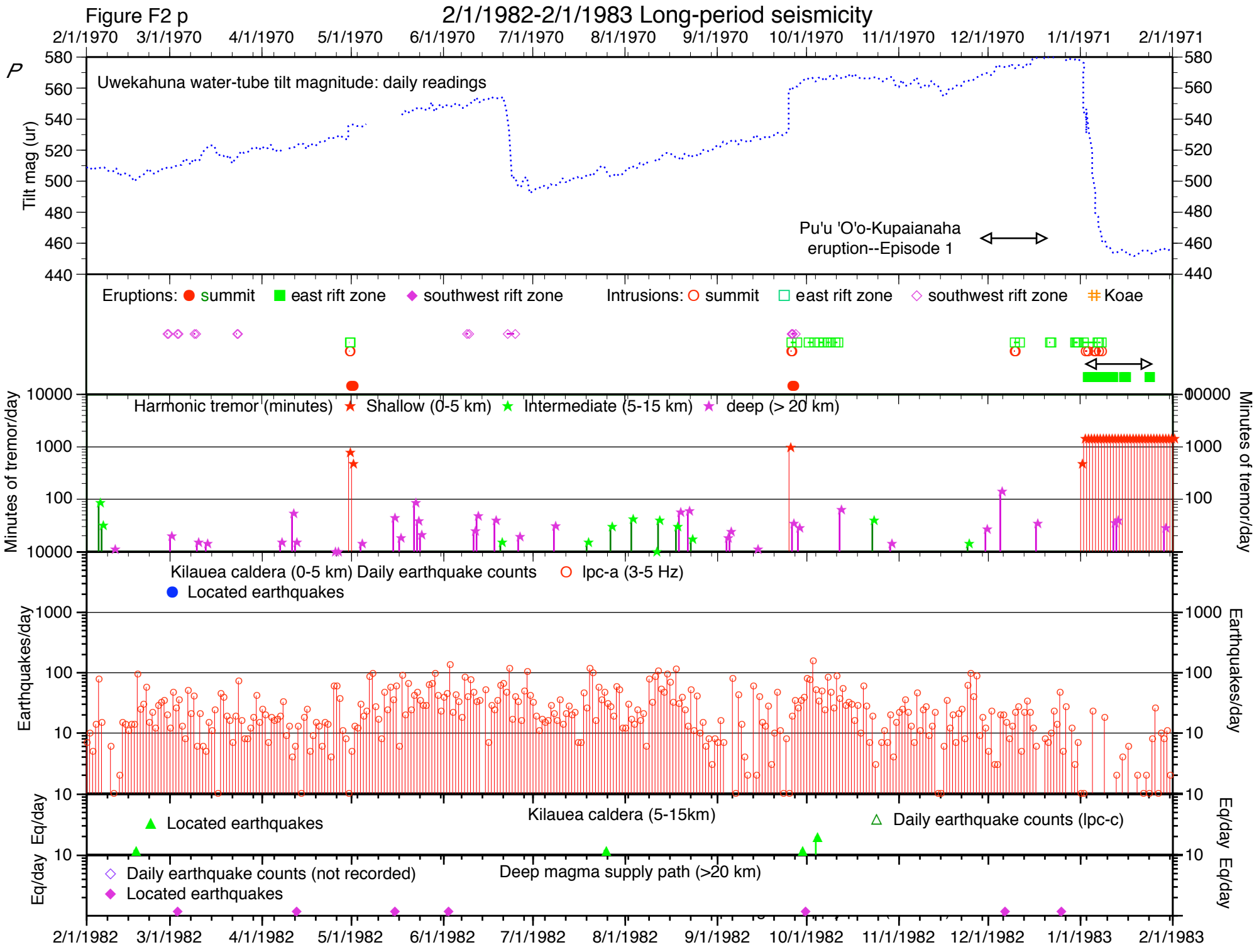
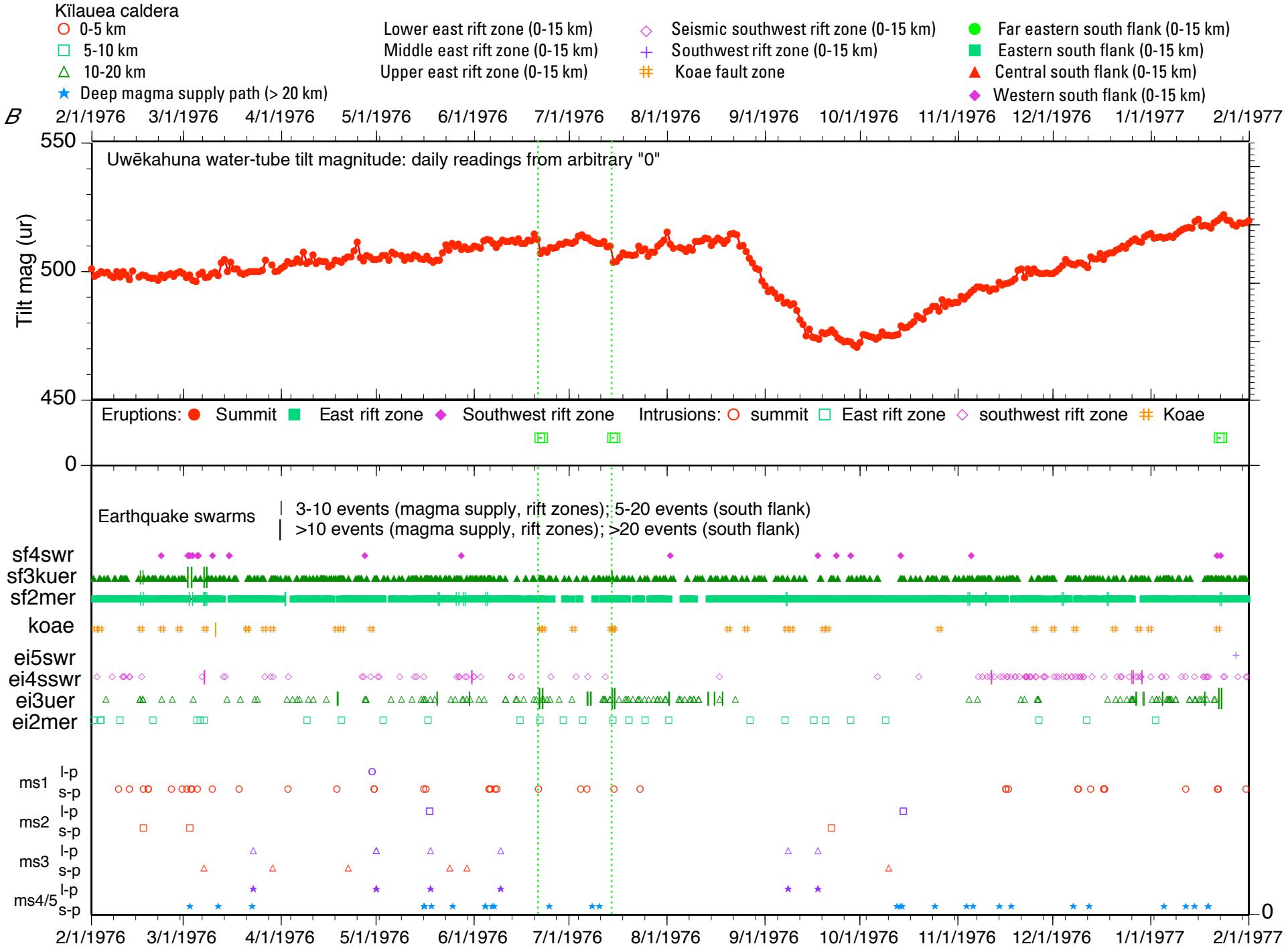


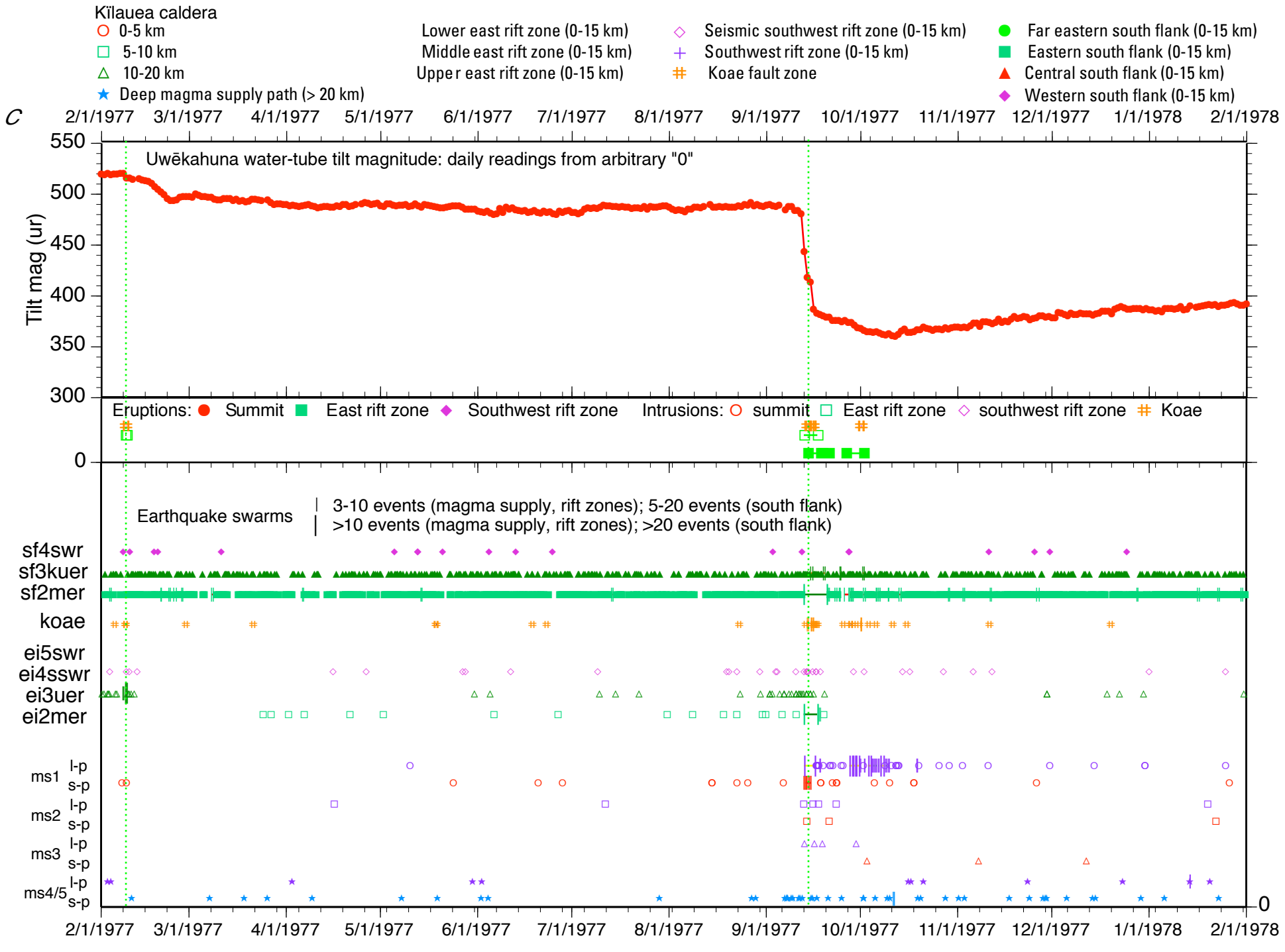
Figure F2 p
2/1/1982-2/1/1983 Long-period seismicity
2/1/1970 3/1/1970 4/1/1970 5/1/1970 6/1/1970 7/1/1970 8/1/1970 9/1/1970 10/1/1970 11/1/1970 12/1/1970 1/1/1971 2/1/1971
P
Uwekahuna water-tube tilt magnitude: daily readings
Tilt mag (ur)
580 560 540 520 500 480 460 440
Pu'u 'O'o-Kupaianaha eruption--Episode 1
Eruptions: summit east rift zone southwest rift zone
Intrusions: summit east rift zone southwest rift zone Koae
Harmonic tremor (minutes) Shallow (0-5 km) Intermediate (5-15 km) deep (> 20 km)
Minutes of tremor/day
10000 1000 100
Kilauea caldera (0-5 km) Daily earthquake counts
lpc-a (3-5 Hz)
Located earthquakes
Earthquakes/day
1000 100 10
Eq/day
Located earthquakes
Kilauea caldera (5-15km)
Daily earthquake counts (lpc-c)
Daily earthquake counts (not recorded)
Deep magma supply path (>20 km)
2/1/1982 3/1/1982 4/1/1982 5/1/1982 6/1/1982 7/1/1982 8/1/1982 9/1/1982 10/1/1982 11/1/1982 12/1/1982 1/1/1983 2/1/1983

