

Task Number: DI-06-09

Task Title: Use of Satellites for Risk Management

Area: DISASTERS

Related Community of Practice: Geohazards, wildfires, disaster management user communities

Relevant Committee: UIC

Related Targets: (to be included in 2009)

Task Definition (as given in the 2009-2011 Work Plan):

Define and facilitate implementation of satellite constellations for risk management from a multi-hazard perspective. The group will undertake the consolidation of the validated requirements and examine options for system development and implementation, using the following steps:

- Assessment of the use of satellite data for the management of different types of disasters and development of a Road Map
- Roll-up across all disaster types to establish overall architecture requirements for Earth observation satellites
- Simulation of satellite systems to respond to the requirements
- Gap analysis for existing and planned satellite systems
- Recommendations for future satellite systems

Deliverables will include: (i) Constellation requirement definition and performance assessment; (ii) Actions towards the Board of the International Charter and relevant CEOS members, to identify possible strengthening of Charter mechanisms and options for widening its scope; and (iii) Charter metadata catalogue.

Leads (GEO Member or PO, Entity carrying out the work, Contact: e-mail):

Canada (CSA), Point of Contact: Guy Seguin, guy.seguin@asc-csa.gc.ca

CEOS (CSA), Guy Seguin, guy.seguin@asc-csa.gc.ca

China (NSMC), Xiaoxiang Zhu, zhuxx@cma.gov.cn

ESA, Philippe Bally, philippe.bally@esa.int

UNOOSA, David Stevens, david.stevens@unvienna.org; Lorant Czarán, lorant.czarán@unoosa.org

Motivation/Background

Increased use of satellite data in support of the full cycle of risk management will allow disaster managers to better plan for disaster situations, to save lives and protect property. Increase cooperation during the response phase will enable developing countries to improve disaster response practices and develop capacity.

Outputs

Main outputs include (see activities for timeline, end dates after deliverable):

Use of Satellites for Risk Management – user requirements (volume I) – completed

Assessment of the use of satellite data for the management of different disasters – fall 2009

Use of Satellites for Risk Management – system architecture (volume II) – fall 2010

Gap analysis and recommendations – summer 2011

Charter Metadata Catalogue – fall 2010

Charter Cooperation with GEO, Phase I – fall 2010

Charter Cooperation with GEO, Phase II – fall 2011

Activities

Planned

Spring 2009 – outline of architecture report (Use of Satellites for Risk Management Volume II), demonstration of Charter Metadata Catalogue, Implementation Plan for Charter cooperation

Fall 2009 – assessment report, first draft of architecture report, Charter Metadata catalogue version 1.0

Spring 2010 – final draft of architecture report for user review, update to volume I user requirements

Fall 2010 – Presentation of architecture report to CEOS plenary, presentation of Charter cooperation results (Phase I) to CEOS plenary

Progress:

Use of Satellites for Risk Management Volume I has been completed. Charter Metadata catalogue under development, architecture report under development, Charter-GEO discussions have reached agreement in principle for broader Charter access

Resources

Resources for the task are being contributed in kind by space agencies and end users in order to address requirements. At this time, main resources include time of human resources and in-kind data contributions from satellites.

Current list of main resource contributors:

CSA: human resources, data, contractor support

UNOOSA/UN-SPIDER: human resources

CNES: human resources, software

GISTDA: human resources, software

All CEOS SBA Team members: human resources

Architecture and Data Component

1) Please briefly describe any task-related Earth observation resources (data set, system, website/portal) and any related Web Service interfaces that are contributed to GEOSS. State whether these items are or will be registered with the GEOSS Component and Service Registry for access via the GEO Web Portals, and whether any associated standards or other interoperability arrangements will be registered in the Standards and Interoperability Registry.

2) Please also describe what data and information your activity/system needs that you would request to be accessible through the GEOSS Common Infrastructure.

Capacity Building Component

1) Does this Task have a capacity-building component? If so, please provide a short description of this component including a description of end users.

