



Dr. Andreas Hirner

European Commission Joint Research Center Institute for the Protection and the Security of the Citizen Global Security and Crisis Management **Critech**



Current Geocoding Situation at GDACS



GDACS stands for: <u>Global Disaster Alert and</u> <u>Coordination System</u>

Near real-time alerts about natural disasters around the world and tools to facilitate response coordination, including media monitoring, map catalogues and Virtual On-Site Operations Coordination Centre

Disasters are classified in three classes: Green: very low likelihood of humanitarian disaster Orange: potential humanitarian disaster Red: very high likelihood of humanitarian disaster

Alert levels are automatically selected and continuously updated by a computer program based on the available information and will not be modified manually.







System for international disaster response community

Complimentary with existing information systems

Information gap in the initial response phase



- Partnerships
 - United Nations OCHA, UNOSAT, JLS, WFP, UNEP, HABITAT

Scientific organisations

- Earthquakes: US, Italian, European, German, Russian seismological institutes
- Tropical cyclones: Pacific Disaster Centre
- Floods: Dartmouth Flood Observatory, NASA
- Volcanic eruptions: Smithsonian Global Volcanism Program
- Tsunamis: Pacific Tsunami Warning Centre, NOAA, UNESCO



Current Geocoding Situation at GDACS



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Data Sources

http://www.gdacs.org/sources.asp

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CDACC	The Global Disaster Alert and Coordination System provides near	
GDACO	fear-time alerts acout natural cisasters around the world and tools to facilitate resconse coordination, including media monitoring, map	
	catalogues and Virtual On-Site Operations Coordination Centre.	
Alerts	Coordination About GDACS	
	Data sources Useful links	
GDACS sources	or event information	
The list of events publis	ted by GDACS is compiled from information provided by GDACS partners or fr	om public information syndicated on the internet.
Automatic event o	ollection by the Asgard system (JRC)	
Earthquakes		
Earthquakes can be de allow for a rapid and au	ected within minutes through a global network of seismic detectors. Many seis omatic determination of earthquake characteristics by computation centres. In	imological institutes in the world maintain such sensors and share their information to turn, these data are made public using telecommunication or the Internet.
The ODACS earthquak earthquakes. In order to	impact model is built on this setsmological inhashucture. Without it, GDACS v ensure robust information gathering, GDACS collects information from various	vouid not be able to obtain rapid estimations of location, magnitude and depth of s sources.
GDACS collects inform	tion every 5 minutes from the following sources:	
· United States G	ological Survey National Earthquake Information Center (NEIC): http://neic.us/	95,925
0 1555	http://earthquake.usgs.gov/egcenter/recentegs/ww/catalogs/egs7day-M2.5	ami
 European-Medi 	arranean Seismological Centre (EMSC). http://www.emsc-csem.ong/	
o Source (Application of the second s	
GEOEON Program	nme of the GEZ Policitam, http://www.nt/s.notisitam.delpection/	
a List B	http://www.accounters.	
 Japan Meteoroli 	dical Agency CIMAX, http://www.ima.go.ip/	
· Bource p	age: http://www.ima.go.jp/en/guake/guake_local_index.html	
0 155	http://www.adacs.org/milima.xmi	
Tropical Cyclones		
Tropical cyclones are n	on/bred continuously by national and international meteorological organisatio	ns (see World Neteorological Organisation). Official data is released by Regional
Specialized Meteorolog	cal Centers. However, for aggregated data on a global level other sources are	available.
GDACS collects inform	ton every 10 minutes from the following sources:	
Pacific Disaster	Center, http://www.pdc.org	
Hawaii Universi	, IFA SOLAR: http://www.solar.Ka.hawaii.edu/Tropical/tropical.html	
Volcanoes		
On 1 July 2008, GDACS	changed the source for volcano information. Now, GDACE list volcanic activity	based on the weekly bulletins of the Global Valcanism Program.
· Contration	Property Manhatranakasa al anti	
- Giodal Volcanis	n Program, map www.vor.anc.or.edu	date emission al seco
O HILLING	purchana and an examination and an	MALE MINIMUM STV_ RATE
- molitical []	Restored and an and a second second second	
The Weekly Volcanic Ac	why Report is a cooperative project between the Smithsonian's Global Volcani	sm Program and the US Geological Survey's Volcano Hazards Program. Updated by 2300
a second set of the life bar share as a share of	nese notices are preliminary and subject to change as events are studied in n	nore detail. This is not a comprehensive list of eruptions during the week, but rather a
UTC every wednesday,	reversively unless that the regional version of the re	any in the outers of the Global Volcanism Network. The Wond Organization of Volcano is the most authoritative data for many of these events.
summary of activity that Observatories 020000	AN EXAMPLE THE REPORT OF A DESCRIPTION OF A DESCRIPANTO OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION O	A RECENT AND A REAL AND A
summary of activity that observatories (WOVO)		
summary of activity that Observatories (WOVO)		
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Floods Floods Floods Floods are monitored of JRC is collaborating with Dartmouth Floo	a global basis by the Dartmouth Flood Observatory (DFO), ODACBURC has a DFO on a flood detection system using satellite imagery.	a partnership with DFO to provide updated lists of ongoing floods in the world. Furthermore,
Content wednesday, summary of activity that Observatories (WOVO) Floods Floods are monitored of JRC is collaborating with Cartmouth Floo a	a global basis by the Defmouth Flood Observatory (DFO). ODACSURC has a DFO on a flood detection system using satelike imagery. Cesewaters the <u>Standard addited Ledui-floods</u>	a partnership with DFO to provide updated lists of ongoing floods in the world, Furthermore,
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Floods are monitored of UKE are solved and the solved of t	a global basis by the Diethnoch Flood Cosenvolary (DFO), ODAC SURC has a defore on a flood detection system using satellite imagery. Orientation http://www.dathnoch.edu/-floods accentional and the dondtetection VODIT sum tem. accentional and the dondtetection VODIT sum tem. accentional and the dondtetection VODIT sum tem.	a pathership with DPO to provide updated lists of ongoing floods in the world. Furthermore,