Appendix figure F3 a

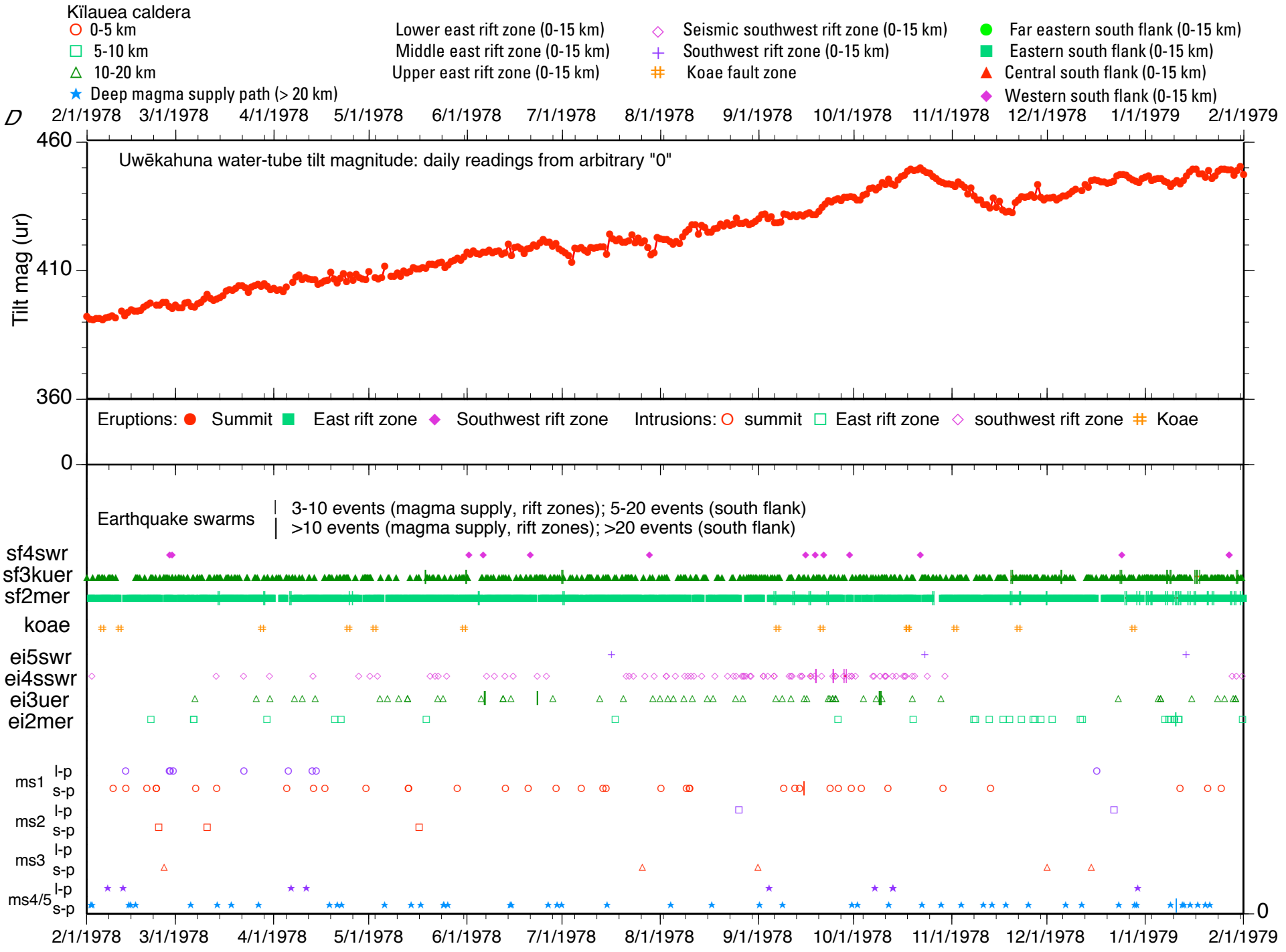
Appendix figure F3 b



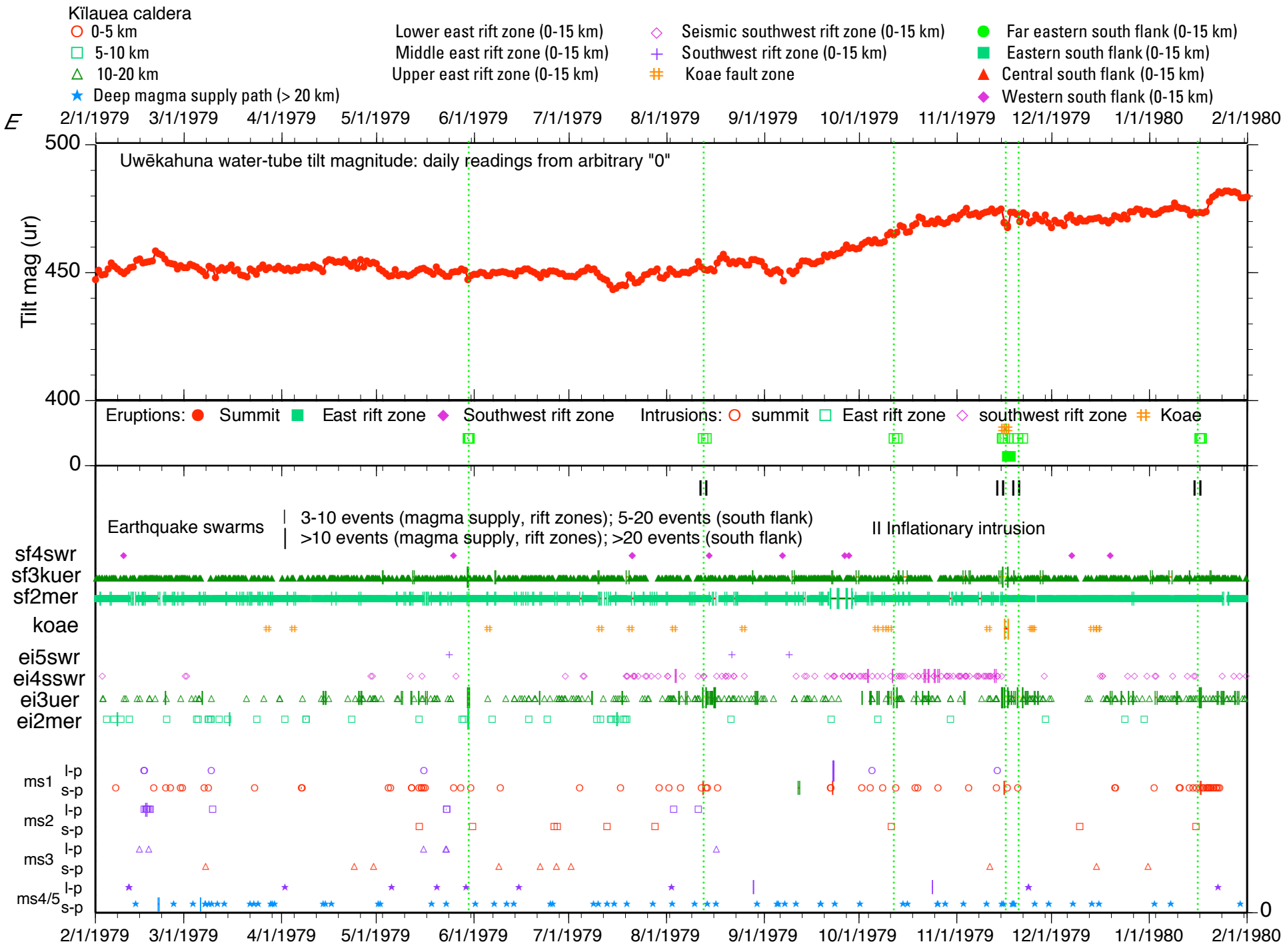
Appendix figure F3 c



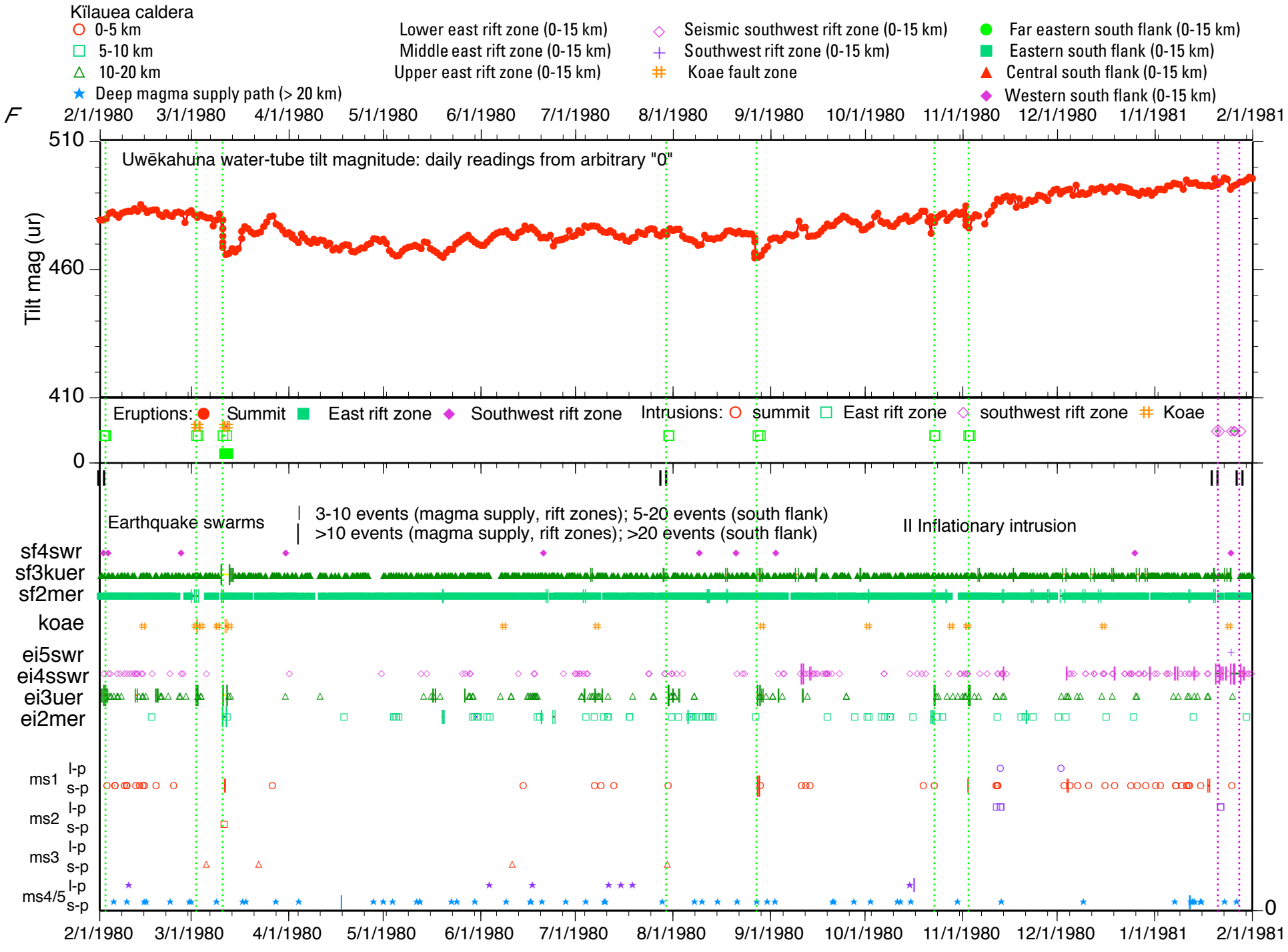
Appendix figure F3 d



Appendix figure F3 e



Appendix figure F3 f



Appendix figure F3 g

Appendix figure F3 h

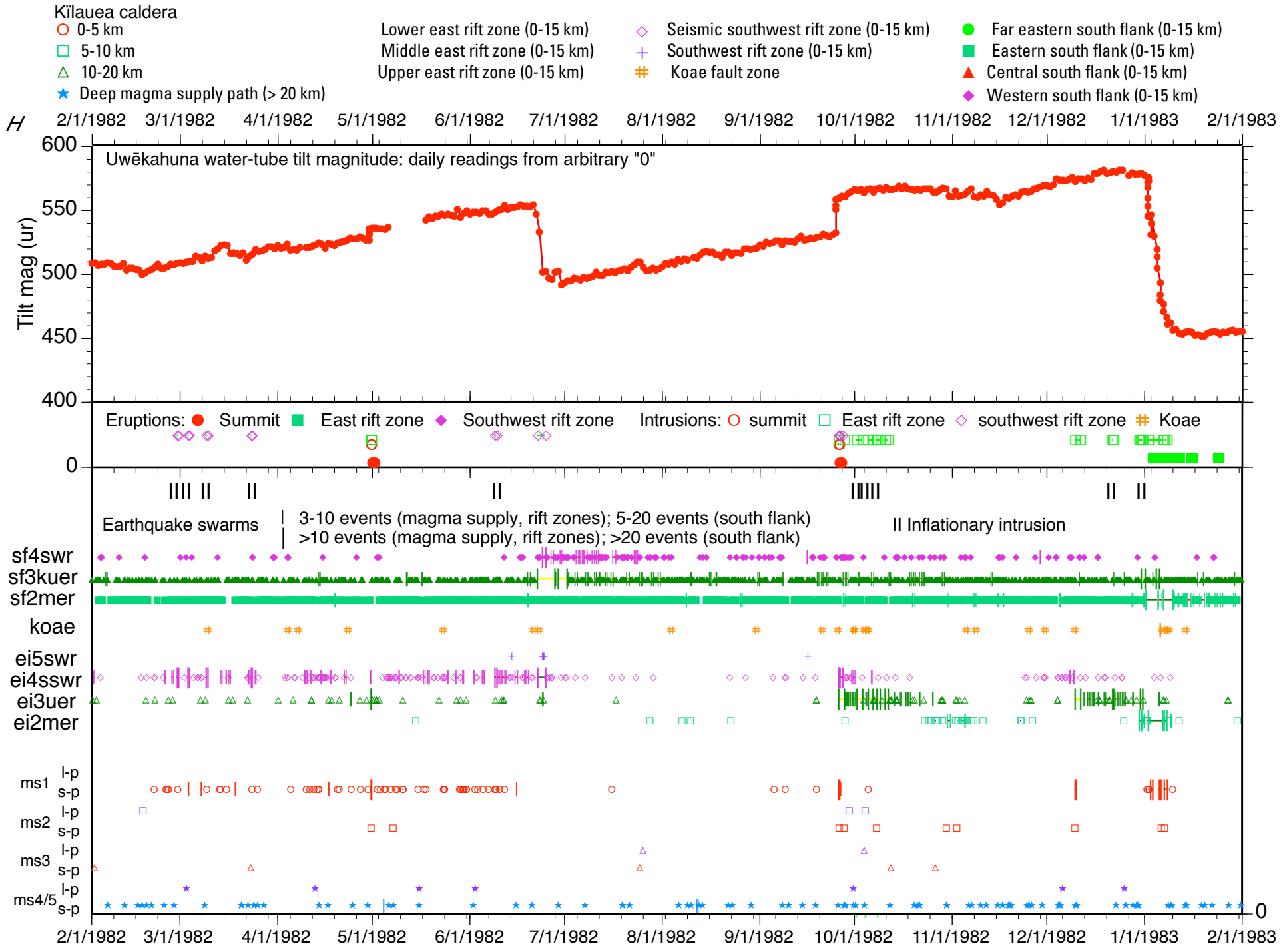
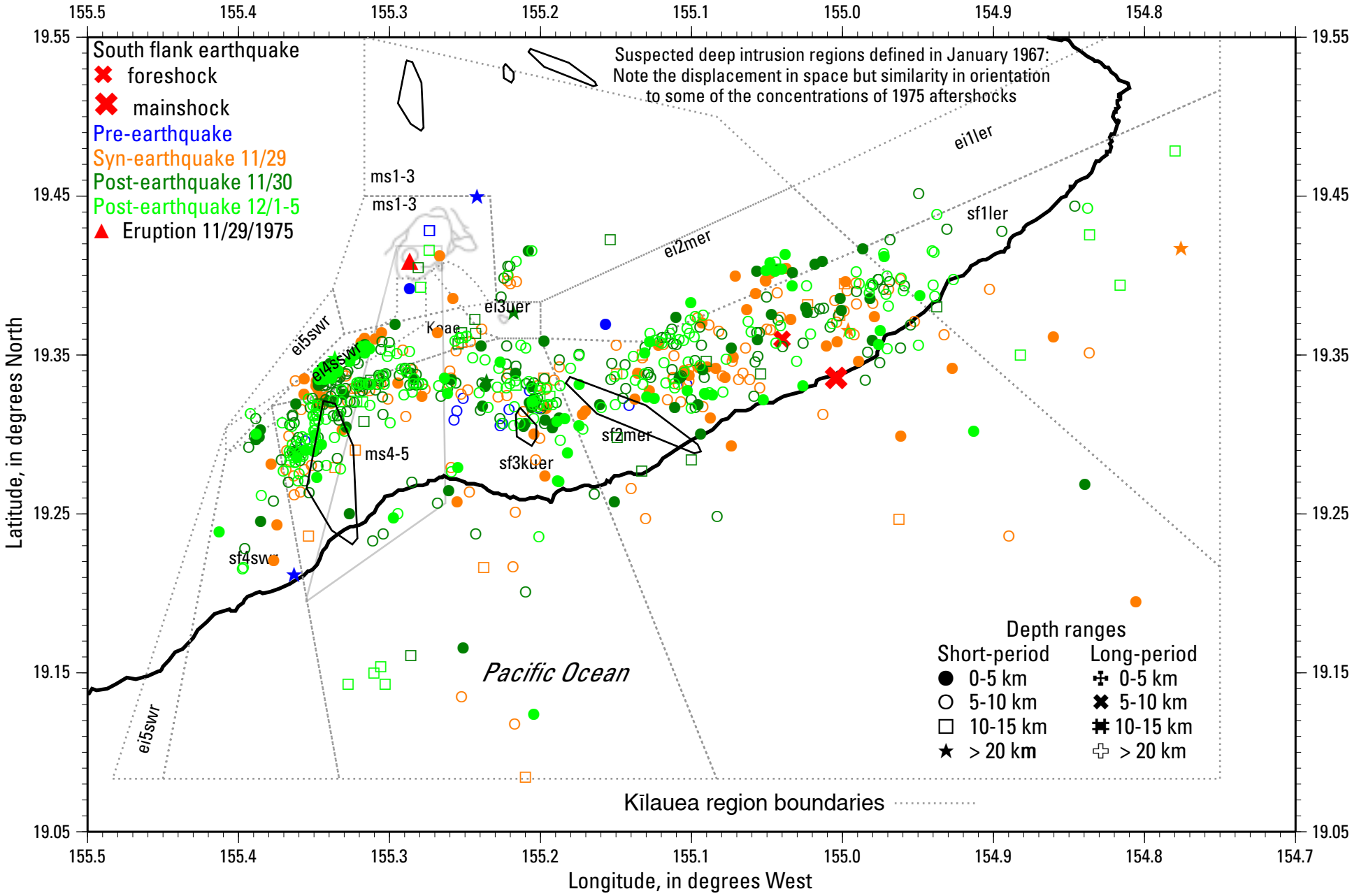
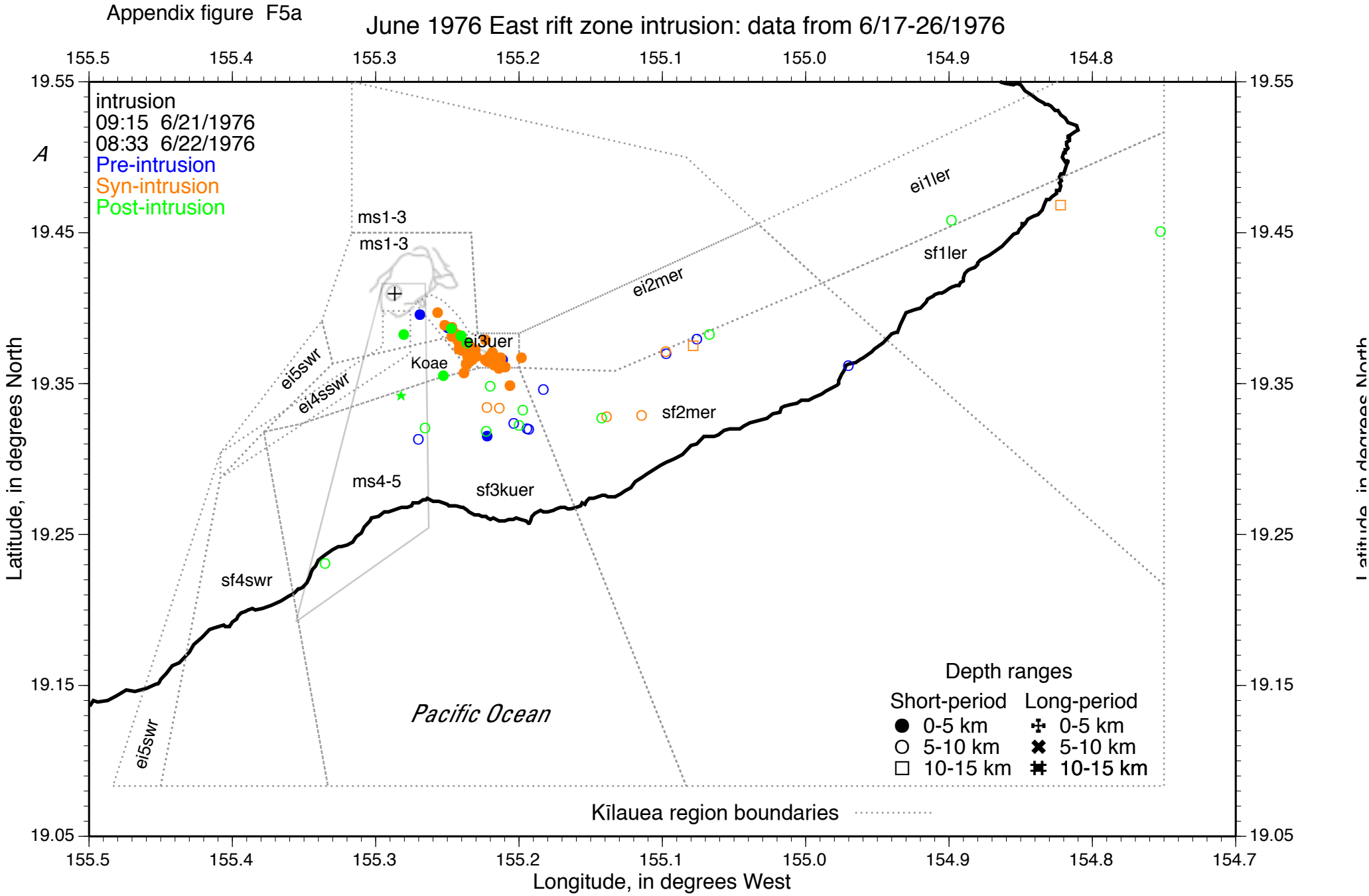


Figure F4 11/29/1975 south flank earthquake and aftershocks; data from 11/26-12/5/1975

