



GLOBAL DISASTER ALERT AND COORDINATION SYSTEM

GUIDELINES

2014



Global Disaster Alert and Coordination System

Guidelines for the use of GDACS tools and services in emergencies

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1. Introduction

The Global Disaster Alert and Coordination System (GDACS) was created as a cooperation framework between the United Nations and the European Commission in 2004, in order to address significant gaps in information collection and analysis in the early phase of major sudden-onset disasters. For the past decade, GDACS has drawn on the collective capacity of disaster managers and information systems worldwide to facilitate international information exchange and decision-making.

The integrated [GDACS website](#) offers the following disaster information systems and online coordination tools:

1. **GDACS Disaster Alerts**, which are issued and disseminated to some 25,000 subscribers immediately following sudden-onset disasters. The automatic estimates and risk analysis – the basis of the alerts - are provided by the European Commission Joint Research Centre (JRC) and the Global Flood Observatory.
2. **The Virtual OSOCC** – a password-restricted online platform for real-time information exchange and cooperation among all actors in the first phase of the disaster. Information updates from the affected country and international responders are moderated by a dedicated team. The Virtual OSOCC has some 19,000 registered users, and is managed by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA).
3. **Maps and satellite imagery** from various providers, including UNOSAT and MapAction, are shared on the Virtual OSOCC. The GDACS Satellite Mapping and Coordination System (SMCS) provides a communication and coordination platform where organisations may monitor and inform stakeholders of their completed, current and future mapping activities during emergencies. This service is facilitated by the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT).
4. A **Science Portal** dedicated to several scientific communities with special interests and a number of Expert Working Groups; the Portal is managed by European Commission JRC.

International response to Typhoon Haiyan in the Philippines in the end of 2013 illustrated the progress made in this area. The work towards higher degrees of interoperability between the different actors in disaster management and humanitarian response worldwide had rendered the response faster and more effective than many in the past. Yet the lessons learned from this response revealed remaining challenges in ensuring all responders have a reliable and timely common operational picture as soon as possible following the disaster. As they celebrate the 10-year anniversary of the network in 2014, GDACS partners will thus continue improving their tools and services, and the way they cooperate in an emergency.

GDACS is guided by a Steering Committee and holds annual stakeholder meetings to bring together disaster managers, scientists, GIS and web developers, as well as other experts, in order to define standards for information exchange and strategy for the future development of GDACS services. OCHA's Activation and Coordination Support Unit (ACSU) serves as the GDACS Secretariat.

These Guidelines provide up-to-date information on the aforementioned tools and services, and explain how they can be used by disaster managers in emergencies. They complement existing guidance materials, including the International Search and Rescue Advisory Group (INSARAG) Guidelines, the United Nations Disaster Assessment and Coordination (UNDAC) Field Handbook, publications by the International Federation of Red Cross and Red Crescent Societies (IFRC), and Standard Operating Procedures from the European Community Mechanism for Civil Protection, International Humanitarian Partnership (IHP), and the Euro Atlantic Disaster Response Coordination Centre (EADRCC).

2. Disaster alerts

About GDACS alerts

GDACS alerts provide automated early warning and preliminary impact estimates on natural disasters around the world. Its alerts are primarily aimed at the international humanitarian community and reflect the possibility of a need for international assistance. Four types of alerts can be issued:

- **White alerts** indicate minor event, where the need for international assistance is very unlikely;
- **Green alerts** indicate moderate events, where the need for international is not likely;
- **Orange alerts** indicate potential local disasters, where international assistance might be required;
- **Red alerts** indicate potentially severe disasters, where international assistance is expected to be required.

Currently GDACS alerts are issued for earthquakes and possible subsequent tsunamis, tropical cyclones and floods. Studies are under way to include volcanic eruptions in this list.



Example of different GDACS alerts on 10 November, 2013. The dates refer to the latest update.

Understanding automatic impact estimation

GDACS alerts are produced automatically using algorithms and scientific data available at the time. The alerts are based on the calculated risk, which the given event poses to the potentially affected population. The following risk indicators are taken into account:

1. The *severity* of the disaster, such as wind strength, earthquake intensity, etc.;
2. The *exposure* to this hazard in terms of the population and infrastructure potentially affected by it; and
3. The *vulnerability* of the potentially affected country or countries, which is estimated on the basis of a number of socio-economic variables.

As a result, events with the same intensity can result in different alert levels, depending on where they take place. For example, a shallow 6.5 RS earthquake under an uninhabited desert would trigger a Green, or even White, alert. However, an earthquake affecting of 7.0 RS a densely populated area would probably trigger a Red alert in a vulnerable country and an Orange alert in a developed, resilient country.

Limitations and scope of GDACS automatic impact estimation

It is important to underscore the nature and role of GDACS Alerts as a preliminary and automated tool to estimate the impact of a disaster. Data on affected population, cities, provinces and infrastructure is sourced from a variety of open-access and commercial databases which can contain inaccuracies or errors.

