

# Ground motion catalog - description

## Ground Motion Catalog – General Description

The catalog is a variable in the Matlab format file and it is kept in a file MAT. The structure is an 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 ground motion catalog is made in the same manner as a 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 catalog 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 "PGA" values in all rows must be present.

**Table The general parameters in catalog MAT format**

field	type	unit	description	fieldType	Comments	Data format
<i>RID</i>	3		Registration ID		<b>required field. ID must be linked to the name of the signal accelerogram</b>	text
<i>EID</i>	3		Event ID		<b>required field. ID should be linked to catalog EID</b>	text
<i>Time</i>	5		Event origin time		<b>required field, Matlab serial numerical time</b>	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>PGA_E</i>	13	m/s <sup>2</sup>	Peak ground acceleration of E component	PGA	required field	double
<i>PGA_N</i>	13	m/s <sup>2</sup>	Peak ground acceleration of N component	PGA		double
<i>PVA</i>	13	m/s <sup>2</sup>	Peak vertical acceleration	PGA		double
<i>PHA</i>	13	m/s <sup>2</sup>	Peak horizontal acceleration	PGA		double
<i>PGA</i>	13	m/s <sup>2</sup>	Total peak ground acceleration	PGA		double
<i>RMS_A</i>	21	m/s <sup>2</sup>	Root-mean-square acceleration	PGA		double
<i>PGV_E</i>	13	cm/s	Peak ground velocity of E component	PGV		double
<i>PGV_N</i>	13	cm/s	Peak ground velocity of N component	PGV		double
<i>PVV</i>	13	cm/s	Peak vertical velocity component	PGV		double
<i>PHV</i>	13	cm/s	Peak horizontal velocity	PGV		double
<i>PGV</i>	13	cm/s	Total peak ground velocity	PGV		double
<i>RMS_V</i>	21	cm/s	Root-mean-square velocity	PGV		double

# EPOS Thematic Core Service Anthropogenic Hazards

<b>PGD_E</b>	13	mm	Peak ground displacement of E component	PGD		double
<b>PGD_N</b>	13	mm	Peak ground displacement of N component	PGD		double
<b>PVD</b>	13	mm	Peak vertical displacement component	PGD		double
<b>PHD</b>	13	mm	Peak horizontal displacement	PGD		double
<b>PGD</b>	13	mm	Total peak ground displacement	PGD		double
<b>RMS_D</b>	21	mm	Root-mean-square displacement	PGD		double
<b>AI</b>	6	m/s	Arias Intensity			double
<b>NED</b>	6	m/s^2	Normalized Energy Density			double
<b>ABD</b>	21	s	Absolute bracketed duration	Duration	A problem with absolute durations relies on that one must prescribe for them absolute criteria. Maybe they should not be included in the catalog but to implement an appropriate service to evaluate them?	double
<b>AUD</b>	21	s	Absolute uniform duration	Duration		double
<b>AED</b>	21	s	Absolute effective duration	Duration		double
<b>RBD</b>	21	s	Relative bracketed duration	Duration	For relative durations criteria must be prescribed too but here there is a general agreement for 5%	double
<b>RUD</b>	21	s	Relative uniform duration	Duration		double
<b>RED</b>	21	s	Relative effective duration	Duration		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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