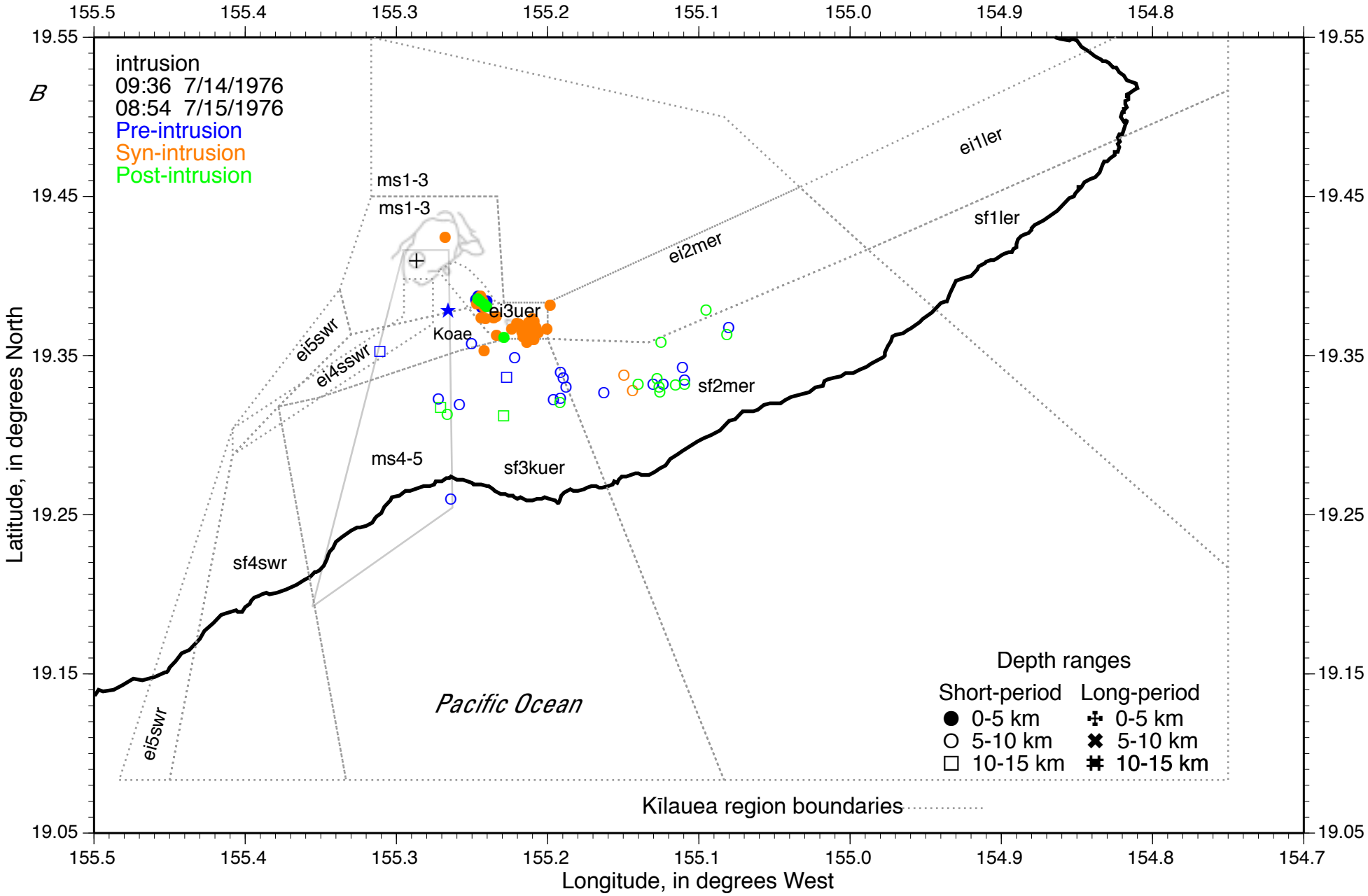


Appendix figure F5a

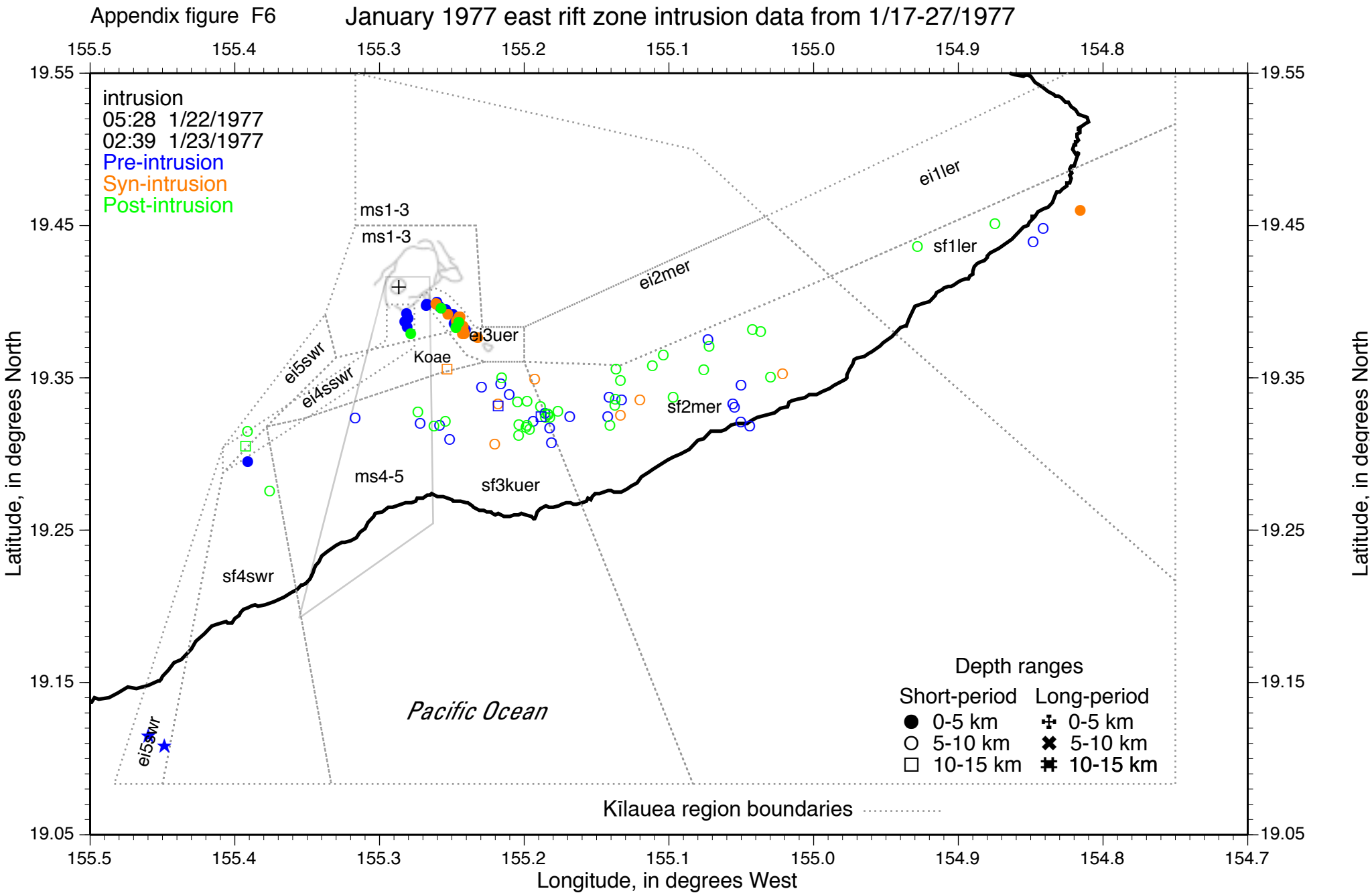


Appendix figure F5b

July 1976 east rift zone intrusion: data from 7/9-19/1976

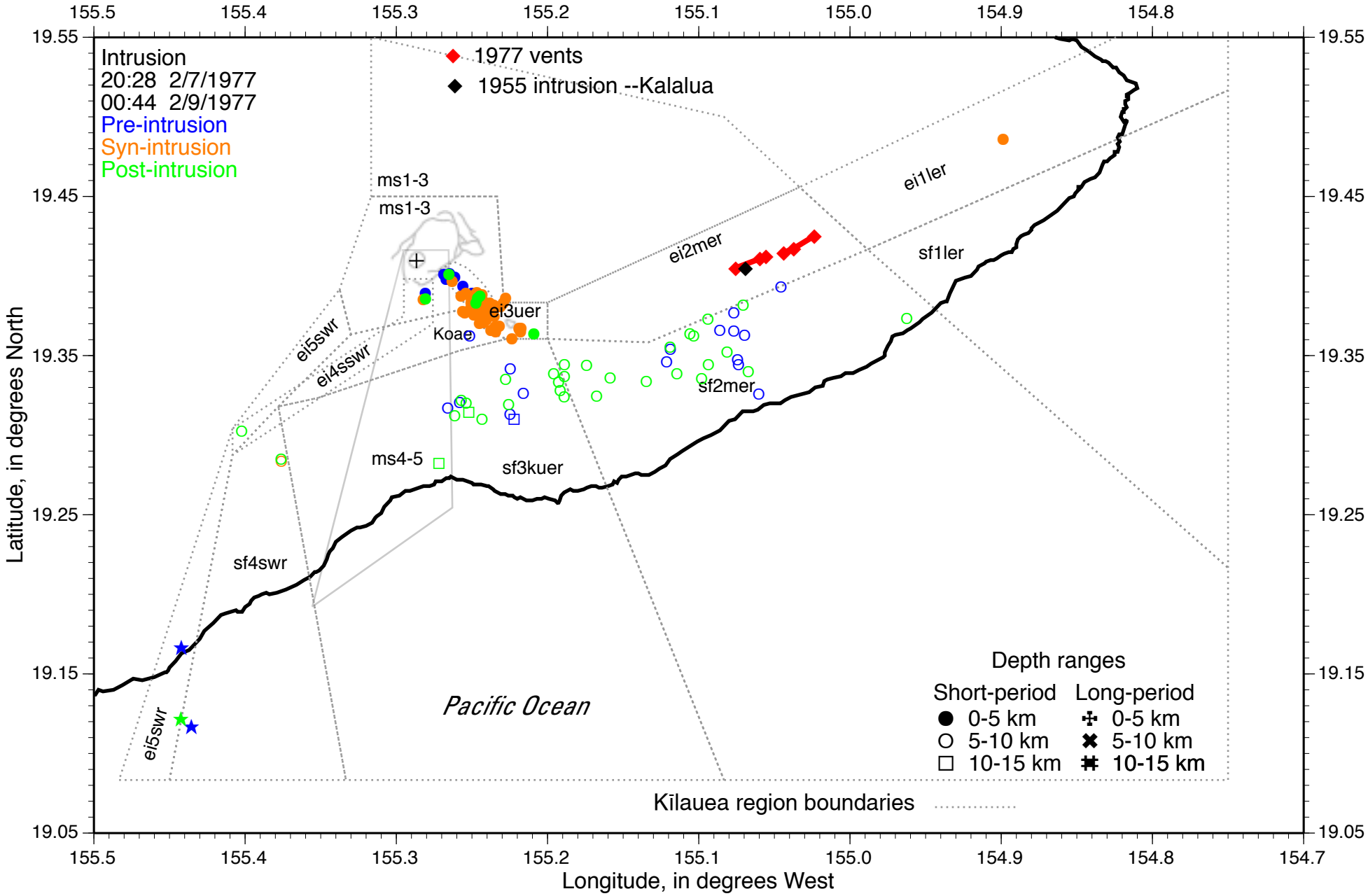


Appendix figure F6



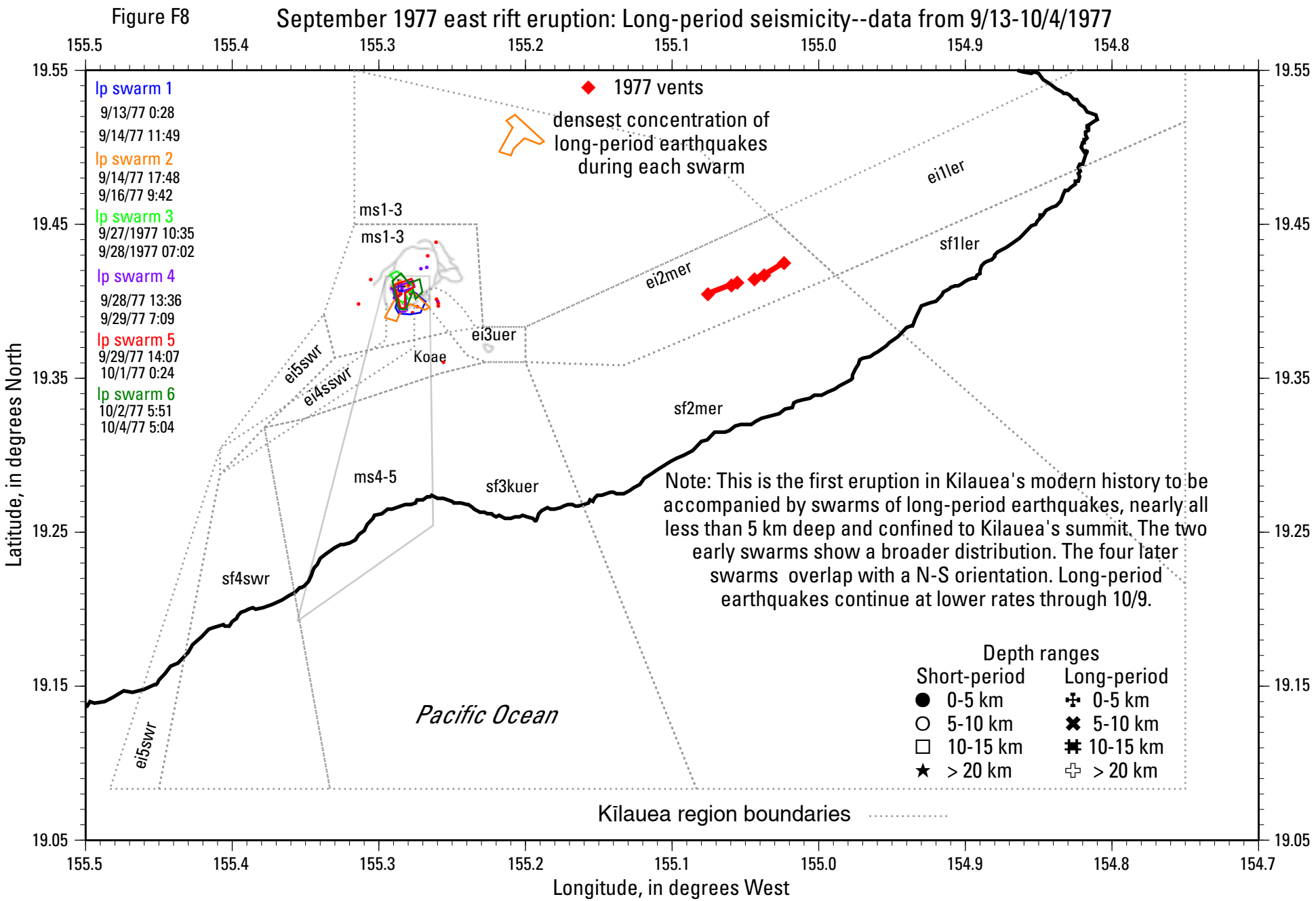
Appendix figure F7

February 1977 east rift intrusion: data from 2/3-13/1977

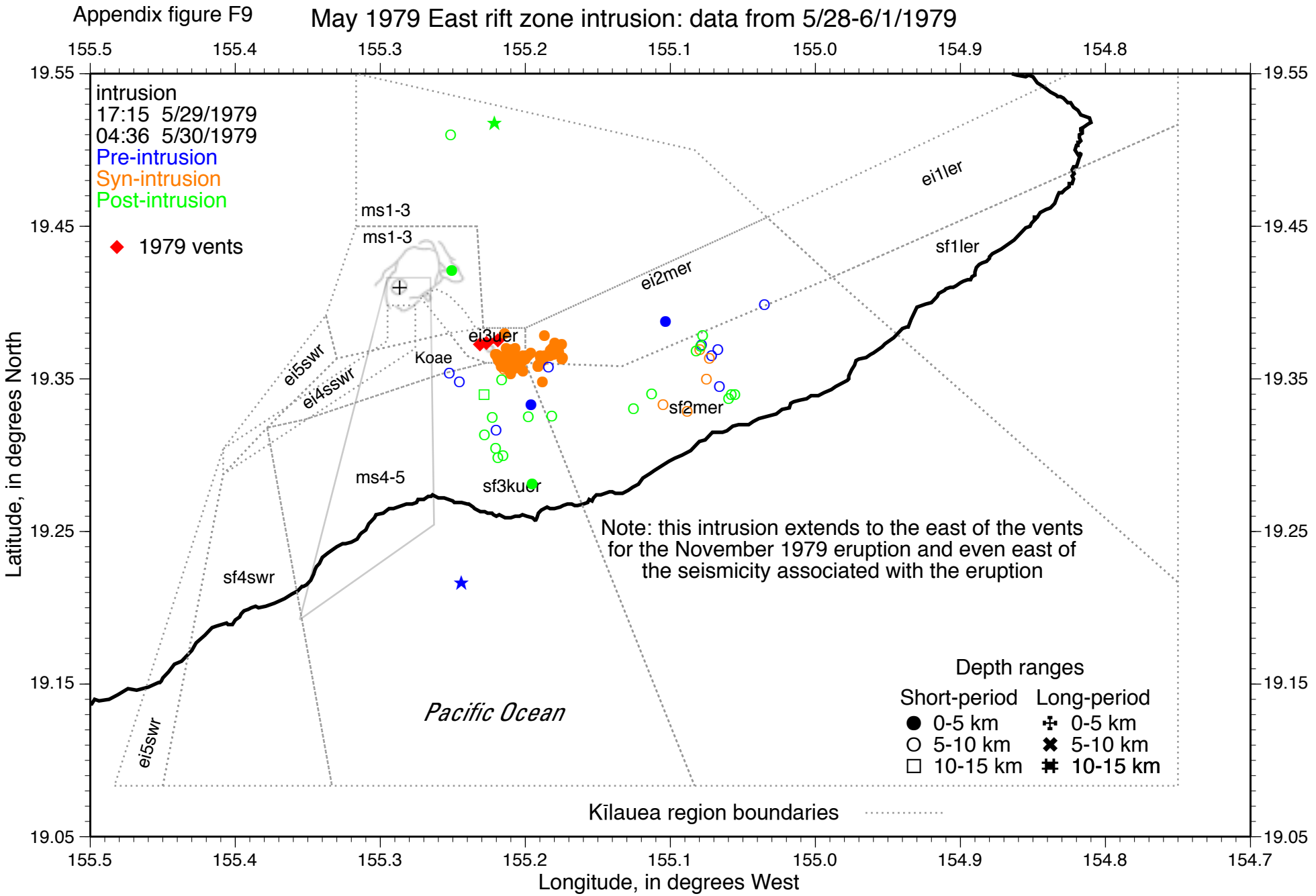


Kīlauea region boundaries

Figure F8

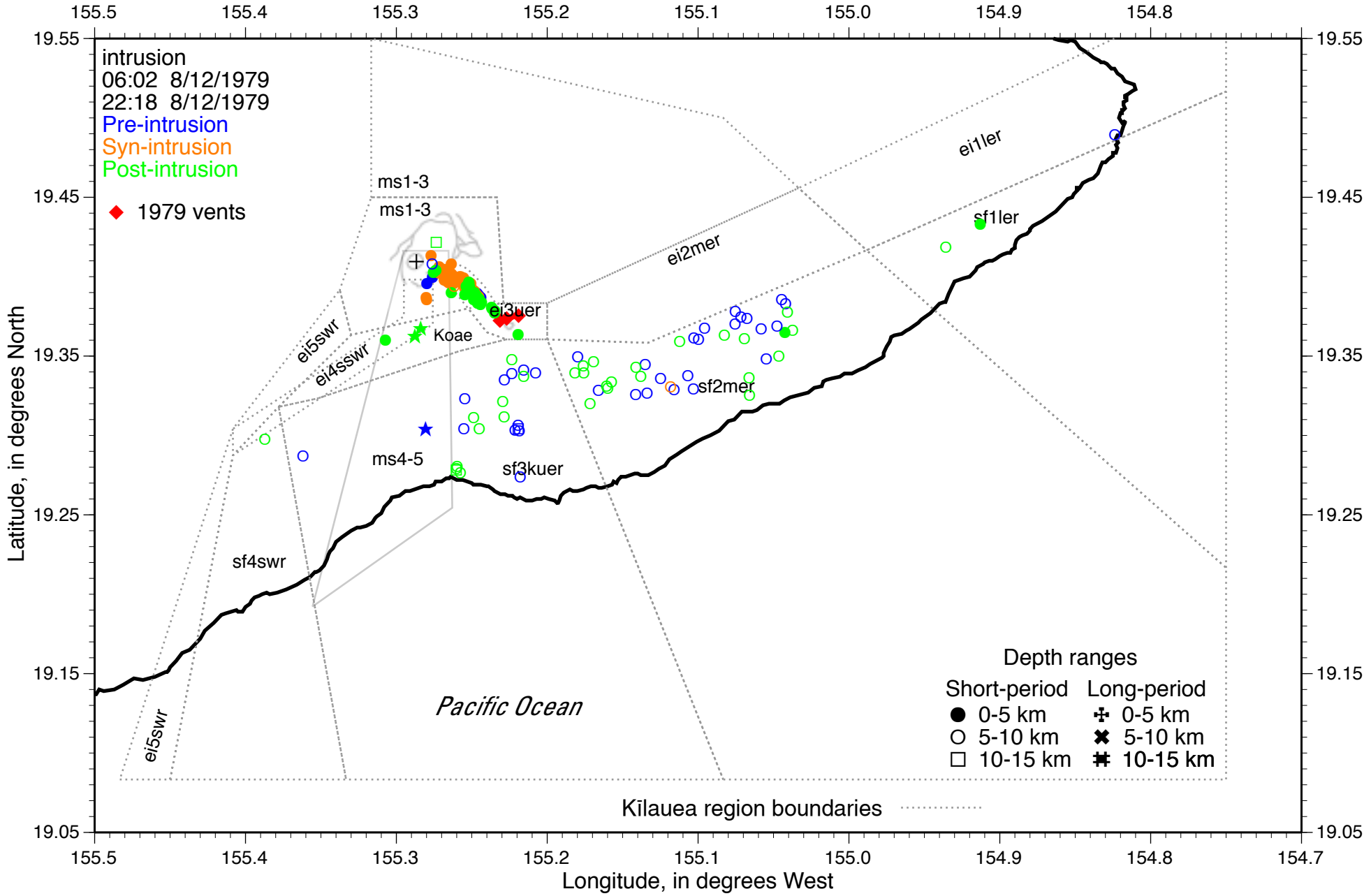


Appendix figure F9

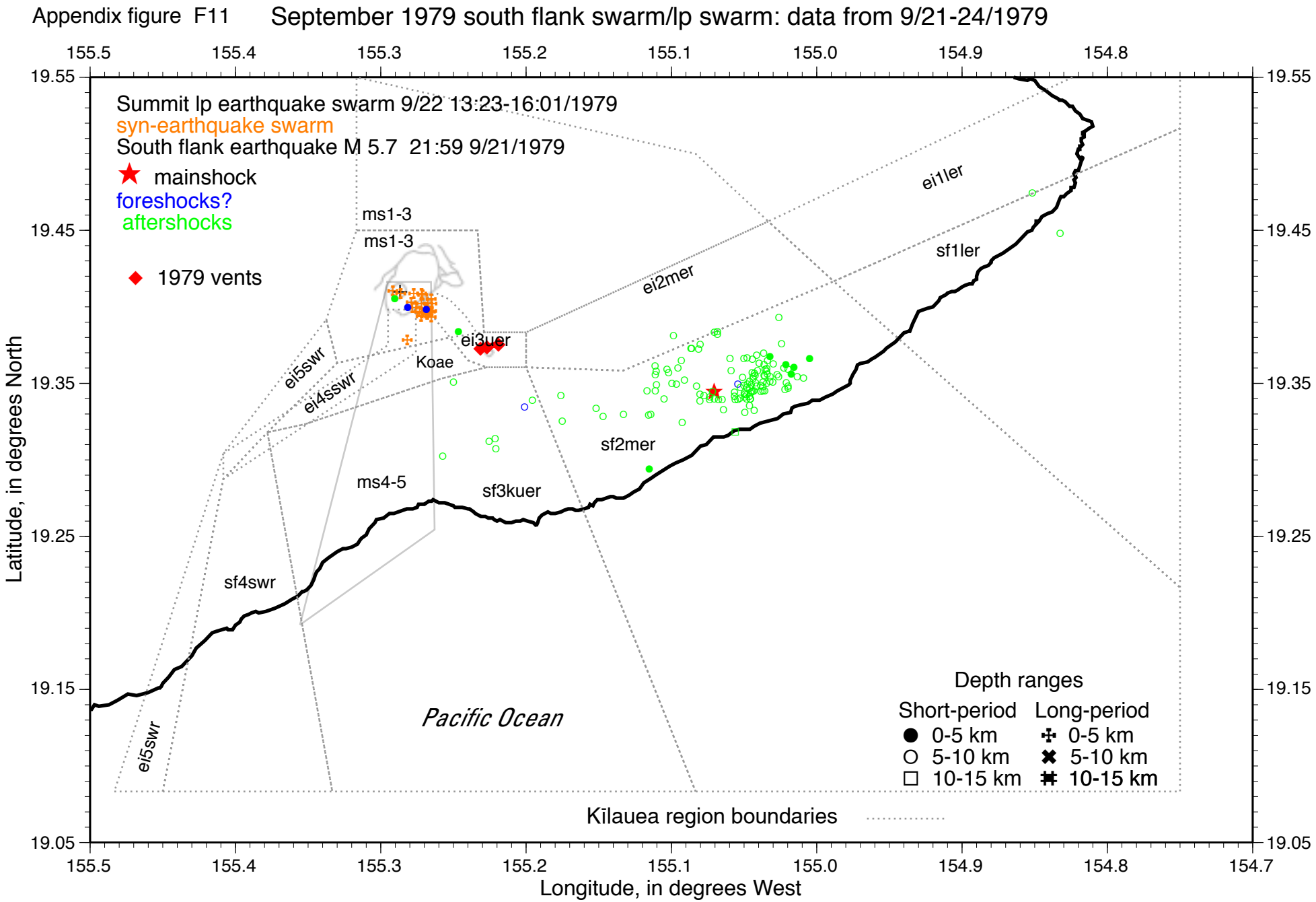


Appendix figure F10

August 1979 East rift zone intrusion: data from 8/7-16/1979

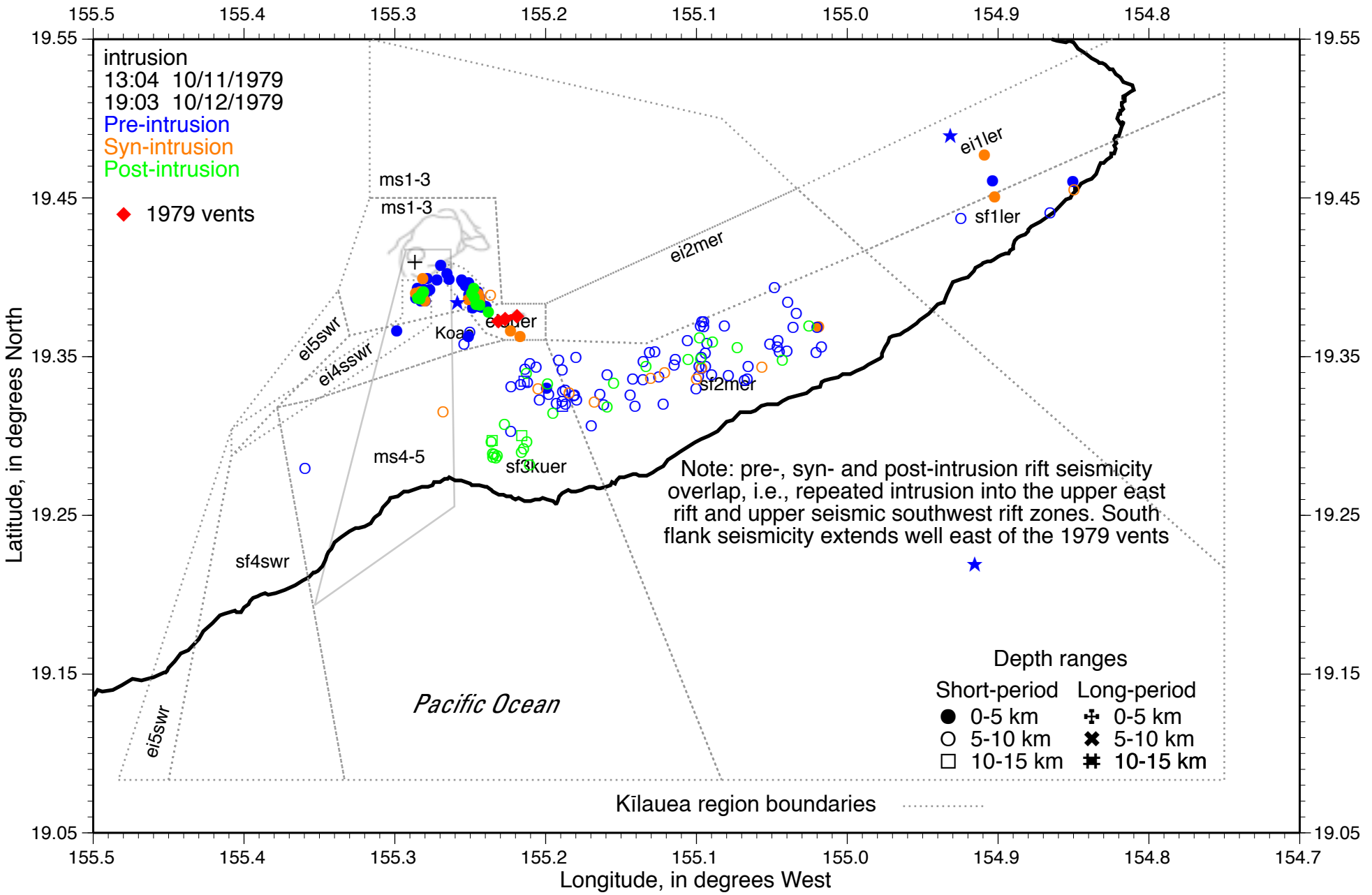


Appendix figure F11



