



## **Guidelines for filling and updating flood phenomena associated data**

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# 1 INTRODUCTION

Information on past flood events is the basis for a sound understanding of flood generating processes across Europe and for reliable predictions of future flood changes.

However, the Water Directors in 2009 concluded that as a comprehensive and consistent overview of floods and their impacts was not available for Europe and that so far overviews of the impact of floods throughout Europe was extracted from global databases. The incompleteness and sometimes incorrectness of these global databases was mentioned and the decision taken to create a European database on past floods.

In the EEA report (2010) on mapping the impact of natural hazards and technological accidents in Europe<sup>1</sup> one of the key conclusions on floods was:

*"Much information on flood events is available through global disaster databases. Nevertheless, the development of a comprehensive publicly available database of flood events and their impacts in Europe is desirable in order to strengthen disaster prevention at European level."*<sup>2</sup>

A survey in 2011 gave an overview of databases on floods and flood impacts available in different European countries, but made at the same time clear that the information could not simply be merged into one European dataset.

As EU Member States (for the EU Floods Directive<sup>3</sup>) had to report the preliminary flood risk assessments (PFRA) by 22/03/2012 to the European Commission, the Common Implementation Strategy for the Water Framework Directive Working Group on Floods commented that any efforts to create such a database could better wait until the PFRA reporting became available.

Since 2012, EEA, in collaboration with JRC and the European Topic Centres for "Climate Change Impact, Vulnerability and Adaptation" and "Inland, Coastal and Marine Waters" prepared several technical documents:

- Towards a potential European Flood Impact Database<sup>4</sup>;
- What makes flood events significant for the European policies?<sup>5</sup>; and
- Historic flood events in Europe: European case studies based on the reporting under the Floods directive<sup>6</sup>.

While the amount of information significantly increased after the reporting of the PFRA (mainly on the impacts, although often not quantified or expressed in monetary terms) as well as an improved structuring of information due to the template imposed by the Floods Directive reporting schemas, the PFRA reporting in itself is insufficient to act as the single database on European floods and flood impacts. Some observations were that:

- some of the major events available in the global databases were not reported in the PFRA reporting (partly but not only because of use of art. 13§1b);

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<sup>1</sup> <http://www.eea.europa.eu/publications/mapping-the-impacts-of-natural>

<sup>2</sup> Underlined parts of sentences are added for this document and are not in the original source.

<sup>3</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060>

<sup>4</sup> [http://cca.eionet.europa.eu/reports/EEA\\_JRC\\_ETC-CCA%20JTP](http://cca.eionet.europa.eu/reports/EEA_JRC_ETC-CCA%20JTP)

<sup>5</sup> [http://cca.eionet.europa.eu/reports/TP\\_4-2013](http://cca.eionet.europa.eu/reports/TP_4-2013)

<sup>6</sup> [http://icm.eionet.europa.eu/ETC\\_Reports/HistoricFloodEvents\\_version\\_20140620](http://icm.eionet.europa.eu/ETC_Reports/HistoricFloodEvents_version_20140620)

- the definition of a flood event was not clear (seen from the meteorology, hydrology or impacted area), leading to different starting dates and/or many events that probably have the same cause;
- the understanding of the impact categories as defined in the reporting template were not understood in the same way in all reported Member States' assessments; and
- several potential inconsistencies.

In addition, floods are not bound to administrative boundaries and no information was available about non-EU European countries. End of 2014, the creation of a European flood impact database is still at the list of open issues for the Common Implementation Strategy for the Water Framework Directive and Floods Directive Working Group on Floods.

EEA is paying an effort to compile European flood database with emphasize on characteristics such as flood severity, flood impacts, caused damage etc. Data compilation started from Flood Directive reporting but went beyond including the evidence information for other countries in Europe<sup>7</sup> from global databases EM-DAT<sup>8</sup> and Dartmouth flood observatory (DFO)<sup>9</sup>.

This document briefly describes the content of the pre-filled datasheets with info on past floods as compiled from above mentioned data sources. Main data source for the EU countries is data reported by the EU Member States under Floods Directive (FD) reporting obligation of the preliminary flood risk assessment (PFRA). Beside FD database, in first place EM-DAT and in second place DFO databases<sup>10</sup> have also been used to update flood data reported by EU countries. For non-EU countries and those using the transitional measures of the Floods Directive (more specifically art. 13§1b), data included in pre-filled excel sheets for these countries are obtained from EM-DAT and DFO databases. This database is in this document referred to as EEA past flood phenomena working database.

## **1.1 How the consultation is organised and to whom is it addressed**

This process is not part of the formal reporting under the Floods Directive, neither part of an Eionet priority data flow.

