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GDACS – Global Flood Observatory

Technical document

DRAFT

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Centre

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Executive Summary

Floods impact over half a billion people every year worldwide, a number that might increase to two billion by 2050. In general, one third of humanitarian aid goes to flood related disasters. In recent years, much progress has been made in monitoring floods using satellite remote sensing and meteorological and hydrological modelling. Yet, a global flood monitoring & modelling system able to forecast, measure, map and monitor floods for rapid estimation or forecasting of the potential humanitarian and/or economic impact does not yet exist.

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1 Introduction

The system allows a distributed group of moderators to maintain a list of ongoing floods. The system aims at expanding the current methodology of the Dartmouth Flood Observatory, maintaining the same procedures and quality assurance, but sharing the work over interested agencies.

2 User interface

2.1 Data retrieval

The **Flood Events archive** page will show all the events recorded, **searchable** by word and **sortable**.

The screenshot shows the 'Latest floods' page of the Flood Events archive. At the top, there is a search bar with the text 'Search For:' and a 'GO' button. Below the search bar, there are links for '1 2 3 4 Next'. The main content area is titled 'Events archive' and contains a table of flood events. The table has columns for 'Glide', 'Class', 'Severity', 'Locations', 'Date', and 'Impact'. The first row shows a flood in villa borghese with a severity of 12 and a location of 34 km². The second row shows a flood in danimarca with a severity of 9 and a location of km². The third row shows a flood in Finland with a severity of 2 and a location of km². The fourth row shows a flood in messico with a severity of 1 and a location of km². The fifth row shows a flood in Peru with a severity of 0 and a location of km². To the right of the table, there is a map of the affected area, showing a red polygon indicating the flood zone. The map is titled 'Episode from 04/03 to' and includes a 'Mappa' button. Below the map, there is a sidebar with event details, including 'eventid 9', 'episoid', 'glide', 'locations Finland', 'began 3/4/2014 10:03:24 AM', 'ended', 'duration', 'dead', 'displaced', 'damage', 'recurrence', 'severity', 'ha', 'hayden', 'sqkm', 'magnitude', 'modis', 'longitude', 'latitude', 'active', 'alertscode', 'alertlevel orange', 'status', 'datemodified', 'alertsent', 'notes', 'version', 'causeCode raining', and buttons for 'PUBLISH' and 'PRINT'.

By clicking a single event (row) the **detail of the latests information published** will be shown.

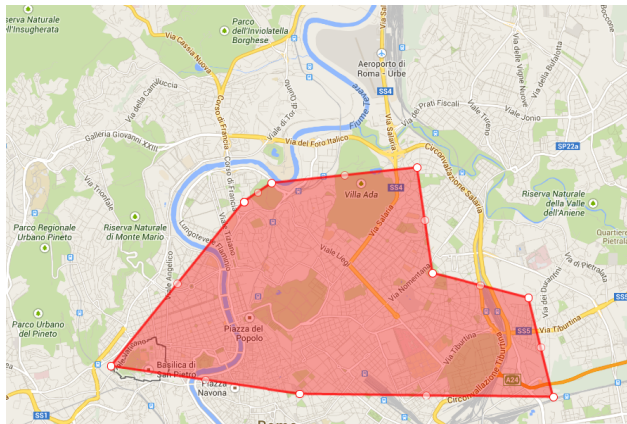
+ Information on Losses

+ Related resources (links, documents..)

2.2 Data entry

2.2.1 INSERT new event:

1 step: draw on map:



2 step: insert information

Map	Info	Impact	Hydrology
Episodeid <input type="text" value="123"/>			
Automatically determined by the system			
Glide <input type="text" value="glide 12 red"/>			
Button to automatically create a new GLIDE			
<input type="checkbox"/> Locations			
Countries	<div><div>Africa</div><div>Asia</div><div>Europe</div><div>North America</div><div>Oceania</div><div>South America</div></div>	<div><div>></div><div><</div><div>>></div><div><<</div></div>	<div><div></div></div>
Rivers	<div><div>Abakan</div><div>Abukuma</div><div>Acaponeta</div><div>Adour</div><div>Adycha</div><div>Agadez</div></div>	<div><div>></div><div><</div><div>>></div><div><<</div></div>	<div><div></div></div>
Locations	<div><div>flood in villa borghese</div></div>		
<input type="checkbox"/> Please enter the start date of the flood, according to the DFO methodology.			
Start date	<input type="text" value="1/28/2014 12:00:00 AM"/>	<input checked="" type="radio"/> Exact	<input type="radio"/> Estimated
End date	<input type="text" value="1/28/2014 12:00:00 AM"/>	<input checked="" type="radio"/> Exact	<input type="radio"/> Estimated <input type="radio"/> Ongoing
<div><div>Save</div><div>Cancel</div></div>			

3 save draft

An **email** will be sent to validator

- **Publication workflow: VALIDATE and Publish drafts**
- **Trace user and timestamp**
- **VIEW Event History**
The software will create automatically version history every time an event will be updated.
- **Automatic notification (email)**

2.2.2 UPDATE Ongoing Event

3 Data Model

The data model is design in order to keep trace and history of each single events:
it keep keep trace of **single episode**

- **related losses** and loss value
- **related resources:** useful links ad documents