The impact estimation can only be as exact as the information available at the moment of the event. For example, a preliminary error of 40 km in the epicenter of an earthquake can significantly alter the number of people potentially affected and consequently the alert level issued by GDACS. The future track of a tropical cyclone is not always accurately predicted

and a deviation of 50 km in the landfall is quite common. This can change the number of people affected by the typhoon-force winds from hundreds of thousands to zero, rendering a previously issued red alert obsolete. These are unavoidable limitations in early warning systems and GDACS users should take them into consideration. In essence, GDACS alerts can be considered as a trigger for further detailed scientific analysis and reporting of the event.¹

GDACS alerts do not replace alerts or information from local or national civil protection authorities. Expert assessment of the situation and eventual evacuation and response plans must always be carried out by competent decision-makers in designated positions of authority.

Subscription to alerts

E-mail and SMS

Subscription to GDACS alerts requires an account, which users can request on the [GDACS website](#). To register for the alerts, follow the steps outlined below:

1. Click on 'Disaster alert account' as illustrated below, which will take you to a separate page where you should choose



'New account'.

2. Choose a username, which will usually be an e-mail address, and a password; then click 'Next'.
3. Fill out your profile details; then click 'Next'.
4. If you wish to also receive alerts by SMS, choose 'SMS' in the drop-down menu, fill in your mobile phone number and click 'Add address'. You can also change the e-mail address to which you wish to receive the alerts. To proceed, click 'Next'.
5. Choose the type of events you wish to receive alerts for (earthquakes, floods and/or tropical cyclones), the channels (e-mail and/or SMS), the region(s), as well as the minimum level of alert (red, orange and/or green). Save each choice by clicking on 'Add Service'. Each service will appear in a list of current services in your account below, as illustrated below. You will be able to edit, enable or disable any of the services at all times. To proceed, click 'Next'.

Alert Type	Channel	Alert Level	Region	Language	Quiet Night	Enabled		
Earthquakes	EMAIL	Red	Worldwide	en	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Edit	Delete
Floods	EMAIL	Orange	Worldwide	en	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Edit	Delete

¹ For further analysis and reporting of the event, users can see the links to traditional and social media sources under the 'Media Analysis' tab of the website of the GDACS alert.

- In the final step of registration, you will see a summary of your account and services to which you are subscribed. If the information displayed is correct, accept the Terms and Conditions of the services and click on the 'Proceed' button. GDACS will then send you an e-mail with a link to confirm your registration. Once you confirm the registration by clicking on this link, you will start receiving GDACS alerts.

Feeds and programmatic access

Registered and non-registered users can subscribe to GDACS alerts through its RSS feed by providing the URL <http://www.gdacs.org/xml/rss.xml> to RSS readers, or by clicking on the RSS icon on the [GDACS Website](#), as illustrated below. The RSS feed contains geographical information (GeoRSS) for eventual use in geographic software. A KML file with the latest alerts and polygons of interest, such as the track of tropical cyclones, for use in Google Earth is also available. To obtain the file, click on the KML icon on the GDACS Website, as also shown in the image below.



All alerts are also published on the [GDACS Facebook page](#) and through its [Twitter account](#) (@GDACS).

GDACS can also share an Application Programming Interface (API) as well as Web Mapping Services (WMS) with organizations wishing to include GDACS alerts and information in geographical software. For more information, please send an e-mail to alerts@gdacs.org.

A number of resources for each event, including links to images and ESRI shapefiles, can be accessed through a proxy interface. For details, please visit: <http://portal.gdacs.org/data/GDACS-Platform>.

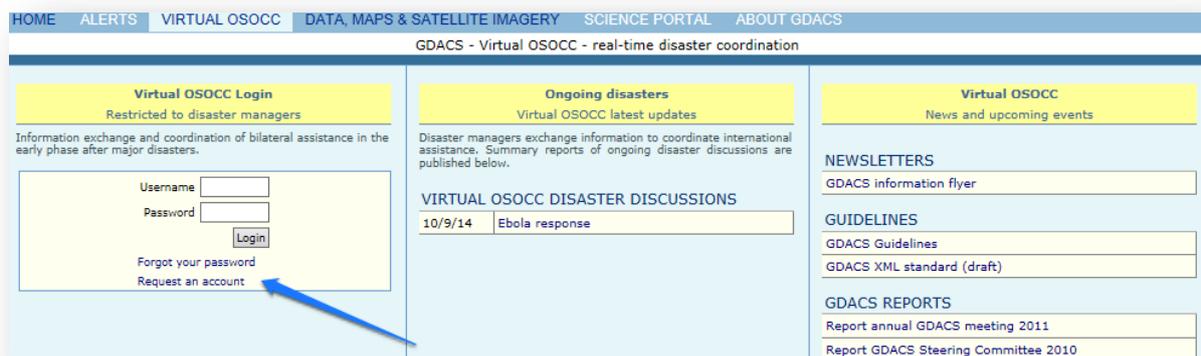
3. Real-time coordination

About the Virtual OSOCC

The [Virtual OSOCC](#) is an OCHA-managed GDACS on-line tool, typically activated in major sudden-onset disasters to support international coordination during the first weeks of the response. The primary purpose of the platform is to facilitate information exchange among disaster responders in order to establish a better situational awareness in the early disaster phase, to inform responders of the operational environment, and to support information analysis, decision-making and coordination. Access to Virtual OSOCC is restricted to disaster managers from governments and disaster response organizations worldwide. Although the platform was initially designed as a tool for bilateral responders, increasing numbers of staff from UN agencies and NGOs use the Virtual OSOCC in disasters.

