

This PDF outlines the fitting applied to ozone concentration data at the Pinheiros Station from April 2006 to September 2010.

The variables used were previously selected through the Warped Wavelet Feature Screening:

- **no 6**: Nitrogen monoxide displaced 6 months in the past;
- **rh**: Humidity;
- **ws 5**: Wind Speed displaced 5 months in the past;
- **tc 1**: Temperature displaced 1 month in the past;
- **sin\_gwd 4**: Sine of global wind direction displaced 4 months in the past;
- **tc**: Temperature;
- **no2 2**: Nitrogen dioxide displaced 2 months in the past;
- **co 4**: Carbon monoxide displaced 4 months in the past;
- **cos\_gwd 2**: Cossine of global wind direction displaced 2 months in the past;
- **no 4**: Nitrogen monoxide displaced 4 months in the past;

For each variable, five types of fitting were made:

- **L1**: Simple Linear Regression Model considering absolute errors;
- **L2**: Simple Linear Regression Model considering squared errors;
- **Warped Wavelets**: Nonlinear Regression computed using Warped Wavelets;
- **Piecewise L1**: Two Simple Linear Regression Model considering absolute errors separated by the median;
- **Piecewise L2**: Two Simple Linear Regression Model considering absolute errors separated by the median.

Based on the information in Table 2, the approximate number of parts for each piecewise fitting was determined, along with the decile at which each cut will occur. Table 1 contains all those values.

Table 1: Number of Parts and Corresponding Decile for each Variable

	no 6	rh	ws 5	tc 1	sin_gwd 4	tc	no2 2	co 4	cos_gwd 2	no 4
Number of parts	2	3	2	2	3	2	2	2	2	2
Decile	60%	30%/60%	60%	40%	20%/90%	30%	60%	60%	60%	50%

To assist in the construction of the piecewise regressions, the tangent of the Warped Wavelet Fitting was calculated at each value of X.

