Supplementary Material

Table S1. A list of 61 earthquakes is considered for this work and taken from the USGS catalogue.

Time [day/month/year hour:seconds]	Latitude [degrees]	Longitude [degrees]	Depth [km]	Magnitude
19/05/2023 02:57	-23.185	170.763	18	7.7
24/04/2023 00:41	-29.992	-177.811	29	7.1
16/03/2023 01:56	-30.174	-176.205	10	7.0
08/01/2023 12:32	-14.9464	166.8808	29	7.0
04/12/2022 19:24	-15.3497	-172.9867	38	6.8
22/11/2022 02:03	-9.8198	159.6033	14	7.0
11/11/2022 10:48	-19.2881	-172.1471	37	7.3
14/08/2022 13:44	-32.7361	-179.0088	30	6.6
26/05/2022 15:37	-22.8282	172.1298	15	6.6
30/03/2022 20:56	-22.666	170.3659	10	6.9
29/01/2022 02:46	-29.5642	-176.7217	8	6.5
20/06/2021 17:05	-30.2162	-177.8449	25	6.5
21/05/2021 22:13	-16.6009	-177.3725	10	6.5
04/03/2021 19:28	-29.7228	-177.2794	29	8.1
10/02/2021 13:19	-23.0511	171.6566	10	7.7
18/06/2020 12:49	-33.2927	-177.8571	10	7.4
04/11/2019 22:43	-18.5747	-175.272	10	6.6
15/06/2019 22:55	-30.6441	-178.0995	46	7.3
14/05/2019 12:58	-4.051	152.5967	10	7.6

15/01/2019 18:06	-13.336	166.8752	35	6.6
05/12/2018 04:18	-21.9496	169.4266	10	7.5
16/10/2018 01:03	-21.7427	169.5217	17	6.5
10/10/2018 20:48	-5.7012	151.2046	39	7.0
29/08/2018 03:51	-22.0295	170.1262	21	7.1
21/08/2018 22:32	-16.0315	168.1428	9	6.5
29/03/2018 21:25	-5.5321	151.4999	35	6.9
08/03/2018 17:39	-4.3762	153.1996	23	6.8
19/11/2017 22:43	-21.3246	168.6715	10	7.0
04/11/2017 09:00	-15.3197	-173.1682	10	6.8
31/10/2017 00:42	-21.6971	169.1485	24	6.7
03/01/2017 21:52	-19.3733	176.0518	12	6.9
08/12/2016 17:38	-10.6812	161.3273	40	7.8
17/10/2016 06:14	-6.0033	148.8871	42	6.8
01/09/2016 16:37	-37.3586	179.1461	19	7.0
12/08/2016 01:26	-22.4765	173.1167	16	7.2
28/04/2016 19:33	-16.0429	167.3786	24	7.0
03/04/2016 08:23	-14.3235	166.8551	26	6.9
18/11/2015 18:31	-8.8994	158.4217	12	6.8
10/08/2015 04:12	-9.3438	158.0525	22	6.6
18/07/2015 02:27	-10.4012	165.1409	11	7.0
10/07/2015 04:12	-9.307	158.403	12	6.7

20/05/2015 22:48	-10.8759	164.1694	11	6.8
07/05/2015 07:10	-7.2175	154.5567	10	7.1
01/05/2015 08:06	-5.2005	151.7773	44	6.8
30/03/2015 08:48	-15.4994	-173.0293	11	6.5
29/03/2015 23:48	-4.7294	152.5623	41	7.5
07/12/2014 01:22	-6.5108	154.4603	23	6.6
16/11/2014 22:33	-37.6478	179.6621	22	6.7
04/07/2014 15:00	-6.2304	152.8075	20	6.5
29/06/2014 17:15	-14.9831	-175.5096	18	6.7
23/06/2014 19:19	-29.9772	-177.7247	20	6.9
19/04/2014 13:28	-6.7547	155.0241	43	7.5
12/04/2014 20:14	-11.2701	162.1481	22	7.6
11/04/2014 08:16	-6.7878	154.9502	20	6.5
02/02/2014 09:26	-32.9076	-177.8806	44	6.5
16/10/2013 10:30	-6.4456	154.931	35	6.8
30/09/2013 05:55	-30.9255	-178.3234	41	6.5
23/04/2013 23:14	-3.898	152.127	10	6.5
14/04/2013 01:32	-6.475	154.607	31	6.6
10/03/2013 22:51	-6.598	148.172	28	6.5
06/02/2013 01:12	-10.799	165.114	24	8.0