The process to correct and complement the prefilled data sheets is organised per country.

For all countries represented in the Common Implementation strategy for the Water Framework Directive and the Floods Directive working group on Floods (WG F), the national representatives and contact points.

For all EEA member countries and cooperating countries, the information is also given to the National Reference Centre (NRC) for Water Quantity (in copy to the National Focal Points (NFP)).

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<sup>7</sup> The exercise is made for all 39 EEA member countries and cooperating countries (<http://www.eea.europa.eu/about-us/countries-and-eionet/intro>), however for Liechtenstein and Malta no flood related records were available in the global databases.

<sup>8</sup> <http://www.emdat.be/database>

<sup>9</sup> <http://floodobservatory.colorado.edu/Archives/index.html>

<sup>10</sup> Where information from the floods directive (FD) reporting was available, this information is included in the data sheets. Afterwards, a check of the EM-DAT database was made to complement the missing information where possible or where no FD information was available to start the data collection. The available information was complemented by a check of DFO database. In all data sheets it is made clear where the information included is coming from.

**We expect one answer per country, coordinated amongst the relevant partners.**

As the main data source used for the prefilling is the reporting under article 4 of the Floods Directive on past floods, we expect in the first place a reaction from the countries representatives in WG F. In that case the copy to the NRC Water quantity and NFP is mainly for their information.

For those non-EU countries, not represented in WG F, we ask for an active involvement of the NRC Water quantity (under the coordination of the NFP, as necessary) to correct and complement the information.

This guideline as well as the invitation letter to correct and complement the information can be found at <http://forum.eionet.europa.eu/nrc-eionet-freshwater/library/country-review-european-floods-impact-database-2015>. However, the draft tables per country are only send by email to addressees addressed above.

## **1.2 Timing and questions**

**One excel sheet per country is expected to send back to EEA by 25 March 2015.**

For questions, both content related and technical, please e-mail to both:<sup>11</sup>

- EEA, Wouter Vanneuville ([Wouter.vanneuville@eea.europa.eu](mailto:Wouter.vanneuville@eea.europa.eu))
- ETC/ICM, Luka Snoj ([luka.snoj@tcvode.si](mailto:luka.snoj@tcvode.si))

A short explanation about the prefilled data sheets per country as well as room for questions will be provided at the meeting of WG F (10-11 March 2015).

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<sup>11</sup> Please do not email to the helpdesk for the floods directive as your question won't be handled by them.

## 2 FLOOD DATA SHEETS

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For each of the EEA member and cooperating countries<sup>12</sup> excel documents with four data sheets have been derived from EEA past flood phenomena working database. The majority of data sheets and fields are not meant to be updated by countries since they have been directly derived either from FD database or EM-DAT and DFO databases. They serve as an overview of already reported data. Special attention should be given to “FloodPhenomena\_1980” and “FloodPhenomena\_1980\_edit” data sheets as they are composed by aggregated flood event data reported under FD, EM-DAT and DFO data. These two sheets are also implemented with new attributes derived, such as assessment of flood severity and flood frequency category.

**In order to obtain more flood information, countries are asked to verify derived flood data and provide additional data in “FloodPhenomena\_1980\_edit” datasheet.**

Considering the large number of past flood events (more than 15 000 since year 1000) reported into FD database, just the events which occurred in 1980 and after have been selected and extracted into excel data sheets.

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<sup>12</sup> With the exception of Liechtenstein and Malta where no information is available.

## 2.1 Flood overview data

First excel sheet “CC\_Overview\_1980” consists of summarized data overview on national level as reported by countries under FD. *No changes or additions in this sheet are expected.*

The purpose of this sheet is to provide an aggregated overview of the flood data. Since data in this table was extracted from flood event and flood phenomena data, no additional updates or comments are expected from countries. Nevertheless, if inconsistencies between national data and “CC\_Overview\_1980” data have been detected, countries are kindly asked to comment flood phenomena associated data presented in “FloodPhenomena\_1980” and “FloodPhenomena\_1980\_edit” data sheets.