Table 2: Tangent of Warped Wavelet Fitting at each value of X

X	no 6	rh	ws 5	tc 1	sin_gwd 4	tc	no2 2	co 4	cos_gwd 2	no 4
1-2	-0.11	2.06	0.91	-0.47	4.97	-1.79	4.80	-0.50	-351.61	2.39
2-3	-1.79	2.33	1.70	-2.47	52.04	-10.61	49.87	-1.89	-35.41	2.12
3-4	-7.12	1.78	-0.50	-0.43	4.29	-1.83	4.18	-0.44	-114.01	5.29
4-5	-7.95	0.24	-34.25	-6.88	1.58	-26.27	3.47	1.00	-13.56	10.31
5-6	-8.71	-1.67	-17.75	-0.82	3.73	-2.53	0.10	16.89	79.01	6.34
6-7	-19.39	-1.07	-37.14	-166.70	32.58	-398.11	-11.68	5.15	14.40	3.95
7-8	-7.84	-8.34	-7.01	-3.40	2.02	-6.28	-20.79	10.05	27.42	4.44
8-9	-10.18	-73.30	-36.77	-2.39	19.19	-3.29	-82.62	35.24	67.56	0.45
9-10	-9.83	-8.58	-94.86	-4.50	4.41	-4.27	-7.40	6.48	87.24	-0.70
10-11	-33.40	-3.84	-283.92	-5.26	2.04	-3.08	-15.81	43.24	187.06	-1.61
11-12	-130.26	-42.58	-73.21	-1.25	12.96	-0.36	-27.42	107.04	63.22	-7.51
12-13	-99.28	-93.26	-36.47	-3.36	15.36	-0.11	-90.19	9.93	713.73	-32.28
13-14	-23.92	-43.86	-47.12	-4.47	32.51	1.09	-60.05	9499.92	256.58	-24.41
14-15	-16.23	-39.68	-29.39	-1.42	11.77	1.01	-588.01	12.23	89.52	-5.41
15-16	-25.58	-36.08	-88.46	-2.00	146.35	6.28	-156.63	40.83	300.74	-3.14
16-17	-78.29	-193.77	-127.75	0.46	57.36	1.17	-60.61	13.06	426.70	-4.07
17-18	-15.41	-64.16	-91.53	2.02	18.17	2.24	-43.39	23.31	467.76	-9.09
18-19	-79.63	-1236.86	-1837.14	17.66	141.00	13.21	-24.83	3.59	101.09	-0.86
19-20	-38.46	-19.77	-164.85	23.74	36.24	13.27	-205.05	106.88	26.08	1.82
20-21	-23.67	-23.19	-82.09	40.85	16.09	17.87	-56.96	11.32	13488.02	4.84
21-22	-153.96	-30.00	-37.70	6.16	58.89	2.16	-24.58	7.21	156.82	5.99
22-23	-41.23	-39.36	-32.73	26.48	618.92	7.68	-11.13	0.56	55.79	61.25
23-24	-7.82	-26.11	-0.49	45.41	45.28	11.36	-15.70	-0.59	203.01	23.81
24-25	-13.99	-145.08	29.54	228.16	40.20	50.18	7.91	-3.94	3.40	6.43
25-26	-7.42	-20.60	127.39	11.21	133.86	2.19	68.97	-6.63	-12.43	16.08
26-27	-10.79	-42.56	39.48	7.96	69.47	1.39	66.09	-52.69	-26.37	11.86
27-28	-3.87	-26.58	174.39	20.26	31.33	3.18	57.34	-18.67	-67.31	23.84
28-29	-15.73	-164.39	637.92	200.46	58.93	29.08	208.23	-117.53	-42.43	11.68
29-30	-0.73	-19.05	10.33	54.20	1061.25	16.32	16.68	-14.54	-20.39	67.92
30-31	-0.30	-48.25	14.65	79.98	387.46	14.01	21.74	-17.78	-39.65	5.43
31-32	0.25	-6.90	13.18	25.80	37.09	11.19	118.20	-80.17	-762.37	10.47
32-33	0.52	-5.47	23.57	38.74	43.29	3.77	28.15	-26.54	-303.21	2.70
33-34	1.27	-111.32	10.31	13.06	100.92	6.07	48.68	-23.08	-31.41	2.05
34-35	1.42	-7.53	4.79	158.01	17.04	2.21	48.66	-15.36	-39.18	2.54
35-36	2.98	-5.82	12.23	13.78	5.21	29.54	358.23	-1.23	-100.48	1.43
36-37		-0.44	12.59	83.09	2.83	2.97	35.79	-118.00	-19.49	1.08
37-38		14.23		15.27	-0.09	21.81	11.97	-4.10	-7.27	-0.57
38-39		11.35		1.75		5.36	3.60		-6.91	
39-40		2.56		3.67		0.96	0.73		-0.26	
40-41		15.27		-0.69		4.49				
41-42		1.43				2.92				

Next, all the graphs with the corresponding fitting:

