

## Project Manager Charter Final Report-Floods in Santa Catarina State-Brazil Call ID-235

### 1 Introduction

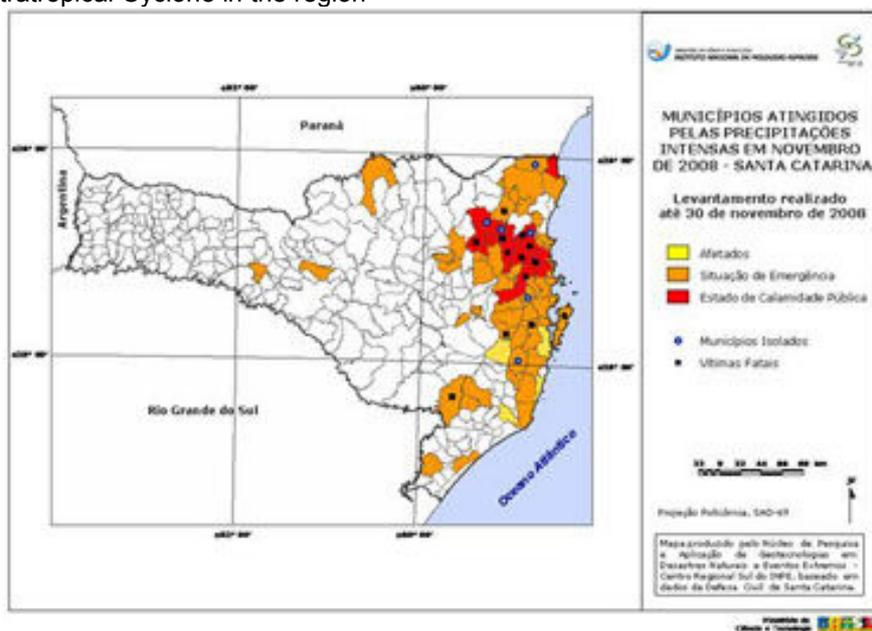
1.1 Purpose-To map flooding and landslides areas in Santa Catarina State as consequence of heavy rains during 7 days.

1.2 Scope-The Charter Call was completed in November 27, three days after the Call, November 30, I was informed that in a meeting with the Santa Catarina Civil Protection and DRHI/SDS two days before, they have decided to acquire a set of RADARSAT2 Images and to contract the Threetek, the RADARSAT representative in Brazil to do an emergency flooding map, and it was decided they were responsible for the flood mapping and EPAGRI, the End User responsible for to identify and map the landslides areas.

### 2 Intervention Summary

#### 2.1 Project details:

- Disaster/Project: Flood and landslides/Santa Catarina, Brasil-Call\_ID:235- The cause of heavy rains, flooding and landslides in Santa Catarina State in November 2008 was an Extratropical Cyclone in the region



Municipalities affected by heavy rains, flooding and landslides in Santa Catarina State, Brasil in November 2008

#### Legend:

- In Yellow-municipalities affected by rains and flooding
- In Orange-Emergency situation
- In Red- calamity situation

#### 2.2 Chronology of events:

- From 21 to 26 of November, 2008, heavy rains in Santa Catarina States, mainly in Itajaí (130.000 people lost their houses), Blumenau (22.000 people were affected by flooding in November-up to now 2137 people are still living in temporary houses, 24 people died), Bom

Jardim da Serra, Brusque, Benedito Novo, Gaspar, Garuva, Jaragua do Sul, Ilhota, Luiz Alves, Pomerode, Rancho Queimado and Rodeio municipalities.

- 24 of November, 2008 landslides mainly in Ilhota Municipality (14 people died). There were also minor landslides in Jaragua do Sul (6 people died), Rancho Queimado (2 people died) and Rodeio (4 people died) municipalities.
- 135 died during the flooding and landslides in Santa Catarina State in November 2008]
- Date of Charter activation: 27/11/2008;
- DMCII ECO DOSSIER:
  - Call ID : 235
  - Date of Call: 27/11/2008
  - Time of Call: 21:26
  - Dossier CompletionDate: 28/11/2008
  - Dossier Completion Time: 02:50

### Chronology of Events (event log)

TIME (utc)	ACTIVITY
21:26 27/11/2008	Incoming call from ODO and reception of the fax with the URF. No email received.
22:40	Verification of the URF with CONAE. No information received about the required data.
02:18 28/11/2008	Sending of the JAXA ERF by mail and fax, confirmation by phone.
02:24	Sending of the USGS ERF by mail and fax, no confirmation by phone.
02:26	Sending of the CSA ERF by mail and fax. The message on pager has been left informing of the Charter request.
02:27	Sending of the ESA ERF by mail and fax, SMS with confirmation was sent.
02:29	Sending of the CNES ERF by mail and fax.
02:35	DMC archive data request.
02:50	End of the dossier.
02:55	Uploading the dossier to the white board.
08:26	Email from Esrin with the information about Call 235 received.
11:56	New information added to the Dossier.
12:00	Updated Dossier uploaded to the ftp.