Table consists of the following attributes:

- **Cc** – Country code;
- **FloodPhenomena** – Sum of derived flood phenomena<sup>13</sup>;
- **FloodEvents** – Sum of all past flood events reported for the period since 1980 under FD;
- **FloodLocations** – Sum of all past flood locations reported for the period since 1980 under FD;
- **FE\_1980\_1989** – Sum of all flood events which occurred between 1980 and 1989 (reported under FD);
- **FE\_1990\_1999** – Sum of all flood events which occurred between 1990 and 1999 (reported under FD);
- **FE\_2000\_and\_later** – Sum of flood events which occurred in 2000 and later (reported under FD);
- **Fatalities\_SUM** – Sum of reported fatalities as a direct consequences of floods in the period since 1980 (as reported in FD, EM-DAT and DFO<sup>14</sup>);
- **ReportedDamage** – The total damage cost in € (as reported in FD, EM-DAT and DFO).
- **DataSources** – Sources of derived data content.<sup>15</sup>

Figure 1: Overview of the reported flood data.

	A	B	C	D	E	F	G	H	I	J
1	cc	FloodPhenomena	FloodEvents	FloodLocations	FE_1980_1989	FE_1990_1999	FE_2000_and_later	Fatalities	ReportedDamage	DataSources
2	XK	74	272	272	22	56	194	44	3629418000	EM-DAT,FD,DFO

“CC\_Overview\_1980” sheet consist of data reported under FD, EM-DAT and DFO. Since »FloodEvents«, »FloodLocations«, »FE\_1980\_1989«, »FE\_1990\_1999« and »FE\_2000\_and\_later« fields are derived from the FD database, they do not contain any information for the countries which have not reported flood data under FD.

<sup>13</sup> For more info on flood phenomena aggregation method see chapter 2.3.

<sup>14</sup> For the FD all information available from 1980 onwards, for EM-DAT and DFO all information from 1980 until 2012). EM-DAT information only used where no FD reported number is available, DFO information only used when no FD information neither EM-DAT information is available to avoid double counting.

<sup>15</sup> See previous comment.

## 2.2 Flood event data reported under FD

FD database consists of flood event associated data as reported by 21 EU Member States<sup>16</sup>. Data has been compiled into a new “FloodEvent\_1980” table which consists of those selected attributes EEA is paying special attention to (frequency, recurrence, damage, fatalities, flood location, unit of management, environmental consequences etc.). *No changes or additions in this sheet are expected.*

Table consists of the following attributes:

- **Cc** – Country code (as reported under FD);
- **FloodEventCode** – Flood event code (as reported under FD);
- **NameofFloodEvent** – Name of flood event (as reported under FD);
- **FloodLocationCode** – Flood location code (as reported under FD);
- **FloodLocationName** – Flood location name (as reported under FD);
- **EUUOMCode** – Unique EU code for the unit of management (as reported under FD);
- **FloodPhenomenaID** – Unique flood phenomena ID code which is assigned to one or numerous flood events considering overlapped flood event duration periods (designated by EEA);
- **Year** – Flood event occurrence year (as reported under FD);
- **Month** – Flood event occurrence month (as reported under FD);
- **Day** – Flood event occurrence day (as reported under FD);
- **DurationofFlood** – Flood duration in days (as reported under FD);
- **Recurrence** – The average number of years between floods of a certain size (as reported under FD);
- **Frequency** – The statistical prediction of years between certain flood magnitude events (as reported under FD);
- **Area** – Area in km<sup>2</sup> (as reported under FD);
- **SourceOfFlood** – Source of flood (as reported under FD);
- **Fatalities** - Number of individuals fatality affected as direct consequence of flood (as reported under FD);
- **Degree\_TotalDamage** – The total damage cost in Euros for the flood event (as reported under FD);
- **Degree\_TotalDamageClass** – The total damage defined by classes: Insignificant (I), Low (L), Medium (M), High (H) and Very high (VH) (as reported under FD);
- **Consequence\_Environment** – Information on potential adverse consequences on environment (as reported under FD);
- **Consequence\_Economic** – Information on potential adverse consequences on economic sectors (as reported under FD).

Data in this sheet is a compilation of different flood event associated data reported under the FD. Since attributes were directly derived from data reported under FD, no additional updates or

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<sup>16</sup> Flood data (PFRA) available (at least partly) for Austria, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Greece, Spain, Finland, France, Croatia, Ireland, Lithuania, Luxembourg, Latvia, Poland, Romania, Slovenia, Slovakia and United Kingdom.



comments are expected from countries. The Flood event table example is illustrated on Figure 2 and Figure 3. The table is empty for those countries which have not reported past flood data as part of the PFRA under the FD<sup>17</sup>.

