Appendix L: ECOS-09 Catalogue Format

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(March 2010)

SED-internally, the catalogue is handled and stored in a relational database. The core information is in two tables: on *locations* and on *magnitudes*.

- *Location* contains information about the identity of an event, its date, location, depth, epicentral & maximum intensity, and their errors, and references to the original catalogues. Further, it contains references to the Mw(SED) and Ml(SED) available for each location. The location table allows for storage of different descriptions of the same event, of which one is primary. All primary event descriptions together define the ECOS-09 catalogue.
- *Magnitude* contains information on magnitudes, magnitude type, error class or standard deviations, calculation methods, the ID of the magnitude from which it was derived, and a link to the providing agency/catalogue. *Magnitude* usually hosts more than one magnitude for each event, including magnitudes obtained from conversions.

For issues related to the SED internal database, especially the structure and handling of macroseismic primary data (individual earthquake observations), see appendix A of the ECOS-02 report, available at http://histserver.ethz.ch/download/Ecos_AppA.pdf.

For the Pegasos Refinement Project (PRP), the content of this database is exported to 3 files:

a) the Earthquake Catalogue Of Switzerland, edition 2009 (ECOS-09), containing the most authoritative description of all earthquakes between 43 and 51°N and 3 and 13°E (including events without location but with some historical relevance for the area), including the most authoritative Mw and Ml(SED) (if available) and related uncertainties. The time period covered by the catalogue begins with the first historical earthquake reports and ends December 31, 2008. However some of the national catalogues from neighbouring countries include events only until the end of 2007, the Italian catalogue ISIDE includes events until 9.9.2007.
b) The catalogue of explosions, induced events and non-seismic events such as landslides etc. (i.e. true events but of a type different from "earthquake")
c) A list of non-existing events and erroneous catalogue entries, i.e.
    - fake events
    - events that took place at a different place or time (or both), or that are of a different type than reported by the providing catalogue.

1. The format of ECOS-09

a.1 Column *datanr*

Format: Floating-point, with a maximum of two significant digits.
Content: Location identifier, key.
Description: Unique line identifier for each location. Beyond serving as a reference, its numerical value is without further meaning.

a.2 Column *eventtype*

Format: Alphanumeric, with a maximum of 32 characters, which refer to a limited list of allowed strings (Table 1).
Content: Event type denominator.
Description: In general, this field contains a string defining the nature of the event that the location line refers to, as given by the information provider (agency/catalogue: see column *location_ag*). The list of permitted values is based on the QuakeML proposal for standard data formats for earthquake information exchange (https://quake.ethz.ch/quakeml/), with some extensions. The event classes are not mutually exclusive, but rather reflect different reporting practices. Thus, quarry blasts, nuclear and chemical explosions are all subgroups of the event type 'explosion'. However, the reporting practices of different catalogues used for ECOS-09 may vary.
For the definition of ECOS-09, besides its regional focus, *eventtype = 'EARTHQUAKE'* is the core requirement. All catalogue entries are generally stated to be earthquakes by the catalogue provider.

eventtype	**Definition**
CHEMICAL_EXPLOSION	chemical explosion
DEBRIS_AVALANCHE	debris avalanche
EARTHQUAKE	earthquake
EXPLOSION	explosion
LANDSLIDE	landslide
MINE_COLLAPSE	mine collapse
NUCLEAR_EXPLOSION	nuclear explosion
OTHER_EVENT	other
QUARRY_BLAST	quarry blast
ROCKSLIDE	rockslide
SNOW_AVALANCHE	snow avalanche
SONIC_BOOM	sonic boom
INDUCED	Induced by human activity

Table 1: list of permitted event types according to the QuakeML standard.

a.3 Column *appraisal*

Format: Integer.
Content: Interpretation of the earthquake description.
Description: Interpretation of the location information *as provided by the SED* in the context of ECOS-09. ECOS-09 only provides *EARTHQUAKES* that are rated as *"certain"* (appraisal=1), *"probable"* (appraisal=2), or *"very uncertain"* (appraisal=3) by SED. For a more detailed description, see table 2.