The task includes development of capacity to better access Charter data in a range of developed and developing countries (see Charter Cooperation above).

2) Have any additional CB needs for this Task been identified? Please provide a short description.

No.

User Engagement Component

End users have been consulted on the user requirements for satellite data and products and will remain in the verification and validation loop as architecture requirements are developed. End users include meteorological organizations, national and international disaster and risk managers and other disaster managers.

Science and Technology (S&T) Component

No identified science and technology gaps for Task ST-09-01 at this time

Members and POs' Contributions to Outputs and Activities above:

(Input is optional. This section gives the chance to Members and POs to provide more details (3-5 lines) on their individual activities, making a clear connection with the Outputs and Activities outlined above).

China

National Satellite Meteorological Center(NSMC): By the end of 2009, National Satellite Meteorological Center (NSMC/CMA) will finish the wildfires monitoring system by using the past 20 years and current meteorological satellite data, the function includes real-time fire monitoring, risk assessment and warning. This system will be supported by the past 20 years fire results data. Now NSMC also has developed many products on natural disaster monitoring by using satellite data, and we will still continue to do more research and application work on hazards by using both polar orbit and geostationary satellite data, a plan for recent five years has been made and will be executed.

Japan

AIST: Satellite-based mapping for geological hazard and earthquake-induced risk on GEO Grid.

JAXA: To develop the SAR Interferometry technique and provide the products of the crustal movement. Also, to contribute to the future Super Site collaboration.

Norway

NGU (The Geological Survey of Norway): Use of satellite radar data for long-time monitoring of areas with subsidence and avalanche risk in Norway.

NORSAR: Characterisation of structures from satellite images.

CEOS

CSA: Development of system architecture for risk management, including validation with users. Based on user requirements developed under DI-06-09_1, the action will document existing and planned systems that meet requirements, determine gaps and propose satellite architectures that address the priority needs.

CNES: Development and operation of International Charter metadata catalog using GEO interoperability standards to contribute to GEO Portal.

ESA: Implementation of GEO-Charter Agreement for broadening access to Charter data. Develop metadata catalogue.

UNOOSA, GISTDA: Analyze the response by WGISS members to supply near real-time data of the 2007 Wenchuan Earthquake to the Chinese response agency. Develop a working process model to integrate and make use of existing technologies within WGISS/CEOS, i.e. web service, grid, and clearing house for disaster response. Implement a prototype to demonstrate use of these integrated technologies for the process model for the earthquake scenario.

GEO Secretariat's Comment: The possibility of CNES contributing its International Charter metadata catalog, upon completion, to the GEO Portal will be explored. Contribution from members will bring extremely valuable input to user requirements and system's architecture reports.

Participation (Table to be filled in 2009):

Type	Member or PO	Representing	Contact Name	EmailAddress
Lead(PoC)	Canada	CSA	Guy Seguin	guy.seguin@asc-csa.gc.ca
Lead	CEOS	CSA	Guy Seguin	guy.seguin@asc-csa.gc.ca
Lead	China	NSMC	Xiaoxiang Zhu	zhuxx@cma.gov.cn
Lead	ESA		Philippe Bally	philippe.bally@esa.int
Lead	UNOOSA		Lorant Czarán	lorant.czarán@unoosa.org
Lead	UNOOSA	UN-SPIDER	David Stevens	david.stevens@unoosa.org
Contributor	Australia	ACRES	Shanti Reddy	shanti.reddy@ga.gov.au
Contributor	Austria	Vienna University	Thomas Glade	Thomas.glade@univie.ac.at
Contributor	Austria	Z.GIS	Peter Zeil	peter.zeil@sbg.ac.at

