

# 关于广域频率域数据预处理工具の説明













本工具主要实现了频率域数据的预处理功能(挑非点)、计算广域视电阻率( $E_x$ 、 $E_y$ 、 $E_\varphi$ )、手动调整广域视电阻率曲线形态。

希望使用者能提宝贵建议，令工具更加完善。Email: [278397935@qq.com](mailto:278397935@qq.com)

免责声明：本工具仅限于熟悉广域电磁法的专业人员使用。如有使用不当导致勘探成果有偏差，概不负责。

特此声明。

## 一：功能描述

- 1,  导入发射端电流文件（用逗号隔开的两列数据，第一列是频率，第二列是电流，单位是安培），发射端电流可以连续导入，以最后一次导入的电流为准。
- 2,  导入接收端电场文件（用逗号隔开的 n 列数据，第一列是频率，后续紧跟的是频率域振幅值）。接收端除以发射端，得到一个  $mV/I$  的物理量，实际上就是用电流来归一化振幅。接收端文件可以分批次导入，注意，一旦开始手动调整主句之后，程序就不允许再导入发射端电流和接收端振幅。
- 3,  把导入的发射端电流和接收端振幅文件全部从本软件中清除掉。
- 4,  水平方向裁剪散点图的点，调整振幅值。
- 5,  垂直方向裁剪散点图的点，调整振幅值。
- 6,  保存。针对选中点做过调整操作后，将经过保存起来。
- 7,  撤销。针对选中点，将结果设置成初始值。注意，次操作不具备逐步撤销功能，只能是撤销至初始值。
- 8,  存盘。保存调整的结果至硬盘，在原文件后追加 filter\_时间。
- 9,  计算广域视电阻率。点击该按钮，会要求用户打开对应的坐标文件。
- 10,  导出广域视电阻率。导出计算结果文档至一个指定的目录。
- 11,  查看本 readme.pdf 按钮
- 12,  关闭程序。如有数据改动，将咨询用户是否对修改结果存盘。

## 二：快捷键说明

- 1, Ctrl+C: 清除数据
- 2, Ctrl+H: 使用水平剪裁工具
- 3, Ctrl+V: 使用垂直剪裁工具
- 4, Ctrl+R: 设置选中点为初始值
- 5, Shift+Ctrl+R: 设置整条选中的曲线所有点为初始值 (此功能仅针对广域视电阻率曲线形态调整时开放)
- 6, Ctrl+S: 保存调整结果

## 三：文件格式截图

### 1, 电流文件

FFT_AVG_I_T(0104-P2-7-G0)_S100_D153_CH1_Ex_20200218214225.csv	
1	8192,2.057
2	6144,2.912
3	4096,4.608
4	3072,6.117
5	2048,9.688
6	1536,12.507
7	1024,18.374
8	768,22.551
9	512,29.197
10	384,32.844
11	256,36.728
12	192,38.457
13	128,39.675
14	96,40.442
15	64,34.550
16	48,34.650
17	32,34.647
18	24,34.664
19	16,37.485
20	12,37.489
21	8,39.344
22	6,39.346
23	4,40.418
24	3,40.428
25	2,40.975
26	1.5,40.997
27	1,41.230
28	0.75,41.258