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• Loca •	ation 94km from Chengdu • 9.7 million people within 100km • 30 million people within 200km Mountainous area • landslides, hydro-dams	Antimie verves Antimie	Mark Mark Mark Refer Web Documents
GDACS 13min 14min	System (times relative to event) Detection of earthquake through USGS GDACS Red Alert GDACS report published on-line	Ninhetin visionalisma Turnatarum alla resedent pressi la decidad pre- parest filosopie filosopie administrativa alla resedent pressi la decidad pre- region has mediane valenzatarum alla resedent pressi la decidad pre- region has mediane valenzatarum (Salestarum Carlos de 20 mm). Research alla como mercina decidad pressi la decidad pressi la decidad fa administrativa de la decidad pressionalistica de la decidad pressionalistica de fa administrativa de la decidad pressionalistica de la decidad pressionalistica de la decidad fa administrativa de la decidad pressionalistica de la decidad de la decidad fa administrativa de la decidad de la decidad de la decidad de la decidad de la decidad de la decidad de la decidad de la decidad de la decidad Tratementaria de la decidad de la decidad de la decidad de la decidad de la decidad decidad decidad de la decidad decidad decidad de la decidad decid	
14min 19min 53min	Email alert sent to 4500 users SMS alert sent to 2700 users Fax alert sent to 100 users all automatic	Operational since 2002 (Status Green: Orange: Red: Grand total:	experimental since1994) Events 30341 509 82 30935



Current Geocoding Situation at GDACS



GDACS system (times relative to event)

collaboration of first responders
 ~1h GDACS Virtual OSOCC topic created
 1h20 UNDAC Alert Message