### 2.3 Available satellite data:

These are the satellite data available for **Charter ID 235 - Santa Catarina Brazil:**

ENVISAT1\_ASAR (11 images)  
 ALOS PalSAR (4 images)  
 RADARSAT- MDA (4 images)  
 LANDSAT (4 images set)  
 SPOT (1 image)  
 TERRA\_SAR-X (1 image)

#### **Images ENVISAT1 ASAR**

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ASA\_IMP\_1PNUPA**20081127**\_123928\_000000162074\_00138\_35262\_4296.N1  
 ASA\_IMP\_1PNUPA**20081127**\_123913\_000000162074\_00138\_35262\_4295.N1  
 ASA\_IMP\_1PNUPA**20081127**\_123956\_000000162074\_00138\_35262\_4298.N1  
 ASA\_IMP\_1PNUPA**20081127**\_123942\_000000162074\_00138\_35262\_4297.N1  
 ASA\_IMP\_1PNUPA**20081127**\_124010\_000000162074\_00138\_35262\_4299.N1  
 ASA\_WS\_\_0CNPDE**20081203**\_125028\_000000792074\_00224\_35348\_3076.N1

ASA\_WS\_0CNPDE**20081206**\_014638\_000000892074\_00260\_35384\_3193.N1  
ASA\_IMG\_1PNDPA**20081127**\_123910\_000000162074\_00138\_35262\_5378.N1  
ASA\_IMG\_1PNDPA**20081127**\_123924\_000000162074\_00138\_35262\_5379.N1  
ASA\_IMG\_1PNDPA**20081127**\_123938\_000000162074\_00138\_35262\_5380.N1  
ASA\_IMG\_1PNDPA**20081127**\_123953\_000000162074\_00138\_35262\_5381.N1

Path: 35262  
Swatch I4  
Polarization: HH  
Cent.Lat -27:26' and Cent. Long -49:06'

#### **Images ALOS PALSAR - JAXA**

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< Post-disaster data >  
Observation date: **November 29, 2008**  
Sensor: PALSAR(WB1) (2 scenes)  
Processing level: 1.5  
Data format: GeoTIFF

< Pre-disaster data >  
Observation date: **September 10, 2008**  
Sensor: PALSAR(WB1) (2 scenes)  
Processing level: 1.5  
Data format: GeoTIFF

#### **ImagesMDA - RADARSAT**

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SCENE\_ID N0584011  
MDA ORDER NUMBER Charter CALL\_235  
GEOGRAPHICAL AREA Brazil  
SCENE START TIME **DEC 02 2008** 08:26:32.401  
SCENE STOP TIME DEC 02 2008 08:26:47.835  
ORBIT 68268 DESCENDING

ORBIT DATA TYPE PREDICTED  
APPLICATION LUT MIXED  
BEAM MODE SAR STANDARD 6  
PRODUCT TYPE PATH IMAGE (SGF)  
FORMAT RADARSAT CEOS  
# OF IMAGE LINES 8285  
# OF IMAGE PIXELS 8810  
PIXEL SPACING 12.500 m  
SCENE CENTRE 28°08'S 48°37'W  
CORNER COORDINATES:  
27°33'29.01" S 27°50'12.96" S  
49°00'46.42" W 47°56'29.33" W  
  
28°27'13.35" S 28°44'07.98" S  
49°18'39.34" W 48°13'51.09" W

SCENE\_ID  
MDA ORDER NUMBER Charter CALL\_235  
GEOGRAPHICAL AREA Brazil  
SCENE START TIME **DEC 03 2008**  
SCENE STOP TIME DEC 03 2008

RADARSAT 1 SCENE DESCRIPTION  
SCENE\_ID N0584019

MDA ORDER NUMBER Charter CALL 235  
 GEOGRAPHICAL AREA Brazil  
 SCENE START TIME **OCT 09 2002** 08:36:55.854  
 SCENE STOP TIME OCT 09 2002 08:37:20.030  
 ORBIT 36169 DESCENDING  
 ORBIT DATA TYPE DEFINITIVE  
 APPLICATION LUT MIXED  
 BEAM MODE SAR WIDE 2  
 PRODUCT TYPE PATH IMAGE (SGF)  
 FORMAT RADARSAT CEOS  
 # OF IMAGE LINES 12983  
 # OF IMAGE PIXELS 11076  
 PIXEL SPACING 12.500 m  
 SCENE CENTRE 28°14'S 48°59'W  
 CORNER COORDINATES:  
 27°21'55.37" S 27°41'53.41" S  
 49°27'12.89" W 48°06'12.97" W  
  
 28°46'31.33" S 29°06'47.78" S  
 49°53'55.50" W 48°31'47.98" W

RADARSAT 1 SCENE DESCRIPTION  
 SCENE\_ID N0584146  
 MDA ORDER NUMBER CALL\_235  
 GEOGRAPHICAL AREA Floods in Brazil  
 SCENE START TIME **DEC 10 2008** 21:52:50.365  
 SCENE STOP TIME DEC 10 2008 21:53:13.285  
 ORBIT 68390 ASCENDING  
 ORBIT DATA TYPE PREDICTED  
 APPLICATION LUT MIXED  
 BEAM MODE SAR WIDE 2  
 PRODUCT TYPE PATH IMAGE (SGF)  
 FORMAT RADARSAT CEOS  
 # OF IMAGE LINES 12309  
 # OF IMAGE PIXELS 10837  
 PIXEL SPACING 12.500 m  
 SCENE CENTRE 28°04'S 49°03'W  
 CORNER COORDINATES:  
 27°33'59.74" S 27°14'23.12" S  
 49°55'47.80" W 48°36'39.28" W  
  