***appraisal* value**	**Short description**	**Definition**
1	certain	According to this description, it is certain that an event of type x occurred.
2	probable	We have no final proof that the event took place as described, but we have good reasons to assume that it did (probability > 50 %, so we could also call it uncertain). This tag is also used for events after 1975 that are located by an agency up to 20 km inside the area of authoritativeness of a different agency, but which are not reported by the potentially authoritative agency (e.g LED locates an event near Frick, less than 20 km from the German border, but SED does not locate it).
3	very uncertain	We have no reliable evidence that this event occurred, however, we cannot falsify the statements of others.

4	fake	This event did not take place, and it is not due to a known mistake in time or place of another event.
5	error in event time	The event did not occur according to this description, but it is related to an event that happened at another date/time (and possibly, another place and/or type). These errors are common for events that occurred at night as well as for events of the first centuries after the Gregorian calendar was introduced.
6	error in place	The event did not occur according to this description, but it is related to an event that happened at the same time elsewhere (beyond the error boundaries of the place indicated in the description). Note: this code does not refer to typical location errors for the time when the event happened, but it labels errors based on serious misinterpretation of data. Example for historical period: An event having caused slight damage in Fribourg (Üechtland/CH) is erroneously located to Freiburg (Breisgau/D).
7	error in event type	The event happened at the given time and place, but it was of another event type.
8	Too far from network	If an event is not reported by an agency whose seismic network covers the country where the event is located, but only by an agency from a country more than 40 km off, it is considered as not valid in the instrumental period. The event should be reported by the local network.
0	duplicate description	This catalogue line describes the same event as another one with preferred agency and with the same event_no, or with assumed less precision/reliability. Note: the distinction of appraisal 0 (duplicate) versus appraisal 5 or 6 varies over time: While a time difference of one hour in the historical part may be regarded as virtually the same (-> appraisal 0), it would clearly be considered as a timing error (appraisal 5) in the instrumental period.

Table 2: explanation of different levels of appraisal used in the database behind ECOS-09. The catalogue delivered only contains events with appraisal 1, 2, or 3.

Note on information handling:

In the SED databases, among the locations describing the same event, there is only one line with an appraisal=1, appraisal=2, or appraisal=3 allowed. This line contains the preferred description of the event.

An event near La Chaux-de-Fonds is reported at the same time by the SED (*location_ag* 20) and BCSF/RéNASS (*location_ag* 24) as a quarry blast, while it is listed in the INGV bolletino (*location_ag* 26) as an earthquake. The relevant columns in the location table will internally be stored as given in table 3. Of this information, the information with *datanr* –1051.2 is provided in ECOS-09. The information with *datanr* 30200185 is provided in the list of non-existing events and erroneous catalogue entries.

datanr	event	eventtype	appraisal	loc._ag	Lon	Lat	explanation
-1051.2	5432	Quarry blast	1	20	47.07	6.75	SED is the authoritative agency for the Swiss Jura.
2009814	5432	Quarry blast	0	24	47.15	6.72	This information is analogous to the SED location, however it is not authoritative and thus labelled as a duplicate.
30200185	5432	earthquake	7	26	47.1	6.8	INGV reports an earthquake, however we have evidence that it was a quarry blast.

Table 3: example for handling information for the same event reported by different agencies.

a.4 - a.9 Columns *year, month, day, hour, minute, second*:

Format: Integer (year, month, day, hour, minute), floating point (second).
Content: Event timing in UTC.
Description: Event timing is given in UTC, following the Gregorian calendar (from 1584 onwards), or Julian calendar (prior to 1584). The uncertainty of the event timing is given through the omission of unknown seconds, minutes, hours, or (in medieval times) even dates. However, this may not exactly reflect the timing precision of the original sources: A report of an earthquake "at the beginning of June" may be parametrized as June 1st in one contributing catalogue, while it may be given as just in June (without date) in another. In the historical part of the ECOS-09 catalogue not all agencies provide the time in UTC. If foreign catalogues cited in ECOS originally provided local time, they were converted to UTC. In the instrumental period, if an agency provided timings with seconds > 60, this was interpreted as belonging to the next minute.

a.10 – a.11 Columns *lat, lon*

Format: Floating point.
Content: Event location.
Description: The primary event location is given in latitude (degrees north) and longitude (degrees east). The number of decimal places may be influenced by coordinate conversions and is not an indicator of the precision of the location (for location error, see columns *cen* and *cee*).