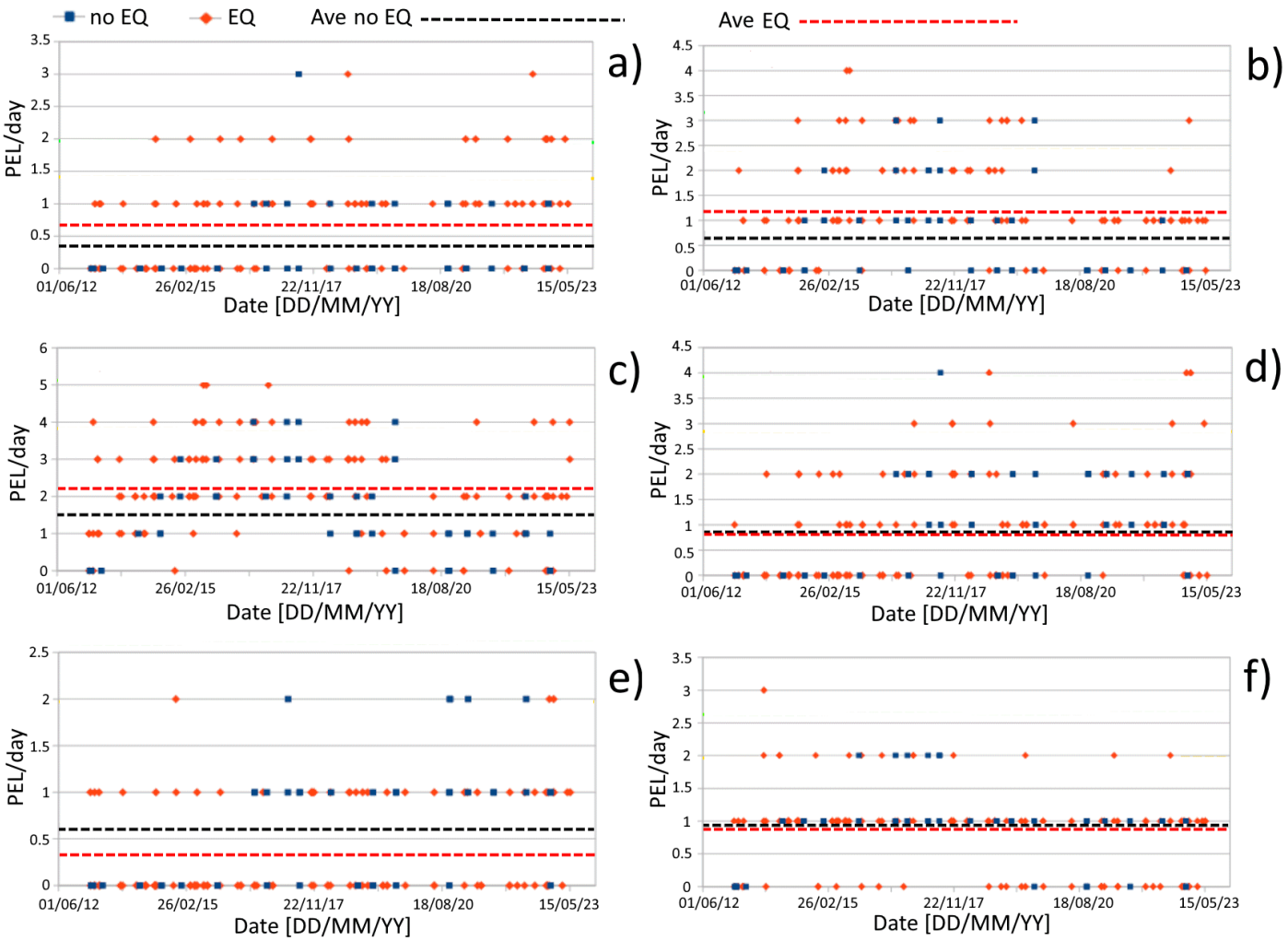

Figure S1. A comparison between the daily number of PELs detected in periods with no strong EQs (blue squares), and the daily number of PELs detected in the periods with strong South Pacific EQs. Along (a) ascending semi-orbits (b) descending semi-orbits (c) southern latitudes (d) northern latitudes (e) ascending around SAA semi-orbits (f) descending around SAA semi-orbits. Averages with no EQs are represented by black dotted lines while averages with EQs are represented by red dotted lines.