## 2, 振幅文件

FFT\_SEC\_V\_T(140-0104-P2-7-G1)\_L140\_S1944\_D134\_QR2\_Ex.csv

1	8192,2.98226,2.96543,2.99172,3.02039,2.97791,3.00486,2.97621,2.94686,2.97692,3.02345,2.96478,2.98270,3.00635,2.95730,3.02142,3.05874,2.99248,2.92080,3.037
2	6144,8.05497,8.04860,8.03139,8.07395,8.00703,8.05119,7.99317,8.07036,8.07025,8.04809,8.04530,8.03739,8.02596,8.06500,8.03399,8.02183,8.00343,8.04192,8.044
3	4096,3.98060,4.11568,3.95679,3.99977,3.99748,3.94386,3.95712,4.04911,3.98023,4.02318,3.99980,3.98992,3.95432,3.96221,3.96012,4.02937,4.03084,3.99404,4.066
4	3072,1.65198,1.84228,1.65201,1.66662,1.88887,1.64781,1.71694,1.66963,1.79130,1.76896,1.75181,1.60593,1.78658,1.76372,1.66323,1.61997,1.68403,1.85112,1.687
5	2048,2.44156,1.98848,2.09657,1.91495,2.26458,1.99250,2.02216,2.58214,1.23441,2.78001,1.22073,2.49616,1.38859,2.52642,1.64547,2.01590,2.34293,1.54978,2.372
6	1536,3.09110,3.07289,2.96981,3.00814,2.92286,3.08138,3.07515,3.04630,2.94157,2.99222,2.97101,3.09734,2.97559,2.99753,3.03344,3.05097,2.96023,3.06321,3.021
7	1024,2.67943,2.70049,2.68460,2.72448,2.66915,2.69938,2.68503,2.65815,2.72333,2.62352,2.67308,2.66812,2.62856,2.58428,2.70630,2.69730,2.68375,2.67790,2.672
8	768,2.72624,2.69865,2.68027,2.75768,2.66839,2.72475,2.72397,2.63600,2.78770,2.72477,2.71960,2.73034,2.74320,2.64457,2.81084,2.64204,2.72257,2.77662,2.6627
9	512,2.73104,2.79896,2.75287,2.75514,2.69687,2.72288,2.74832,2.80724,2.77281,2.73438,2.73665,2.72208,2.75557,2.73329,2.76482,2.75134,2.72663,2.71505,2.7439
10	384,2.61100,2.46468,2.59756,2.60411,2.45672,2.65514,2.60319,2.40900,2.70923,2.48582,2.47982,2.69124,2.50345,2.50860,2.65584,2.49024,2.45515,2.74866,2.4026
11	256,2.15667,2.18082,2.20162,2.20408,2.22037,2.20775,2.21599,2.20848,2.20575,2.19510,2.16883,2.16604,2.13769,2.13718,2.14282,2.13419,2.15726,2.16428,2.1860
12	192,2.07999,1.63047,1.98092,1.99758,1.62154,2.03201,1.93682,1.66856,2.05955,1.90125,1.66835,2.13224,1.80871,1.64749,2.17634,1.74094,1.71702,2.15843,1.6753
13	128,1.35696,1.36533,1.34746,1.37913,1.33372,1.38604,1.37888,1.38122,1.38466,1.40440,1.36904,1.36432,1.38286,1.34751,1.38074,1.39830,1.37546,1.37872,1.4013
14	96,1.79276,0.84406,1.32134,1.66472,0.65804,1.53562,1.54780,0.50777,1.69451,1.43082,0.40889,1.82916,1.30255,0.49091,1.90768,1.20315,0.64033,1.91410,1.04998
15	64,0.82490,0.86833,0.83928,0.83219,0.78995,0.74370,0.67935,0.63746,0.59392,0.57211,0.53226,0.59504,0.59159,0.55937,0.61519,0.60442,0.63573,0.68468,0.73662
16	48,5.35637,7.21738,7.71079,6.16711,5.41719,7.00237,7.82786,6.52181,4.95706,7.23084,7.93386,6.44416,5.29958,7.15829,7.93766,6.52790,5.68796,7.60311,8.22741
17	32,0.63712,0.68233,0.65777,0.68240,0.71461,0.72193,0.77164,0.78213,0.77956,0.81741,0.83203,0.81724,0.82784,0.81742,0.84434,0.78385,0.80089,0.77130,0.70887
18	24,1.42508,1.66965,1.89017,1.56119,1.30356,1.86002,1.86313,1.54410,1.28444,1.73408,1.85490,1.68664,1.25165,1.70735,1.93162,1.63120,1.30273,1.71195,1.88105
19	16,0.76198,0.80969,0.77310,0.81564,0.73018,0.75114,0.75912,0.80716,0.84821,0.84847,0.88368,0.86142,0.86410,0.79187,0.86155,0.79497,0.84710,0.80668,0.80303
20	12,1.46913,1.81860,1.76435,1.73190,1.32877,1.72532,1.51086,1.63675,1.27276,1.47957,1.79907,1.61678,1.33387,1.56787,1.76701,1.64750,1.41922,1.43241,1.74496
21	8,0.94240,0.50999,0.73398,0.66382,0.77153,0.70179,0.88245,0.78865,0.80145,0.77030,0.64863,0.64921,0.61012,0.86642,0.65268,0.74524,0.70743,0.66909,0.80095
22	6,1.24662,1.41560,1.31802,1.47237,0.84297,1.33824,1.38882,1.29917,0.96460,1.36986,1.52999,1.61593,1.35924,1.18691,1.47265,1.64294,1.05545,0.87934,1.52975
23	4,0.60353,0.58266,0.68430,0.44652,0.25305,0.21989,0.46437,0.50065,0.39973,0.60729,0.64502,0.59165,0.65411,0.72278,0.53870,0.64057,0.68094,0.61892,0.70945
24	3,1.86576,1.30717,1.44282,1.46022,1.75818,1.68067,0.92007,1.21667,0.82623,1.09396,1.01106,0.88851,1.03369,1.06235,1.16383,0.94472,1.09771,1.92545,1.07832
25	2,0.82983,0.37451,0.74785,0.40671,0.45972,0.09904,0.64077,0.30337,0.70507,0.45093,0.37168,0.62486,0.67077,0.50270,1.11102,0.46167,0.46926,0.80296,0.66467
26	1.5,1.38084,1.74035,0.87305,2.65951,1.22442,1.46588,0.54591,0.56365,2.29935,1.69374,1.88669,1.20860,1.12732,1.60969,0.91638,1.35840,2.20996,0.27994,0.6294
27	1,0.67736,0.56633,0.33509,0.38863,0.81800,0.48444,0.95359,1.36207,0.41982,1.38571,0.42914,1.05331,1.08494,1.18280,1.30521,1.28955,1.30897,0.50040,1.35009
28	0.75,4.40831,1.44919,1.05553,2.24828,1.19040,3.83844,5.58747,1.96355,2.41225,3.66818,1.25600,0.93517,2.00745,1.97927,3.17754,0.62562,2.26148,0.62118,2.944