9h Media reports >1000 killed

1st day 1st IFRC Situation Report 2nd day First OCHA Situation Report

18 May First satellite based damage map









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Calculating buffers and applying models to get an estimate of probable	Arein A	🗑 You are not legged in I <u>Login</u> I 4	• 9 users on-line
impact	Red Tropical cyclone alert in Myanmar, Thailand		
impuot	Automatic Impact. News Haps ReliefWeb Documents		
	Tropical cyclone NARGIS-08		
Track data from 2002 to	Current storm status		1000
11ack data 110111 2003 to	Analysis based an axis on number 25 for NARGIS-08 published on 5/5/008 12:00 UTC	Lagers,	1150
now -> 655 storms	The storm is: not active	OITNA	
	Current poston: 97.6, 18.29 Basin: NorthIndian	HYANMAR	The second
e ,	Current maximum sustained wind speed. 20 m/s, 39 kt	CAOS	A 19
Since 2007, wind buffers	Report created on MS/2000 4.19:00 PM.		
-> 431 storms	atom How are impact levels calculated?		1.91
	Table (Where cash lifed nore information)* Constrained for the information inf	Service Comparison of Comparis	era la
	Summary impact analysis		8
	Affected Population Up to 7.03 million people are be affected by wind speeds of humicare strength or above. In addition, 1.82 million people are living in cosstal areas below 5m and can therefore be affected by starm surge.		
	Affected Country (provinces) (population) Neuman (manada) (622060), Neuman (Paga) (1602060), Neuman (Rangoon) (501002-0)		
	Affected Cities		
	Extended annos time (Uro) Wind speed period (Xistance (vm) Name Province Country City Class (1 to 6) 6/2/2008 21 30 142 30 142 30 Yangon (Xiangano) (Vianmar 1		
	22.45 138 100/argabion (Kangoon (Kangoon Julyarman) 2 22.45 138 21 0yian (Yangoon (Kangoon) Julyarman) 2		
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Floods

Current version provides reports and impact models.

JRC contracted DFO Dartmouth Flood Observatory) in 2008 to provide data and services.

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<text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text>	atomatic Impact	News	Maps	ReliefWeb	Documents	Country profile	
Drange Elod Alert in Portugal Overview Providew Providew Provide							
Concrete value of a first of a fi)range Flood A	lert in Portugi	1				
Comparison of a contract and particular (1) The maximum contract and ma	Iverview			Portugal	and the second	×	
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Imagine Factures 20, 2010. Buyout-Pendaguree Telenics Minister Rui Peners a says at least 25 geophysics wide in foods and muddides on the sale of Markets Rui Peners have a sagret profits that here arriad to the site of Markets Rui Peners burks the site indi- tion of Markets Rui Pench news agret profits that here arriad which us to 10 biometrics per foods which the site indi- tion of more seeple have connece interval geoper than 100 years). The addition of 2020/010 with a durated of 2020/010 with a durated on 4200/010 with a durated of 2000/010 with a durated with a durated of 2000/010 with a durate		See also experime	ental flood monitoring syste	m for Portugal (c) 2010 3RC	Europe Wetere Suite		
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he main cause is Torrential Rain. The alebs creater is has de on the reported dash and displaced. Red = 1000 or more people killed or 800000 or more people displaced. Orange = 0 with stores: 2 1 with stores: 2 2 with stores:	The flood started on 2/ with an estimated recu	19/2010 and ended o rrence interval greate	m 2/20/2010, with a duration in than 100 years).	h of 2 days. This flood has	severity class 2 ()	.e. this is an extreme event	
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	 alert score: 2 magnitude: 3.3 duration: 2 seearth: 7 						
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hvers in food Maps (around approximate geographic location) Pepulukan densky map 	he approximate geog te place names ment	raphic location of this ioned in the media.	flood is 32.76 latitude and	16.97 longitude. This is th	ne centroid of the at	fected area, as determined by	
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Pepulation density map	laps (around ap	proximate geog	raphic location)				
200.00			Populatio	n densår map			
				2004.00			





LOX

Volcanoes

Current version provides reports derived from the Global Volcanism Program weekly RSS feed.

We currently work on monitoring volcanic ash dispersal.