 28°54'27.98" S 28°34'34.19" S  
 49°31'27.29" W 48°11'17.23" W

RADARSAT 1 SCENE DESCRIPTION  
 SCENE\_ID N0584071  
 MDA ORDER NUMBER M0584071  
 GEOGRAPHICAL AREA Brazil  
 SCENE START TIME **DEC 05 2008** 08:38:55.721  
 SCENE STOP TIME DEC 05 2008 08:39:13.369  
 ORBIT 68311 DESCENDING  
 ORBIT DATA TYPE PREDICTED  
 APPLICATION LUT MIXED  
 BEAM MODE SAR STANDARD 2  
 PRODUCT TYPE PATH IMAGE (SGF)  
 FORMAT RADARSAT CEOS  
 # OF IMAGE LINES 9479

# OF IMAGE PIXELS 9330  
PIXEL SPACING 12.500 m  
SCENE CENTRE 28°10'S 48°39'W  
CORNER COORDINATES:  
27°31'12.73" S 27°47'22.97" S  
49°04'51.00" W 47°56'21.74" W  
  
28°33'13.30" S 28°49'34.08" S  
49°23'23.33" W 48°14'07.13" W

#### **Images LANDSAT**

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LE72200792005237EDC00  
LE72210802008077EDC00  
LE72200782004059EDC01  
LE72210782007090EDC00  
LE72210792007154EDC00

#### **Images SPOT5**

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Charter ID-235 on SANTA CATARINA (BRAZIL).  
5 713-405 08/12/02 13:03:05 2 A Inc:-21.6 SAT:0 Clouds:EDEDEEEEE TQ: EEEE  
5 713-405 08/12/02 13:03:05 2 B Inc:-21.6 SAT:0 Clouds:EDEDEEEEE TQ: EEEE  
5 713-405 08/12/02 13:03:08 2 J Inc:-21.6 SAT:0 Clouds:EDEDEEEEE TQ: EEEE  
Unfortunately this new scene is very cloudy again (cf. quick-look in attached file).

#### **Images TERRASAR-X**

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TSX1\_SAR\_\_GEC\_SE\_\_\_SM\_S\_SRA\_20081201T214149\_20081201T214157

### **3 Intervention Assessment**

#### **3.1 Main project issues:**

- **First Step:**
  - The PM received the images, download it and check it and faced the following situation:
    - 1 The SPOT Images-The first two image the PM got had almost 90% cloud cover, few days latter SPOT sent one more image and was very cloud cover as well;
    - 2 The LANDSAT7/ETM-Like the SPOT this image is perfect for landslide mapping, but there were stripes in 75% of the image, and the collecting dates were updated;
    - 3 TERRASAR-X-1,25 spatial resolution, perfect for landslides mapping in the region, but the image cover just part of the critical area, and this was not the area where the landslides problems where located;
    - 4 The PaLSAR images-100m spatial resolution, it is covering the all critical area, but its spatial resolution is not appropriate to identify and map the landslides areas in the region;
    - 5 The ENVISAT-ASAR- the first set of images there was not georeference information or additional files; the second set was sent just on December 19, to late for landslides mapping and we still had problems with these images that were solved just recently;

- 6 The RADARSAT images-the images are from Santa Catarina Southern region and the critical area is in the northeast region, not appropriate to map the landslides areas.
- 7 After these problems EPAGRI, the End User decided to generate basic cartographic maps using a pre-disaster SPOT4 image from FATMA, introduced some basic cartographic information on it and used it as support for the fieldwork and for the helicopter flight in the critical area in order to map the landslides areas. EPAGRI got many photos and GPS data, and mapped preliminarily the landslides area.
- 8 After that the PM decided to develop a flooding map with ALOS PaLSAR images, with pre and post-flooding data and went back again to the ENVISAT-ASAR image and develop a flooding map, it was possible to open it and work with it. These two maps were sent to the End User and to Charter Webmaster. In other to do these maps were developed the following actions:
  - Snata Catarina Data base: Its was developed by INPE/GEODESASTRES-SUL researchers a data base Santa Catarina, with the charter images, precipitation data and information from Civil Defense about the critical areas in Santa Catarina State;
  - Images Processing for flood maps, developed by INPE/GEODESASTRES-SUL researchers: visualization and to transform the images in geotiff format using the NEST (Next ESA SAR Toolbox) software; To import the images to SPRING software; To test the limiars for classification; To slice using the gray levels to classify the flood areas; to generate de maps using the Module Scarta of Spring software;
  - PAL SAR Flood Map: it was developed by INPE/GEODESASTRES-SUL researchers
  - ENVISAT Flood Map: it was developed by INPE/GEODESASTRES-SUL researchers
  - These two maps were sent to EPAGRI, the End User, and to Charter Webmaster

