[0,1,2,3]:

```
Tit   = total number of iterations
Tnf   = total number of function evaluations
Tnint = total number of segments explored during Cauchy searches
Skip  = number of BFGS updates skipped
Nact  = number of active bounds at final generalized Cauchy point
Projg = norm of the final projected gradient
F     = final function value

          * * *

   N    Tit     Tnf Tnint  Skip  Nact     Projg        F
   4     16      43     1     0     0   9.686D-03   1.968D+03
  F =   1968.1721401373791

CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH

 Warning:  more than 10 function and gradient
   evaluations in the last line search.  Termination
   may possibly be caused by a bad search direction.
振动源时间: -6.439043408145214 秒
振动源位置: (19494.323270970464, -45715.91925627278, 51.46081293801104) 米
```

[0,1,2,4]:

```
Tit   = total number of iterations
Tnf   = total number of function evaluations
Tnint = total number of segments explored during Cauchy searches
Skip  = number of BFGS updates skipped
Nact  = number of active bounds at final generalized Cauchy point
Projg = norm of the final projected gradient
F     = final function value

          * * *

   N    Tit     Tnf Tnint  Skip  Nact     Projg        F
   4     34      63     1     0     0   6.048D-03   1.968D+03
  F =   1968.1732520097401

CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH

 Warning:  more than 10 function and gradient
   evaluations in the last line search.  Termination
   may possibly be caused by a bad search direction.
振动源时间: -6.4687469614228466 秒
振动源位置: (19510.062096701415, -45722.888754890424, 38.06578161934918) 米
```

[0,1,2,5]:

```
Tit    = total number of iterations
Tnf    = total number of function evaluations
Tnint  = total number of segments explored during Cauchy searches
Skip   = number of BFGS updates skipped
Nact   = number of active bounds at final generalized Cauchy point
Projg  = norm of the final projected gradient
F      = final function value

          * * *

   N    Tit     Tnf  Tnint  Skip  Nact     Projg        F
   4     21      55      2     0     0    2.729D-04   1.968D+03
  F =    1968.1662231414809

CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH
振动源时间: -6.495826286569775 秒
振动源位置: (19513.52319498478, -45734.23965053486, 79.52745463813744) 米
```

[0,1,2,6]:

```
Tit    = total number of iterations
Tnf    = total number of function evaluations
Tnint  = total number of segments explored during Cauchy searches
Skip   = number of BFGS updates skipped
Nact   = number of active bounds at final generalized Cauchy point
Projg  = norm of the final projected gradient
F      = final function value

          * * *

   N    Tit     Tnf  Tnint  Skip  Nact     Projg        F
   4     34      54      1     0     0    1.951D-02   1.968D+03
  F =    1968.1630437166082

CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH
振动源时间: -6.4973104658114424 秒
振动源位置: (19514.99759691207, -45734.889648970995, 105.18246895703884) 米
```

[0, 1, 3,4]:

```
Tit    = total number of iterations
Tnf    = total number of function evaluations
Tnint = total number of segments explored during Cauchy searches
Skip   = number of BFGS updates skipped
Nact   = number of active bounds at final generalized Cauchy point
Projg = norm of the final projected gradient
F      = final function value

           * * *

   N    Tit     Tnf  Tnint  Skip  Nact     Projg        F
   4     36      66     2     0     0   4.320D-04   1.968D+03
  F =    1968.1649081193702

CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH
振动源时间: -6.530664982101498 秒
振动源位置: (19525.224322861246, -45745.722478882315, 91.62189785138327) 米
```

[0,1,3,5]:

```
Tit    = total number of iterations
Tnf    = total number of function evaluations
Tnint = total number of segments explored during Cauchy searches
Skip   = number of BFGS updates skipped
Nact   = number of active bounds at final generalized Cauchy point
Projg = norm of the final projected gradient
F      = final function value

           * * *

   N    Tit     Tnf  Tnint  Skip  Nact     Projg        F
   4     30      45     1     0     0   8.140D-03   1.968D+03
  F =    1968.1594892622143

CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH
振动源时间: -6.486350415690425 秒
振动源位置: (19510.370106256632, -45731.19519482825, 144.83955829392397) 米
```

[0,1,3,6]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[1.45581491e+01 -1.72254669e+04 -1.98936764e+03 9.59665058e+01]
振动源时间：-6.487053537444186 秒
振动源位置：(19511.019968030443, -45731.5480900967, 80.26788057589863) 米

[0,1,4,5]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]]
最初解是
[76.33568498 -2101.21692767 -6921.00741974   112.75608426]
振动源时间：-6.4421699574035465 秒
振动源位置：(19500.54749069276, -45711.32911108448, 71.55925484666861) 米

[0,1,4,6]:

```
[[-1.85572629e+04 -3.97526804e+04  8.37142857e+01  1.00767000e+02]
 [ 3.38895931e+04 -1.17144044e+04 -1.32857143e+01  1.12220000e+02]
 [ 2.72729211e+04  2.48911226e+04  1.71428571e+00  1.88020000e+02]
 [-1.75842229e+04  2.93416426e+04  1.09714286e+02  2.58985000e+02]
 [ 8.97976914e+03  6.19893857e+03  4.57142857e+01  1.18443000e+02]
 [ 3.43344114e+03  4.00228906e+04 -6.22857143e+01  2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02  1.63024000e+02]]
[[-1.85572629e+04 -3.97526804e+04  8.37142857e+01  1.00767000e+02]
 [ 3.38895931e+04 -1.17144044e+04 -1.32857143e+01  1.12220000e+02]
 [ 8.97976914e+03  6.19893857e+03  4.57142857e+01  1.18443000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02  1.63024000e+02]]
```