Note:
For simple distance calculations in Cartesian coordinates, and for referencing to Swiss maps, latitude and longitude may be converted in meter coordinates of the Swiss national grid using the approximate conversion formulas of Swisstopo:

X_coord (left) = (600072.37+(211455.93*((([Lon]*3600)-26782.5)/10000))-(10938.51*((([Lon]*3600)-26782.5)/10000)*((([Lat]*3600)-169028.66)/10000))-(0.36*((([Lon]*3600)-26782.5)/10000)*((([Lat]*3600)-169028.66)/10000)*((([Lat]*3600)-169028.66)/10000))-(44.54*((([Lon]*3600)-26782.5)/10000)*((([Lon]*3600)-26782.5)/10000)*((([Lon]*3600)-26782.5)/10000)))

Y_coord (up) = (200147.07+(308807.95*((([Lat]*3600)-169028.66)/10000))+(3745.25*((([Lon]*3600)-26782.5)/10000)*((([Lon]*3600)-26782.5)/10000))+(76.63*((([Lat]*3600)-169028.66)/10000)*((([Lat]*3600)-169028.66)/10000))-(194.56*((([Lon]*3600)-26782.5)/10000)*((([Lon]*3600)-26782.5)/10000)*((([Lat]*3600)-169028.66)/10000))+(119.79*((([Lat]*3600)-169028.66)/10000)*((([Lat]*3600)-169028.66)/10000)*((([Lat]*3600)-169028.66)/10000)))

In case the earthquake location is unknown (or too uncertain even for a statement with a large location error), the values for *lat* and *lon* are given as 0 (zero), and a comment provides the information "not located", along with an indication of the region where observations were reported. For such earthquakes we also don't provide preferred magnitudes, even if source agencies may do so.

a..12, a.13 Columns *cen, cee*

Format: Integer (ordinal).
Content: Location uncertainty in the north-south (cen) and east-west (cee) directions.
Description: Parameters *cen* and *cee* indicate a classified location error. If the original data source gives location errors based on standard deviations, then those values are converted assuming a normal distribution and a ~ 95% probability level (2 standard deviations). For rules on estimating the location uncertainty from gap and minimum station distance of SED instrumental locations, see table 7.2 of the main report. In cases an input catalogue provided location standard deviation in parallel to gap and minimum distance, the SED rules according to table 7.2 of the main report were applied.

Used values are:

cen, cee	Location uncertainty range
0, [empty field]	Unknown
1	<= 5 km
2	<= 10 km
3	<= 20 km
4	<= 50 km
5	<= 100 km
6	> 100 km

Table 4: location uncertainty codes. Uncertainty is equal to 2 estimated standard deviations.
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a.14 Column *location_ag*:

Format: Integer (classification).
Content: Origin catalogue and agency providing the location information
Description: Reference to the original information provider for this ECOS-09 location entry.

Used values are:

location_AG	**Catalogue**	**Agency**
1	Macroseismic Earthquake Catalogue of Switzerland, edition 1999 (MECOS-99).	SED
2	Earthquake Catalogue Of Switzerland, edition 2002 (ECOS-02).	SED
3	Instrumental Earthquake Catalogue of Switzerland, edition 1999 (IECOS-99).	SED
4	Instrumental Catalogue of BGR 1968-2001, provided to ECOS-02 in 2001.	BGR
5	Macroseismic Earthquake Catalogue, 813-1995, provided by G. Leydecker in 2001.	BGR
6	Earthquake Catalogue of Baden-Württemberg 1994-2000, provided to ECOS-02 in 2001.	LED
7	Instrumental Earthquake Catalogue of Germany, provided to ECOS-02 in 2001.	University of Karlsruhe
8	NT4_1_1, 1005-1992.	Consiglio Nationale Delle Richerche, Milano
9	CSI 1.0, 1975-2001.	INGV
10	IPSN Catalogue 1356-1999, provided to ECOS-02 in 2001.	IPSN
11	LDG instrumental catalogue, 1962-1999, provided to ECOS-02 in 2001.	LDG