**Figure 2: Selected flood event associated data (Left part of the table).**

	A	B	C	D	E	F	G	H	I	J
1	cc	FloodEventCode	NameofFloodEvent	FloodLocationCode	FloodLocationName	EUUOMCode	FloodPhenomenalD	Year	Month	Day
2	XX	EventCode_1	EventName_1	Location_Code_1	Location_Name_1	XX1000	XX-1982-01-31	1982	1	31
3	XX	EventCode_2	EventName_2	Location_Code_2	Location_Name_2	XX1000	XX-1982-01-31	1982	1	31
4	XX	EventCode_3	EventName_3	Location_Code_3	Location_Name_3	XX1000	XX-1982-01-31	1982	1	31
5	XX	EventCode_4	EventName_4	Location_Code_4	Location_Name_4	XX1000	XX-XX7000017	1983		
6	XX	EventCode_5	EventName_5	Location_Code_5	Location_Name_5	XX1000	XX-XX4009500	1983	6	
7	XX	EventCode_6	EventName_6	Location_Code_6	Location_Name_6	XX2000	XX-1985-05-17	1985	5	17
8	XX	EventCode_7	EventName_7	Location_Code_7	Location_Name_7	XX2000	XX-1985-08-06	1985	8	6
9	XX	EventCode_8	EventName_8	Location_Code_8	Location_Name_8	XX2000	XX-1985-08-06	1985	8	6

**Figure 3: Selected flood event associated data (Right part of the table).**

	K	L	M	N	O	P	Q	R	S	T
1	DurationofFlood	Recurrence	Frequency	Area	SourceOfFlood	Fatalities	Degree_TotalDamage	Degree_TotalDamageClass	Consequence_Environment	Consequence_Economic
2	10	20	<30		Fluvial		50000 H		Protected Areas,Pollution Sources	Rural Land Use
3			30		Fluvial	1	Not Applicable	M	Pollution Sources,Protected Areas	Rural Land Use,Infrastructure
4			<30		Fluvial		Not Applicable	I	Environment	Not Applicable
5		100	Unknown		Fluvial		Not Applicable	I	Environment	Economic
6	15		100-300		Fluvial		100000 VH		Waterbody Status	Infrastructure
7	1		Unknown		Fluvial		Not Applicable		Protected Areas	Economic
8	2		100		Fluvial	10	Not Applicable		Not Applicable	Property
9	2	5	100		Fluvial	2	Not Applicable	L	Not Applicable	Not Applicable

<sup>17</sup> Either because they used the transition measure of art. 13§1b) of the FD, they are not part of the EU and so no reporting under the FD is available or for other reasons.

## 2.3 Flood phenomena data

Due to the fact that definition of flood event distinguishes from countries to countries, they were aggregated on higher, Flood phenomena level<sup>18</sup>. This has been done because flood events as reported by countries under FD, are not always singular hydrological/flood phenomena but are in many cases reported as numerous flood events within the same (or overlapped) time periods.

Flood events as reported by countries were united into groups where each group presents distinct hydrological phenomenon. Such units were distinguished by grouping the events with the same or overlapped time periods into a singular unit named Flood phenomena.

Flood phenomena unit was designated using the following methodology:

- All flood events with overlapped duration periods within one country were grouped into the same flood phenomena unit (red circle on the Figure 4 below).
- Flood events which time period is not overlapped with any other flood events are treated as flood phenomena which consist of exactly one flood event (blue circle on the picture below).
- Flood Events with unknown start date are remaining singular events and are treated as Flood phenomena which consist of not more than one flood event.
- If flood event (FE6 on Figure 4) started and ended within duration of another flood event (FE7 on Figure 4), they were grouped into the same flood phenomena.
- Flood Events with known start date but unknown duration and end date were treated as Flood Events with duration period equal to one day. If their time extent overlapped with other Flood Events they have been grouped into the same Flood phenomena.

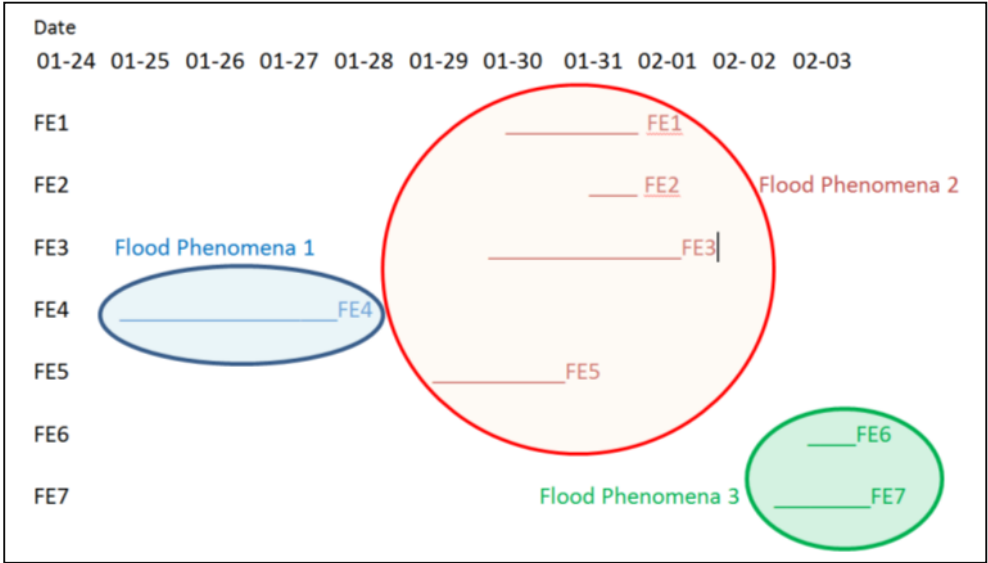
Flood Phenomenon in many cases consists of more than one flood event. In such cases corresponding attributive data such as fatalities and damage have also been grouped / summed up.