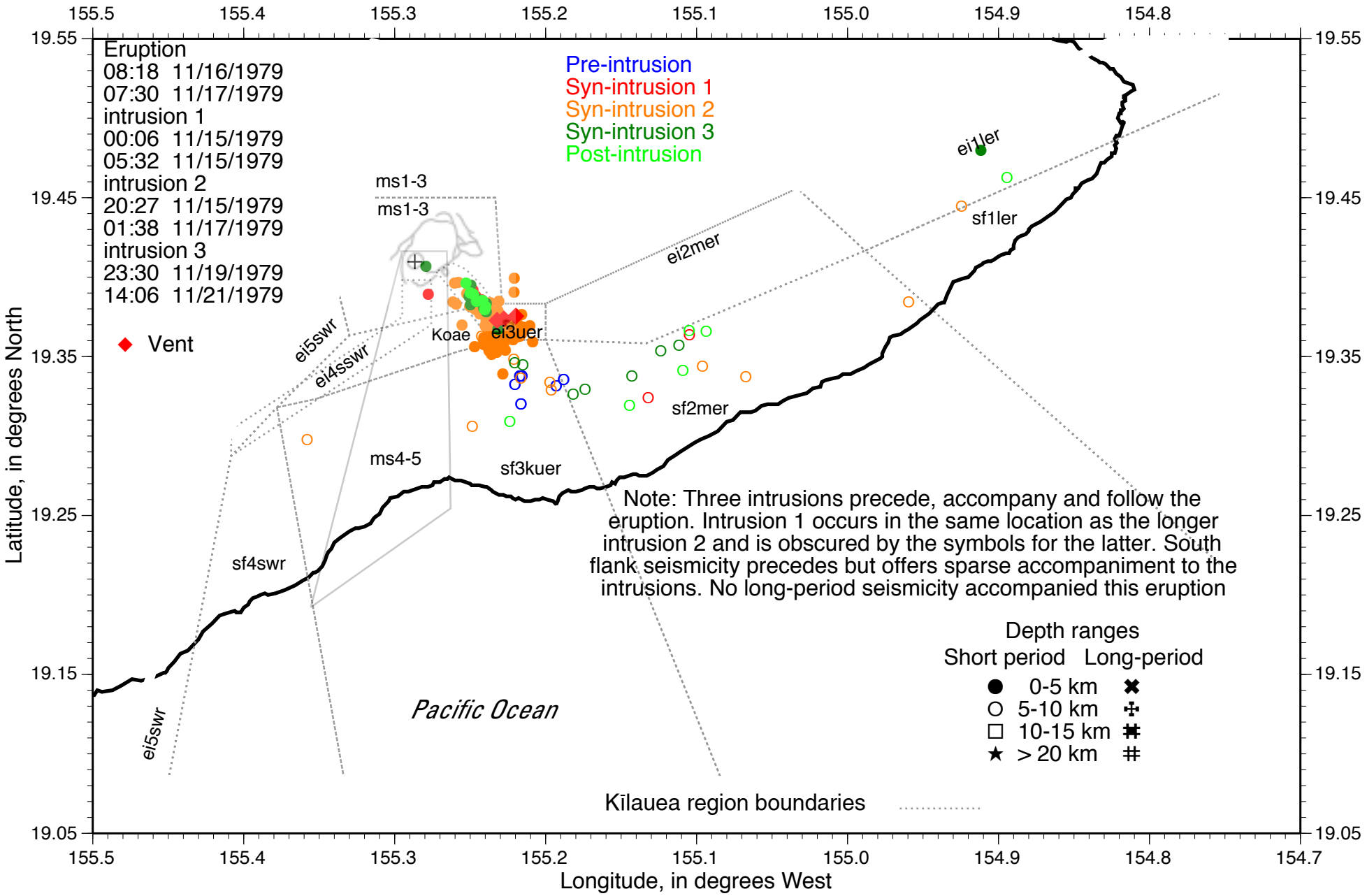
Appendix figure F12

October 1979 East rift zone intrusion: data from 10/1-14/1979



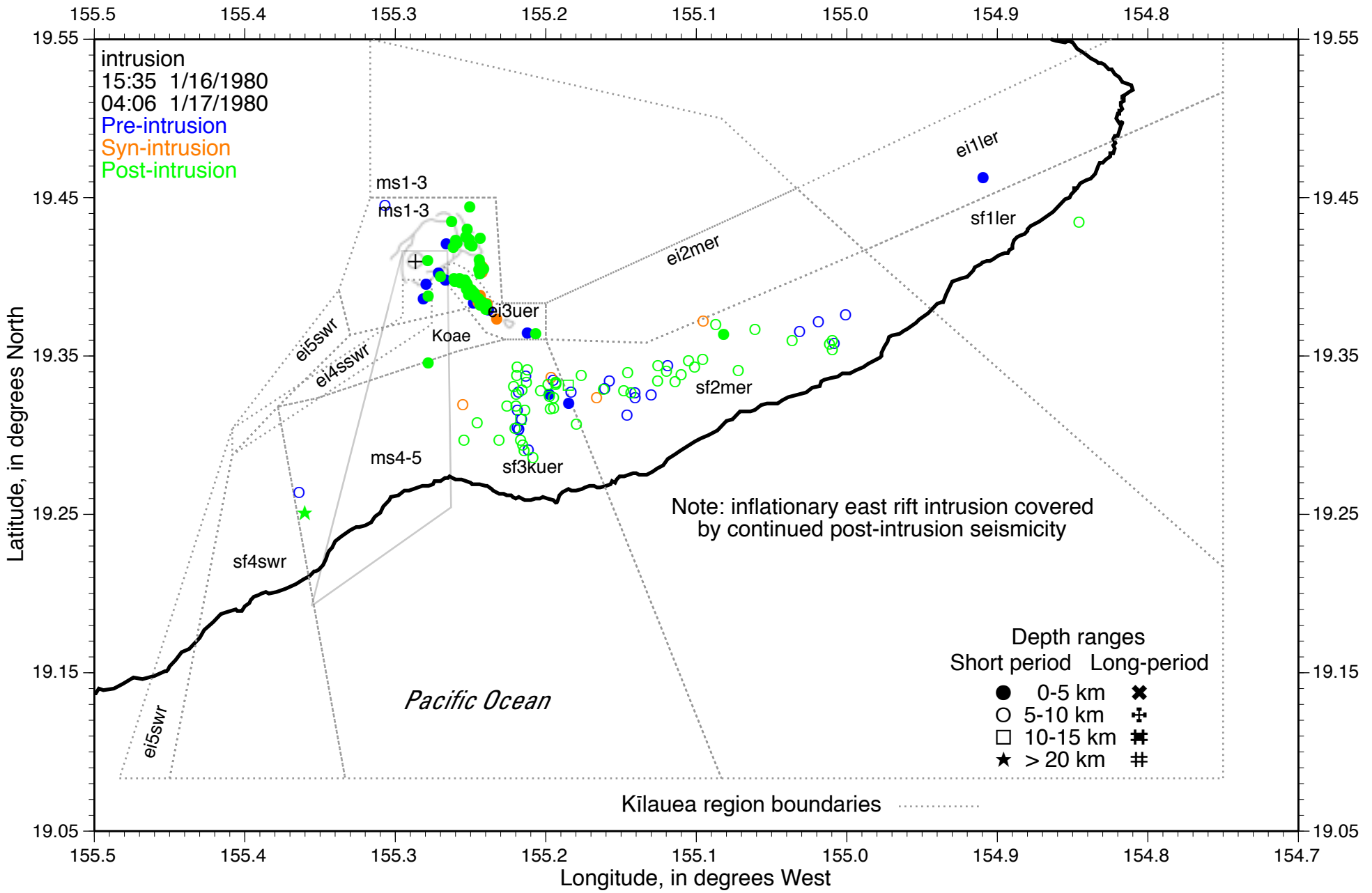
Appendix figure F13

November 1979 east rift eruption: data from 11/14-19/1979

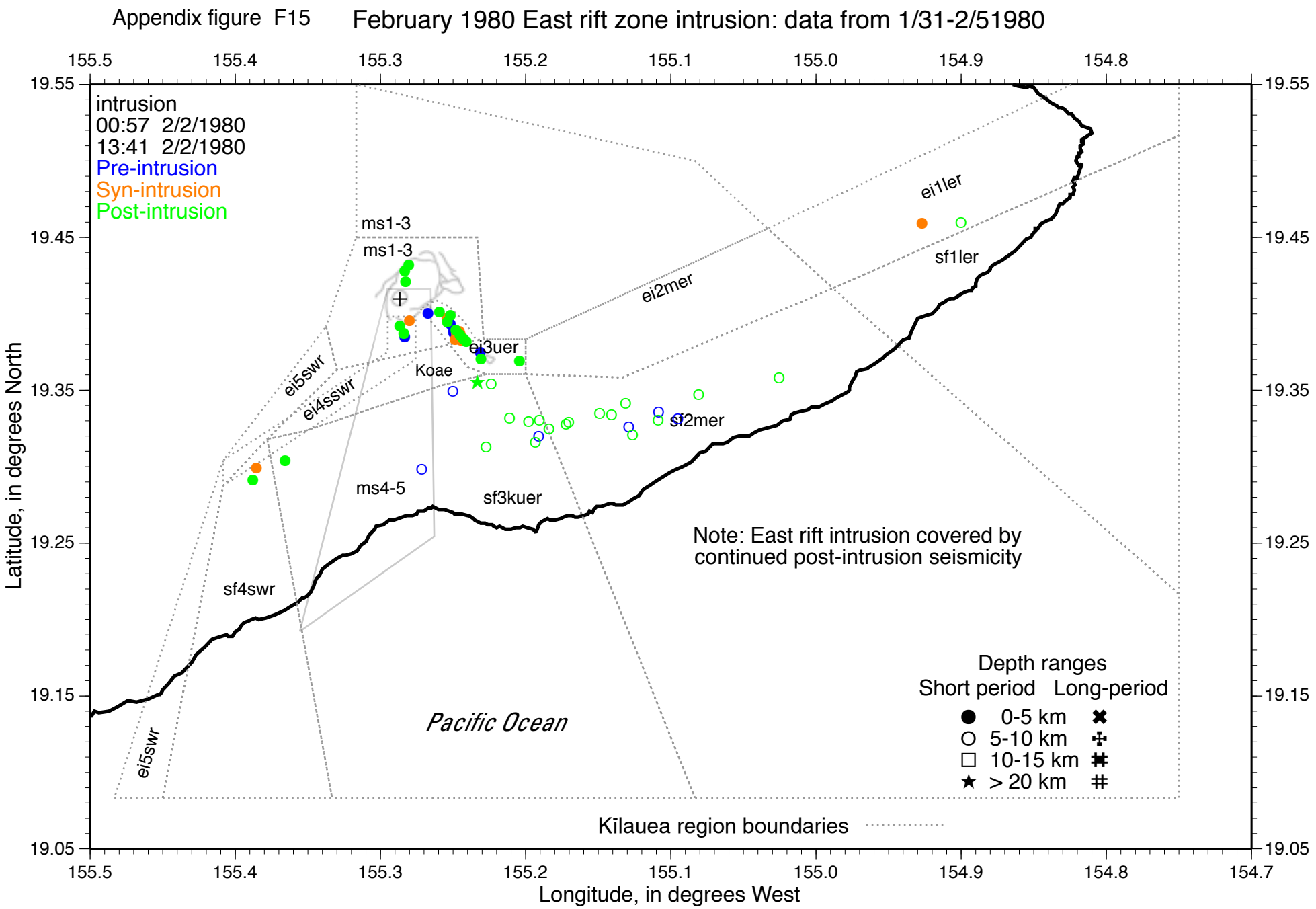


Appendix figure F14

January 1980 East rift zone intrusion: data from 1/13-24/1980

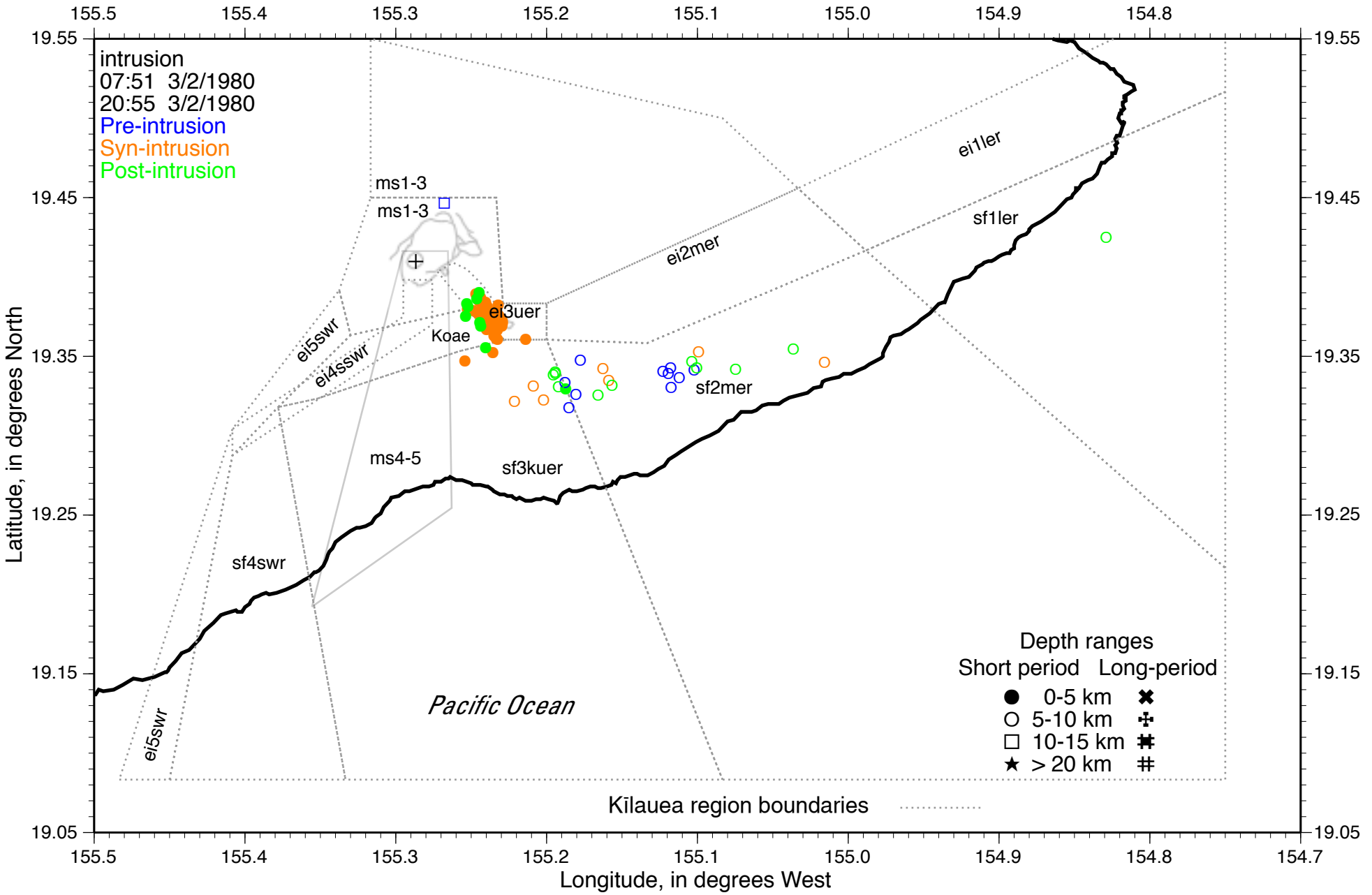


Appendix figure F15



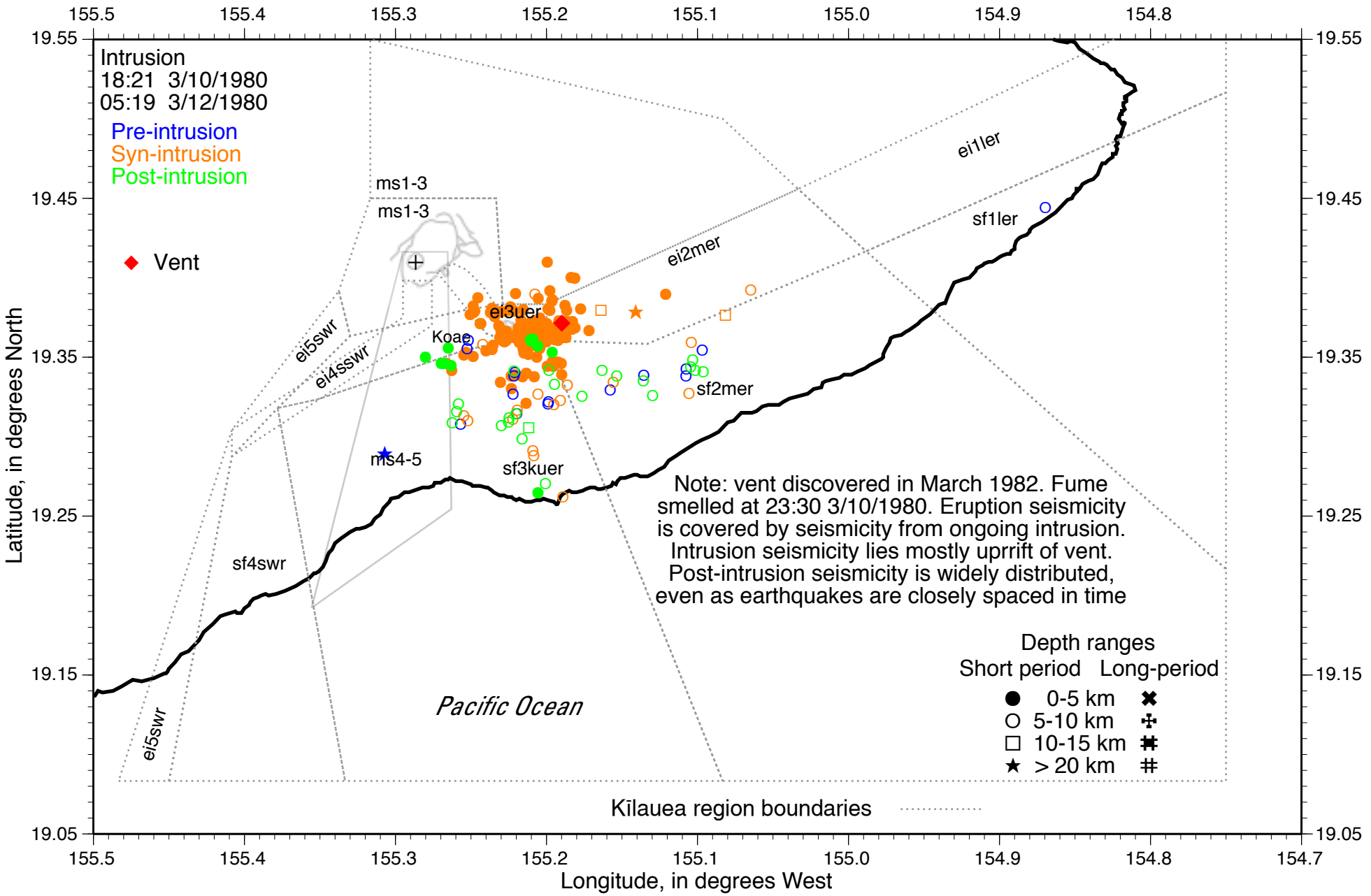
Appendix figure F16

March 1980 East rift zone intrusion: data from 3/1-4/1980



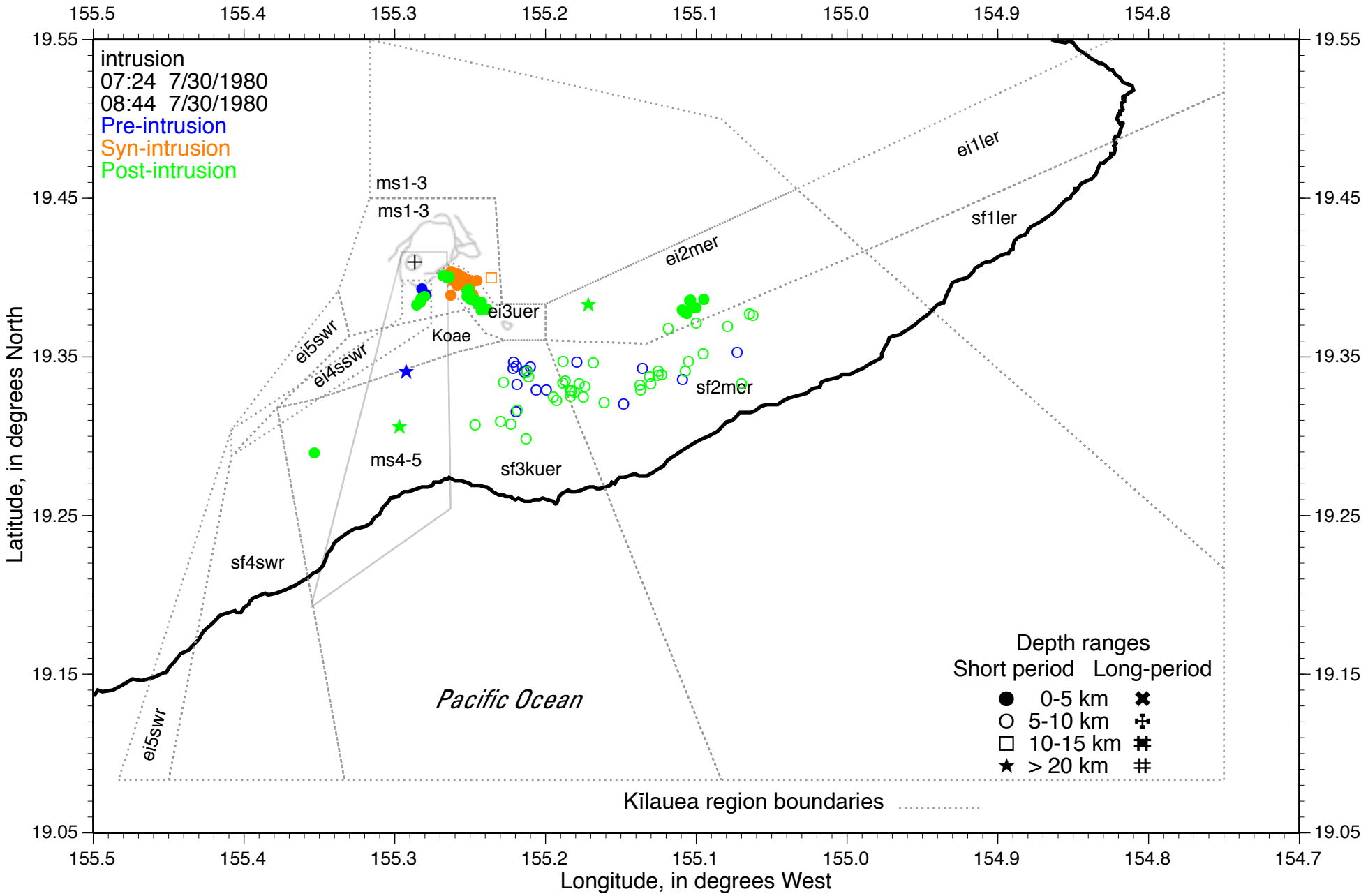
Appendix figure F17

March 1980 east rift eruption: data from 3/8-14/1980

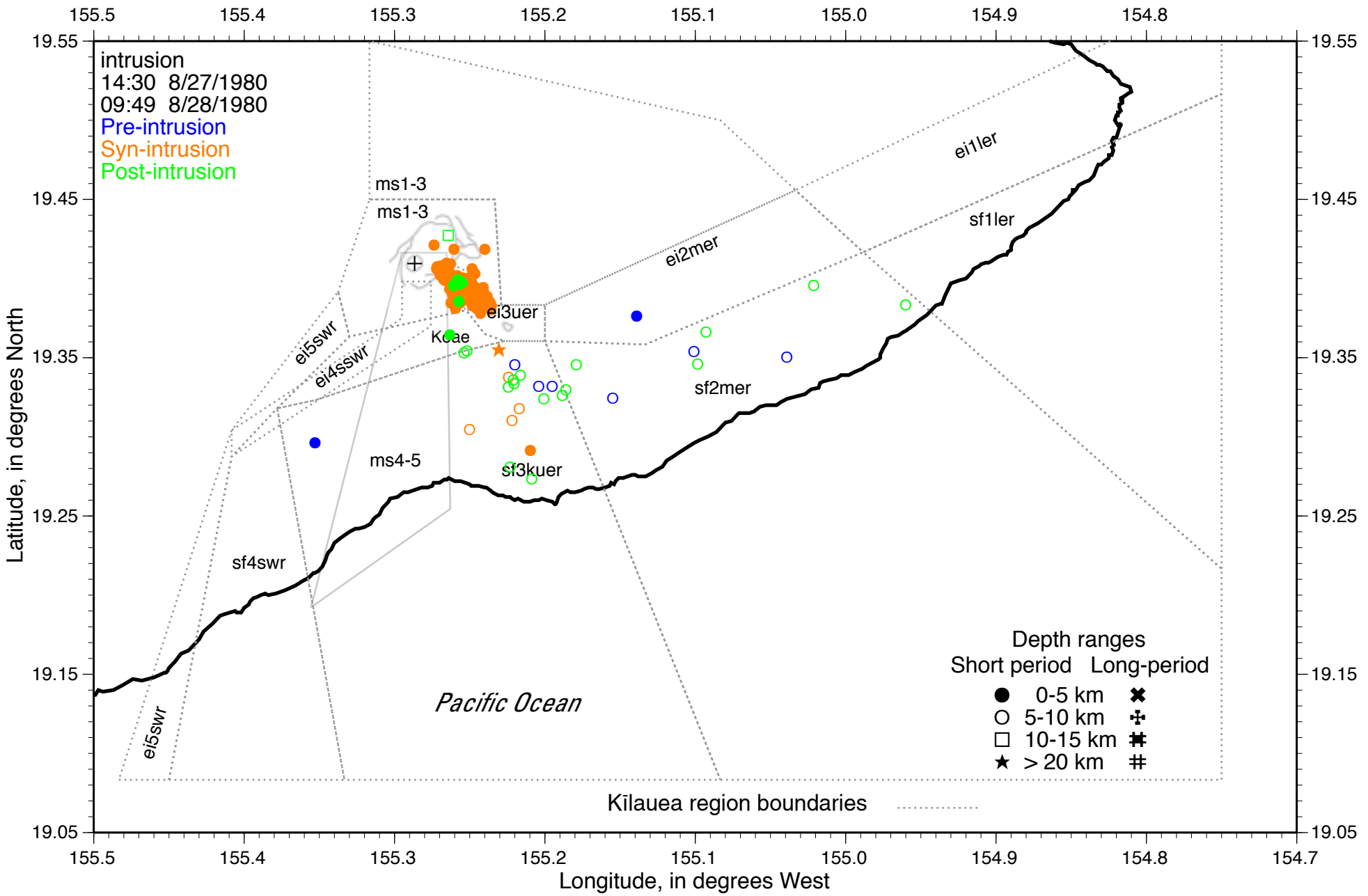