- **Second Step:**

- ENVISAT Flood and Land Cover Map: After the first step, the PM asked to EPAGRI, the End User, to validate the ENVISAT Flood Map. EPAGRI did a fieldwork in the critical area and a fly with helicopter. They did this check with data collected in the field work, the land cover map and a map about areas with high potential for flooding, they have developed for the region. EPAGRI checked the classification about the flooding areas, and identified and separated the irrigated rice crop areas from the flooding area. There are many irrigated rice crops in the region that causes a misclassification concerning to the flooding areas in the flood map that's why the PM have asked for validation of flood map.
- The map about areas with high potential for flooding in Santa Catarina State, developed by EPAGRI, was done in 2008, previously from the disaster period in Santa Catarina, from SRTM data with resolution of 30m, using the SPRING Systems.
- After that they integrated the land use and land cover maps they have developed for Santa Catarina State in 2008, previously from the disasters, with the ENVISAT flood map. They added information from the field work colleted during the flood and landslides period, and calculated the total flood area for each class of land use and land cover

- This ENVISAT Flood and Land Cover map was sent back to INPE/GEODESASTRES-SUL researchers and rechecked and sent to Charter Webmaster and to User.

### 3.2 Results of value-added processing if provided

- Flooding map, scale 1:600.000, from ALOS-PaLSAR images, about the following municipalities in Santa Catarina state in the critical area (camality): Benedito Novo, Blumenau, Brusque, Camboriu, Gaspar, Ilhota, Itajaí, Itapoá, Luis Alves, Nova Trento, Rio dos Cedros, Rodeio (12 municipalities)
- Flooding map, scale 1:150.000, from ENVISAT1\_ASAR images, about the critical area Ilhota and Gaspar Municipalities
- Flooding and land cover map, scale 1:150.000, from ENVISAT1\_ASAR images, about the critical area Ilhota and Gaspar Municipalities

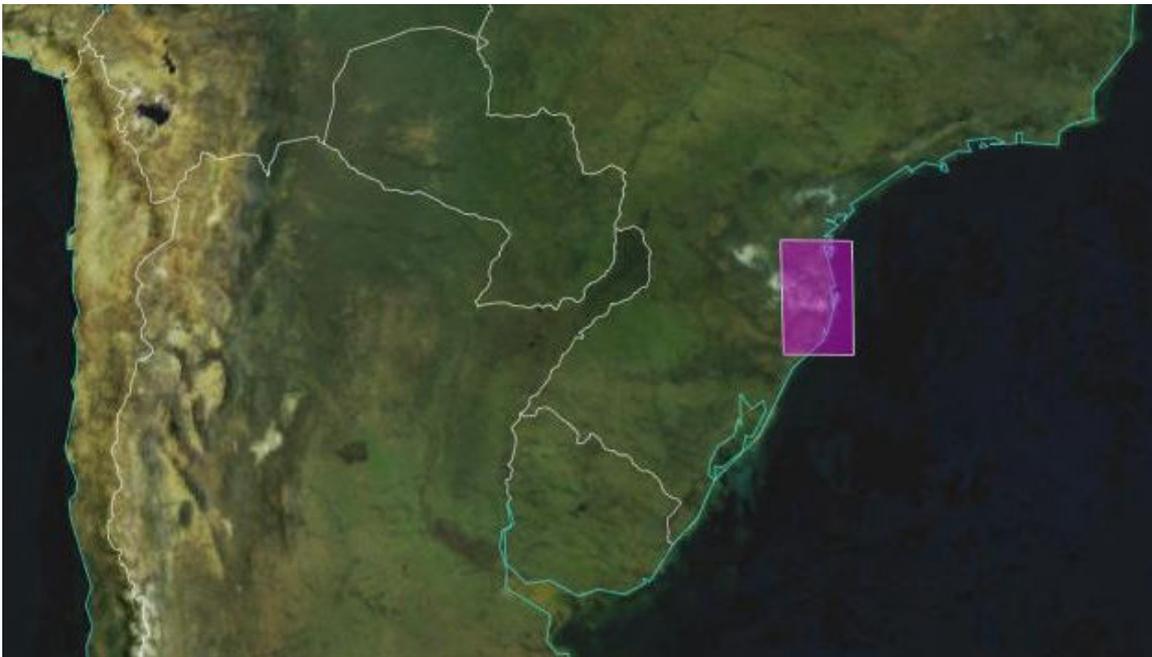
### 3.3 User feedback

### 3.4 Conclusions on the project

During the project we had faced some problems with the images, but the Charter call works very well and it was very helpful, it is very important in critical situation like disasters, the response for the call to be very quick and effective, and Charter do this. The maps generated were useful for the End User and will be used as basic information for future studies about flooding disasters in Santa Catarina State.