Global Disaster Alert and Coordinati						
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Orange avents or remembers and a case	10	-	_	Reports and Docum	ents	
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🔐 Floods 🛨		155	Anthine	TURC landslide risk map o	(Halti earthquakes (14 Januar	x.201.0)
Culletins provides by Datasouth Flood Observatory by	roed on media reports			Overview landslide risk asso	or ciated with the earthquake of 1	2 January 2010, Slope was
¥ Volcanoes ⊖		New	ASS	calculated using discrete der elevation data. Risk categoria	rivative computations based on as were defined as 25 degrees	Sobel operator from SRTM moderate, 30 degrees high
Activity changes in past week. Note that 0.0403 oo N	ongerprovides alert levels for e	slowed we	uptions.	risk. Roads and bull-up area	is atrisk are identified.	100
Last updated Wed, 17 Peb 2010 02 41:46 -0500				JRC 14/01/2010 12:00 00 0	MT	2101
Bezymianny (Russia) - Report for 10	Read and provide fee	dback		Maps showing affected infras	structure (hospitals, schools, e	mbassies, slums).
February 16 February 2010 - NEVO	Log in WOOCHA-WEAK	NOCC	_	See all 18 items		
Activity Precent/VEPT reported				Coursel for discovery	1	a la famo atlan
that during 5-12 February a thermal				search for disaster a	uert ana coordinatio	n information
anomaly from Bezymianny's lava				Search information (using Go	ogle Custom Search) from the	websites of all ODACS
dome was detected in satellite				partners.		
lava flow from the lava dome was					1.00	10
observed. Furnaroli						
Source Kamphalkan Volcanic				Subseribe to disaste	r alorts	
Eruption Response Team (ICVERT)				busseriot to usuate	, uncreo	
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Elaima (Chile) - Report for 10	Log in CHA-Vitual	socc		Language and to draw and		Subscribe now for this
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Activity RecontCameras operated				earthquake or tsunami occu	rs with a potential for	RegisterNow
by OVDAS-SERNAGEOMIN showed				humanitarian disaster.		And a state of the
Llaima's main crater during 20				Multi hazard daily newsletter		
January-9 February Seismit signals				ODACS also offers daily aler	ts for all disaster types monito	red. Up to now, only
(tremor and volcano-tectoric				earthquake alerts were avail	lable (apart from the RSS feed:	s). Since tropical cyclones,
contribution of the cristing				volcances and floods are no	it as 'sudden onset' as earthqu	akes, only a daily service is
Source: Servicio Nacional de				available.		
Geotogra y Mineria (SERNAGEOMIN)			_	See today's as an example.		
Southiere Hills Gizztert Kingdom) -	Read and provide feet	sback		GDACS alert feeds		
Eleport for 10 February-16 February	Log in WOOCHA Vitual	8000			Alleh of Physics and a set A set	A A A A A A A A A A A A A A A A A A A
2010 - NEWI				used in your RSS reader or	on Oppole Earth GDACS is use	dination system can also be ind existing (ML and content
Activity BanastW/O reported that				standards.		
during 5-12 February activity from the						
Soumere Hills lava dome increased						
concentrated on the W side of the				RSS finds can be read in	FOCCAST () Audio	Coogle Earth
lava dome during the first part of the				feed readers	Open in ITunes or other	Google Earth KML file: see
wee					audio software	Globe with detailed satellite
Sources: Montserrat Volcano				CAP	Compl surfig file	images and maps. (You
Observatory (MVO), Agence France-				This site supports the		need to install Google
Presse				Click on the disaster's CAP	<u>س</u>	Lamo.
AUTOMATIC IMPACT REPORT	Read and provide feet	dback .		logo to see the XML.		Mobile or PDA version
February 16 February 2010 - NEWA	Log in COCHA Wituok	00000		1000 / 1000 1000 1000		Second and the second se
SETUSGS WEEKLY VOLCANIE						
Activity Report SVERT reported				Legend		







After the 2004 Tsunami in Banda Aceh, Indonesia, JRC decided to include Tsunami models for a quick evaluation of the possible impact of a Tsunami as a consequence of an earthquake







- Risk analysis
 - Risk = Hazard x Population x Vulnerability
 - Hazard = 0 then Risk = 0
 - Population = 0 then Risk = 0
 - Vulnerability = 0 then Risk = 0
- Impact analysis is similar
 - Impact = Event magnitude x Population in affected area x Vulnerability







- Models usually based on neighbourhood and buffer analysis
 - Validation requires external data
 - Optimization is done on past disasters









Examples of Outputs







Examples of Outputs



Problem I

How do we associate single measurements with specific disasters?

Need for algorithms for each disaster type.