Creating a Virtual OSOCC account

You can request an account on the Virtual OSOCC [homepage](#). Click on 'Request an account', as shown in the image below, and fill out the short form. You will receive a confirmation e-mail once the administrators have reviewed your request.



Finding and providing disaster information

The Virtual OSOCC has the following structure:

1. **Tabs** are different sites within the platform, each serving a different purpose. These GDACS Guidelines focus on the 'Disasters' tab. In-depth information about the features of other tabs is available in the Virtual OSOCC Handbook, available on the Virtual OSOCC homepage.
2. **Sections** classify discussions, such as Breaking emergencies and Emergencies under the 'Disasters tab'. Breaking emergencies are discussions on sudden-onset disasters which are of interest to the Virtual OSOCC community, but do not necessarily result in international response. Any user may open a discussion under Breaking Emergencies choosing 'New breaking emergency'. The Emergencies section contains disasters which require, or are likely to warrant, international response. Only moderators can open a new discussion in this section.

3. **Discussions** are set up for each major sudden-onset emergency; they are usually triggered by a red GDACS alert.

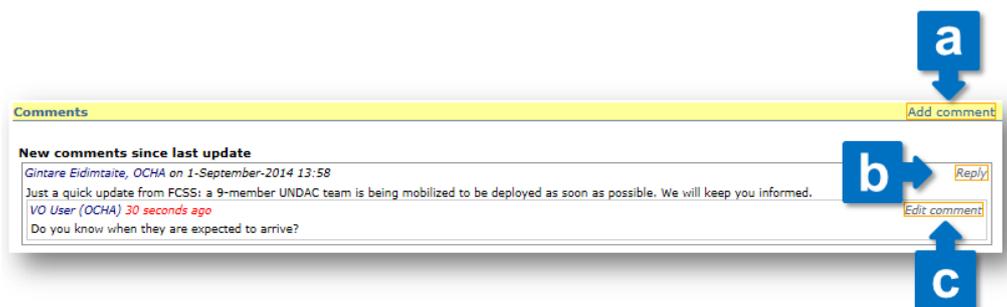
Disasters	Simulator	Training	Meetings	Discussions
Breaking Emergencies MAIL SMS NEW EMERGENCY IN THIS SECTION				
3-Aug-2014	Aug. 3 Yunnan Zhaotong City M 6.5 earthquake			HTML RSS ☆
24-May-2014	Earthquake Greece			☆
2-May-2014	Afghanistan landslide - 2nd of May 2014			☆
Emergencies MAIL SMS				
18-Jul-2014	Syrian Border Monitoring Mechanism			☆
15-Jul-2014	Cyclone RAMMASUN			☆
12-Jun-2014	Paraguay - floods			HTML RSS ☆

4. **Discussion elements** contain a variety inter-active information tools that are relevant in the given disasters, including international relief teams, a maps repository, an overview of relief items, and the Hazard Identification Tool (HIT).
5. **Titles** divide information within each discussion into structural elements, such as Situation, Operational environment, Response coordination and OSOCC. Users can provide comments under each title to complete the information or make queries.
6. **Subtitles** break down the information into more manageable snippets. For a detailed description of the contents of each subtitle, see Annex 3 to these Guidelines.
7. **Summary updates** provide analyzed information updates under each discussion title, compiling key information from OCHA and other sources, as well as relevant user comments.

Disasters	Simulator	Training	Meetings	Discussions	Users	Lists	Statistics				
VIEW											
Selected discussion: Ejercicio INSARAG Costa Rica: Juliandia											
Back to overview											
RELIEF TEAMS RELIEF ITEMS HIT MAPS VIEW SUBSCRIBE											
<table border="1"> <tr><td>Alerted Rosters</td></tr> <tr><td>Situation</td></tr> <tr><td>Operational Environment</td></tr> <tr><td>Response coordination</td></tr> </table>	Alerted Rosters	Situation	Operational Environment	Response coordination	<p>Situation</p> <p>Situation overview - VO User (OCHA) 23 minutes ago</p> <p>An earthquake of magnitude 7.6 on the Richter Scale occurred in Juliandia on D at 1330hrs local time, P... epicenter for the earthquake is indicated as latitude 24. 8, 50 degrees north, longitude 53.43' 31 degrees east, 40 km de... about 100km west of the capital. The earthquake was felt in neighboring country of Emirana. The Juliandia Institute of Volcan... smology (JIVS) has reported at least 110 aftershocks which have been hampering local rescue efforts. Experts warned that, while there was no threat of a resulting tsunami, residents should beware of landslides, particularly close to the border area with Emirana.</p> <p>... weather forecasts, thunderstorms and heavy rainfall are expected in the affected regions exacerbating the living conditions... ced and further hampering rescue efforts.</p> <p>... local press reports that the municipalities of Anitarak, Griffiths and Stevenhampton have been severely affected, including the towns of Rudenotto and Minas. Some 13 people have been reportedly killed and several others injured by falling debris. Preliminary reports indicate that a historic church and 400-year old tower has collapsed with several victims being reported. Stevenhampton airport is also reported as damaged.</p> <p>In Emirana, some cracked buildings were reported and power and telephone services interrupted, although most services have now been restored. No reports of injuries have yet been received.</p> <p>Preliminary estimates suggest 100,500 people have been affected, of which 20,000 have been displaced. 13 fatalities have been confirmed.</p> <p>Status of request of assistance - Gintare Eidimtaite, OCHA on 1-September-2014 13:57</p> <p>The President of Juliandia has welcomed offers of international assistance and international urban search and rescue teams are mobilizing to support the national response.</p> <p>Comments Add comment</p> <p>New comments since last update</p> <p><i>Gintare Eidimtaite, OCHA on 1-September-2014 13:58</i></p> <p>Just a quick update from FCSS: a 9-member UNDAC team is being mobilized to be deployed as soon as possible. We will keep you informed. Reply</p>						
Alerted Rosters											
Situation											
Operational Environment											
Response coordination											