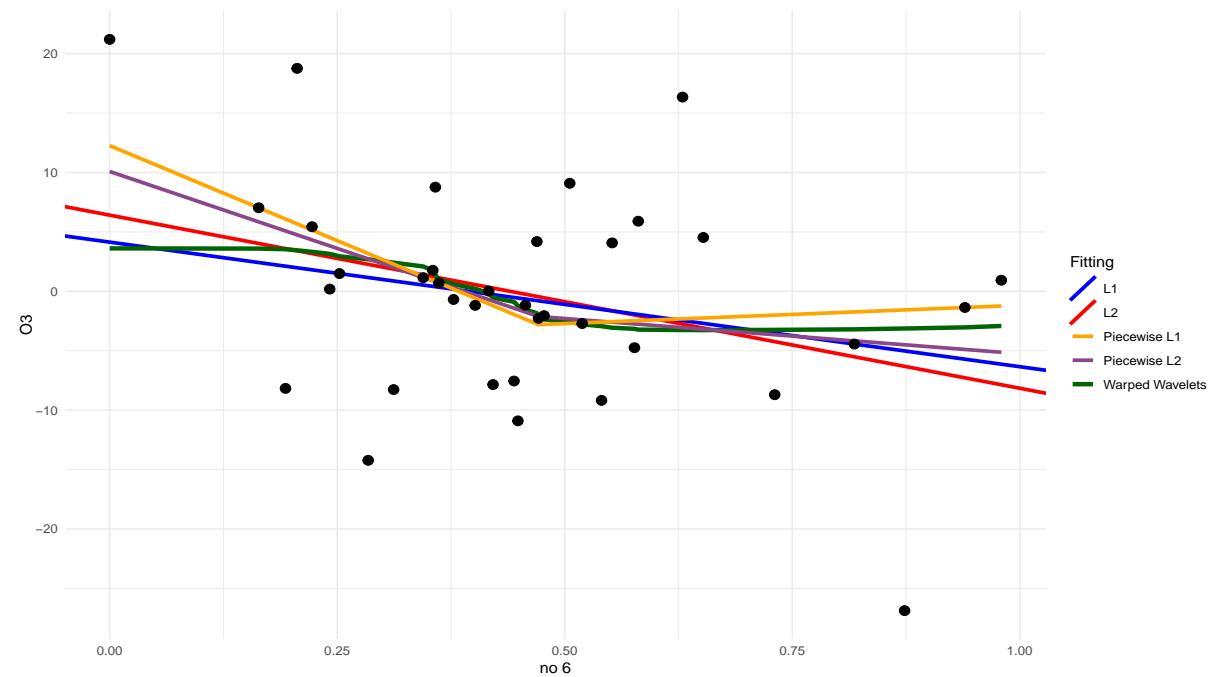


Figure 1: Fitting no 6

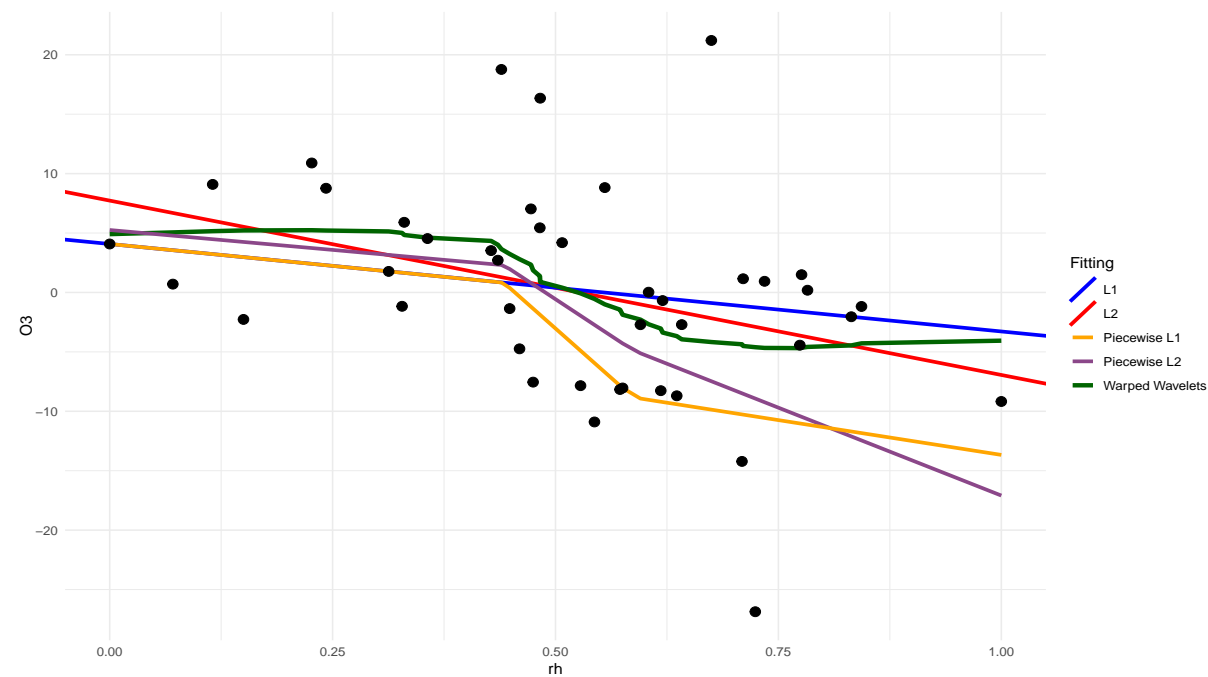