### 3.5 Recommendations for improving Scenarios

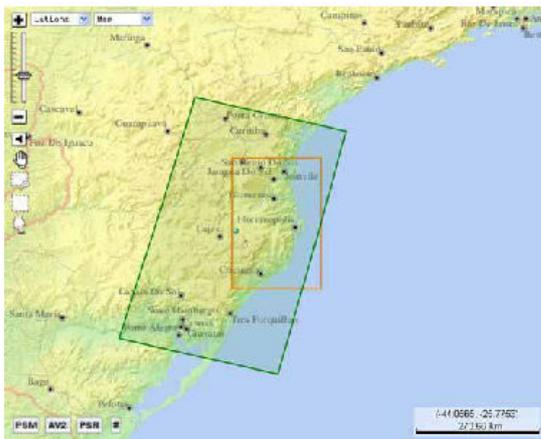
## Appendix A General information – Map of the area



Call 235

• Post-Disaster Data •

PALSAR-WB1 • November 29, 2008



• Pre-Disaster Data •

PALSAR-WB1 • September 10, 2008



## Appendix B Media coverage of the disaster (national TV, radio, news agencies/papers, web sites, etc.)

Clima - Nível do Rio Itajaí-Açu começa a baixar em SC - Microsoft Internet Explorer

Arquivo Editar Exibir Favoritos Ferramentas Ajuda

Endereço <http://www.clicrbs.com.br/diariocatarinense/jsp/default.jsp?uf=28&local=18&section=Geral&newsID=a2305844.xml>

Quick Search [F3] Type your search here... Search Web Look for Maps Services (17) Web Security Guard Customize

Este site pode requerer o seguinte controle ActiveX: 'Adobe Flash Player Installer' de 'Adobe Systems Incorporated'. Clique aqui para instalar...

# DIÁRIO CATARINENSE

Edição Impressa

Capa Plantão > VOLTAR <

Plantão

Blogs Fotos Vídeos Infográficos Indicadores Esportes Leitor-Repórter Mural Enquete RSS Edição do Dia

Flóripa 2050 Catarinense 2009 Donna Fashion DC Imposto de Renda Garota Verão TV Digital Revista de Verão Planeta Atlântida Flóripa Tem SOS SC

IMPRIMIR ENVIAR CORRIGIR COMENTAR LETRA A - | A +

Clima | 24/11/2008 | 12h37min

## Nível do Rio Itajaí-Açu começa a baixar em SC

A previsão é que até as 18h o rio atinja oito metros

Atualizada às 19h35min

O boletim das 14h desta segunda-feira, divulgado pela Defesa Civil, informa que o nível do Rio Itajaí-Açu, que inundou totalmente cidades catarinenses como Blumenau e Itajaí, atingiu a marca de 9,6 metros no Centro de Blumenau.

A previsão é que até as 18h o rio chegue a oito metros, deixando de atingir várias ruas.

A Defesa Civil também informa que o distrito de Garcia

Leitores registram estragos da chuva no fim de semana

(6 item(ns) restante(s)) Abrindo página <http://www.clicrbs.com.br/diariocatarinense/jsp/default.jsp?uf=28&local=18&section=Gera>

Internet

Iniciar Clima - Nível do Rio It... Documento1 - Micros...

09:13

SOS RIOS DO BRASIL: CHUVAS E INUNDAÇÕES EM SANTA CATARINA - Microsoft Internet Explorer

Arquivo Editar Exibir Favoritos Ferramentas Ajuda

Endereço <http://sosriodosbrasil.blogspot.com/2008/11/chuvas-e-inundaes-em-santa-catarina.html>

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PESQUISAR BLOG SINALIZAR BLOG Próximo blog

criar um blog | Login

# SOS RIOS DO BRASIL

24 DE NOVEMBRO DE 2008

## CHUVAS E INUNDAÇÕES EM SANTA CATARINA

**Emergência em Santa Catarina**

Do Jornal Diário Catarinense

### Dobra o número de desabrigados e desalojados em Santa Catarina

Boletim da Defesa Civil acusa que 42 mil pessoas tiveram de deixar suas residências

É um Blog destinado a todos aqueles que estão preocupados com a qualidade das águas dos rios do Brasil. Que buscam de alguma forma, através de atitudes PROATIVAS, recuperá-las, conservá-las e preservá-las pela revitalização e renaturalização de nossos cursos d' água. SE ESTÁ DISPOSTO E PODE AJUDAR, SEJA MUITO BEM VINDO!!!

"Um rio é como um espelho que reflete os valores e comportamentos da nossa sociedade"

Concluído

Iniciar SOS RIOS DO BRASIL... Documento1 - Micros... Microsoft Photo Edito...

09:15



Mais mortos em Santa Catarina. Defesa Civil avalia como entrar nas regiões 'vermelhas', com ... - Microsoft Internet Explorer

Arquivo Editar Exibir Favoritos Ferramentas Ajuda

Endereço [http://oglobo.globo.com/pais/mat/2008/11/28/mais\\_mortos\\_em\\_santa\\_catarina\\_defesa\\_civil\\_avalia\\_como\\_entrar\\_nas\\_regioes\\_verme](http://oglobo.globo.com/pais/mat/2008/11/28/mais_mortos_em_santa_catarina_defesa_civil_avalia_como_entrar_nas_regioes_verme)

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**O GLOBO PAÍS** BUSCAR Notícias Na web OK Edição digital No celular No e-mail ASSINE

CAPA PLANTÃO MEU GLOBO BLOGS COLUNISTAS COMUNIDADES EU-REPÓRTER OPINIÃO MULTIMÍDIA GUIAS E SERVIÇOS EXTRA ONLINE DIÁRIO DE S. PAULO

PAÍS RIO CIDADES ECONOMIA MUNDO CIÊNCIA ESPORTES CULTURA EDUCAÇÃO SAÚDE TECNOLOGIA VIAGEM CLASSIFICADOS ZAP AGÊNCIA O GLOBO