Type	Member or PO	Representing	Contact Name	EmailAddress
Contributor	CEOS	CNES	Steven Hosford	steven.hosford@cnes.fr
Contributor	CEOS	ESA	Ivan Petiteville	Ivan.petiteville@esa.int
Contributor	CEOS	ESA	Jerome Béquignon	jerome.bequignon@esa.int
Contributor	CEOS	ESA	Jolyon Martin	Jolyon.martin@esa.int
Contributor	CEOS	ESA	Simon Jutz	simon.jutz@esa.int
Contributor	CEOS	GISTDA	Pakorn Apaphant	pakorn@gistda.or.th
Contributor	CEOS	NOAA	Ivan Csiszar	Ivan.csiszar@noaa.gov
Contributor	Chile	Foreign Ministry	Luciano Parodi	eparodi@minrel.gov.cl
Contributor	Chile	UN Mission	Irene Acevedo	echileat1@chello.at
Contributor	Czech Republic	CHMI	Dr. Obrusnik	obrusnik@chmi.cz
Contributor	Germany	DLR DFD-KA	Michael Bittner	michael.bittner@dlr.de
Contributor	Germany	DLR DFD-KA	Thilo Erbertseder	thilo.berbertseder@dlr.de
Contributor	Germany	DLR DFD-L	Gunter Schreier	gunter.schreier@dlr.de
Contributor	Germany	DLR DFD-US	Harald Mehl	harald.mehl@dlr.de
Contributor	Germany	DLR-HR	Marian Werner	marian.werner@dlr.de
Contributor	Germany	DLR-ST-IZ	Ulrich Huth	ulrich.huth@dlr.de
Contributor	Germany	Freiburg University	Johannes Goldammer	johann.goldammer@fire.uni-freiburg.de
Contributor	Germany	GFZ Potsdam	Dr. Schau	zschau@gfz-potsdam.de
Contributor	Germany	Univeritat Trier	Joachim Hill	hillj@uni-trier.de
Contributor	Greece	GSCP General Secretariat for Civil Protection	P. Furlas	info@gscp.gr
Contributor	Greece	Ministry of Environment and Public Works	N. Manalis	nmanalis@edpp.gr
Contributor	Greece	National Observatory of Athens	C. Zerefos	zerefos@geol.uoa.gr
Contributor	Greece	National Observatory of Athens - Institute of Environment Research and Sustainable Development(IERSD)	Andrianos Retalis	adrianr@meteo.noa.gr
Contributor	Greece	National Observatory of Athens - Institute of Environment Research and Sustainable Development(IERSD)	Evangelos Gerassopoulos	egeera@meteo.noa.gr
Contributor	Greece	National Observatory of Athens - Institute of Environment Research and Sustainable Development(IERSD)	Ioannis Kaloghros	jkalog@meteo.noa.gr
Contributor	GTOS	GOFC-GOLD	Elaine Prins	elaine.prins@ssec.wisc.edu
Contributor	GTOS	GTOS Secretariat	GTOS Secretariat	GTOS@fao.org
Contributor	IGOS-P	Geohazards	Gonéri Le Cozannet	g.lecozannet@brgm.fr
Contributor	India	National Remote Sensing Agency	K. Radhakrishnan	radhakr@nrsa.gov.in
Contributor	Italy	INFN	Paolo Gasparini	paolo.gasparini@na.infn.it
Contributor	Italy	Italian Civil Protection Department	Pierluigi Soddu	pierluigi.soddu@protezionecivile.it
Contributor	Italy	Italian Space Agency (ASI)	Giovanni Valentini	giovanni.valentini@asi.it
Contributor	Italy	Italian Space Agency (ASI)	Rosa Loizzo	rosa.loizzo@asi.it
Contributor	Japan	AIST	Eikichi Tsukuda	e-tsukuda@aist.go.jp
Contributor	Japan	AIST	Masashi Matsuoka	m.matsuoka@aist.go.jp
Contributor	Japan	JAXA	Chu Ishida	ishida.chu@jaxa.jp
Contributor	Japan	JAXA	Masanobu Shimada	shimada.masanobu@jaxa.jp
Contributor	Japan	JAXA	Shoji Matsubura	matsubura.shoji@jaxa.jp
Contributor	Japan	Ministry of Education, Science and Technology (MEXT)	Hideyuki Yamada	hiyamada@mext.go.jp
Contributor	Korea	Korea Aerospace Research Institute	Chin-Young Hwang	cyhwang@kari.re.kr
Contributor	Nigeria	NASRDA/NCRS	David Nyomo	jebtiya@yahoo.com
Contributor	Nigeria	NASRDA/NCRS	J. Funso Olorunfemi	funsofem@yahoo.com
Contributor	Norway	NGU - The Geological Survey of Norway	Øystein Nordgulen	Oystein.Nordgulen@ngu.no
Contributor	Norway	NORSAR	Conrad Lindholm	conrad@norsar.no
Contributor	Portugal	Skysoft Portugal - Software e Tecnologias, SA	Sérgio Marques Barbedo	sergio.barbedo@skysoft.pt
Contributor	Romania	National Meteorological Administration	Gheorghe Stancalie	gheorghe.stancalie@meteo.inmh.ro
Contributor	Russia	EMERCOM	Igor Veselov	veselov@mchs.gov.ru