Figure 2: Fitting rh

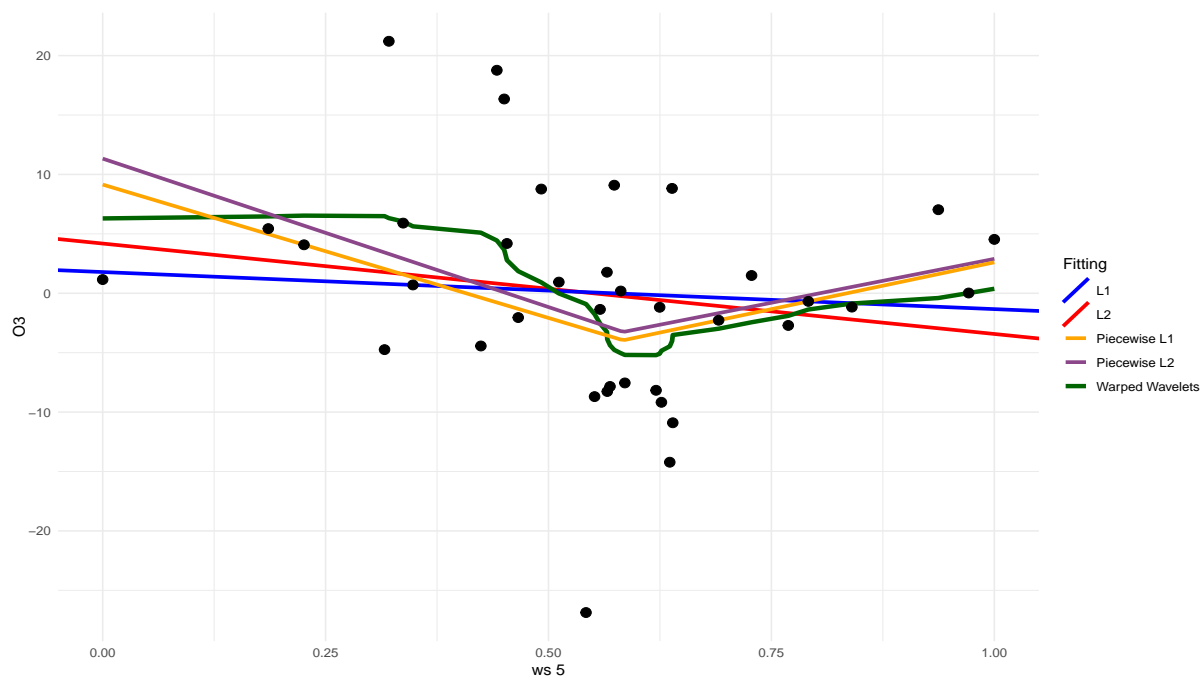


Figure 3: Fitting  $ws\ 5$

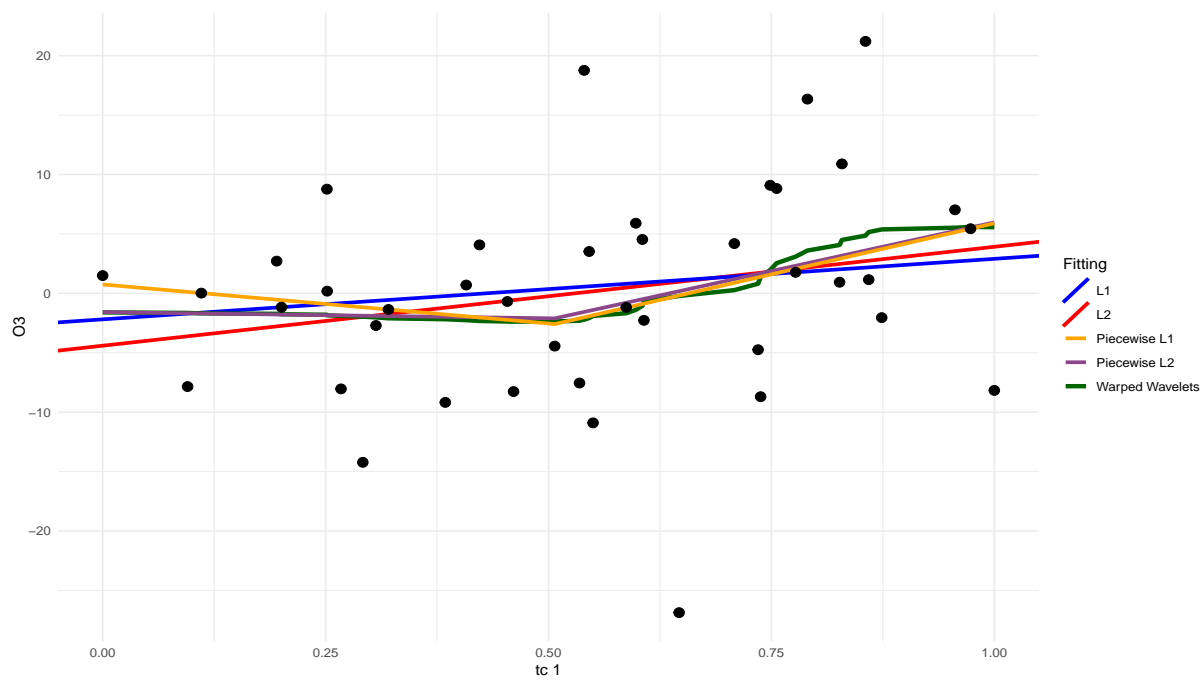