Appendix figure F18

July 1980 East rift zone intrusion: data from 7/28-8/7/1980

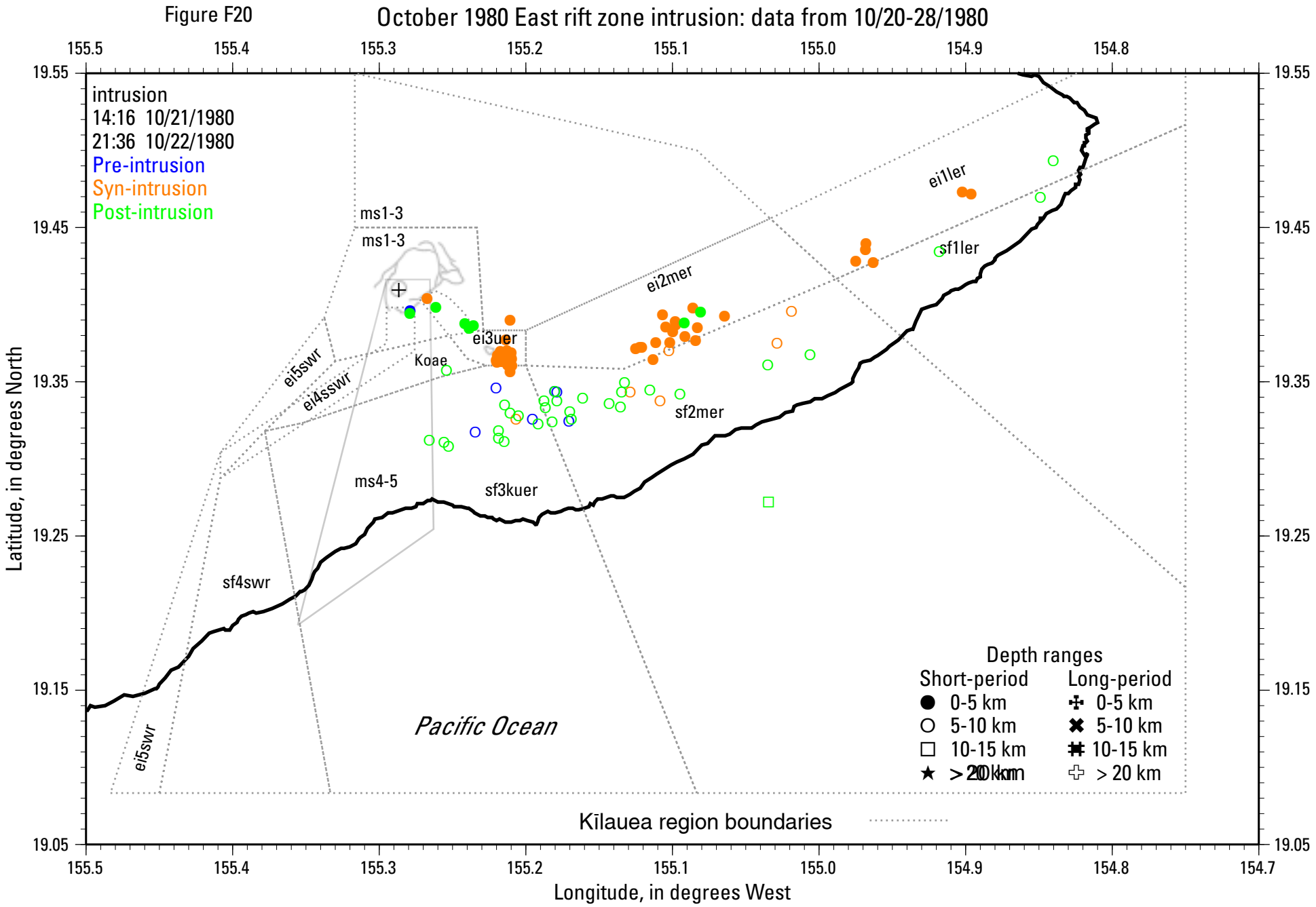


Appendix figure F19 August 1980 East rift zone intrusion: data from 8/26-30/1980



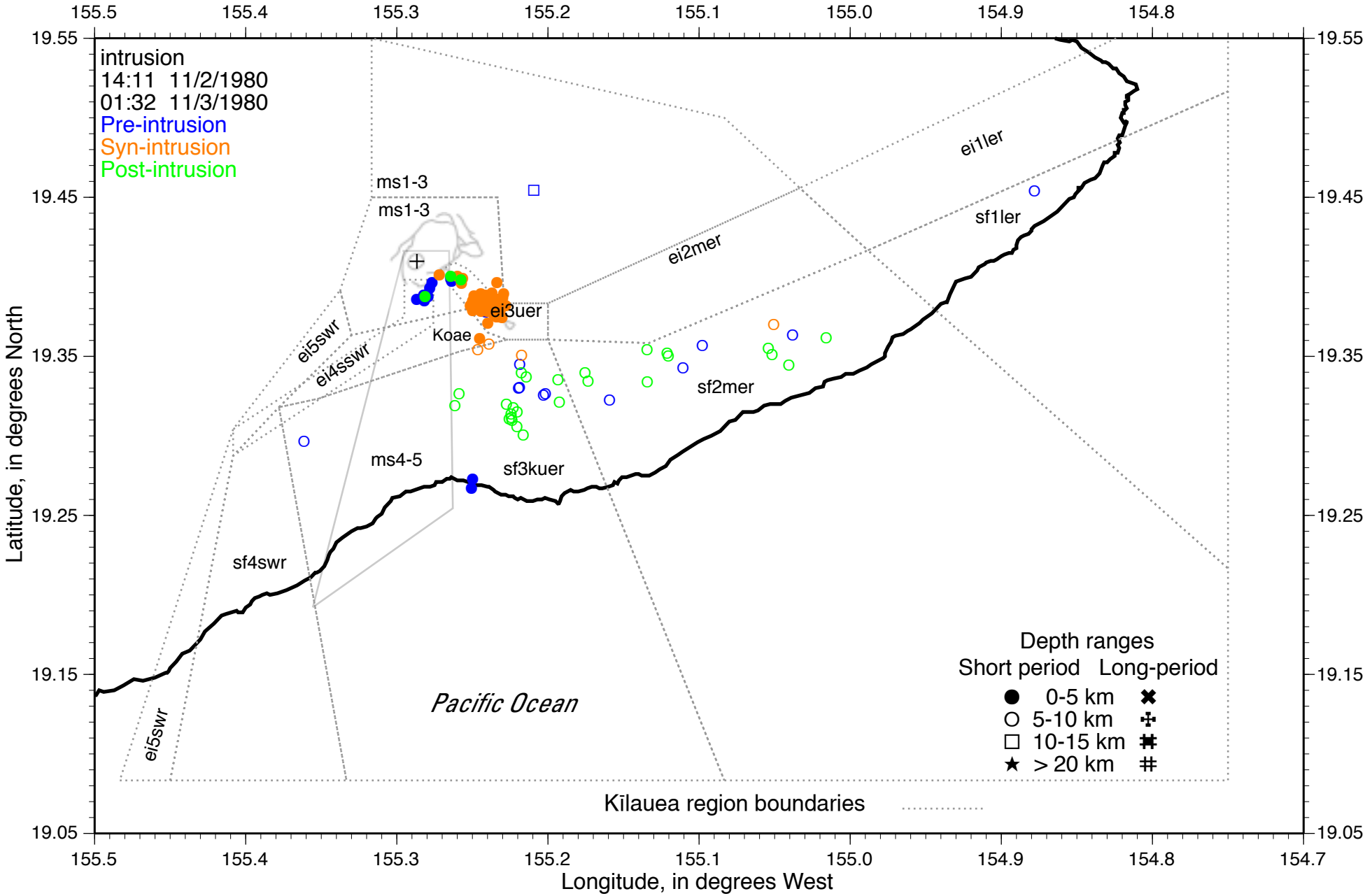
Kīlauea region boundaries

Figure F20

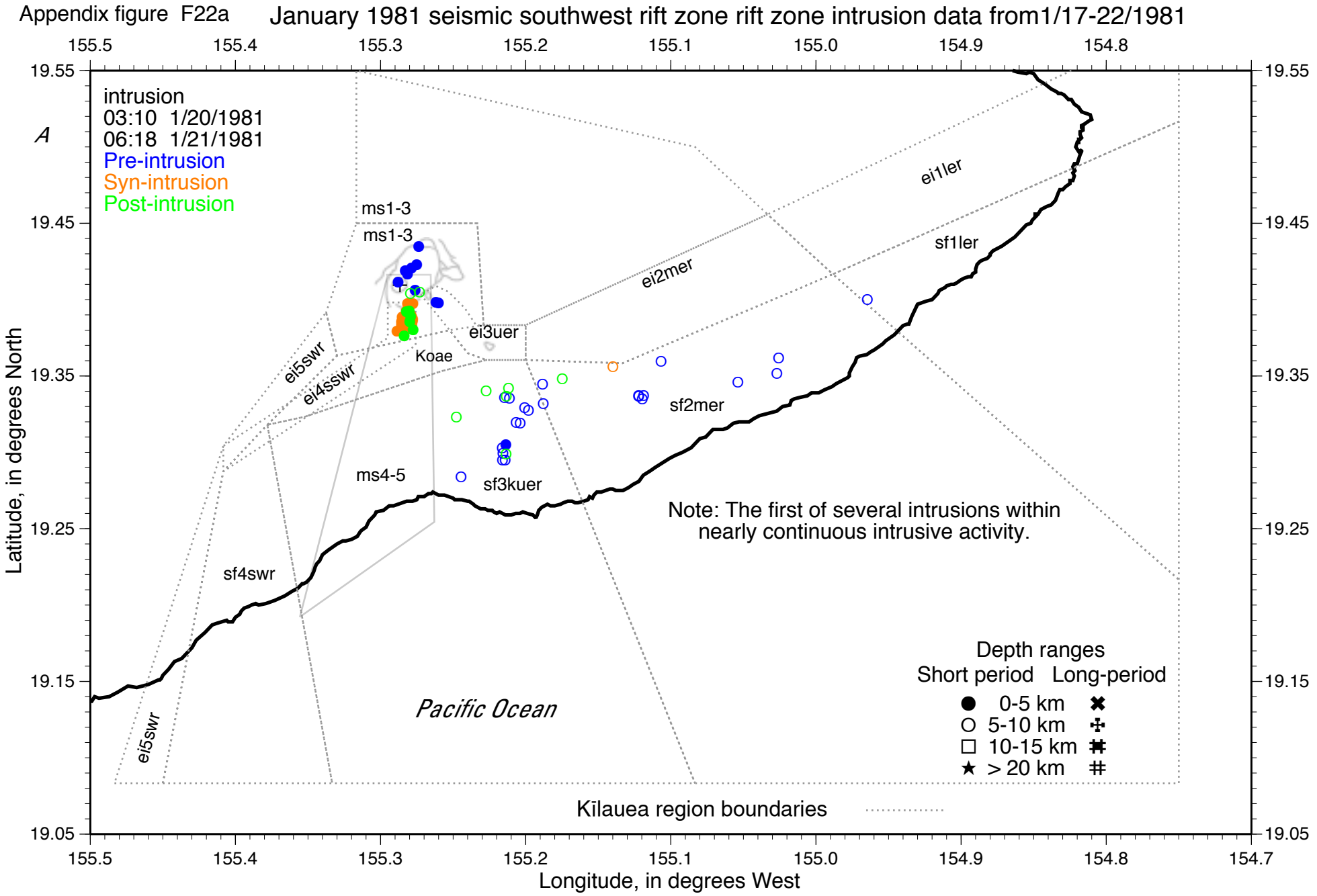


Appendix figure F21

November 1980 East rift zone intrusion: data from 10/30-11/6/1980

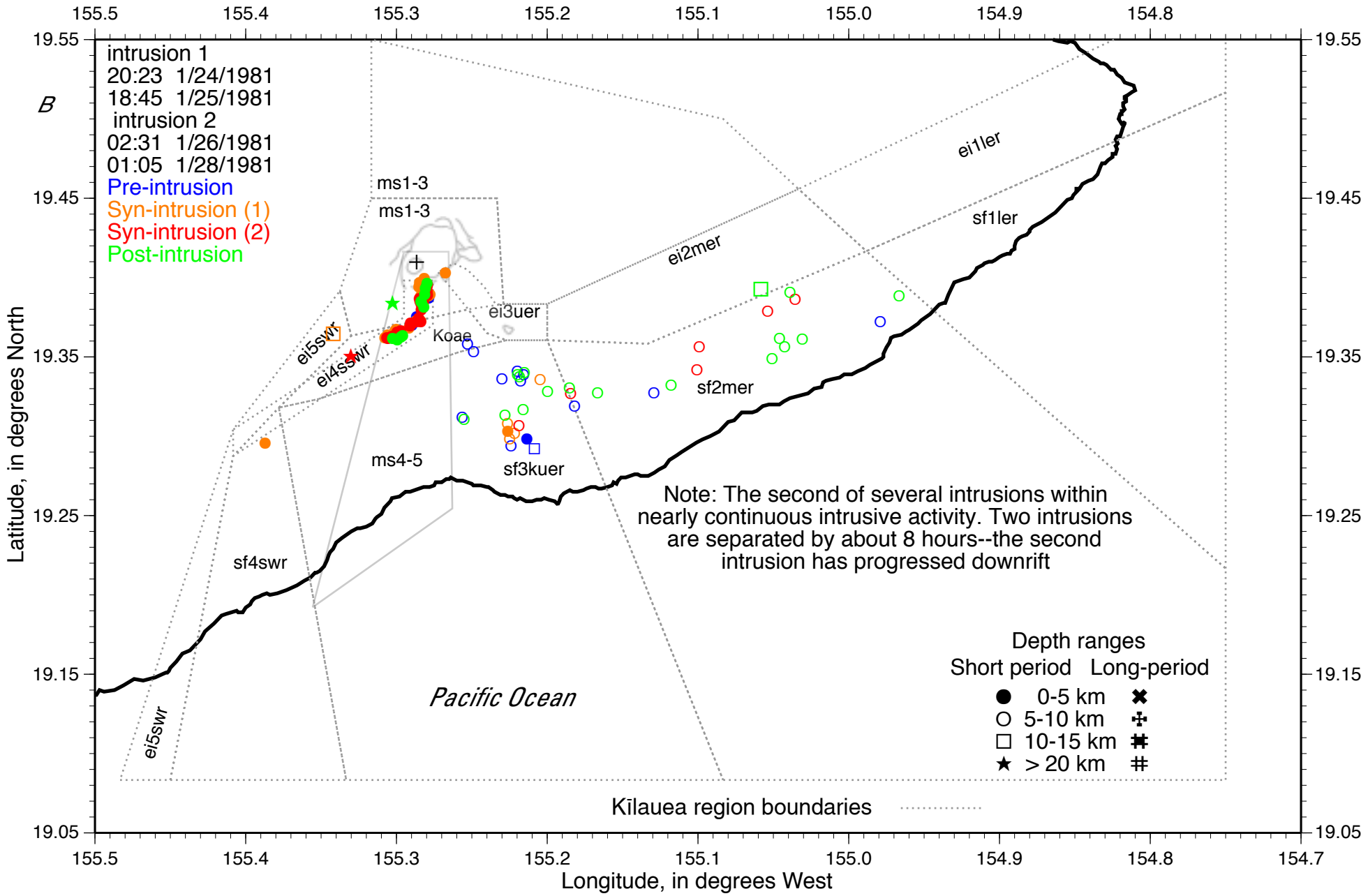


Appendix figure F22a



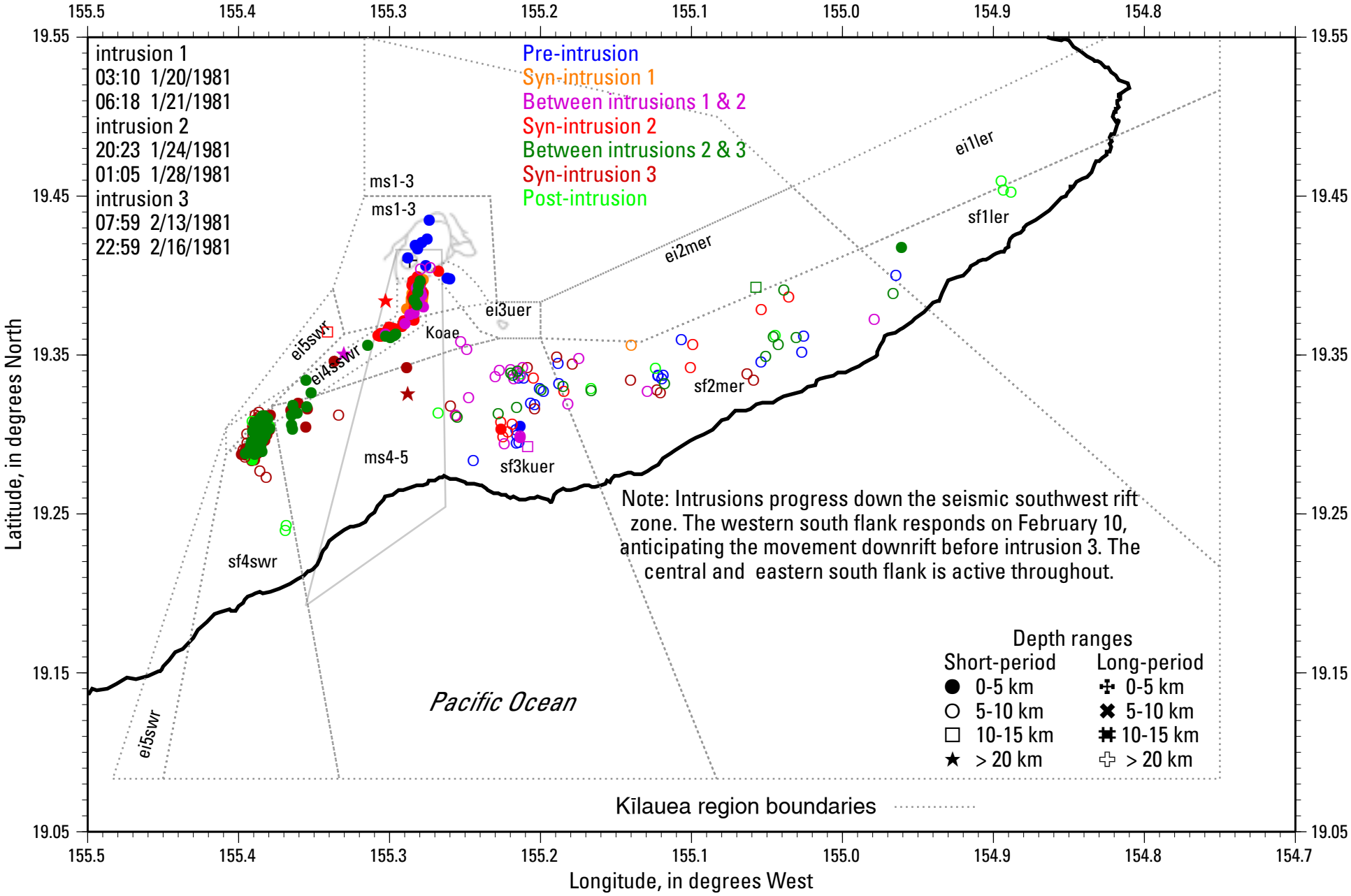
Appendix figure F22b

January 1981 seismic southwest rift zone rift zone intrusion data from 1/23-31/1981



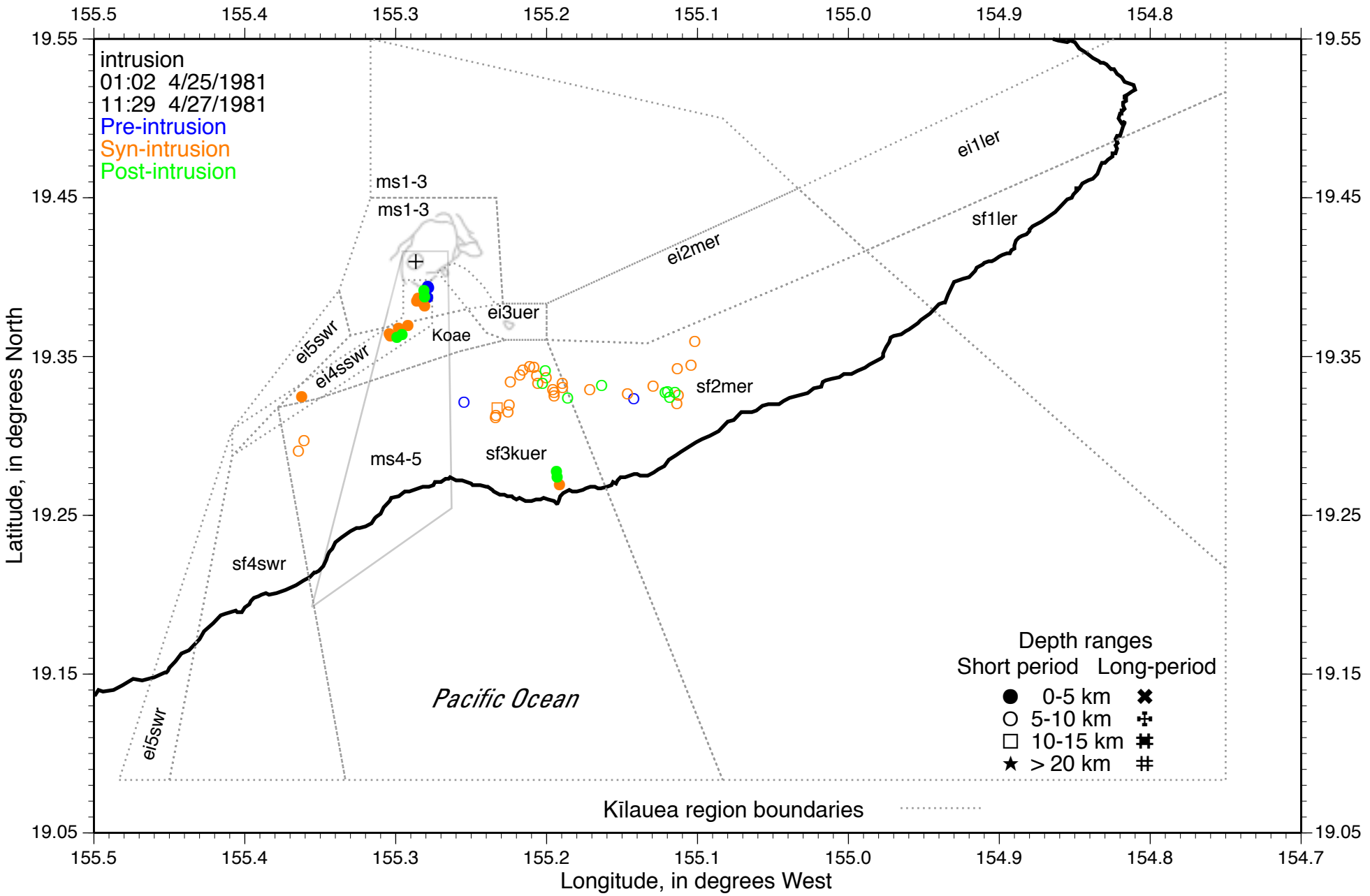
Kīlauea region boundaries