Examples of Outputs



Problem II

How do we identify disasters across various databases, institutions, companies?





Glidenumber.net

Web application to create, register and manage globally common unique ID codes for disasters.

JRC recently committed a module, which enables automatic creation of numbers.

Work to do: Come up with algorithms that reliably detect duplicates and "aftershocks" for each disaster type.

Examples of Outputs



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earch Results				Epidemic, Madagascar: The eastern coast of Madagascar		
			4577 hts, 450 Pages : 1 2 3 4 5 6 7 0 9 10	experiences malaria throughout		
Glide Number	Event	Country	Comment	Laboratory has confirmed the		
			throughout the year. The Institute Pasteur Laboratory has	diagnosis of Chikungunia on		
P-2010-000032-MDG	Epidemic	Madagascar	confirmed the diagnosis of Chikungunia on February Bth.	high fever and asthenia which		
			them bedridden for 2-3 days and thus affects schools and	keeps them bedridden for 2-3		
			local and national economies.	local and national economies.		
L-2010-000031-PRT	Flood	Portugal	Violent floods and mudslides killed at least 42 people on the resort island of Madeira.	FL-2010-000031-PRT		
			The Philippine Atmospheric, Geophysical and Astronomical	Flood,Portugal: Violent floods		
			Services Administration (PAGASA) states that the El Ni?o in the Equatorial Region continues to contain do moderate	people on the resort island of		
			strength and is recently in his mature stage. Gradual	Madeira.		
R-2010-000030-PH	Drought	Philippipes	decrease in sea surface temperature is expected but still within the El Ni2o threshold and likely to last up to June 2010.	OT-2010-000028-NER		
1.12010-0000000-FHL	Drodyn	Philippines	To date, Regions I, II and XII have been experiencing dry	Other,Niger: Already the annual		
			spell conditions such as drought, increased temperature,	that many departments are in		
			agricultural productions such as rice, corn and vegetables in	deficit of cereal production.		
	<u> </u>		165,071 hectares with estimated production loss of PhP2.4B.	appraisal was done by the		
			From Oct 2009 to January 2010 Dominica southward to Trinidad experienced moderately to extremely dry conditions	government of Niger by mid		
n	Country	Trinidad &	for the four month period. St. Lucia, Darbados, St. vincent	than a half of the rural		
R-2010-000029-110	Drought	Tobago	and the Grenadines and Grenada in particular were extremely dry. Water levels are dropping guickly in several	households would have no cereals		
			Caribbean countries, prompting officials to limit availability	in stock by the end of January.		
			Are adv the annual barvest statistics of Niner show that many	DR-2010-000029-TTO Drought-Tripidad & Tobago:		
			departments are in deficit of cereal production. Alerted by	From Oct 2009 to January 2010		
T-2010-000028-NER	Other	Niper	these results, a rapid appraisal was done by the government	Dominica southward to Trinidad		
			of the rural households would have no cereals in stock by the	extremely dry conditions for the		
			end of January.	four month period. St. Lucia, Barbados, St. Vincent and the		
	Snow	L	An avalanche killed at least 20 people on Thursday in a remote mountain village in porthern Pakistan where rescue	Grenadines and Grenada in		
V-2010-000027-PAK	Avalanche	Pakistan	workers struggled to free another 30 buried under snow and	Water levels are dropping guickly		
			108, pointe said. 3200 neorde affected by recent floods. Centro de	in several Caribbean countries,		
		Orminiara	Operaciones de Emergencia (COE) entreg? a la gobernadora	availability and impose		
L-2010-000026-DOM	Flood	Rep	de Puerto Plata el primer levantamiento sobre la situaci?n	restrictions as the region enters		
			aguaceros que inundaron unas 3,700 viviendas.	its only season.		
C+2010-00025-TON	Tropical	Tonga	Cyclone Rene hit Tonga's main island Tongatapu and caused	DR-2010-000030-PHL		
	or a second second		the state descent is assessed as and building and	comment Phillipping The		



Examples of Outputs







Examples of Outputs



Thank you!





Services connected to disasters

- Data and geo data
- Catalog services
- Geolocation services
- Gazetteer
- Symbology/Terminology
- etc.