12	Earthquake Catalogue of Austria 1201-2001, provided to ECOS-02 in 2001.	ZAMG
13	GSHAP catalogue 1728-1992, provided to ECOS-02 in 2001.	GFZ
14	Historical Earthquake Catalogue of France, 858-1999 (SISFRANCE), provided to ECOS-02 in 2001.	F
15	Earthquake Catalogue of the International Seismological Centre, provided to ECOS-02 in 2000.	ISC
20	Earthquake Catalogue of Switzerland, edition 2009.	SED
22	CPTI04 (2004).	INGV
23	BGR catalogue 1968-07, provided to ECOS-09 in 2009.	BGR
24	RENASS/BCSF catalogue, provided to ECOS-09 in 2009	RENASS/BCSF
25	CSI 1.1 for year 2002, provided to ECOS-09 in 2009.	INGV
26	INGV Bolletino Jan 1, 2003 - April 15, 2005	INGV
27	BSI ISIDe, April 17, 2005– September 9, 2007.	INGV
28	CSI 1.1 for 1981-2001, from web with permission (2009).	INGV
29	Earthquake Catalogue of Baden-Württemberg, covering 1996-2007, provided to ECOS-09 in2009.	LED
30	Updated Earthquake Catalogue of Austria 1980-2009, provided to ECOS-09 in 2009.	ZAMG
31	CENEC, Grünthal et al. 2009	GFZ

Table 5: referenced earthquake catalogues and agencies.

a.15 Column *H*

Format: Floating point.
Content: Hypocentral depth in km.
Description: The hypocentral depth of the event as provided by the location agency; measured in km below sea level. Negative values indicate events with focal depths above sea level.

a.16 Column *CH*

Format: Integer (ordinal).
Content Uncertainty of hypocentral depth, classified.
Description: The depth error classification describes a depth error that should not be exceeded with a 95% probability. The following codes are used to classify uncertainties of the hypocentral depth assignment. For instrumental catalogues with gap and minimum distance available, the uncertainty of the hypocentral depth was estimated following the rules presented in table 7.2 of the main report.

0 or [empty field]	Unknown
1	<= 5 km
2	<= 10 km
3	> 10 km
4	Macroseismically assessed depth within ECOS-02

Table 6: Depth uncertainty classification. Uncertainty is equal to 2 standard deviations.

Note:

Within the ECOS-02 project, the focal depth of historical events was qualitatively classified into "shallow" (nominally 5 km) and "deep" (nominally 12 km) based on macroseismic data. This procedure is coded for with a statement of *CH*=4 (indicating rather a method here than an error. There is no calibration data available to analyse macroseismic error assessment methods in Switzerland). In the framework of the ECOS-09, the depth of historical events was assessed in a non-classified manner; the error of such assignments is given as *CH*=0 (unknown). The uncertainties of all macroseismic depth assignments in ECOS-02 and ECOS-09 are assumed to be large.

a.17 Column *Mw_ECOS09*

Format: Floating point.
Content: ECOS-09 preferred M_W, instrumental or converted (scaled)
Description: *Mw-ECOS09* is the earthquake size scaling measure in terms of M_W that should allow for comparability of different catalogue entries. It is derived, with decreasing priority, from:

1. M_W assignments published by Bernardi et al. (2005) (M_W derived from M_s) for the early instrumental period.
2. M_W assignments from waveform inversions provided by the authoritative location agency[1]. For SED, local Mw by Clinton is used with higher priority than Mw by Braunmiller (see http://www.seismo.ethz.ch/mt/), if it goes along with a variance reduction of 60% or more. Clinton Mw's with less than 60% variance reduction are not reported.
3. M_W calculated from M_L (SED), where M_L (SED) itself is the instrumentally measured M_L for Swiss events, or alternatively the result of a regression-based scaling of instrumental M_L (or other magnitudes, if M_L is not available) provided by a foreign agency.
4. M_W equivalent magnitude derived from the intensity field (in case of many IDPs) or from epicentral intensity (in case of < ~10 IDPs).

Note:
If in case 3, no overlapping dataset was available between Mx(foreign) and Ml(SED), a multistep regression was used (e.g. MD(INGV) → ML(INGV) → Ml(SED) fore some *bolletino*-events), or simple assumptions were needed for linking the foreign magnitudes to an Mw(SED conv.). The last case applied especially to the BGRM and Karlsruhe catalogues citing a multitude of magnitude types from different agencies with no scaling relationship to Ml(SED) of any kind available. The assumptions applied in those cases were the same as the ones used in ECOS-02, however they were interpreted in terms of Ml, and then complemented with the Ml(SED) → Mw(SED) scaling of ECOS-09. More details on magnitude homogenisation and scaling are given in appendices I, J, and K.

a.18 Column *Mw_ECOS09_ID*

Format: Integer.
Content: Foreign key to the magnitude table of the SED database, for use as reference.