No data aggregations have been performed on EM-DAT and DFO flood data since flood duration periods within these databases are not overlapping.

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<sup>18</sup> Flood phenomenon is understood as distinct hydrological situation which can occur on several, spatially separated locations within one or many river basins.

Figure 4: Flood phenomena aggregation scheme.



### 2.3.1 “FloodPhenomena\_1980” data sheet

“FloodPhenomena\_1980” data sheet compiles aggregated flood event data reported under FD and data obtained from EM-DAT and DFO flood databases. The purpose of this data sheet is to provide information which flood events and other associated data reported under FD (e.g. flood locations) have been aggregated into distinct Flood phenomena unit. New records from EM-DAT and DFO databases have been inserted to this table for countries which have not reported under FD and also for countries which have reported under FD<sup>19</sup>. Flood phenomena table example is illustrated on Figure 2 and Figure 3.

*No changes or additions in this sheet are expected. However, as the data in this sheets are processed and combine the raw information, countries are provided with the possibility to give comments in the field ‘CountryComments’<sup>20</sup>.*

Attributes on fatalities and reported damage with no reported data have updated with EM-DAT and DFO databases.

Table consists of the following attributes (“to be filled” fields are coloured red):

- **Cc** – Country code;
- **FloodPhenomenaID** – Unique code assigned to every flood phenomena unit. First two characters of the code are equal to country code “XX”, while 4-13 characters are equal to phenomena “StartDate” (as reported in FD, EM-DAT or DFO databases). If beginning of flood phenomena is not known, “StartDate” is replaced with “FloodEventCode” as reported in FD database;
- **Year** – Year of flood phenomena occurrence;
- **StartDate** – Beginning of flood phenomena. Attribute is equal to start date of the oldest flood event in flood phenomena group or to flood beginning as reported in EM-DAT and DFO databases;
- **EndDate** – Flood phenomena end date. Attribute is equal to end date of the youngest flood event in flood phenomena group or to flood end date as reported in EM-DAT and DFO databases;
- **FP\_Duration** – Flood phenomena duration. Duration is expressed as difference between flood phenomena “StartDate” and “EndDate” in days;
- **FloodEventCode** – Flood events codes. List of flood events grouped in corresponding flood phenomena group. If flood phenomena data source is EM-DAT or DFO this value is empty;
- **Number\_FE** – Number of flood events in flood phenomena group. If flood phenomena data source is EM-DAT or DFO this value is equal to 0;
- **FloodLocationCode** – Flood locations codes. List of flood locations grouped in distinct flood phenomena. If flood phenomena data source is EM-DAT or DFO this value is empty;

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<sup>19</sup> EM-DAT and DFO databases have been cross-checked with FD database. EM-DAT and DFO floods with no match (match was based on overlapped flood time periods) in FD database have been inserted into “FloodPhenomena\_1980” datasheet as new records.

<sup>20</sup> Only fields described in red in *FloodPhenomena\_1980” data sheet* and *“FloodPhenomena\_1980\_edit” data sheet* can be edited and changed.

- **Number\_FL** – Number of flood locations in flood phenomena group. If flood phenomena data source is EM-DAT or DFO this value is equal to 0;
- **EUUOMCODE** – EUUOMCODE codes. List of EU units of management grouped in flood phenomena group. If flood phenomena data source is EM-DAT or DFO this value is empty;
- **EnvironmentImpact** – Types of flood consequences on environment as reported by countries under FD;
- **EconomicImpact** – Types of flood consequences on economic sectors as reported by countries under FD;
- **Source** – Primary data source;
- **OtherSources** – Secondary data sources (used to update missing primary source data);
- **CountryComments** – Country comments. Since this is a new attribute introduced by EEA, all the values are by default empty. In this field countries can comment consistency of flood event data aggregated into flood phenomena (max 500 characters). If countries have no comments in regard to aggregation field should remain empty.