Figure F23 January-February 1981 seismic southwest rift zone rift zone intrusions: data from 1/17-2/18/1981



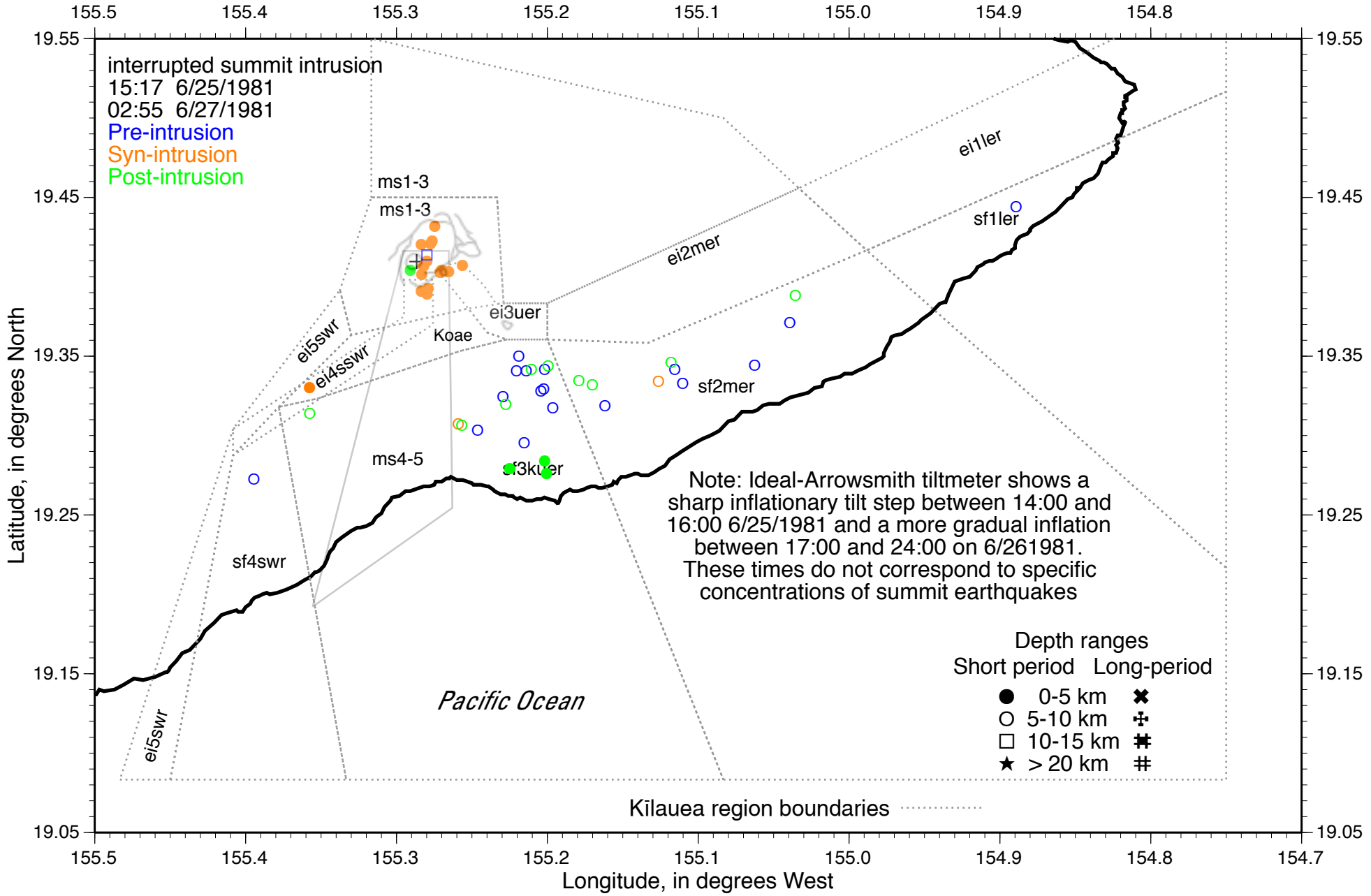
Appendix figure F24

April 1981 slow intrusion?: data from 4/24-28/1981



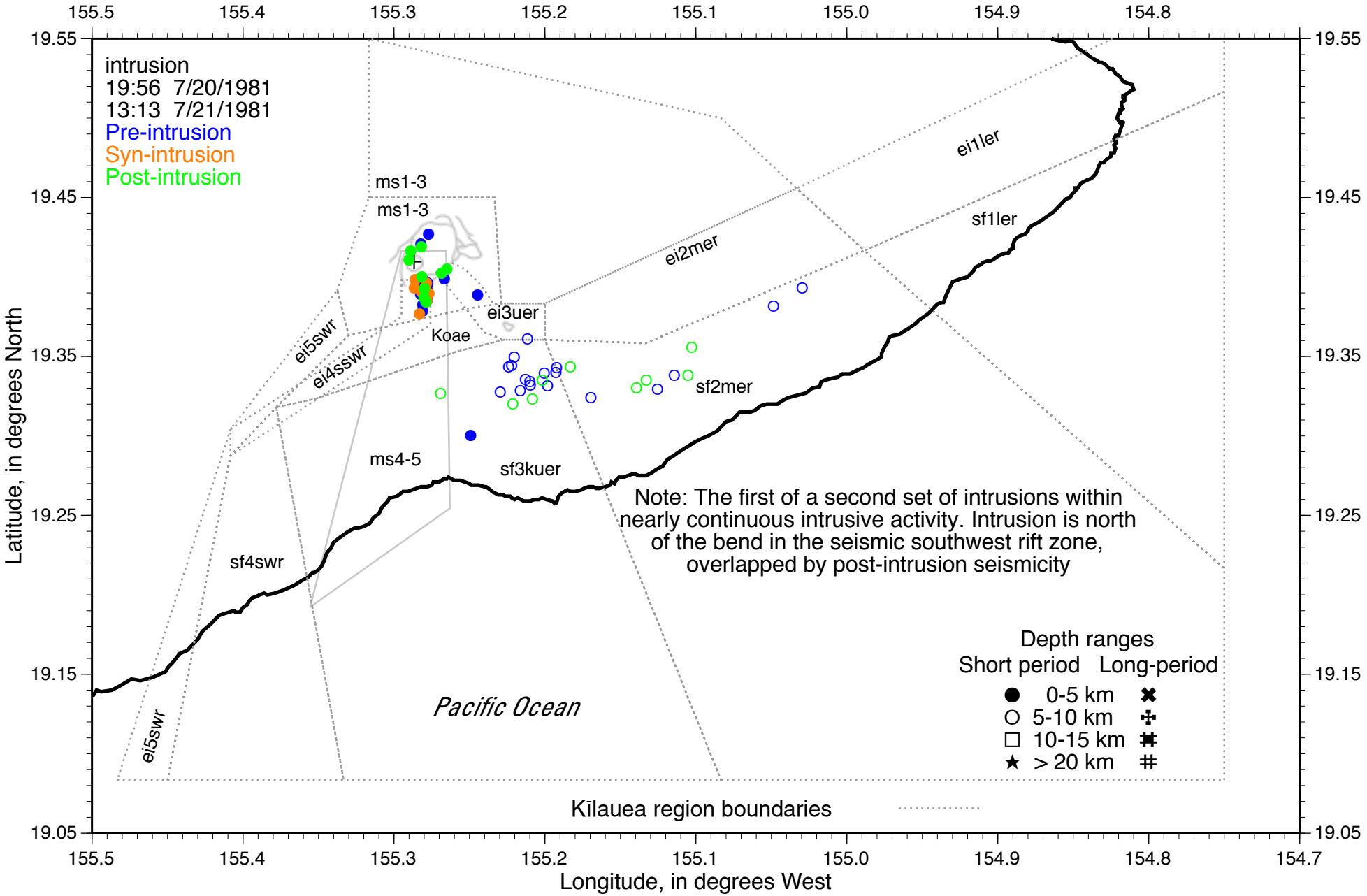
Appendix figure F25

June 1981 summit intrusion data from 6/23-28/1981



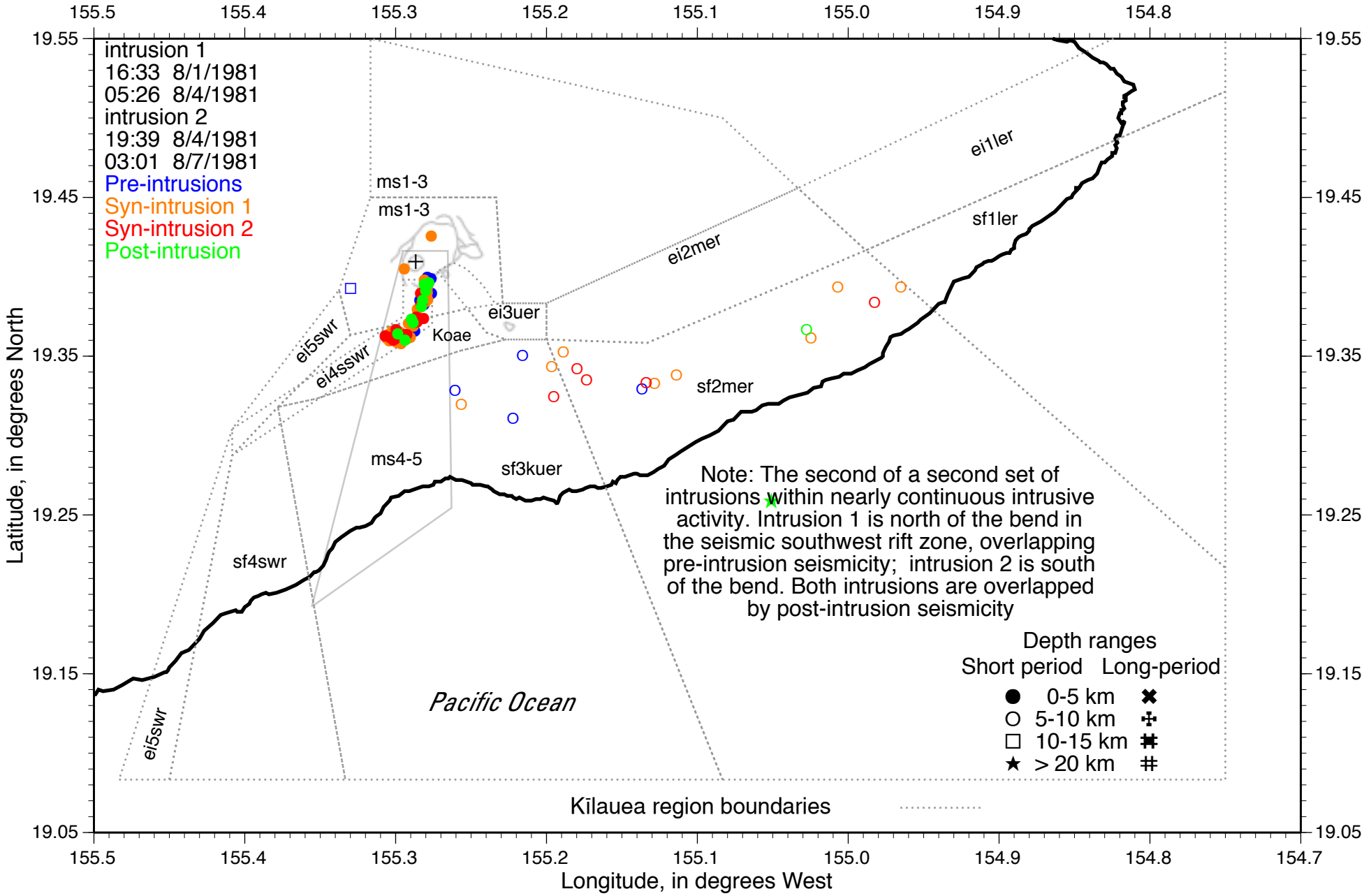
Appendix figure F26

July 1981 seismic southwest rift zone rift zone intrusion data from 7/17-24/1981



Appendix figure F27

August 1981 seismic southwest rift zone rift zone intrusion data from 7/31-8/7/1981



Appendix figure F28a

August 1981 seismic southwest rift zone rift zone intrusion data from 8/8-23/1981