[1] Note: In a small number of manually selected cases in the near-border area outside Switzerland, we provide good quality instrumental Mw assigned by SED even as a primary Magnitude for a location provided by a foreign agency, if that agency does not provide instrumental Mw, or if it is not transparent whether provided Mw are from waveform inversion or from magnitude conversion.

Description: This references the full description of *MW_ECOS09* in the SED database, including calculation method, and base magnitude ID in case of converted magnitudes.

a.19 Column *Mw_errclass*

Format: Integer (ordinal).
Content: Classified M_w(SED) uncertainty.
Description: Magnitude uncertainties for the pre-instrumental period are given in error classes. They are based on expert judgement mostly. The error classes indicate a magnitude error that is expected to be exceeded at a probability of <= 5%. The classification is as follows:

Error class code	description
0 or [no value]	unknown
1	<= 0.2 magnitude units
2	<= 0.5 "
3	<= 1.0 "
4	> 1.0 "

Table 7: Magnitude error classes. Uncertainty is equal to 2 standard deviations.

a.20 Column *Mw_stdev*

Format: Floating point (~1-2 significant digits).
Content: M_w (SED) standard deviation.
Description: Standard deviation of the magnitude error, covering the uncertainty of instrumental magnitude assessment, and potential subsequent magnitude conversion. The standard deviation is cited from the providing agency *as is*, if Mw is directly cited from that agency (this mainly applies to CPTI-04). It bases on SED assumptions and calculations, if the magnitude is calculated by SED either instrumentally or by rescaling a different magnitude type. For details on Mw error calculation, we refer to Appendix I.

Note:

Columns a.19 and a.20 are alternative error descriptions. *Mw_errclass* is preferred if an exact evaluation is not possible in a strict statistical sense (e.g., with Mm from a macroseismic field). In case general magnitude uncertainties can be estimated from catalogue comparison, standard deviations of converted magnitudes are calculated using error propagation from general input uncertainty and regression parameter uncertainty.

a.21 Column *Ml_ECOS09*

Format: Floating point.
Content: Swiss instrumental M_L or equivalent.
Description: The unified ECOS-09 M_L for foreign events is calculated whenever possible through of a regression of foreign M_L to Swiss M_L based on a common event dataset.
Ml_ECOS09 is given as an alternate earthquake scaling measure available for most events of the instrumental period.

Note:
The note on a.17 also applies to a.21.

a.22 Column *Ml-ECOS09_ID*

Format: Integer.
Content: Foreign key to the magnitude table of the SED database, for use as reference.
Description: This references to the full description of *Ml_ECOS09* in the SED database, including calculation method, and base magnitude ID in case of converted magnitudes.

a.23 Column *Ml_errclass*

Format: Integer (ordinal).
Content: Classified M_L uncertainty.
Description: Magnitude uncertainties for the pre-instrumental and early instrumental period are given in error classes. They are based on expert judgement mostly. The error classes indicate a magnitude error that is expected to be exceeded at a probability of <= 5%. The classification is given in table 7.

a.24 Column *Ml_stdev*

Format: Floating point (~1-2 significant digits).
Content: M_L standard deviation.
Description: Standard deviation of the magnitude error, covering the uncertainty of instrumental magnitude assessment, and potential subsequent magnitude conversion. The standard deviation on SED assumptions and calculations executed on a per-catalogue level, and it embraces the uncertainty of magnitude scaling, if applied. For details on M_L error calculation, we refer to Appendix K.

Notes:

- The note a.19 and a.20 also applies to a.23 and a.24.
- All Ml related magnitude scaling relations and error assessments for instrumental data were derived from data after Jan 1, 1975. In cases of purely instrumental catalogues as e.g. LDG, they were applied back to the 1960ies. In cases of catalogues that extend over a macroseismic and an instrumental period themselves, as e.g. ZAMG, we have assumed the magnitudes to be consistent over the entire time-span of the catalogue. Thus, we have applied homogeneous magnitude scaling back to the beginning of the catalogue. However, we do not provide magnitude standard deviations for the time before 1975.