Figure 4: Fitting  $tc\ 1$

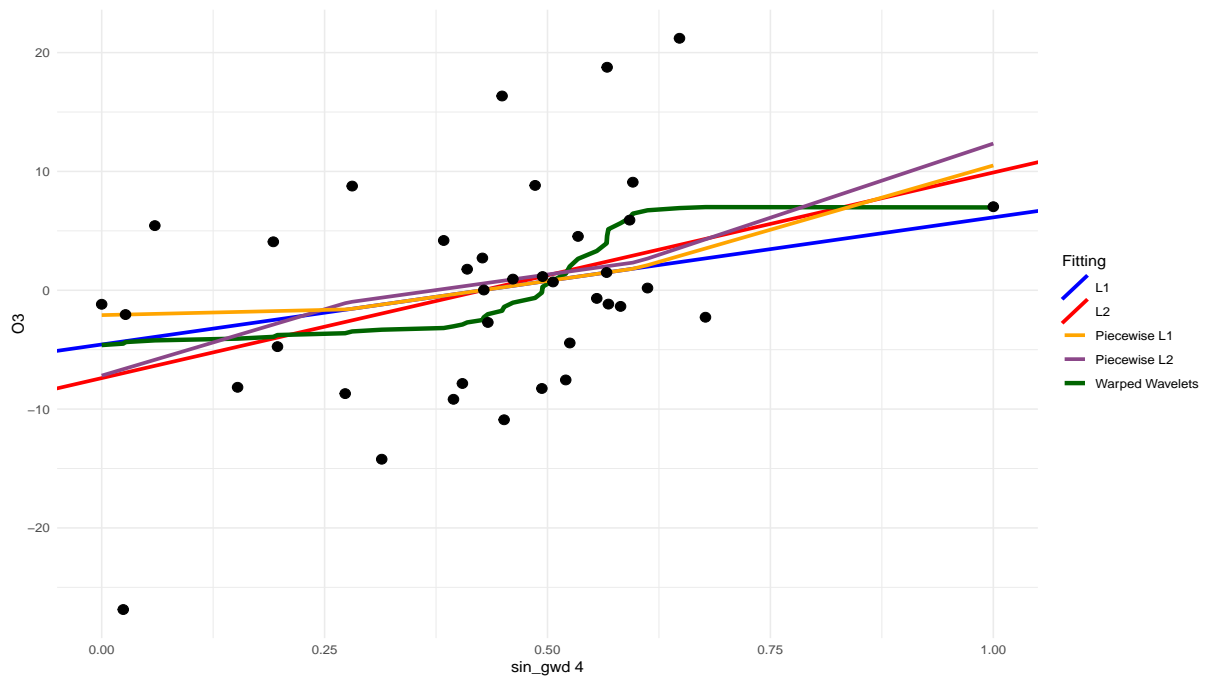


Figure 5: Fitting  $\sin\_gwd\ 4$