最初解是
`[-2.05318947e-01 -1.97268547e+04  1.63957176e+02  1.20054733e+02]`
振动源时间：-6.604907529624305 秒
振动源位置：(19541.43934993484, -45776.871461087205, 162.8872054782924) 米

[0,1,5,6]:

```
[[-1.85572629e+04 -3.97526804e+04  8.37142857e+01  1.00767000e+02]
 [ 3.38895931e+04 -1.17144044e+04 -1.32857143e+01  1.12220000e+02]
 [ 2.72729211e+04  2.48911226e+04  1.71428571e+00  1.88020000e+02]
 [-1.75842229e+04  2.93416426e+04  1.09714286e+02  2.58985000e+02]
 [ 8.97976914e+03  6.19893857e+03  4.57142857e+01  1.18443000e+02]
 [ 3.43344114e+03  4.00228906e+04 -6.22857143e+01  2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02  1.63024000e+02]]
[[-1.85572629e+04 -3.97526804e+04  8.37142857e+01  1.00767000e+02]
 [ 3.38895931e+04 -1.17144044e+04 -1.32857143e+01  1.12220000e+02]
 [ 3.43344114e+03  4.00228906e+04 -6.22857143e+01  2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02  1.63024000e+02]]
```

最初解是
`[    34.89283231 -15125.20894801  -1117.64753038     101.39561502]`
振动源时间：-6.460217554381712 秒
振动源位置：(19501.716634351655, -45722.222276555614, 65.06544723341155) 米

[1,2,3,4]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]]
最初解是
[103.12259416 17897.69169542 -4961.35457755   96.95973869]
振动源时间：-6.568143482609621 秒
振动源位置：(19530.88998830622, -45761.44464930058, 60.84242297452128) 米

[1,2,3,5]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]]
最初解是
[92.31594817 27528.96760453 -9496.11845427   95.63401847]
振动源时间：-6.435479789733859 秒
振动源位置：(19494.902195710016, -45711.22852871417, 130.81083359642994) 米

[1,2,3,6]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[49.15691301 -1526.58942674 -383.9805231   111.28638313]
振动源时间：-6.506482952165302 秒
振动源位置：(19517.668178109503, -45738.28633998894, 96.64936166336828) 米

[1,2,4,5]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]]
最初解是
[100.88880628 19685.60387657 -7421.96807447   101.18783598]
振动源时间：-6.546967998686403 秒
振动源位置：(19530.86969429456, -45751.02266478325, 92.84975204097228) 米

[1,2,4,6]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[18.31247288 -13277.41332198 -10205.48987407   103.60438322]
振动源时间：-6.4949998527926445 秒
振动源位置：(19514.773103081334, -45732.27792413253, 53.37894899620342) 米

[1,3,4,5]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
[[3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]]
最初解是
[111.22108888 18993.05354243 -3459.11382748   101.84484039]
振动源时间：-6.459291217826895 秒
振动源位置：(19509.684150581685, -45718.79047121426, 121.23493940967202) 米

[1,3,4,6]:

第0组数据的平均值和标准差是10745447.526857141 24022.729296723774
第1组数据的平均值和标准差是3066551.3324285713 32155.953754757826
第2组数据的平均值和标准差是740.2857142857143 86.61361536933404
标准化后的数据（经度、纬度、高程、时间）：
[[-1.85572629e+04 -3.97526804e+04 8.37142857e+01 1.00767000e+02]
 [3.38895931e+04 -1.17144044e+04 -1.32857143e+01 1.12220000e+02]
 [2.72729211e+04 2.48911226e+04 1.71428571e+00 1.88020000e+02]
 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
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 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[39.18599237 -5714.41773567 -1889.28644787   108.16999563]
振动源时间：-6.495215294316687 秒
振动源位置：(19514.814562904736, -45733.538118418524, 79.76558866049426) 米

[1,3,5,6]:

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 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
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 [-1.75842229e+04 2.93416426e+04 1.09714286e+02 2.58985000e+02]
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 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[59.62532932 -3670.64123177 -468.53306508   111.90871793]
振动源时间：-6.513571063567309 秒
振动源位置：(19516.357335189194, -45741.80871288033, 78.16676930040478) 米

[2,3,4,5]:

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 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]]
最初解是
[111.31420537 22711.33375327 -2194.1178853   115.08208891]
振动源时间：-6.480579570566513 秒
振动源位置：(19511.056490766656, -45727.09616847924, 87.62250756079729) 米

[2,3,4,6]:

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 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[65.96090642 2636.41535262 -969.08249945 116.72901116]
振动源时间：-6.518969847301251 秒
振动源位置：(19520.225525724534, -45742.36486510384, 94.07705302211352) 米

[2,4,5,6]:

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 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[37.52114107 -5556.14950307 -23553.52743252   142.93690903]
振动源时间：-6.537014701329881 秒
振动源位置：(19527.090373759052, -45747.47012290121, 73.87769722065184) 米

[3,4,5,6]:

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 [8.97976914e+03 6.19893857e+03 4.57142857e+01 1.18443000e+02]
 [3.43344114e+03 4.00228906e+04 -6.22857143e+01 2.66871000e+02]
 [-3.74342389e+04 -4.89875094e+04 -1.65285714e+02 1.63024000e+02]]
最初解是
[2.85988608e+01 -4.69894679e+02 -3.22782566e+04 8.81863761e+01]
振动源时间：-6.446711059720845 秒
振动源位置：(19503.198507610898, -45715.11804105975, 57.78900623019102) 米