

## Dataset description

The datasets contain vertical land motion estimates from GNSS and SATTG data. The following data (GNSS.nc and SATTG.nc) is a supplement to 'Oelsmann, J., Passaro, M., Sanchez, L., Dettmering, D., Schwatke, C., Seitz, F.: Bayesian modelling of piecewise trends and discontinuities improves coastal vertical land motion estimates'. Trends and discontinuities were estimated with DiscoTimesS (<https://github.com/oelsmann/discotimes>).

### GNSS.nc

dimensions:

x = 381; (number of stations)

cp\_dim = 15; (parameters for each time series segment are sorted along this dimension)

variables:

```
double trend(x, cp_dim) ;
    trend:_FillValue = NaN ;
    trend:long_name = "Piecewise trend (up)" ;
    trend:unit = "m/year" ;
    trend:coordinates = "lat lon ID" ;
double trend_un(x, cp_dim) ;
    trend_un:_FillValue = NaN ;
    trend_un:long_name = "Piecewise trend uncertainty (up)" ;
    trend_un:unit = "m/year" ;
    trend_un:info = "computed with plwn noise model (discotimes)" ;
    trend_un:coordinates = "lat lon ID" ;
double discontinuity(x, cp_dim) ;
    discontinuity:_FillValue = NaN ;
    discontinuity:coordinates = "ID lat lon" ;
double start_epoch(x, cp_dim) ;
    start_epoch:_FillValue = NaN ;
    start_epoch:long_name = "Start epoch of segment" ;
    start_epoch:coordinates = "lat lon ID" ;
    start_epoch:units = "days since 1950-01-01" ;
    start_epoch:calendar = "proleptic_gregorian" ;
double end_epoch(x, cp_dim) ;
    end_epoch:_FillValue = NaN ;
    end_epoch:long_name = "End epoch of segment" ;
    end_epoch:coordinates = "lat lon ID" ;
    end_epoch:units = "days since 1950-01-01" ;
    end_epoch:calendar = "proleptic_gregorian" ;
double segment_length(x, cp_dim) ;
    segment_length:_FillValue = NaN ;
    segment_length:long_name = "Segment length" ;
    segment_length:coordinates = "lat lon ID" ;
    segment_length:units = "days" ;
string ID(x) ;
    ID:long_name = "station ID" ;
double lat(x) ;
    lat:_FillValue = NaN ;
    lat:long_name = "latitude" ;
    lat:unit = "degrees_north" ;
```

```

double lon(x) ;
    lon:_FillValue = NaN ;
    lon:long_name = "longitude" ;
    lon:unit = "degrees_east" ;

// global attributes:
    :title = "DiscoTimeS estimates of piecewise trends and discontinuities from GNSS (NGL14, Blewitt et
al., 2016) time series" ;
    :information = "This work is a data supplement to \ Oelsmann, J., Passaro, M., Sanchez, L.,
Dettmering, D., Schwatke, C., Seitz, F.: Bayesian modelling of piecewise trends and discontinuities improves
coastal vertical land motion estimates\ " ;
    :usage = "Piecewise trends with durations of less than 3 years and time series with more than 2
detected changepoints should be treated with caution." ;

```

### SATTG.nc

dimensions:

```

x = 606; (number of stations)
cp_dim = 6; (parameters for each time series segment are sorted along this dimension)

```

variables:

```

double trend(x, cp_dim) ;
    trend:_FillValue = NaN ;
    trend:long_name = "Piecewise trend (up)" ;
    trend:unit = "m/year" ;
    trend:coordinates = "psmsl_ID lat lon ID" ;
double trend_un(x, cp_dim) ;
    trend_un:_FillValue = NaN ;
    trend_un:long_name = "Piecewise trend uncertainty (up)" ;
    trend_un:unit = "m/year" ;
    trend_un:info = "computed with ar1 noise model (discotimes)" ;
    trend_un:coordinates = "psmsl_ID lat lon ID" ;
double discontinuity(x, cp_dim) ;
    discontinuity:_FillValue = NaN ;
    discontinuity:long_name = "Discontinuity size" ;
    discontinuity:unit = "m" ;
    discontinuity:coordinates = "lat lon psmsl_ID" ;
double start_epoch(x, cp_dim) ;
    start_epoch:_FillValue = NaN ;
    start_epoch:long_name = "Start epoch of segment" ;
    start_epoch:coordinates = "psmsl_ID lat lon ID" ;
    start_epoch:units = "days since 1950-01-01" ;
    start_epoch:calendar = "proleptic_gregorian" ;
double end_epoch(x, cp_dim) ;
    end_epoch:_FillValue = NaN ;
    end_epoch:long_name = "End epoch of segment" ;
    end_epoch:coordinates = "psmsl_ID lat lon ID" ;
    end_epoch:units = "days since 1950-01-01" ;
    end_epoch:calendar = "proleptic_gregorian" ;
double segment_length(x, cp_dim) ;
    segment_length:_FillValue = NaN ;
    segment_length:long_name = "Segment length" ;

```

```
    segment_length:coordinates = "psmsl_ID lat lon ID" ;
    segment_length:units = "days" ;
double lat(x) ;
    lat:_FillValue = NaN ;
    lat:long_name = "latitude" ;
    lat:unit = "degrees_north" ;
double lon(x) ;
    lon:_FillValue = NaN ;
    lon:long_name = "longitude" ;
    lon:unit = "degrees_east" ;
int64 psmsl_ID(x) ;
    psmsl_ID:long_name = "PSMSL tide gauge ID" ;

// global attributes:
    :title = "DiscoTimeS estimates of piecewise trends and discontinuities from SATTG time series" ;
    :information = "This work is a data supplement to ` Oelsmann, J., Passaro, M., Sanchez, L.,
Dettmering, D., Schwatke, C., Seitz, F.: Bayesian modelling of piecewise trends and discontinuities improves
coastal vertical land motion estimates`" ;
    :usage = "Piecewise trends with durations of less than 8 years and time series with more than 2
detected changepoints should be treated with caution." ;
```