Figure 5 Flood phenomena data (left part of the table).

	A	B	C	D	E	F	G	H	I	J
1	cc	FloodPhenomenaID	Year	StartDate	EndDate	FP_Duration	FloodEventCode	Number_FE	FloodLocationCode	Number_FL
2	XX	XX-1980-06-15	1980	1980-06-15	1980-06-29	14	XX_6000_P	1	XX_6000_L	1
3	XX	XX-1980-07	1980					0		0
4	XX	XX-1980-07-11	1980	1980-07-11	1980-07-20	9	XX_6001,XX_6002,XX_2001,XX1980	3	XX_6001L,XX_6002L,XX_2	3
5	XX	XX-1980-07-23	1980	1980-07-23	1980-08-05	13	XX_2000_P_1980_0044_0060,XX_2000	29	XX_2000_000226352_15	29
6	XX	XX-1980-08-31	1980	1980-08-31	1980-09-27	27	XX_2000_P_1980_0045_0004,XX_2000	4	XX_2000_000022352_10	4
7	XX	XX-1981-03-13	1981	1981-03-13	1981-03-14	1	XX_2000_P_1981_0046_0002	1	XX_2000_000000029_00	1
8	XX	XX-1982-01	1982					0		0
9	XX	XX-1982-01-08	1982	1982-01-07	1982-03-09	61	XX_2000_P_1982_0047_0003,XX_2000	6	XX_2000_000027369_08	6

Figure 6: Flood phenomena data (right part of the table).

	K	L	M	N	O	P	Q
1	EUUOMCode	EnvironmentImpact	EconomicImpact	Source	OtherSources	CountryComments	
2				EM-DAT			
3	XX1000			FD			
4				EM-DAT			
5				EM-DAT			
6	XX1000		EconomicOverall	FD			
7	XX1000			FD	Data on Fatalities obtained from EM-DAT		
8	XX1000			FD			

Country Comments  
In this field country can comment consistency of flood event data aggregated into flood phenomena (max 500 characters)

Countries cannot update “FloodPhenomena\_1980” table (except “CountryComments” field) since the table consists of aggregated data reported under FD and data obtained from EM-DAT and DFO databases. Since the aggregation of flood events into flood phenomena was rather a pragmatic process, countries are encouraged to comment consistency of aggregated data with their national data and knowledge and put their observations / suggestions in field “CountryComments”.

This table should not be updated by countries since consists aggregated data reported under FD and data obtained from EM-DAT and DFO databases. Nevertheless, countries can comment consistency of aggregated data according to their national data and knowledge and put their observations / suggestions in field “CountryComments”.

### 2.3.2 “FloodPhenomena\_1980\_edit” data sheet

The content of this data sheet is actually extension of “FloodPhenomena\_1980” data sheet. The majority of the fields in this data sheet are empty since “FloodPhenomena\_1980\_edit” sheet has been prepared as table form. **Countries are invited to provide additional data and fill empty parts of the table** if possible. Since special focus is given to environmental flood phenomena characteristics, a significant share of “to be filled” fields are associated with environmental issues. Most of the “to be filled” fields have been applied constrained editing freedom<sup>21</sup>. Flood phenomena data on fatalities and reported damage were updated with EM-DAT and DFO databases<sup>22</sup>.

**The amount of the derived flood phenomena is still considerably high for some countries (Poland, France, Spain etc.). In such cases, countries should primarily focus on those flood phenomena which flood severity was assessed as Very High.**

The table consists of the following attributes (“to be filled” fields are marked with red colour and supported with figures):

- **Cc** – Country code;
- **FloodPhenomenaID** – Unique code assigned to every flood phenomena unit. First two characters of the code are equal to country code “XX”, while 4-13 characters are equal to phenomena “StartDate” (as reported in FD, EM-DAT or DFO databases). If beginning of flood phenomena is not known, “StartDate” is replaced with “FloodEventCode” as reported in FD database;
- **FP\_Extension** - Flood phenomena extension. Since this is a new attribute introduced by EEA, all the values are by default empty. Following categories are at disposal from a dropdown list: “Local” (L), “Regional” (R), “National” (N) and “International” (I).

Figure 7: FP\_Extension.