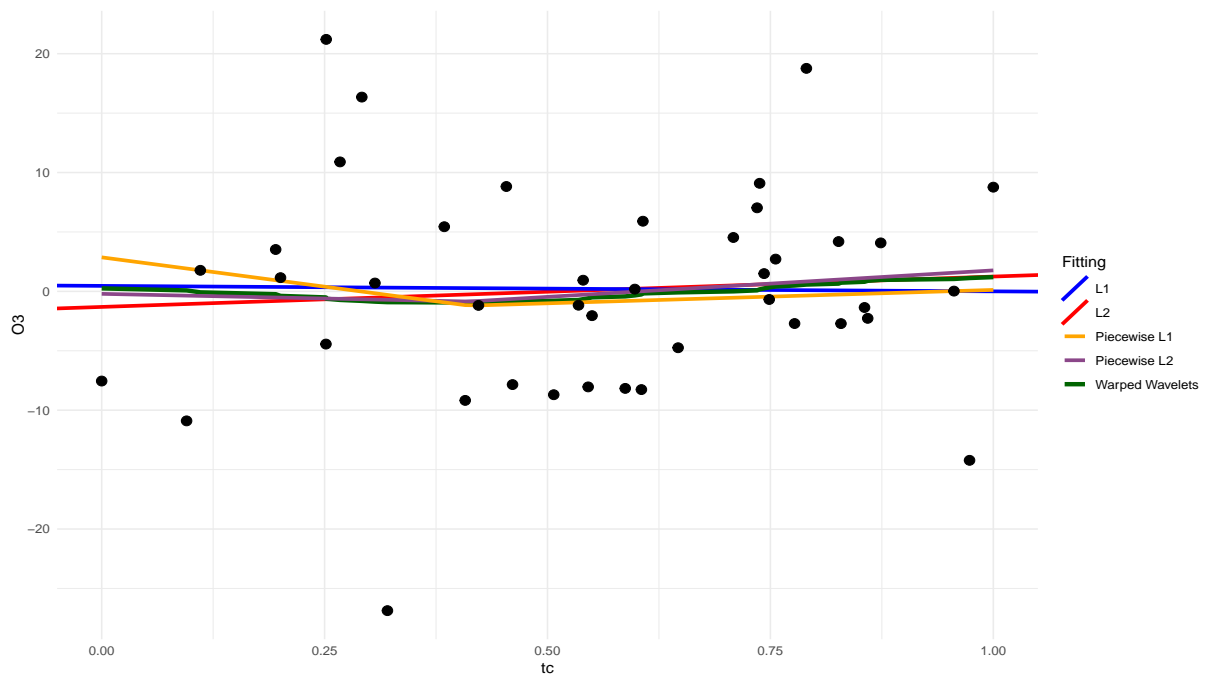


Figure 6: Fitting  $tc$

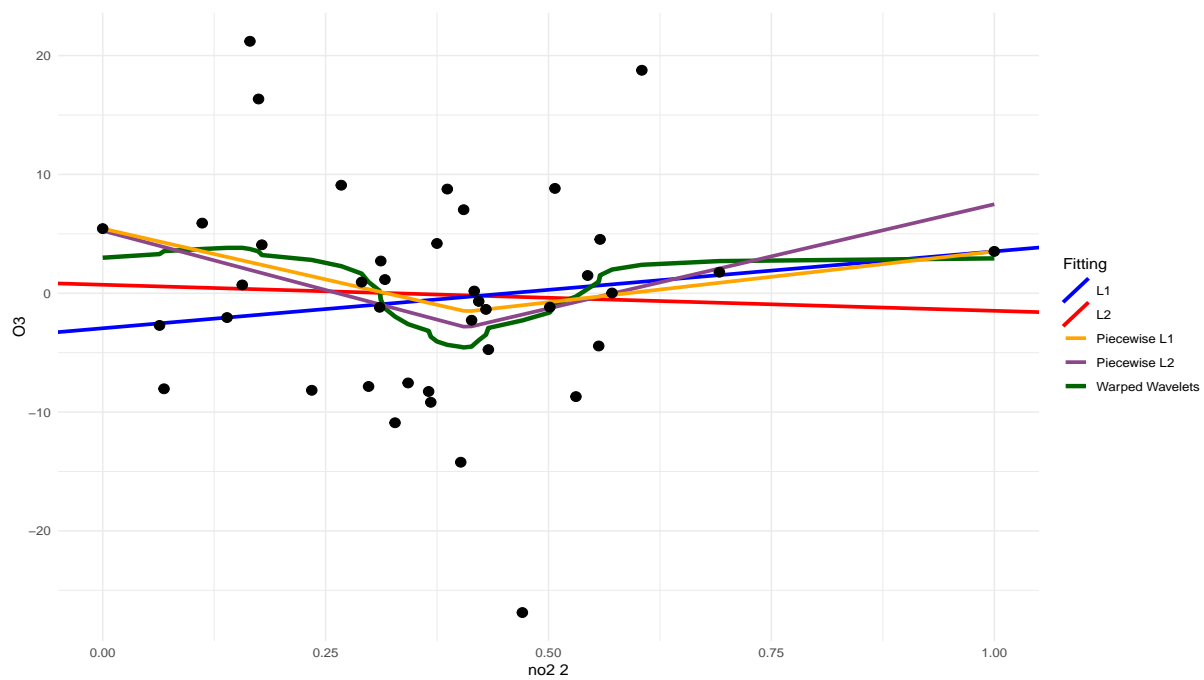