Publicada em 29/11/2008 às 00h06m Cadastre-se | Login

**AINDA CHOVE NA REGIÃO**

**Mais mortos em Santa Catarina. Defesa Civil avalia como entrar nas regiões 'vermelhas', com riscos de deslizamentos**

Rogério Dafton - O Globo; Clécio RBS  
Reuters

☆☆☆☆ DÊ SEU VOTO ☆☆☆☆ MÉDIA: 4,0 Comentários



Clique para ampliar

ITAIÁ, FLORIANÓPOLIS, BRASÍLIA, SÃO PAULO e RIO - A chuva continua a fazer vítimas em Santa Catarina. Foram encontrados mais quatro corpos neste sábado na região do Baú, no município de Gaspar, um dos mais afetados pelos temporais, elevando para 109 o número de mortos. A Defesa Civil estadual está reunida neste sábado de manhã para avaliar as regiões consideradas "vermelhas", onde não se pode transitar por causa dos riscos de deslizamentos. Uma dessas áreas é justamente o Braço do Baú, na cidade de Ilhota, que está completamente isolada. Nem veículos de resgate

**PLANTÃO**

**14h17m**  
Lima Neto deixa presidência do Banco do Brasil

**13h38m**  
Lula defende fumódromo, mas projeto está parado há mais de um ano na Casa Civil

**SAIBA MAIS**

- Eleições 2006
- Vestibular

**LINKS ÚTEIS**

- Loterias
- Governo do Brasil
- Câmara dos Deputados

**MULTIMÍDIA**

**VÍDEO**  
Entrega do Prêmio Personalidade do Ano

**FOTOGALERIA**  
Márcio Moreira Alves

**ÁUDIO**  
Marquês e Temer falam das reformas dos apartamentos

**SITES DE COLUNISTAS**

**BLOG DO NOBLAT**  
Presidente do Banco do Brasil deixa o cargo

**RÁDIO DO MORENO**  
Alessi Brothers - All for a reason

(2 item(ns) restante(s)) Abrindo página [http://oglobo.globo.com/pais/mat/2008/11/28/mais\\_mortos\\_em\\_santa\\_catarina\\_defesa\\_civil](http://oglobo.globo.com/pais/mat/2008/11/28/mais_mortos_em_santa_catarina_defesa_civil)

Iniciar Project Manager Cha... PLANTILLA\_PM\_REP... SANTA CATARINA Mais mortos em Sant... 14:47

Risco de novos deslizamentos mantém Santa Catarina em alerta; hospital de campanha da FAB ... - Microsoft Internet Explorer

Arquivo Editar Exibir Favoritos Ferramentas Ajuda

Endereço [http://oglobo.globo.com/pais/mat/2008/12/01/risco\\_de\\_novos\\_deslizamentos\\_mantem\\_santa\\_catarina\\_em\\_alerta\\_hospital\\_de\\_campi](http://oglobo.globo.com/pais/mat/2008/12/01/risco_de_novos_deslizamentos_mantem_santa_catarina_em_alerta_hospital_de_campi)

Quick Search [F3] Type your search here... Search Web Look for Maps Services (17) Web Security Guard Customize

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PAÍS RIO CIDADES ECONOMIA MUNDO CIÊNCIA ESPORTES CULTURA EDUCAÇÃO SAÚDE TECNOLOGIA VIAGEM CLASSIFICADOS ZAP AGÊNCIA O GLOBO

Publicada em 02/12/2008 às 00h55m Cadastre-se | Login

**TRAGÉDIA**

**Risco de novos deslizamentos mantém Santa Catarina em alerta; hospital de campanha da FAB começa a funcionar**

Juraci Perboni - Especial para O Globo; Rogério Dafton - O Globo; Agência Brasil  
Reuters

☆☆☆☆ DÊ SEU VOTO ☆☆☆☆ MÉDIA: 4,0 Comentários



RIO e FLORIANÓPOLIS - A Defesa Civil determinou alerta máximo pelo risco de novos deslizamentos em Santa Catarina, onde 116 pessoas morreram em decorrência das enchurradas. Havia previsão de mais chuva em vários municípios do estado até terça-feira. Devido à falta de segurança e condições de trabalho, as equipes de resgate reduziram o ritmo das buscas em regiões de deslizamento como o Morro do Baú, em Ilhota, que foi interditado. Segundo o meteorologista Marcelo Moraes, o tempo se

**PLANTÃO**

**14h50m**  
Começa sessão da CPI dos Grampos para ouvir Protógenes

**14h45m**  
Novo presidente do BB terá missão de ampliar crédito

**SAIBA MAIS**

- Eleições 2006
- Vestibular

**LINKS ÚTEIS**

- Loterias
- Governo do Brasil
- Câmara dos Deputados
- Senado Federal

**MULTIMÍDIA**

**VÍDEO**  
Entrega do Prêmio Personalidade do Ano

**FOTOGALERIA**  
Márcio Moreira Alves

**ÁUDIO**  
Marquês e Temer falam das reformas dos apartamentos

**SITES DE COLUNISTAS**

**BLOG DO NOBLAT**  
Presidente do Banco do Brasil deixa o cargo

**RÁDIO DO MORENO**  
Alessi Brothers - All for a reason

Concluído

Iniciar Project Manager C... PLANTILLA\_PM\_RE... SANTA CATARINA Risco de novos desl... Microsoft Photo Edi... 14:56