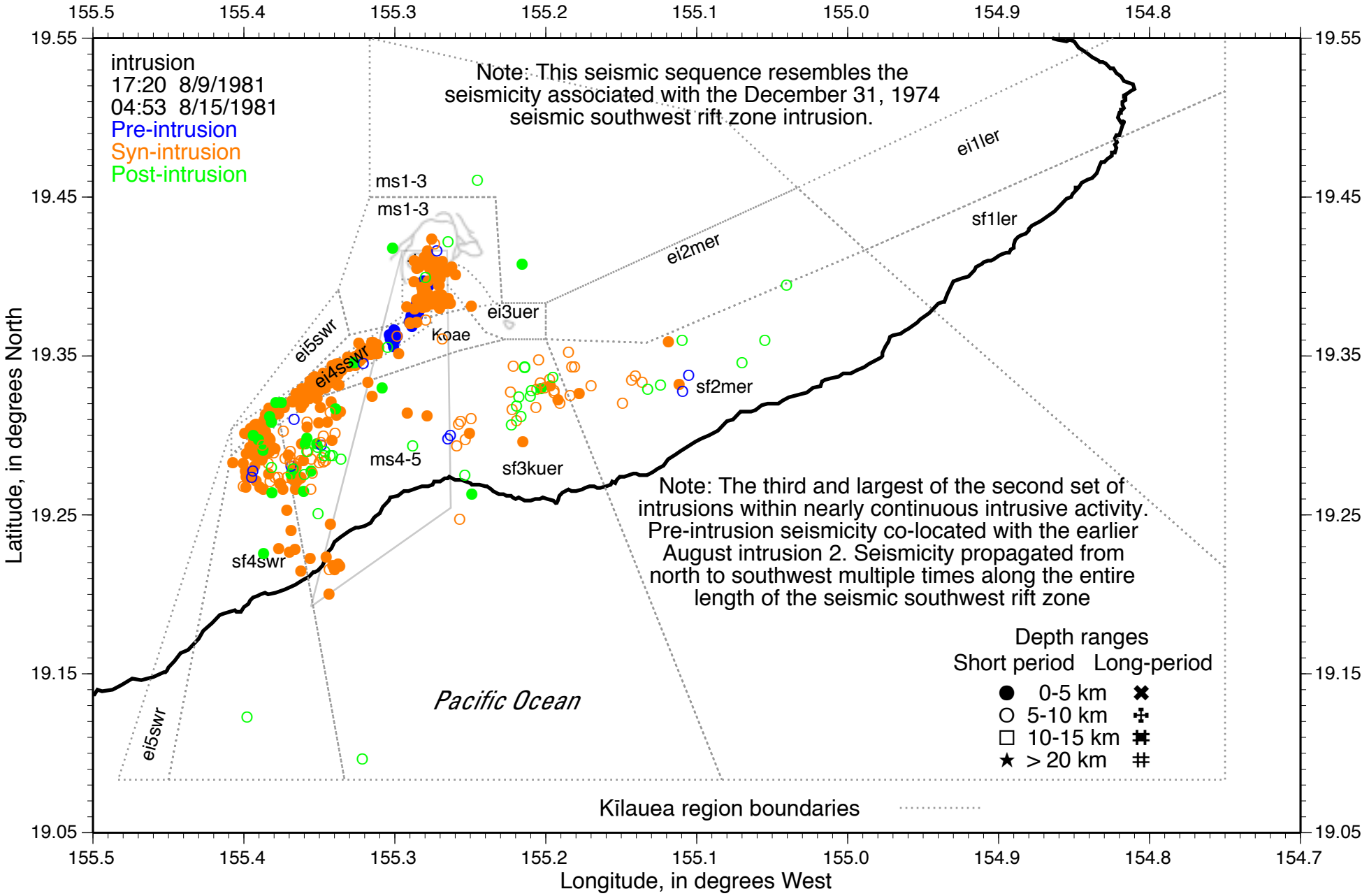
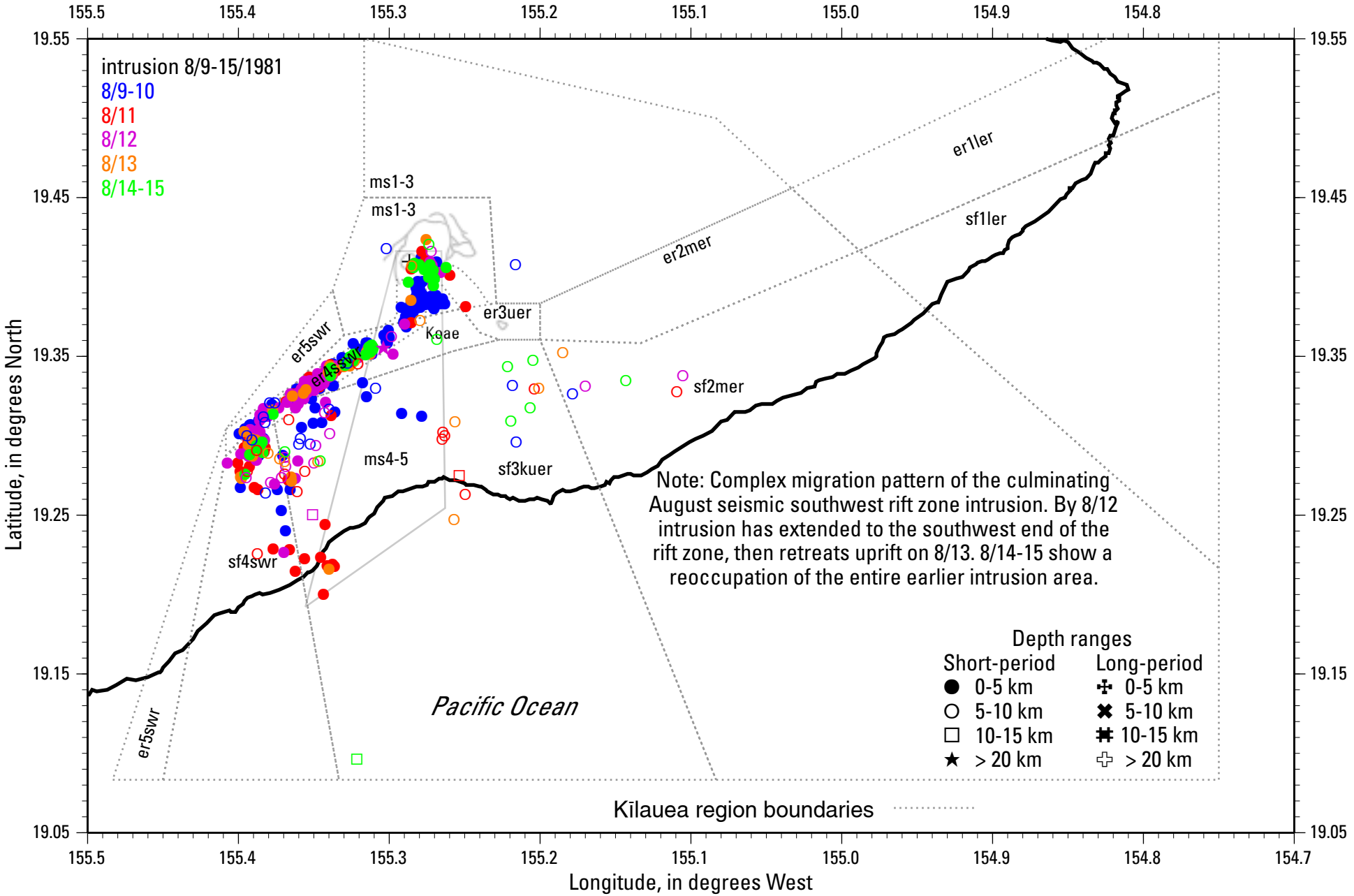


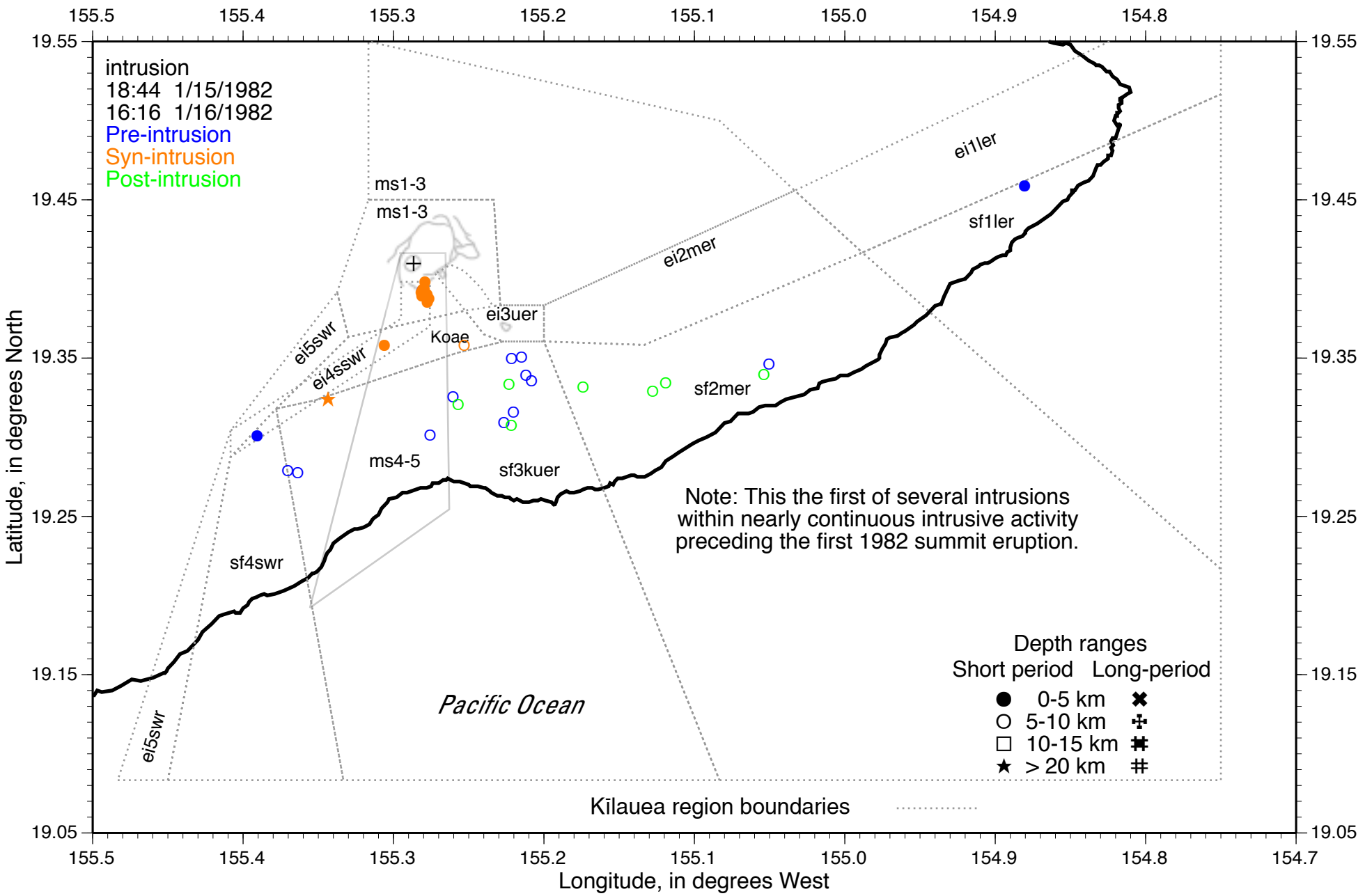
Figure F28b

August 1981 seismic southwest rift zone rift zone intrusion: Subdivided by day 8/9-15/1981

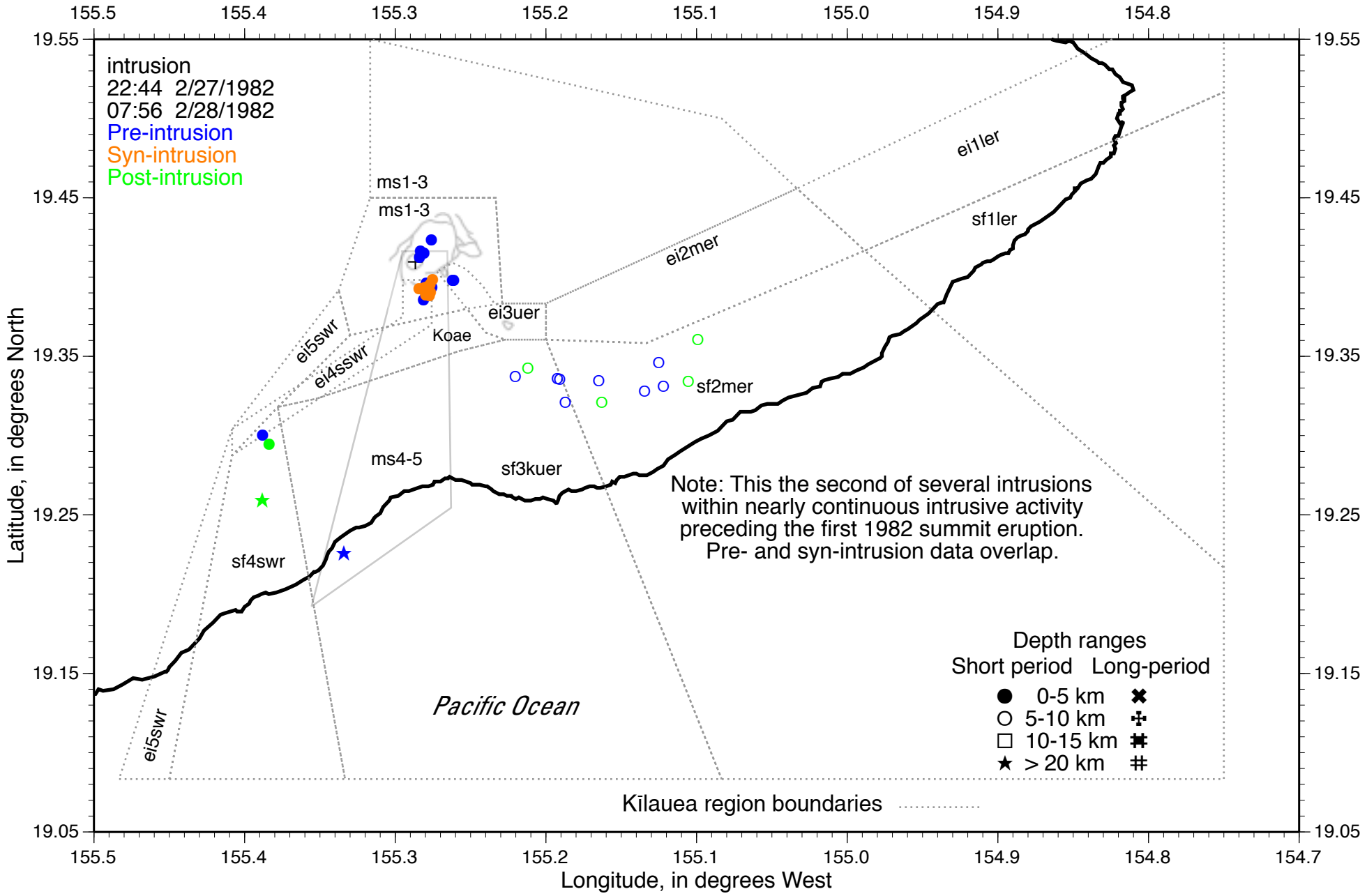


Appendix figure F29

Janruary 1982 seismic southwest rift zone rift zone intrusion: data from 1/14-17/1982

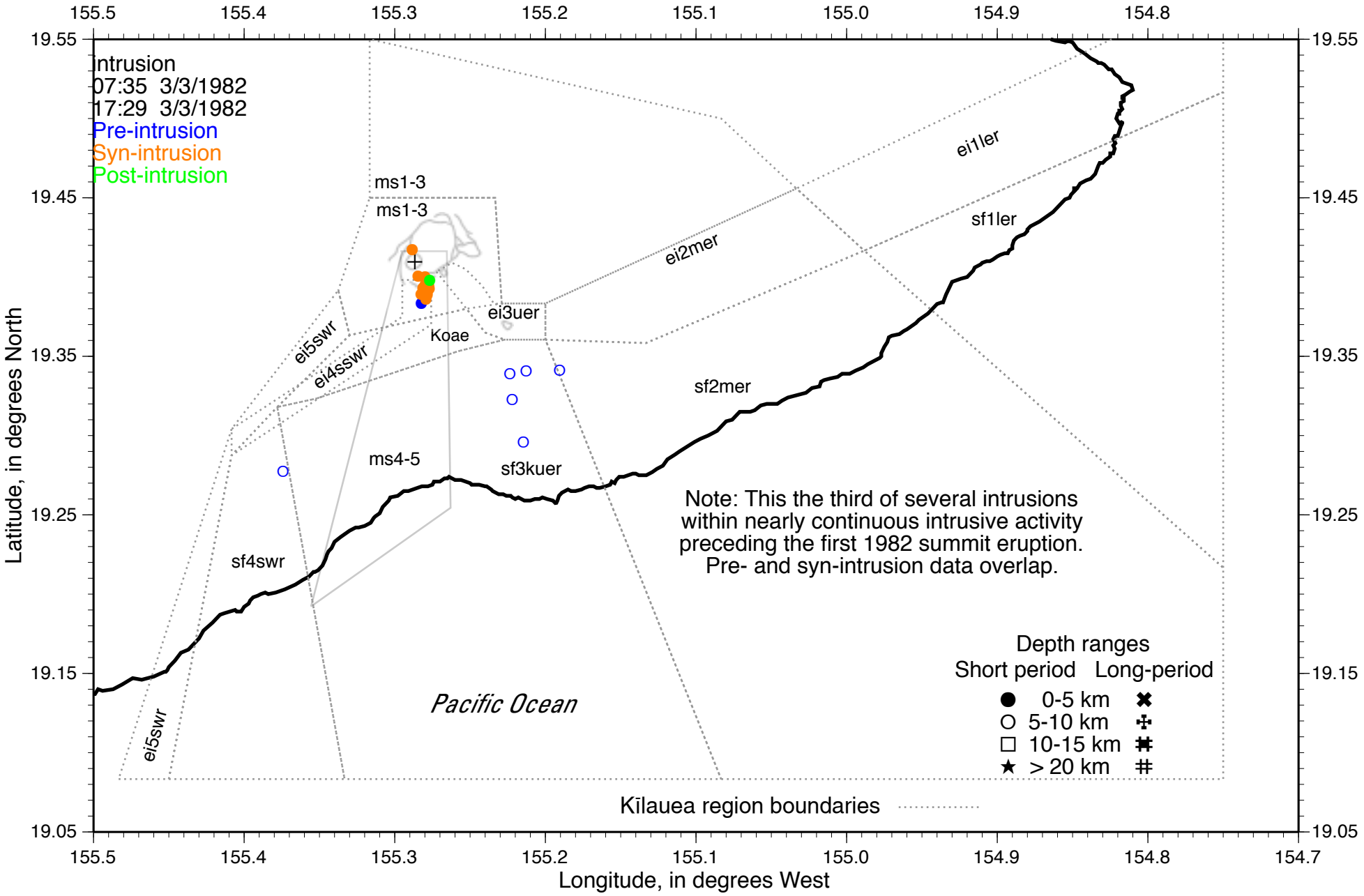


Appendix figure F30 February 1982 seismic southwest rift zone rift zone intrusion data from 2/24-3/1/1982