8. **Comments** are the primary information-exchange format for Virtual OSOCC users:

- a) Typically, users provide comments to which they can attach files. Comments are included in the information analysis and respective updates by discussion moderators, as relevant. Processed comments (that were included in the information analysis) are usually hidden by moderators to reduce the information load on the page.
- b) Users can reply to other comments using the 'Reply' button.
- c) Users can edit or delete their own comments using the 'Edit comment' button and replace or delete their attachments.



Use of the Virtual OSOCC by the disaster-affected country

Local and national authorities are encouraged to contribute to disaster discussions with information about the scale and extension of the disaster, the need for international assistance, identified priority needs, government focal points, and instructions for international responders. Active participation of the affected country in the Virtual OSOCC disaster discussions usually helps responding countries to plan their response more adequately and efficiently. Especially in earthquakes, the Virtual OSOCC has proven effective in supporting operational planning of the search and rescue operations, as national authorities are timely informed about deploying teams, their arrival details, logistics requirements, and capacity.

The following information would be expected from the national authorities following a major sudden-onset disaster:

1. Clarify the need for international assistance. The sooner the modalities of international assistance (requested, welcome, not required, etc.) are posted on the Virtual OSOCC, the better and more adequately the international community will react.
2. A brief description of the disaster management and/or coordination set-up within the government, and contact details of relevant focal points.
3. Information about the situation in the disaster-affected areas, including access of the affected areas and related constraints.
4. Priority needs and operational priorities - which type of relief is most needed (search and rescue, water, food, shelter, fuel, air transport, etc.) and in which geographic areas.
5. Customs and immigration - contact details of national and/or local customs focal points, procedures relating to immigration of relief workers and equipment, and additional information to allow responders to adequately prepare.
6. Urgent announcements and/or key information updates, as needed.

Use of the Virtual OSOCC by responders

To support information analysis and decision making, it is critical that also international responders provide information on the Virtual OSOCC reliably and timely in the following areas:

1. Updates on planned or mobilised relief teams and experts, along with description of type and capacity, estimated arrival, and eventual transport or other support requirements in the field.
2. Information about planned or mobilised in-kind contributions, such as relief or medical items, but not cash, along with description of type and capacity, estimated arrival, and indication of consignee to take over at the arrival point in the affected country and manage the distribution.
3. Updates about established coordination structures at regional or field level by the own country or organization. Examples of such structures include military command posts, preliminary Reception/Departure Centre (RDC) and OSOCC and information centres at embassies.
4. Any available and recent information about the situation in the affected areas and additional needs and gaps identified.
5. Maps, satellite images, situation and assessment reports.

Please see Annex 3 and the Virtual OSOCC Handbook for more detailed information about where and how such information should be posted.

For further information and inquiries, please send an e-mail to virtual-osoccc@un.org.

4. Maps and Satellite Imagery

GDACS Satellite Mapping and Coordination System

The [GDACS Satellite Mapping and Coordination System](#) (SMCS) provides a communication and coordination platform where organisations can share information about completed, ongoing and planned mapping activities with other stakeholder during emergencies. It makes use of both automatic data feeds of mapping organisations as well as allowing registered users to create their own areas of interest within a given event area, and keep others updated on their mapping activities and products. The end goal is to reduce duplication of mapping efforts and to increase awareness of existing products.

Access to SMCS data is public for all internet users. To share mapping information, individuals can request an account at the SMCS [registration page](#) from UNOSAT.

The GDACS SMCS Homepage provides a map with the overview of events worldwide, including:

- A publically available display of automatic feeds from partners and mapping organisations; please contact GDACS at maps@gdacs.org to have a GeoRSS feed added to this list.
- SMCS coordination events, where mapping teams can mark their area(s) of interest (AOI) details for other organisations on their past, current and future products.