Geral > Os estragos da chuva em SC

clic RBS



Appendix C User Request Form (URF)

User Request Form  
(Affected area information)

To be filled by <i>OPQ</i> Call ID <i>235</i>	
1. Date and time of the call	DAY 27 MONTH (Spell) November YEAR 2008 TIME 18:30 LOCAL TIME ZONE -3 UTC TIME 20:30
2. Name of the organization and caller	CONAE
Phone	+54 03547428/66 Fxt
Fax	+54 03547431000 Ext. 1032
Cellular phone	
E-mail	charter@conae.gov.ar
to be used for call back	
3. Type of disaster	
<input checked="" type="checkbox"/> flood	<input type="checkbox"/> storm/hurricane
<input type="checkbox"/> landslide	<input type="checkbox"/> fire
<input type="checkbox"/> volcano	<input type="checkbox"/> ice
	<input type="checkbox"/> earthquake
	<input type="checkbox"/> oil spill
	<input type="checkbox"/> other (specify)
4. Geographical location	5. Geographical Coordinates in Degrees, minutes, seconds
Region/Country name, approximate geographical location and surface extent.	a) Center Point
Region/country name: Santa Catarina/Brazil	Lat * * * N / S
Location	Long * * * E / W
From	
To	
Extent (km2)	b) Upper left Lat 26° * * South Long 50° * * West
	Lower right Lat 29° * * South Long 48° * * West
6. Approximate date/time of occurrence or predicted occurrence	29 November 2008
7. Additional information on the disaster	The rain-fueled flooding in southern Brazil. The number of deaths attributed to floods rose Tuesday to 84. The flooding has left more than 20,000 people homeless.  Attach some links about the problem.  <a href="http://edition.cnn.com/2008/WORLD/americas/11/27/brazil.flood.s/index.html">http://edition.cnn.com/2008/WORLD/americas/11/27/brazil.flood.s/index.html</a> <a href="http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=56035">http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=56035</a> <a href="http://www.dwr-world.co.uk/function/0_12215_oid_3818556_00.html?maga=en-re-or-ol-1573-raf">http://www.dwr-world.co.uk/function/0_12215_oid_3818556_00.html?maga=en-re-or-ol-1573-raf</a>

5 Additional instructions (shipping instructions)	UF Centro de Informaçoes de Recursos Ambientais e de Hidrometeorologia de Santa Catarina. EPAGRI/CIRAM, Brazil
To be filled by OOO	Authorized User <input checked="" type="checkbox"/> Cooperating Body <input type="checkbox"/> Other <input type="checkbox"/>

Authorized User/Cooperating Body: Fill the form as indicated above and fax it to +39-06-04-180 202. A completed form may additionally be sent as a backup via email to [charlesps@disastercenter.org](mailto:charlesps@disastercenter.org).

~~Dir. Gen. DIRECTOR G. RAGO  
Director de Planeamiento  
y Coordinación, Protección Civil  
Ministerio del Interior~~

## EMERGENCY REQUEST FORM – (common part)

<b>Date: 27/11/2008</b>		<b>Call_ID : 235</b>	
<b>ECO on-duty</b>			
<b>Name</b>	Katarzyna Kozan		
<b>Agency</b>	DMCII		
<b>Phone</b>	+44 1483 803926		
<b>Fax</b>	+44 1483 804298		
<b>Mail</b>	<a href="mailto:k.kozan@dmcii.com">k.kozan@dmcii.com</a>		
<b>Authorized User / Cooperating Body</b>			
<b>Name / Organization</b>	CONAE		
<b>Address</b>			
<b>Phone</b>	+54 35474 26766		
<b>Fax</b>	+54 35474 31000		
<b>Mail</b>	charter@conae.gov.ar		
<b>End User / Agent</b>			
<b>Name / Organization</b>	Centro de Informações de Recursos. Ambientais e Hidrometeorologia de Santa Catarina		
<b>Address</b>	EPAGRI/CIRAM, Brazil		
<b>Phone</b>			
<b>Fax</b>			
<b>Mail</b>			
<b>Type of disaster</b>			
<input checked="" type="checkbox"/> flood	<input type="checkbox"/> storm/hurricane	<input type="checkbox"/> earthquake	
<input type="checkbox"/> landslide	<input type="checkbox"/> fire	<input type="checkbox"/> oil spill	
<input type="checkbox"/> volcano	<input type="checkbox"/> ice	<input type="checkbox"/> other (specify)	
<b>Affected area details</b>			
<b>Geographical location</b>	<b>Geographical Coordinates in Degrees, minutes, seconds</b>		
Approximate geographical location and surface extent	a) Center Point	b) Upper left	
Location:	Lat ...°...'..." N	Lat 26°00'00" S	
<b>Santa Catarina, Brazil</b>	Long ...°...'..." E	Long 50°00'00" W	
			
		Lower right Lat 29°00'00" S Long 48° 00'00" W	
<b>Comments or Special instructions</b>			