	B	C	D
1	FloodPhenomenaID	FP_Extension	FrequencyCategory
2	AT-1980-10-13		
3	AT-1982-01-31		
4	AT-1982-05-18		
5	AT-1983-09-22		
6	AT-1985-05-17	L	
7	AT-1985-08-06	R	Very Rare
8	AT-1987-07-01	I	Very Rare

<sup>21</sup> Some fields can be edited just with numerical values while dropdown lists have been applied to majority of the “to be filled” fields, limited character length have been applied to textual fields.

<sup>22</sup> If data on fatalities or reported damage (€) is not available in FD and the Flood Phenomenon match is found in EM-DAT, data from EM-DAT is kept. When data is not available either in FD or EM-DAT databases and the Flood Phenomenon match is found in DFO database, data from DFO is obtained. Since damage is in EM-DAT and DFO database reported as USD (\$), the values were converted into euros (€). The currency with the exchange rate (1 USD= 0.79 €) from 13 Oct. 2014 was applied. Source of the currency exchange rate is European Central Bank.

- FP\_Severity** – Flood phenomena severity. Flood severity is assessment of Flood phenomena magnitude considering the values on flood frequency, damage category, number of flood events within one flood phenomena and severity classes as reported in DFO database. To each flood phenomenon, one of severity categories (Very High, High, Moderate) was assigned. Flood severity categories are not supposed to be directly modified / changed by the Member States. Nevertheless, Member States are welcomed to reconsider and change the values reported under fields “FrequencyCategory”, “Degree\_TotalDamageClass” and “Fatalities” within “FloodPhenomena\_1980\_edit” data sheet which are used in flood severity assessment process;
- Frequency** – Flood phenomena return period. This field consist of aggregated FD, EM-DAT and DFO frequency and recurrence data. If frequency data was not at disposal in FD database, data on recurrence was obtained. If more than one category (e.g. Very rare, Rare) were assigned to one Flood Phenomenon the most severe category was obtained (e.g. Very Rare). Field values can be updated by the countries. Following categories are at disposal considering the statistical prediction of years between certain flood magnitude phenomena: 0-10 years = “Frequent”, 11-50 years = “Rare” and >50 years = “Very Rare”. If frequency cannot be assessed field should remain empty.

Figure 8: FrequencyCategory.

	B	C	D
1	FloodPhenomenaID	FP_Extension	FrequencyCategory
2	AT-1980-10-13		
3	AT-1982-01-31		Rare
4	AT-1982-05-18		
5	AT-1983-09-22		
6	AT-1985-05-17		Frequent Rare Very Rare
7	AT-1985-08-06		

- Area** - Flood phenomena area. Extent by the flood inundated land in km<sup>2</sup>. Field can be filled / updated by the countries (just numeric values are allowed to enter). If affected area cannot be assessed, field should remain empty. The number in the field equals to sum of reported flood events areas within flood phenomena.

Figure 9: Area.

C	D	E	F
FP_Extension	FrequencyCategory	Area	Fatalities
	Rare		

- **Fatalities** – Number of fatalities caused by the flood. Field can be filled / updated by the countries (just numeric values are allowed to enter). If no fatalities were caused by the flood the reported value should be 0. If the fatality value is not known field should remain empty. The number in the field equals to sum of reported flood events fatalities within flood phenomenon.

Figure 10: Fatalities.

D	E	F	G
FrequencyCategory	Area	Fatalities	Degree_TotalDamage
Rare	Fatalities Number of individual fatality as direct consequence of flood.	<input type="text"/>	
		7	

- **Degree\_TotalDamage** – The total damage cost in Euros caused by the flood. Field can be filled / updated by the countries (just numeric values are allowed to enter). If no damage was caused by the flood the reported value should be 0. If damage is not known field should remain empty. The number in the field equals to sum of reported flood events damages on flood phenomenon basis. Missing data have been updated with EM-DAT and DFO databases.

Figure 11: Damage in euros.

F	G	H
Fatalities	Degree_TotalDamage	Degree_TotalDamageClass
		H
	<input type="text"/>	Total Damage in Euros Total damage in euros
8		
	525000	

- **Degree\_TotalDamageClass** – The total damage defined by classes. This field consists of aggregated FD damage class data. If more than one category (e.g. VH, M) were assigned to one Flood Phenomenon the most severe category was obtained (e.g. VH). Following categories are at disposal from a dropdown list: “I” (Insignificant), “L” (Low), “M” (Medium) and “H” (High) and “VH” (Very High).

Figure 12: Damage in classes.