Pages of SMCS coordination events

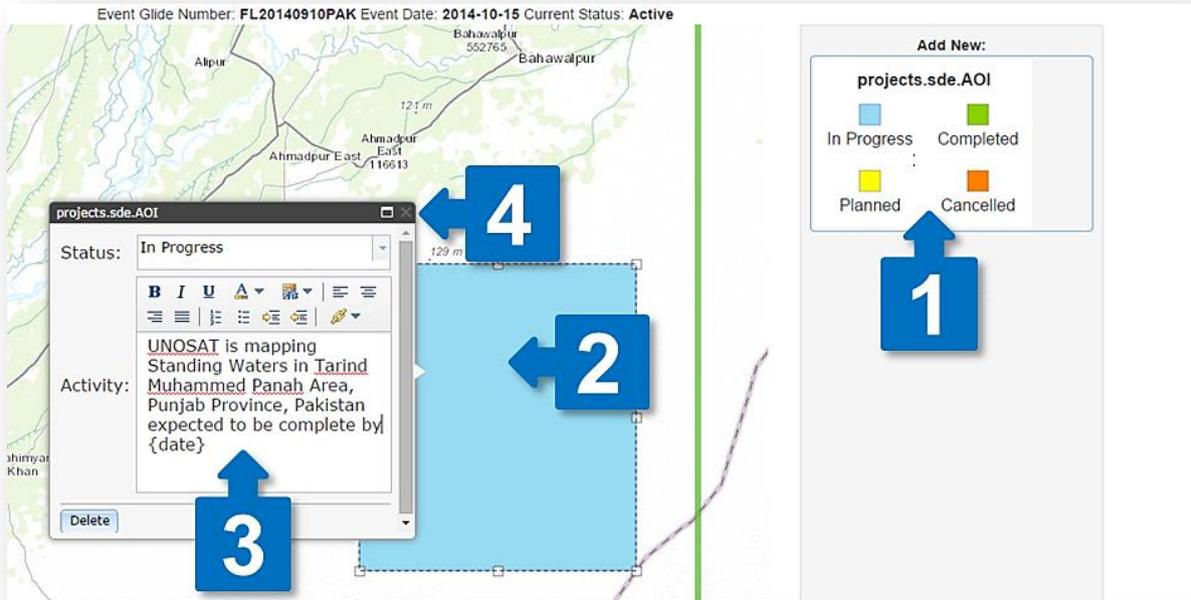
A coordination event page provides in-depth details of a given event and the activities being carried out by different partners in responding to it. It allows for both automated data entry via GeoRSS, as well as for a direct updating of AOIs.

To view an event from the map on the homepage:

1. Click the polygon of the event you want to view;
2. On the resulting pop-up, click the menu option to 'View Event'.



To add data to a coordination event, log in to the SMCS website in and navigate to the coordination event you wish to update. Then, choose the type of activity AOI you want to add (completed, ongoing or planned) on the right-side menu (1). Draw of the AOI on the map (2) and fill in the form which will pop up (3). Closing the pop-up automatically saves the AOI in the system (4).



To modify or update coordination event AOIs associated with your organisation, click on the AOI and introduce required changes in the pop-up form, which will then be saved automatically.

For more information, please see the following [video tutorials](#).

Maps on the Virtual OSOCC

In the “Maps” section, the Virtual OSOCC provides a comprehensive overview of maps that have been produced in the context of the given disaster. Maps are automatically integrated into the Virtual OSOCC from the UNOSAT database of



maps and satellite images. In addition users can share (upload) and request maps directly on the Virtual OSOCC. The three

functions can be accessed through the 'Maps' discussion title under the relevant disaster discussion, as shown in the image below.

Accessing maps available on the relevant emergency

To view all mapping products available, hover the mouse over the 'Maps' discussion element and choose 'All maps'. Maps are grouped in categories to facilitate navigation.

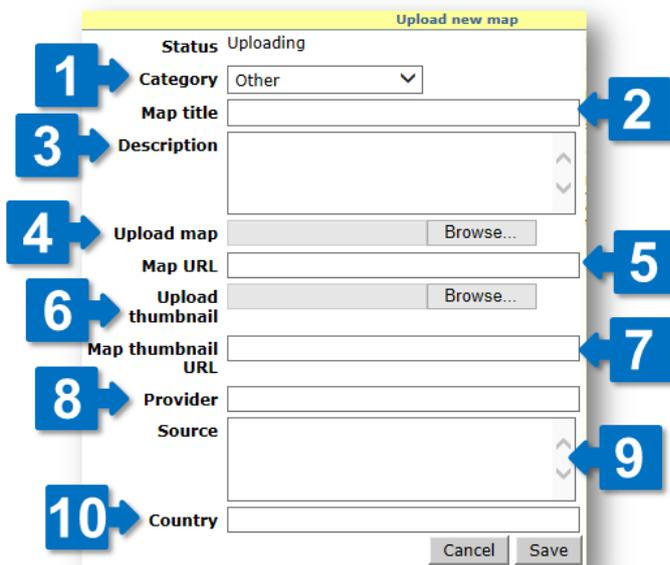
Map	Provider	Title	Description	Moderator remark	Date
Available maps:					
Baseline information (3); Country information (3)					
Coordination (1); Coordination setup (1)					
Situation (5); Situation overview (5)					
Requested maps:					
Other (1); Other (1)					
Maps and satellite images, last update: 17-September-2014 09:40 (Show all)					
Baseline information					
Country information					
	Source: Various data providers. Collected by SBTF. Provider: NetHope	Various datasets related to Ebola & Liberia	Collection of datasets related to Ebola and Liberia		
	Source: OCHA ROWCA Provider:	Liberia - administrative map	Liberia - administrative map with counties and districts		

For more information, please see the following [video tutorial](#).