Type	Member or PO	Representing	Contact Name	EmailAddress
Contributor	Saudi Arabia	KACST	Mohamed Tarabzouni	mtrabzon@kacst.edu.sa
Contributor	South Africa	Department of Water Affairs and Forestry (DWAF)	Mbangiseni Nephumbada	nephumbadam@dwaf.gov.za
Contributor	South Africa	National Disaster Management Centre (NDMC)	Mmboneni Muofhe	mmboneni.muofhe@dst.gov.za
Contributor	South Africa	South African Weather Service (SAWS)	Mark Majodina	majodina@weathersa.co.za
Contributor	Spain	INTA	Alider Cragnolini	alider@inta.es
Contributor	Syria	General Organization of Remote Sensing	Bassam Habib	gors@mail.sy
Contributor	Syria	General Organization of Remote Sensing	Manwan Koudmani	gors@mail.sy
Contributor	Thailand	Department of Disaster Prevention and Mitigation (DDPM)	Prasong Thammapala	thammapala@yahoo.com
Contributor	Thailand	GISTDA	Srisaang Kaojarern	skaoja@gistda.or.th
Contributor	Thailand	TMD	Porrames Amatayakul	obs_develop@tmd.go.th
Contributor	Thailand	TMD	Somchai Baimoung	somchaib@tmd.go.th
Contributor	Tunisia			chaabane.zohra@inat.agrinet.tn
Contributor	UK	BNSC	Ian Downey	ian.downey@scisys.co.uk
Contributor	Ukraine	NSAU	Nataliya Zubach	zubach@nkau.gov.ua
Contributor	UNESCO	UNESCO	Laura Kong	l.kong@unesco.org
Contributor	UNESCO	UNESCO	Robert Missotten	r.missotten@unesco.org
Contributor	UNOOSA	UNOOSA	Georg Magerl	georg.magerl@unvienna.org
Contributor	UNOOSA	UN-SPIDER	Robert Backhaus	Robert.backhaus@dlr.de
Contributor	UNOSAT	United Nations Institute for Training and Research Operational Satellite Applications Programme	Alain Retiere	alain.retiere@unosat.org
Contributor	UNOSAT	United Nations Institute for Training and Research Operational Satellite Applications Programme	Francesco Pisano	Francesco.pisano@unosat.org
Contributor	USA	NASA	Steve Ambrose	sambrose@nasa.gov
Contributor	USA	NOAA	John Morrisroe	john.morrisroe@noaa.gov
Contributor	USA	USGS/EROS	Larry Tieszen	tieszen@usgs.gov
Contributor	WMO	OBS/SAT/SBOS	Jérôme Lafeuille	JLafeuille@wmo.int
	Invited Expert	Canada, Athena Global	Andrew Eddy	andrew.eddy@athenaglobal.com
	Invited Expert	ECMWF	David Richardson	David.richardson@ecmwf.int
	Invited Expert	Hawaii Institute of Geophysics and Planetology	Pete Mouginiis-Mark	pmm@higg.hawaii.edu