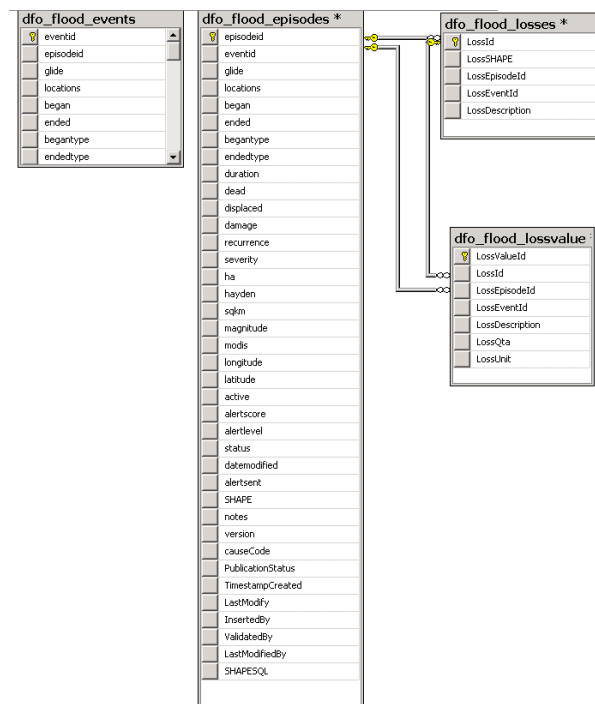


DIAGRAM: to be replaced

[dfo_flood_events]

```
[eventid] [int] IDENTITY(1,1) NOT NULL,  
[episodeid] [int] NULL,
```

(...)

Other fields will be retrived from the latest [dfo_flood_episodes] record validated

[dfo_flood_episodes]

```
[episodeid] [int] IDENTITY(1,1) NOT NULL,  
[eventid] [int] NULL,  
[glide] [varchar](255) NULL,  
[locations] [varchar](max) NULL,  
[began] [datetime] NULL,  
[ended] [datetime] NULL,  
[begantype] [varchar](50) NULL,  
[endedtype] [varchar](50) NULL,  
[duration] [int] NULL,  
[dead] [int] NULL,  
[displaced] [int] NULL,  
[damage] [varchar](255) NULL,  
[recurrence] [int] NULL,  
[severity] [int] NULL,  
[ha] [numeric](10, 2) NULL,  
[hayden] [varchar](255) NULL,  
[sqkm] [numeric](10, 2) NULL,  
[magnitude] [numeric](5, 2) NULL,  
[modis] [varchar](255) NULL,  
[longitude] [numeric](8, 3) NULL,  
[latitude] [numeric](8, 3) NULL,  
[active] [bit] NULL,  
[alertscore] [numeric](5, 2) NULL,  
[alertlevel] [varchar](255) NULL,  
[status] [varchar](255) NULL,  
[datemodified] [datetime] NULL,  
[alertsent] [datetime] NULL,  
[SHAPE] [geometry] NULL,  
[notes] [varchar](max) NULL,  
[version] [int] NULL,  
[causeCode] [varchar](20) NULL,  
[PublicationStatus] [nchar](10) NULL,  
[TimestampCreated] [datetime] NULL,  
[LastModify] [datetime] NULL,  
[InsertedBy] [nvarchar](50) NULL,  
[ValidatedBy] [nvarchar](50) NULL,  
[LastModifiedBy] [nvarchar](50) NULL,  
[SHAPESQL] [nvarchar](max) NULL
```

[dfo_flood_losses]

```
[LossId] [int] IDENTITY(1,1) NOT NULL,  
[LossSHAPE] [geometry] NULL,  
[LossEpisodeId] [int] NULL,  
[LossEventId] [int] NULL,  
[LossDescription] [nvarchar](max) NULL
```


[dfo_flood_lossvalue]

```
[LossValueId] [int] IDENTITY(1,1) NOT NULL,  
[LossId] [int] NOT NULL,  
[LossEpisodeId] [int] NULL,  
[LossEventId] [int] NULL,  
[LossDescription] [nvarchar](max) NULL,  
[LossQta] [float] NULL,  
[LossUnit] [varchar](50) NULL
```

[dfo_flood_documents]

```
[docId] [int] IDENTITY(1,1) NOT NULL,  
[doctitle] [varchar](255) NULL,  
[description] [text] NULL,  
[filename] [varchar](255) NULL,  
[docType] [varchar](50) NOT NULL,  
[access] [varchar](50) NULL,  
[lossid] [int] NULL,  
[username] [varchar](50) NULL,  
[uploadDate] [datetime] NULL,  
[updateDate] [datetime] NOT NULL,  
[thumbnailImage] [varchar](255) NULL,  
[owner] [varchar](50) NULL,  
[iso3] [varchar](50) NULL,  
[eventType] [varchar](2) NULL,  
[episodeid] [int] NULL,  
[eventid] [int] NULL,  
[timestamp] [datetime] NULL,  
[docIcon] [varchar](max) NULL,  
[status] [int] NULL,  
[docPath] [nvarchar](max) NULL
```

[dfo_flood_links]

```
[lid] [int] IDENTITY(1,1) NOT NULL,  
[episodeid] [int] NULL,  
[eventid] [int] NULL,  
[lossid] [int] NULL,  
[url] [nvarchar](max) NOT NULL,  
[description] [nvarchar](max) NULL,
```

TIMESTAMP ON ALL RECORD will be added for tracing purpose

4 Data import from Dartmouth Flood Observatory

5 Activities and task

- Finish database design (timestamp, trace user)
- Import data from DFO
- User interface:
 - Insert/Edit/Publish data
 - Automatic fields calculation (area, glide number,..)
 - Layers management on map drawing

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Abstract

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