Uploading maps to the Virtual OSOCC

You can either upload maps that you have saved as a file on your computer, or provide a link (URL) to a map stored on another website. In both cases, hover your cursor over the 'Maps' menu, and choose 'Upload map' from the drop-down list.

Next, fill out the form: choose the category which best describes the content of your map (1) and provide a name which would describe the content and/or purpose of the map (eg. OSOCC and RDC location) (2). If necessary, provide a brief description of the map (3). If you are uploading the map as a file, browse for it on your computer (4) and leave the 'Map URL' field empty (5). If you want to share a link to a map on another website, copy and paste it into the 'Map URL' field (5). You can set a thumbnail (a reduced size image of the map) by either uploading it in JPEG format (6), or providing a link to one online (7).



The screenshot shows the 'Upload new map' form with the following fields and callouts:

- 1:** Category dropdown menu (set to 'Other')
- 2:** Map title text input field
- 3:** Description text area
- 4:** Upload map button with 'Browse...' link
- 5:** Map URL text input field
- 6:** Upload thumbnail button with 'Browse...' link
- 7:** Map thumbnail URL text input field
- 8:** Provider text input field
- 9:** Source text input field
- 10:** Country text input field

Buttons for 'Cancel' and 'Save' are located at the bottom right of the form.

Although not obligatory, the following information is useful for the categorisation of maps in the database: the country, institution or organization which uploaded the map (8), the country, institution or organization which created the map (9) and, in emergencies where more than one country is

Although not obligatory, the following information is useful for the categorisation of maps in the database: the country, institution or organization which uploaded the map (8), the country, institution or organization which created the map (9) and, in emergencies where more than one country is

affected, which country the map is covering (10). Click 'Save' to upload the map.

Requesting a customized map

Any user can request maps through the Virtual OSOCC by holding the cursor over 'Maps', then choosing 'Request map'. the user will be prompted to indicate title and a description of the desired map or satellite image, which should contain the following details:

- a. A detailed description of the purpose of the map.
- b. Contact details of the requester.
- c. Coordinates and related information that should be included on the map (e.g. assessment results, coordination centres, etc.).

When saving the form, UNOSAT's Rapid Mapping Unit will be notified to process the request. Once the map has been produced, it will be uploaded in response to the on-line request on the Virtual SOOCC. Pending map requests can be viewed by choosing 'All maps', then expanding 'Requested maps'.



For more information, please see the following [video tutorial](#).

Annex 1 – Related tools and services

JRC Science Portal

The [JRC Science Portal](#) is a section of GDACS website dedicated to several scientific communities with special interests and a number of Expert Working Groups. It is divided into a publicly accessible part and one restricted to registered users. The public part of the portal contains:

- Details on the algorithms behind the alerting system in the section 'Models'.
- A number of detailed analyses and maps on a small number of specific disasters in the section 'Analyses'.
- A number of reports on workshops related to natural hazards and disaster and crisis management in 'Expert Working Groups', 'Mobile Technology' and 'Volcanic Eruptions'.
- Detailed information on the activities of the Global Flood Partnership and Working Group in the corresponding sections under 'Expert Working Groups'.
- The homepage of the Global Flood Detection System (GFDS) under 'GDACS Beta', an experimental flood detection system developed by the JRC, based on microwave satellite detection of flooded areas. The system covers the whole globe daily, recording water presence over land unencumbered by cloud cover. Observations in 3,000 areas along major river beds and floodplains are recorded systematically and users can readily obtain time series of water presence, with records starting from 2011. The system is open for use to everyone. For more information, please visit the dedicated [flood detection page](#).

The restricted part of the portal, in addition to the above, contains:

- The Global Flood Observatory, still under development at the time of writing, used by the Global Flood Partnership group to record flood extent, effects and losses in detail as they happen around the world. To gain access, please contact Tom De Groot at tom.de-groot@jrc.ec.europa.eu.
- The system for Storm Surge monitoring in Europe, developed by the JRC in collaboration with the European Centre for Medium Term Weather Forecasting, which is still in an experimental stage. For more information and access, please contact Alessandro Annunziato at alessandro.annunziato@jrc.ec.europa.eu.

To request access to the restricted part of the Science Portal, please contact the principal researchers mentioned above.

LogiK: Logistics information about in-kind relief

The lack of a reliable overview of arriving and committed international in-kind assistance has always been a challenge in managing coordinating humanitarian relief in major disasters and emergencies. No reliable tools exist to support this task. To overcome this challenge, OCHA developed LogiK - an online logistics in-kind tracking tool. LogiK was launched in 2013 as an [online platform](#) for the international community to exchange information on in-kind contributions, with the aim of supporting coordination, planning and reporting on international in-kind relief.

Senders of in-kind relief (national governments, NGOs, the private sector and other actors) are requested to enter information about planned and dispatched deliveries of relief items. The information provided should contain shipment details such as sender, origin and destination, items description, weight, value, transport mode, and other details. To enter information into the system, users need a password, which they can acquire on the LogiK homepage. Sending organizations can request an account on the [LogiK platform](#).

