

Underground motion catalog

Underground Motion Catalog – General Description

The catalogue is a variable in the Matlab format file and it is kept in a file MAT. The structure is array with named fields that can contain data of various types and sizes. In the file there is only one variable, the file name and variable name are optional.

The format of the underground motion catalog is made in the same manner as catalog of seismic events

The variable describing the catalog is a vector of structures, consisting of fields:

- **field** – name of field in the catalog (text value);
- **type** – type of field in the catalogue and way of showing the field (numeric value);
- **val** – column array of values. For the text, the column is an array type cell with text fields. For the remaining value the column is a numeric column.
- **unit** – description of unit for individual data (text value).
- **description** – short description of the parameter (text value).
- **fieldType** – semantic meaning of the field. When some field values are similar/related then fieldType name is entered and for another case [] is entered.

The fundamental is a full catalog i.e. the variable contains the definitions of all specified fields. When some field values are missing then for the numeric data NaN (not specified) is entered and for the text null [] is entered. In the fields "ID", "Time" and at least one of the fields "PPV" values in all rows must be present.

Table The general parameters in catalogue MAT format

| field | type | unit | description | fieldType | Comments | Data format |
|--------------------|-------------|------|--|-----------|---|-------------|
| <i>RID</i> | 3 | | Registration ID | | required field. ID must be linked to name of signal accelerogram | text |
| <i>EID</i> | 3 | | Event ID | | required field. ID should be linked to catalog EID | text |
| <i>Time</i> | 5 | | Event origin time | | required field, Matlab serial numerical time | double |
| <i>SID</i> | 3 | | Station ID | | required field | text |
| <i>S_name</i> | 3 | | Station name | | required field | text |
| <i>S_Lat</i> | 24,25 | deg | Station latitude | | required field | double |
| <i>S_Long</i> | 24,25,34,35 | deg | Station longitude | | required field | double |
| <i>S_Elevation</i> | 10 | m | Station elevation | | required field | double |
| <i>R_Time</i> | 5 | days | Registration occurrence time | | required field | double |
| <i>PPV_E</i> | 13 | m/s | Peak particle velocity of E component | PV | required field | double |
| <i>PPV_N</i> | 13 | m/s | Peak particle velocity of N component | PV | | double |
| <i>PPV_V</i> | 13 | m/s | Peak particle velocity of the vertical component | PV | | double |

The Numbers of Data type:

1 – the real data without limits,

2 – the integer data,

3 – text value,

4 – the real number rounded to 0.1 (shown as 11),

5 – time in Matlab format serial time – the time display format; seconds with accuracy 1/10,

6 – the real data display in an engineering manner with one decimal place, e.g.: 3.5E6, (obsolete, recommended 2cd)

7 – the real data display in an engineering manner with two decimal place, (obsolete, recommended 2cd)

bc – (b and c are code digits) the real data display in fix-point manner with at minimum b places before decimal and c decimal place

e.g. For number 3.149.

10: „3”

11: „3.1”

12: „3.15”

20: „03”

23: „03.149”

1bc– the same manner as bc, but with place for a sign (space for sign „+”, sign - for sign „-”)

2cd– (c and d are code digits), the real data is displayed in an engineering manner, with place for a sign (space for sign „+”, sign ‘-’ for sign „-”), with c decimal place and exponent expressed by d places. The sign in exponent is always displayed.

e.g. For number 0.001:

211: „1.0E-3”

221: „1.00E-3”

212: „1.0E-03”

222: „1.00E-03”

e.g. For number 1000:

211: „1.0E+3”

221: „1.00E+3”

212: „1.0E+03”

222: „1.00E+03”

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