a.25 Column *Io*

Format: Two-digit integer
Content: Epicentral Intensity.
Description: Characteristic intensity of the event in the epicentral region (90 means intensity 9; 100 means intensity 10). Epicentral intensity is usually given as integer intensity; some agencies also assign intermediate classes (e.g., Io=6.5 is given as 65, indicating epicentral intensity is VI to VII). In cases where Io is assigned by the SED, it normally equals the maximum intensity in the epicentral region, as long as it is reported from more than one place. Otherwise it equals to the next lower intensity (This rule is not applied in cases where only few IDPs are available and where historical evidence suggests Io = Imax). Special code numbers: 101 corresponds to *felt; 99* corresponds to *no information available.*

Note:

We did no intensity scale conversion in the framework of the ECOS-09 project. Provided intensities are predominantly EMS-98, besides this, EMS-92, MSK-81/81, MCS, and MM are present. Some data for events in the 19 th and early 20th century base on Rossi-Forel intensities that were converted to MSK in the 1970ies. For event scaling based on intensities, EMS and MSK was treated as equivalent, MCS was avoided as far as possible.

a.26 Column *Ix*

Format: Two-digit integer
Content: Maximum observed intensity.
Description: Maximum observed intensity is usually given as integer intensity (90 means intensity 9; 100 means intensity 10); however, some agencies also assign intermediate values (e.g. Ix=6.5 is given as 65, indicating maximum intensity is VI to VII). Special code numbers: 101 corresponds to *felt; 99* corresponds to *no information available.*

Note:
The note of a.25 applies also to a.26.

a.27 Column *IDP*

Format: Integer.
Content: Number of intensity data points provided by the SED.
Description: Number of intensity data points from the Macroseismic Earthquake Catalogue of Switzerland, including the macroseismic data collection of SED for the period 1878-2008, and the historical data for the time period before 1878, outlined in two volumes given as draft versions in the Appendix to the main ECOS-09 report (Schwarz-Zanetti and Fäh, 2009; see Appendix B; Gisler and Fäh, 2009; see Appendix C). This number may be different from the number of IDPs used for parameter assessment with historical earthquakes (it includes "felt" sites not used for parameter assessment, but it does not include IDPs provided by foreign agencies that were used for parameter assessment, but for which SED does not have the right of redistribution).

a.28 Column *ax*

Format: Character string (maximum of 255 characters).
Content: Event name.
Description: Event naming: the geographical place name (usually settlement, in some cases lakes or mountains) as provided by the location agency. The naming does not follow homogeneous rules. Larger events of events with a large location error tend to be named after the largest settlement in the epicentral area. Fore- and aftershocks are named consistently by assignment of the geographical name of the main event. Names listed in foreign catalogues are reported without changes.

a.29 Column *comment*:

Format: Text (unlimited length).
Content: Comments on event or location.
Description: Additional information on the nature of the event and the available information that is not reflected in the parametric part of the event description. Comments are used especially for historical events.

2. The catalogue of explosions, induced events and non-seismic events

The column format of this event list is identical to the format of the Earthquake Catalogue Of Switzerland, edition 2009. However, selection criteria are different:
The list contains events reported by the providing agency to be *of another eventtype (column b.2) than* 'EARTHQUAKE'. These are mostly explosions, especially quarry blasts or induced events (for a full list: see table 1) All events are rated with appraisal 1 (certain), 2 (probable), or 3 (very doubtful) by SED.
In instrumental times, this list describes the gap between seismically recordable events and natural seismicity. In pre-instrumental times, it reports the true nature of events, that, as a result of unclear sources or wrong interpretation, have erroneously been brought in a seismic context in some other publications.

3. The list of non-existing events and erroneous catalogue entries

The third file delivered lists 'earthquakes' that have been reported in either previous SED catalogues (such as MECOS-99, IECOS-99, ECOS-02), or in catalogues of neighbouring agencies that were merged into ECOS-09, and that were recognized as being erroneous or fake. Selection criteria for this list is an appraisal of 4 (fake event without relation to a true one), 5 (wrong event timing), 6 (wrong event location, beyond typical location uncertainties), or 7 (wrong event type). The main purpose of this list is to prevent the re-introduction of events recognized as erroneous during the work on ECOS-09 by future generations of scientists comparing ECOS-09 to previous catalogues.
The format of the list equals that of ECOS09 for the first 16 columns (c.1..c.16: time, location, depth and their uncertainties). Further, it omits information on magnitude and intensity, and gives just a location and a comment on why the event is considered as erroneous (c.17 and c.18, according to a.28 and a.29).