From the information provided, LogIK produces various reports and statistical analysis that can be used by disaster managers and humanitarian organisations for planning, coordination and reporting purposes. LogIK products are available online for the general public. Interested organisations can subscribe to receive updates automatically by e-mail.

LogIK is managed by the Activation and Support Coordination Unit (ACSU) in the Emergency Services Branch (ESB) in OCHA Geneva. ACSU provides training and support to users in terms of data entry and creation of customized reports. Furthermore, ACSU continuously improves LogIK based on specific user requirements and performance evaluations.

For further information, please contact Virginie Bohl (+41-22-917-1792, logik@un.org)

Annex 2 – GDACS Alerts on specific events

Earthquakes and tsunamis

GDACS receives dedicated messages on detected earthquakes by a number of seismological agencies around the world (USGS, EMSC, GEOFON and national systems). Algorithms then process the data, distinguishing among different reports on the same event and calculating the potential impact to arrive at an Alert Level that will be published in the website and distributed by e-mail and SMS.

The earthquake damage considered by GDACS is that caused by shaking or by tsunami. To assess the potential impact by shaking, GDACS considers:

- earthquake magnitude
- hypocenter depth
- population within 100km from the epicenter
- vulnerability of the affected country or countries.

In 2015, however, earthquake magnitude and depth are expected to be replaced by the earthquake intensity calculations by the USGS.

An empirical mathematical formula and some subsequent calibration corrections are then used by the algorithm with all these parameters to calculate the alert level. As a general rule, higher magnitude, lower depth, higher population within 100km and higher country vulnerability result in a higher alert. The exact formula and further details can be found in the [GDACS Alerts models page](#).

GDACS usually receives more than one message for a given earthquake. The first message, usually a few minutes after the event, often contains preliminary data. Important parameters like magnitude, depth or epicenter are measured more accurately as time passes. Suppose that an earthquake occurs with an initial estimate for the magnitude of 6.5 on the Richter Scale. This triggers an orange GDACS alert, which is published online and disseminated through e-mail and SMS to subscribers. Sometime later, a new message might arrive, re-calculating the magnitude to 7.0. GDACS will re-calculate the impact parameters and revise the alert level. This new alert will substitute the previous alert on the website, and, if the alert is higher, a revised GDACS alert will be disseminated to subscribers by e-mail and SMS. The time sequence of modified parameters can be seen in the bottom of the 'Impact' page for each earthquake. It should not be confused with aftershocks².

In the case of strong earthquakes ($M > 6.5$) under or very near the sea that pose a tsunami threat, pre-calculated tsunami scenarios are consulted and automatic detailed calculations by JRC-developed software are initiated. If the pre-calculated tsunami height is between 1 and 3 m in the vicinity of a populated coastal area, an orange tsunami alert is issued; if the height is more than 3 m, it triggers a red alert. Once the detailed calculations are finished, the resulting height is published and the alert level updated. Again, in case of increased alert level, new alert messages will be sent.

Tropical cyclones

Tropical Cyclones constitute a major threat to a number of highly vulnerable countries in the north-eastern and western Pacific, western Atlantic and the Indian Ocean. The principal hazards posed by them and considered by GDACS are strong winds, heavy rainfall and storm surge (coastal flooding by an increase of the sea level due to strong winds and low pressure). Unlike in earthquake scenarios, in the case of tropical cyclones GDACS alerts can serve also as an early warning tool, as they can be issued before the event affects the population.

² Aftershocks are earthquakes in the same area that follow the largest shock of an earthquake sequence. They are smaller than the mainshock and can continue over a period of weeks, months, or years.

GDACS receives regular bulletins from meteorological organizations, covering all tropical cyclone basins, every six hours. These bulletins provide the current and forecast position and wind-speeds of active tropical cyclones from the moment they are formed until they are dissolved. The forecasts can extend up to 5 days in the future. The risk for each of the above-mentioned hazards is then calculated:

- For **winds**, GDACS calculates how many people live in the area that will be affected by winds of Tropical Storm force or stronger in the period covered by the latest forecast. Stronger winds, higher population - or high percentage of the whole country's population - and higher vulnerability result in a higher alert level. As an example, winds stronger than 120 km/h (the threshold of Hurricane or Typhoon strength) that are predicted to affect more than 1 million people in a highly vulnerable country will trigger a red alert. For the full decision matrix, please visit the [following GDACS page](#). Alerts can be issued up to 5 days in advance, depending on the forecast. The vulnerability taken into account has been developed by the JRC specifically for tropical cyclones and is based on various development indices and historical impact data.
- For **heavy rainfall**, GDACS considers the tropical cyclone special rainfall forecast by NOAA. A predicted total accumulation over land (for the whole life-cycle of the cyclone) of more than 500 mm or a maximum rain rate of more than 33 mm per hour will result in a red alert for rain. Vulnerability is not considered in this case, but is planned to be included in the future.
- For the **storm surge**, GDACS uses estimates by JRC-developed code that calculates the storm surge at each point of the coast that is forecast to be near the tropical cyclone's path. These calculations are updated as soon as a new bulletin is received, so the numbers of the predicted storm surge height could change every 6 or 12 hours. A water height of more than 1 m above the astronomical tide in the vicinity of a populated coastal area will trigger an orange alert, more than 3 m - a red alert. Vulnerability is not considered in this case, but is planned to be included in the future.