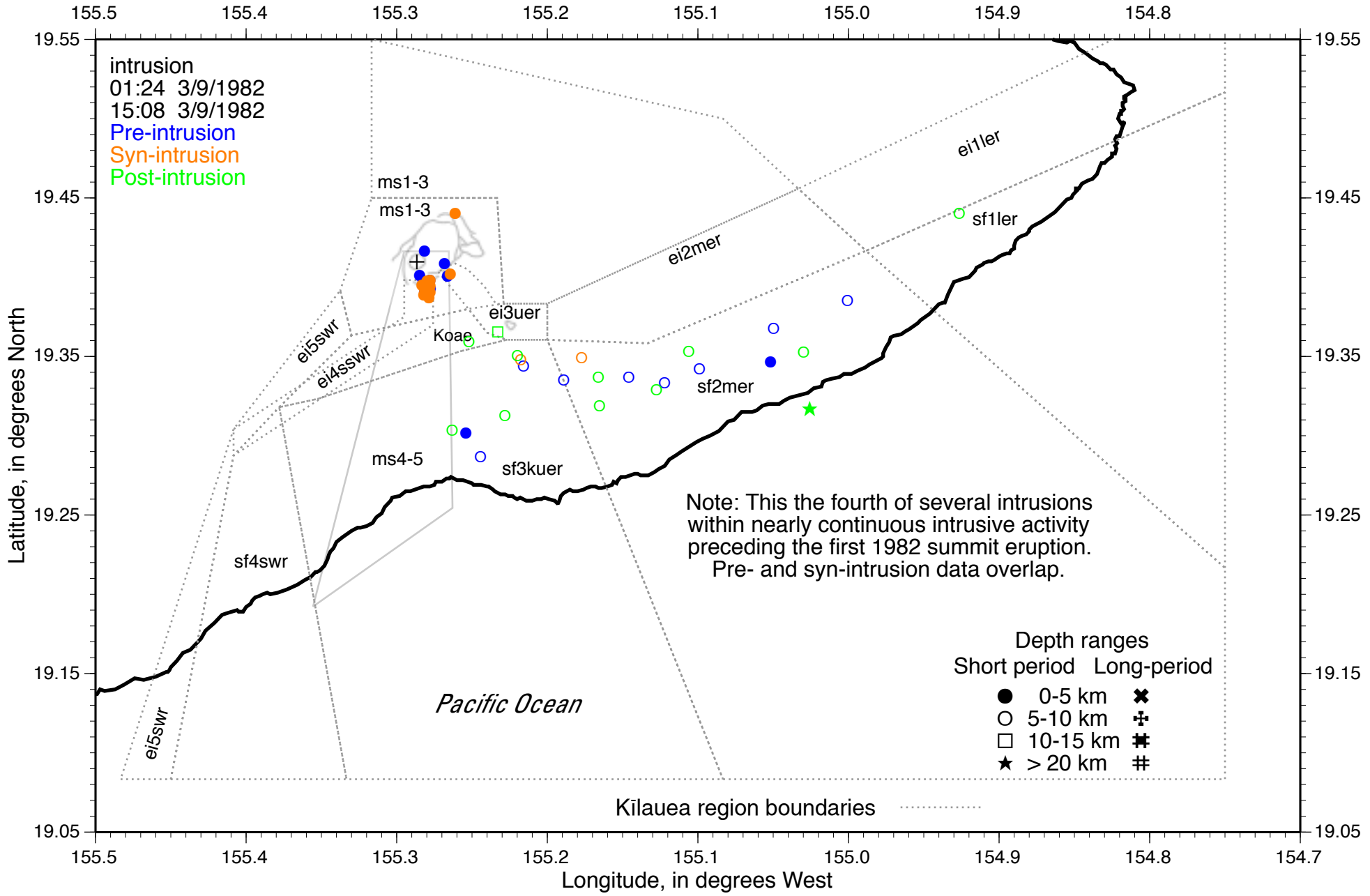
Appendix figure F31

March 1982 seismic southwest rift zone rift zone intrusion data from 3/2-5/1982

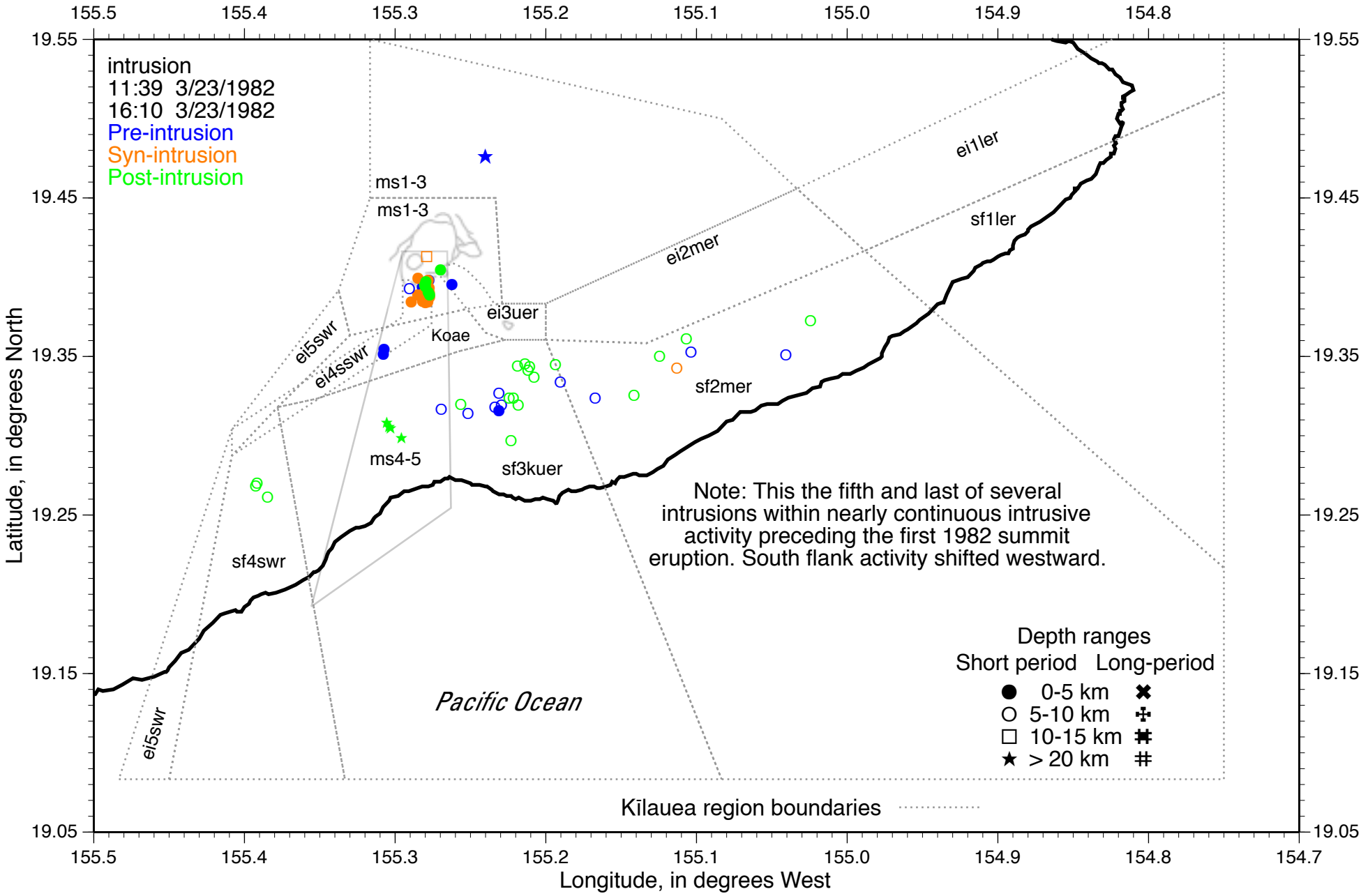


Appendix figure F32

March 1982 seismic southwest rift zone rift zone intrusion data from 3/6-12/1982

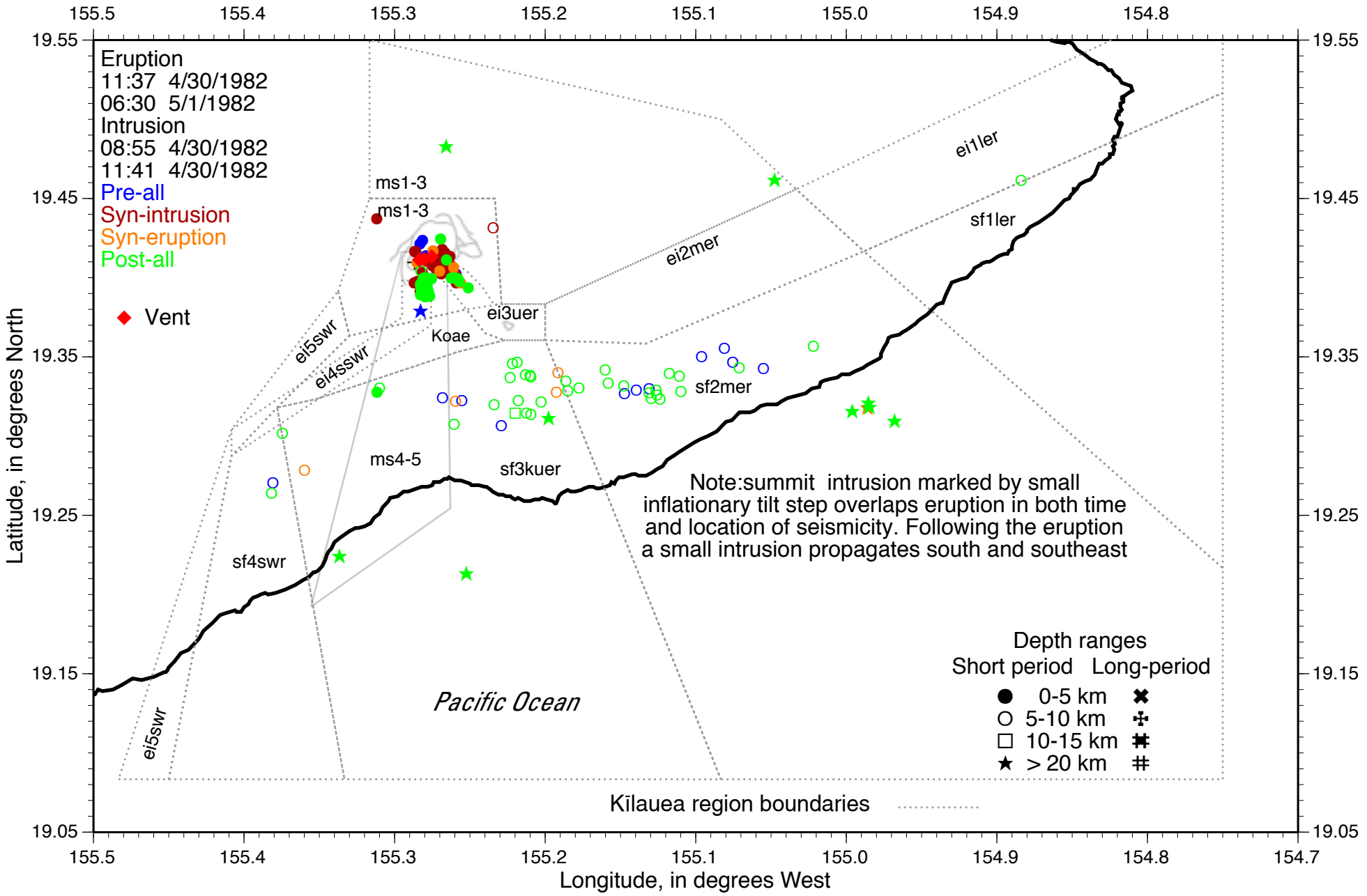


Appendix figure F33 March 1982 seismic southwest rift zone rift zone intrusion data from 3/21-27/1982



Appendix figure F34

April 1982 summit eruption and intrusion: data from 4/25-5/11/1982



Appendix figure F35

june 1982 seismic southwest rift zone rift zone intrusion data from 6/4-14/1982

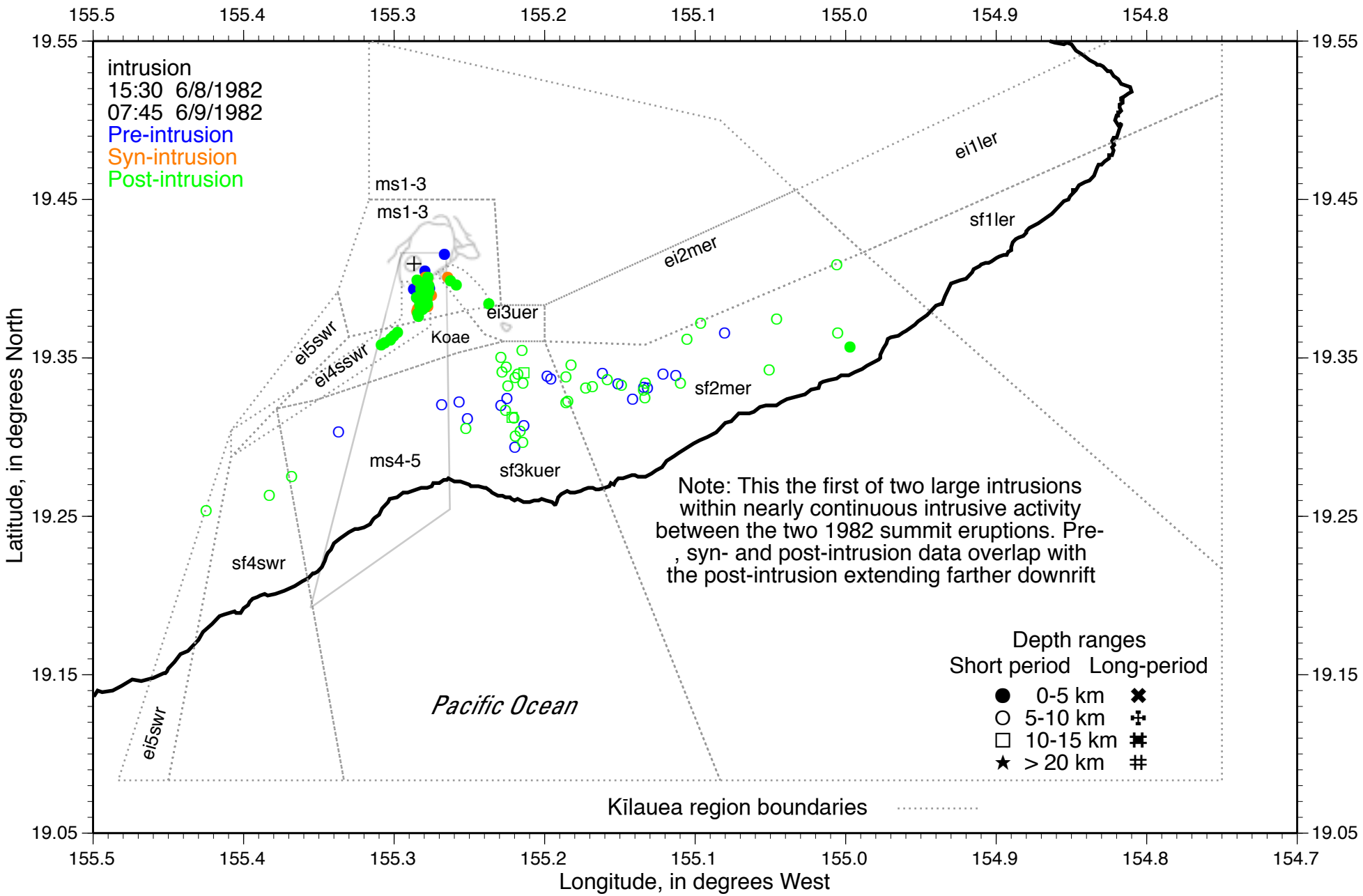
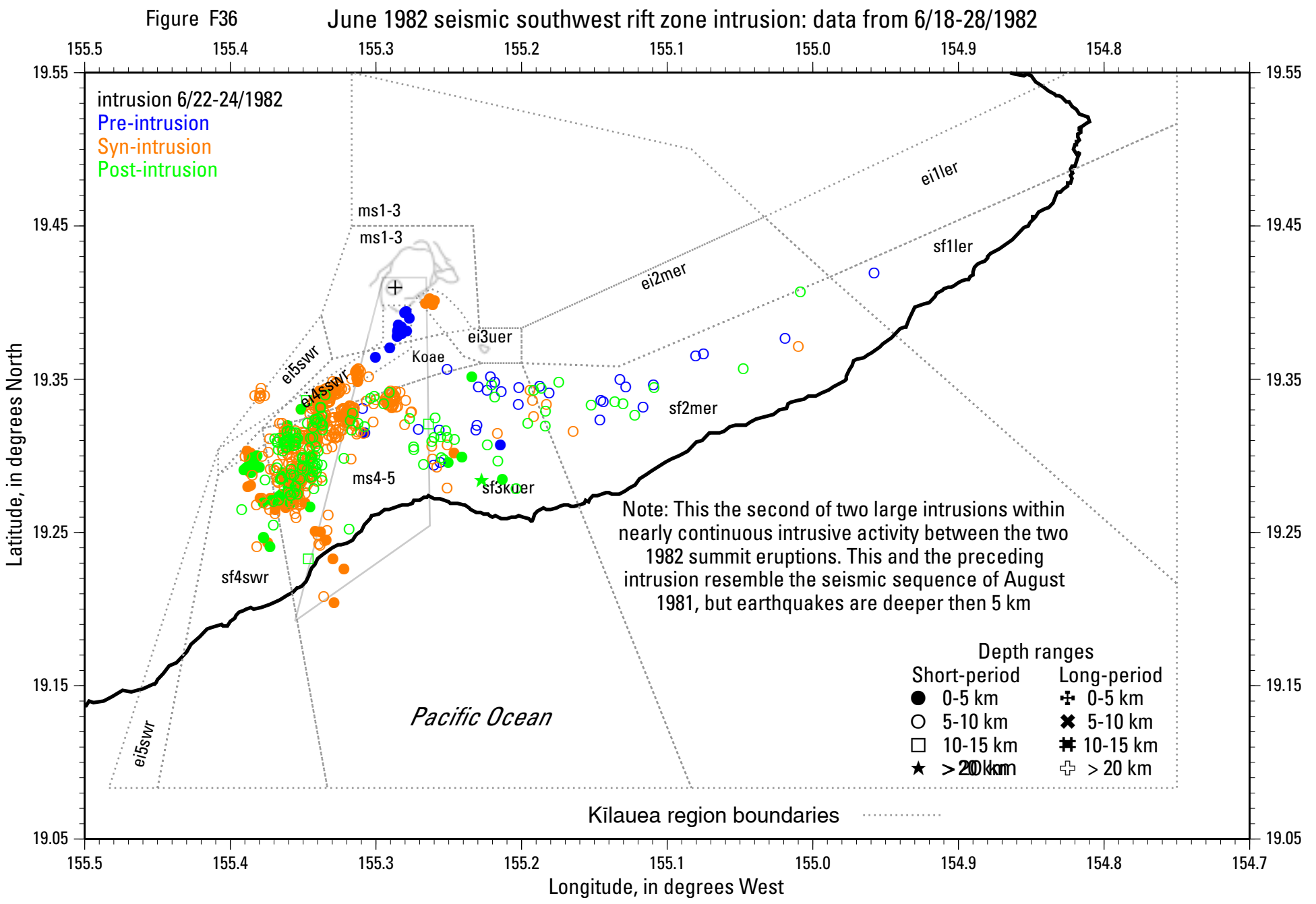
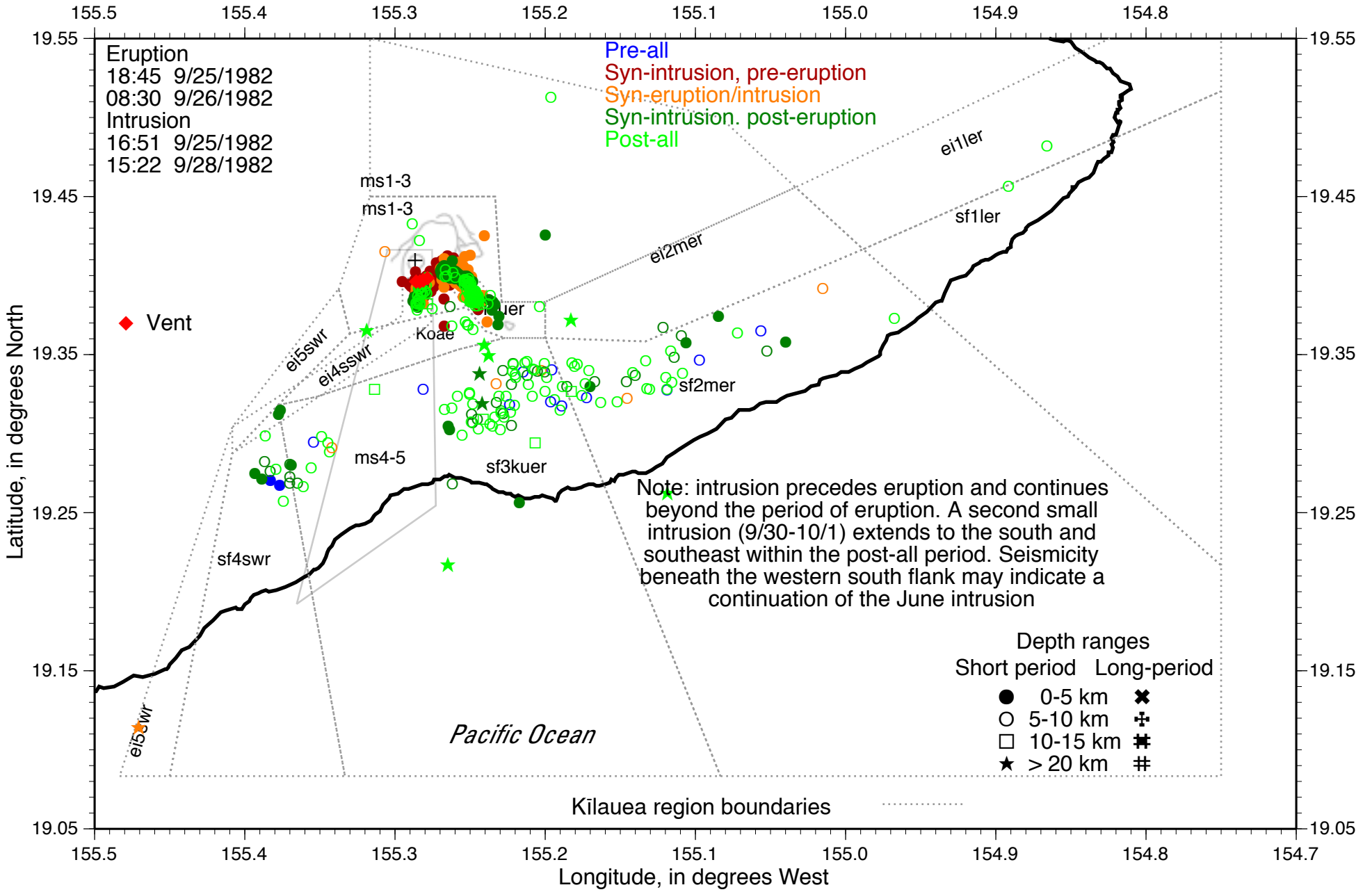


Figure F36


June 1982 seismic southwest rift zone intrusion: data from 6/18-28/1982
intrusion 6/22-24/1982
Pre-intrusion
Syn-intrusion
Post-intrusion
ms1-3
ms1-3
ei1ler
sf1ler
ei2mer
ei3uer
Koae
ei5swr
ei4sswr
sf2mer
ms4-5
sf3kuer
sf4swr
ei5swr
Pacific Ocean
Note: This the second of two large intrusions within nearly continuous intrusive activity between the two 1982 summit eruptions. This and the preceding intrusion resemble the seismic sequence of August 1981, but earthquakes are deeper then 5 km
Depth ranges
Short-period
0-5 km
5-10 km
10-15 km
> 20 km
Long-period
0-5 km
5-10 km
10-15 km
> 20 km
Kīlauea region boundaries
Latitude, in degrees North
Longitude, in degrees West
155.5
155.4
155.3
155.2
155.1
155.0
154.9
154.8
154.7
19.55
19.45
19.35
19.25
19.15
19.05

Appendix figure F37

September 1982 summit eruption and intrusion: data from 9/23-10/8/1982



Appendix figure F38

October 1982 east rift zone intrusions: data from 10/1-15/1982