Figure 7: Fitting no2 2

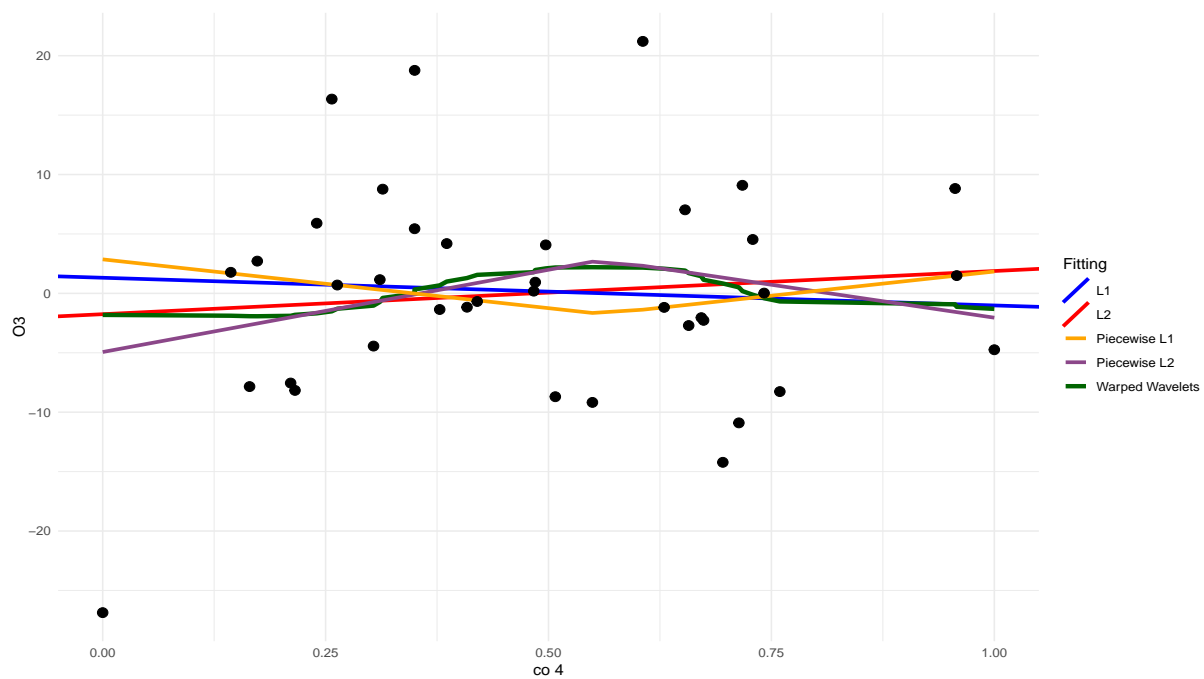


Figure 8: Fitting co 4

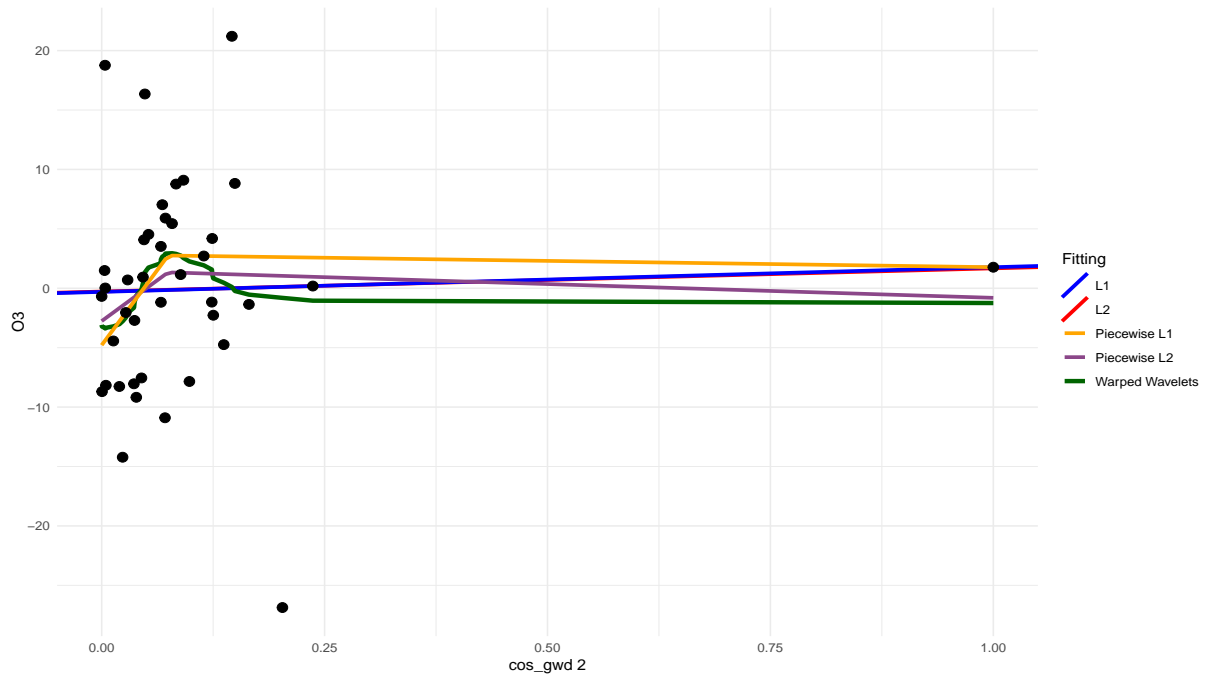