### 3, 坐标文件

06-坪宝-WFEM-记录点-MNAB-坐标.csv	
1	A, B, 375136, 2857316.3, 215.3, 376047.5, 2856483.6, 230
2	128, 1520, 364438.5, 2848197, 298.7, 364468.1, 2848170, 294.4
3	128, 1522, 364452.7, 2848183.1, 296.9, 364481.7, 2848155.2, 291
4	128, 1524, 364468.1, 2848170, 294.4, 364497.7, 2848142.7, 288.3
5	128, 1526, 364481.7, 2848155.2, 291, 364512.4, 2848129.6, 286.6
6	128, 1528, 364497.7, 2848142.7, 288.3, 364527.3, 2848116.3, 281.8
7	128, 1530, 364512.4, 2848129.6, 286.6, 364542.3, 2848102.7, 277.9
8	128, 1532, 364527.3, 2848116.3, 281.8, 364557.2, 2848089.7, 277.9
9	128, 1534, 364542.3, 2848102.7, 277.9, 364572.1, 2848076.5, 277.7
10	128, 1536, 364557.2, 2848089.7, 277.9, 364587.2, 2848063.3, 277.2
11	128, 1538, 364572.1, 2848076.5, 277.7, 364602.1, 2848049.7, 277.1
12	128, 1540, 364587.2, 2848063.3, 277.2, 364616.7, 2848036.3, 278.3
13	128, 1542, 364602.1, 2848049.7, 277.1, 364631.7, 2848022.5, 282.1
14	128, 1544, 364616.7, 2848036.3, 278.3, 364647, 2848009.9, 286.4
15	128, 1546, 364631.7, 2848022.5, 282.1, 364660.7, 2847995.1, 292.3
16	128, 1548, 364647, 2848009.9, 286.4, 364675.7, 2847982.3, 298
17	128, 1550, 364660.7, 2847995.1, 292.3, 364692, 2847969.7, 304.2
18	128, 1552, 364675.7, 2847982.3, 298, 364705.7, 2847955.6, 309.7
19	128, 1554, 364692, 2847969.7, 304.2, 364720.8, 2847942.4, 313.2
20	128, 1556, 364705.7, 2847955.6, 309.7, 364736.3, 2847929.9, 316.3
21	128, 1558, 364720.8, 2847942.4, 313.2, 364750.5, 2847915.6, 322.6
22	128, 1560, 364736.3, 2847929.9, 316.3, 364765, 2847902.1, 330.3
23	128, 1562, 364750.5, 2847915.6, 322.6, 364780.2, 2847888.9, 339.6
24	128, 1564, 364765, 2847902.1, 330.3, 364794.9, 2847875.1, 344.9
25	128, 1566, 364780.2, 2847888.9, 339.6, 364810.1, 2847862.3, 339.9
26	128, 1568, 364794.9, 2847875.1, 344.9, 364824.2, 2847848.1, 325.3
27	128, 1570, 364810.1, 2847862.3, 339.9, 364839.8, 2847835.3, 319.4
28	128, 1572, 364824.2, 2847848.1, 325.3, 364854.3, 2847821.9, 310
29	128, 1574, 364839.8, 2847835.3, 319.4, 364869.3, 2847808.1, 302.1
30	128, 1576, 364854.3, 2847821.9, 310, 364884.3, 2847795.2, 295.3
31	128, 1578, 364869.3, 2847808.1, 302.1, 364898.9, 2847781.4, 290.2
32	128, 1580, 364884.3, 2847795.2, 295.3, 364914, 2847768.1, 290.6
33	128, 1582, 364898.9, 2847781.4, 290.2, 364926.4, 2847752.1, 293
34	128, 1584, 364914, 2847768.1, 290.6, 364942.3, 2847740.4, 293.9
35	128, 1586, 364926.4, 2847752.1, 293, 364959.8, 2847729.5, 295.2
36	128, 1588, 364942.3, 2847740.4, 293.9, 364973.2, 2847714.3, 297.7
37	128, 1590, 364959.8, 2847729.5, 295.2, 364988.4, 2847701.6, 306.5