Currently, the main alert for a tropical cyclone that appears in the GDACS homepage, e-mails and SMS is that of the wind impact. The rain and storm surge alerts can be seen only in the relevant subsections ('Extreme Rain' and 'Storm Surge') in the GDACS homepage. In 2015, the JRC plans to deploy an overhauled cyclone system where alerts will be based on all three factors.

As with earthquakes, the alert level of a tropical cyclone can change depending on the latest forecast, as strength and course can change significantly with each new bulletin. It is not unusual that the alert level of a tropical cyclone change from red to green in 48 hours with slight changes in the predicted track.

Floods

In the case of floods, GDACS alerts mainly source information from individuals rather than automated procedures. Researchers at the Dartmouth Flood Observatory release a list of significant floods worldwide two or three times a month, including information from official government sources or media on the number of people killed or displaced. GDACS then issues an alert depending on this information:

- Orange alert if there are more than 100 dead or 80,000 displaced.
- Red alert for more than 1,000 dead or 800,000 displaced.
- Green alert for all other floods.

GDACS alerts published online and sent by e-mail and SMS also include information on the severity of the flood, as calculated by the Global Flood Detection System. This data includes the magnitude, duration and severity, and estimates the significance of the detected extent and duration of the flood with respect to previous years. For the exact definitions and details, please refer to the [Flood Detection page](#) on the GDACS website. At the time of writing, these parameters do not affect the level of the alert.

Annex 3 – Virtual OSOCC disaster information structure

One of the key challenges in managing significant amounts of information in the early phases of disaster response is finding the right balance between predictability, standardization, and flexibility. To address this issue, the Virtual OSOCC disaster information structure has default titles and subtitles, but can be adapted to the needs in the given emergency. The table below provides an overview of the default structure.

TITLE Subtitle	Purpose Type and format of information posted
SITUATION	
Situation overview	Moderator-produced and constantly updated summary of the disaster situation: geographic extension and impact; trends, needs, disaster statistics and current response. In the very early stages, this summary would also provide an overview of media reports.
Status of request of assistance	Information on whether the affected country has requested or accepted international assistance, with any relevant documentation attached.
Comments	User comments and inquiries related to the disaster situation as described in the titles above.
OPERATIONAL ENVIRONMENT	
Country baseline data	Country name, time zone, population, capital, administrative division, ethnic groups, languages, religion, media landscape, currency, international dial code, medical advice and vaccinations.
Operational priorities	A moderator-produced summary with immediate response priorities in terms of type and geographical areas, to support decision-making at HQ level.
Customs and immigration	Relevant information about immigration (visa), customs, and associated contact details.
Security situation	Relevant information about safety and security, incidents, looting; UNDSS daily reports; time and place of security briefings in the affected country.
Access	An overview of the state of and constraints at entry points (airports, ports, border crossings), roads, waterways, railways, damaged infrastructure, alternative routes.
Communications	Updates on the availability and coverage of mobile network and internet access.
Comments	User comments and inquiries related to “operational environment” as described in the titles above.
RESPONSE COORDINATION	
Coordination setup	Overview of national and international coordination structures, as relevant to the emergency. It will include location(s) of OSOCCs and RDCs; civil-military coordination; key contact details and UNDAC team information

Reception/Departure Centre	Important information updates and announcements from the RDC
LEMA updates	Important information updates and announcements from LEMA
Assessments and reports	Recent and relevant assessment and other related reports (e.g. situation reports)
Comments	User comments and inquiries related to “response coordination” as described in the titles above.
OSOCC	
Situation	Moderator summary of the state of response: team activities, trends, gaps, lives saved so far, etc. Focused on information required for operational coordination in the field.
Announcements	Any announcements by the OSOCC or other actors, requiring immediate attention: meetings, briefings, key information.
USAR Coordination [Sector X]	Moderator summary of state of USAR in the sector: team activities, trends, gaps, lives saved so far, etc. This subtitle will allow for direct comments, thereby providing a discussion space for USAR teams on the ground.
Assessments	Reports covering the area of operations, with a moderator-produced summary of key highlights.
Comments	A space for responders in this area of operations to discuss and exchange operational information.

Crucially, however, the VO is adapted to each emergency to reflect its coordination and information needs. For example, more subtitles will be created if additional USAR coordination sectors are established in the field. An ‘OSOCC’ title will be added for each physical OSOCC or sub-OSOCC, to provide space for operational information exchange. The titles will be renamed to indicate their geographic location and will cover the areas of operation of the physical OSOCC. For example, in the Typhoon Haiyan response in the Philippines, there would have been three separate OSOCC titles: OSOCC Tacloban, sub-OSOCC Guiuan, sub-OSOCC Ormoc and OSOCC Roxas. If needed, separate subtitles for the coordination of Foreign Medical Teams can also be created.