G	H	I
Degree_TotalDamage	Degree_TotalDamageClass	ProtectedAreas
	H	
	<input type="text"/>	
	<div>           Damage Class            Damage defined by classes:            Insignificant            Low            Medium            High            Very High         </div> <div>           I            L            M            H            VH         </div>	



- Figure 13: Floods on protected areas.**

- ConseqProtectedAreas** - Level of negative consequences to protected areas (affected protected areas were identified in field "ProtectedAreas"). Since this is a new attribute introduced by EEA, all the values are by default empty. Following categories are at disposal from a dropdown list: "N" (Not relevant), "L" (Low), "M" (Medium) and "H" (High).

**Figure 14: Level of negative consequences to protected areas.**

## Guidelines for filling and updating flood phenomena associated data

- **PollutionSources** – Floods on potential pollution sources. Since this is a new attribute introduced by EEA, all the values are by default empty. Following categories are at disposal from a dropdown list: “I” (IPPC - Integrated pollution prevention and control), “S” (Seveso), “YC” (IPPC and Seveso), “PO” (Point or diffuse) and “N” (None). If flood phenomenon occurred on one of the listed potential pollution sources it should be chosen from the dropdown list. More textual information in regard to pollution sources can be provided in field “AdditionalEnvironmentInfo”.

	J	K	L
1	ConseqProtectedAreas	PollutionSources	ConseqPollutionSources
2	N	S	
3	L		
4	M		
5		I	
6		S	
7		IS	
		PD	
		N	

**Figure 16: Consequences on pollution sources.**

- **WaterbodyStatus** – Consequences on ecological or chemical water body status. Since this is a new attribute introduced by EEA, all the values are by default empty. Following categories are at disposal from a dropdown list: “NR” (Effect is not relevant), “P” (Positive Effect), “NL” (Negative Low Effect), “NM” (Negative Medium Effect) and “NH” (Negative High Effect).

Figure 17: Consequences on ecological or chemical water body status.

L	M	N
ConseqPollutionSources	WaterbodyStatus	AdditionalEnvironmentInfo
N	NR	Effect on Water Body Status Consequences on ecological or chemical water body status NR=Not relevant P=Positive effect NL=Negative Low NM=Negative Medium NH=Negative High
	NL	
	NR P NL NM NH	

- **AdditionalEnvironmentInfo** - Other flood consequences on environment or additional information regarding protected areas, pollution sources and water bodies. Since this is a new attribute introduced by EEA, all the values are by default empty. Free text can be entered (text length is constrained to 100 characters).

Figure 18: Additional environment information.

M	N	O
WaterbodyStatus	AdditionalEnvironmentInfo	Property
NR		Additional Environmental Info (Other flood consequences on environment or additional info (max 100 characters))
NL		

- **Property** - Level of negative consequences to property (including homes). Since this is a new attribute introduced by EEA, all the values are by default empty. Following categories are at disposal from a dropdown list: “N” (Not relevant), “L” (Low negative consequences), “M” (Medium negative consequences) and “H” (High negative consequences).

Figure 19: Negative consequences to property.

N	O	P
AdditionalEnvironmentInfo	Property	RuralLandUse
	L	Property Level of negative consequences to property (including homes): N=Not Relevant L=Low M=Medium H=High
	N L M H	

- Figure 20: Negative consequences to uses of the land.**

	O	P	Q
	Property	RuralLandUse	EconomicActivity
L	N		Rural Land Use Level of negative consequences to uses of the land: N=Not Relevant L=Low M=Medium H=High
N			
L			
M			
H			

- Figure 21: Negative consequences to sectors of economic activity.**

P	Q	R
RuralLandUse	EconomicActivity	OtherEconomicActivity
N	M	<div> <div>Economic Activity</div> <div>Level of negative consequences to sectors of economic activity:</div> <div>No/Not Relevant</div> <div>Low</div> <div>Medium</div> <div>High</div> </div>
N		
L		
M		
H		

- Figure 22: Additional information regarding economic activities.**

Q	R	S
<b>EconomicActivity</b>	<b>OtherEconomicActivity</b>	
M		Other Economic Activity Other flood consequences on economic sectors or additional info (max 100 characters)

### **3 CONCLUSION**

To better understand flood generating processes across Europe and to better the variety of possible consequences in the future, a sound understanding of the past floods is necessary. Compilation of comprehensive, reliable and extensive flood database is therefore very important step in flood phenomena understanding.

A prefilled collection of information is made available for commenting, correction and complementing with the aim to get a first version of a European flood impact database that summarizes selected fields from the reporting under the PFRA as well as data available in selected global databases.

The information is in most cases structured in descriptive categories, rather than requesting exact (economic) numbers and values as this information. The reasons are plentiful, including the fact the exact numbers are seen as more sensitive information and the fact that a much more thorough homogenisation and normalisation to come to a European overview will be needed.