## 4，广域视电阻率文件

2020年03月16日14时31分26秒_广域视电阻率结果.csv	
1	线号,点号,仪器号,通道号,分量标识,频率,电流,场值,相对均方误差,视电阻率,AX,AY,AH,BX,BY,BH,MX,MY,MH,NX,NY,NH,
2	140,1952,133,2,Ex,8192,2.057,0.372166,2.263%,23635.4,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
3	140,1952,133,2,Ex,6144,2.912,0.953943,1.156%,42775.3,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
4	140,1952,133,2,Ex,4096,4.608,0.42734,2.426%,12114.9,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
5	140,1952,133,2,Ex,3072,6.117,0.177406,10.315%,3788.7,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
6	140,1952,133,2,Ex,2048,9.688,0.315702,45.500%,4257,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
7	140,1952,133,2,Ex,1536,12.507,0.274823,6.558%,2870.52,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
8	140,1952,133,2,Ex,1024,18.374,0.309505,4.130%,2200.51,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
9	140,1952,133,2,Ex,768,22.551,0.199762,6.259%,1157.2,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
10	140,1952,133,2,Ex,512,29.197,0.190368,5.788%,851.757,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
11	140,1952,133,2,Ex,384,32.844,0.164509,9.944%,654.325,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
12	140,1952,133,2,Ex,256,36.728,0.12848,13.503%,456.981,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
13	140,1952,133,2,Ex,192,38.457,0.105217,30.122%,357.413,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
14	140,1952,133,2,Ex,128,39.675,0.055994,41.710%,194.368,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
15	140,1952,133,2,Ex,96,40.442,0.162369,39.342%,524.427,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
16	140,1952,133,2,Ex,64,34.55,0.158163,16.756%,598.214,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
17	140,1952,133,2,Ex,48,34.65,0.710023,22.255%,2472.17,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
18	140,1952,133,2,Ex,32,34.647,0.261976,14.613%,964.012,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
19	140,1952,133,2,Ex,24,34.664,0.264591,20.415%,944.735,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
20	140,1952,133,2,Ex,16,37.485,0.265175,21.823%,851.506,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
21	140,1952,133,2,Ex,12,37.489,0.245123,25.098%,780.241,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
22	140,1952,133,2,Ex,8,39.344,0.244371,36.307%,750.057,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
23	140,1952,133,2,Ex,6,39.346,0.24194,44.200%,773.109,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
24	140,1952,133,2,Ex,4,40.418,0.310271,63.147%,1181.85,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
25	140,1952,133,2,Ex,3,40.428,0.292396,66.336%,1229.22,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
26	140,1952,133,2,Ex,2,40.975,0.496196,70.700%,2812.76,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
27	140,1952,133,2,Ex,1.5,40.997,0.58049,73.724%,3532.78,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
28	140,1952,133,2,Ex,1,41.23,0.946946,76.861%,6088.85,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2
29	140,1952,133,2,Ex,0.75,41.258,1.21694,87.949%,7920.04,375136.000,2857316.300,215.300,376047.500,2856483.600,230.000,368451.400,2846197.600,316.300,368480.2