Figure 9: Fitting  $\cos\_gwd\ 2$

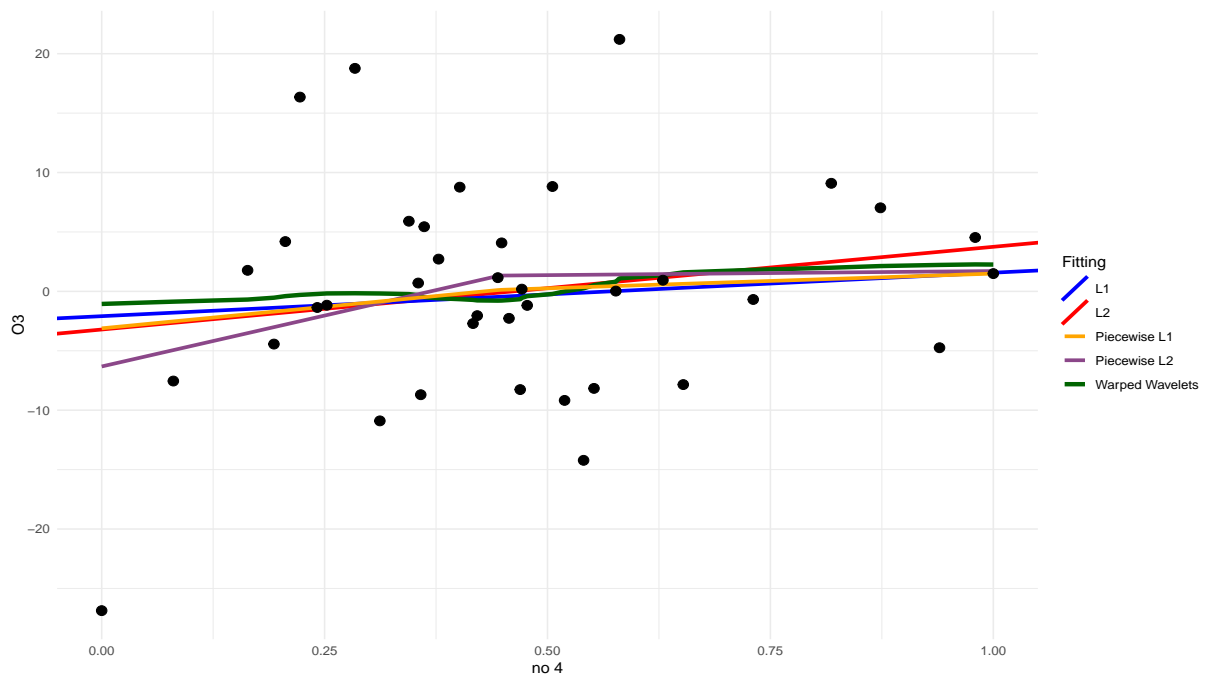


Figure 10: Fitting  $no\ 4$