**Data delivery:** <ftp://charterpm@uranus.esrin.esa.it/WhiteBoard>, or: ftp uranus.esrin.esa.it  
 username: charterpm  
 password: n2daa  
 cd WhiteBoard; cd CALL\_235

**Appendix D Emergency Data Request Submission forms for the various satellites tasked**

DOSSIER	
<b>Date</b> (dd/mm/yyyy) : 27/11/2008	<b>Call ID:</b> 235
<b>URF:</b> Please find the URF on the next page	
ECO on-duty	
<b>Name</b>	Katarzyna Kozan
<b>Agency</b>	DMCII
<b>Phone</b>	+44 1483 803926
<b>Fax</b>	+44 1483 804298
<b>Mail</b>	<a href="mailto:k.kozan@dmcii.com">k.kozan@dmcii.com</a>
AU	
<b>Name / Organization</b>	CONAE
<b>Address</b>	
<b>Phone</b>	+54 35474 26766
<b>Fax</b>	+54 35474 31000
<b>Mail</b>	<a href="mailto:charter@conae.gov.ar">charter@conae.gov.ar</a>
EU	
<b>Name / Organization</b>	Centro de Informações de Recursos Ambientais e Hidrometeorologia de Santa Catarina
<b>Address</b>	EPAGRI/CIRAM, Brazil
<b>Phone</b>	
<b>Fax</b>	
<b>Mail</b>	
Emergency type	
<input type="checkbox"/> Earthquake <input checked="" type="checkbox"/> Flood <input type="checkbox"/> Ice <input type="checkbox"/> Storm / Hurricane <input type="checkbox"/> Fires <input type="checkbox"/> Industrial danger <input type="checkbox"/> Landslide <input type="checkbox"/> Volcano <input type="checkbox"/> Other:	
Area details	
<b>Area Name / Country</b>	Santa Catarina, Brazil
<b>Map of interest:</b> Please find the Map below	
<b>General Information on the event:</b> The rain-fuelled flooding in southern Brazil. The number of deaths attributed to floods raise on Tuesday to 84. The flooding has left more that 20,000 people homeless.	
<b>Information and preferences provided by Requester:</b>	

Acquisition & Archives Plan						
Agency	Satellites				Program / Archive	
<input checked="" type="checkbox"/> CNES	<input type="checkbox"/> SPOT2	<input type="checkbox"/> SPOT4	<input checked="" type="checkbox"/> SPOT5		<input checked="" type="checkbox"/> Pr.	<input checked="" type="checkbox"/> Ar.
<input checked="" type="checkbox"/> ESA	<input checked="" type="checkbox"/> ENVISAT		<input type="checkbox"/> ERS2		<input checked="" type="checkbox"/> Pr.	<input checked="" type="checkbox"/> Ar.
<input checked="" type="checkbox"/> CSA	<input checked="" type="checkbox"/> RADARSAT				<input checked="" type="checkbox"/> Pr.	<input checked="" type="checkbox"/> Ar.
<input type="checkbox"/> ISRO	<input type="checkbox"/> IRS1C	<input type="checkbox"/> IRS1D	<input type="checkbox"/> IRSP4	<input type="checkbox"/> IRSP6	<input type="checkbox"/> Pr.	<input type="checkbox"/> Ar.
<input type="checkbox"/> CONAE	<input type="checkbox"/> SAC-C				<input type="checkbox"/> Pr.	<input type="checkbox"/> Ar.
<input type="checkbox"/> NOAA	<input type="checkbox"/> POES	<input type="checkbox"/> GOES		<input type="checkbox"/> Pr.	<input type="checkbox"/> Ar.	
<input type="checkbox"/> USGS	<input type="checkbox"/> LANDSAT				<input type="checkbox"/> Pr.	<input type="checkbox"/> Ar.
<input checked="" type="checkbox"/> DMC	<input checked="" type="checkbox"/> DMC Constellation				<input checked="" type="checkbox"/> Pr.	<input checked="" type="checkbox"/> Ar.
<input checked="" type="checkbox"/> JAXA	<input checked="" type="checkbox"/> ALOS				<input checked="" type="checkbox"/> Pr.	<input checked="" type="checkbox"/> Ar.
<input type="checkbox"/> CNSA	<input type="checkbox"/> CBERS				<input type="checkbox"/> Pr.	<input type="checkbox"/> Ar.
<b>ERF:</b> Please find all the ERF files and the event log below						

### General Emergency Request Form

EMERGENCY REQUEST FORM – (common part)		
<b>Date:</b> 27/11/2008	<b>Call ID :</b> 235	
ECO on-duty		
<b>Name</b>	Katarzyna Kozan	
<b>Agency</b>	DMCII	
<b>Phone</b>	+44 1483 803926	
<b>Fax</b>	+44 1483 804298	
<b>Mail</b>	<a href="mailto:k.kozan@dmcii.com">k.kozan@dmcii.com</a>	
Authorized User / Cooperating Body		
<b>Name / Organization</b>	CONAE	
<b>Address</b>		
<b>Phone</b>	+54 35474 26766	
<b>Fax</b>	+54 35474 31000	
<b>Mail</b>	charter@conae.gov.ar	
End User / Agent		
<b>Name / Organization</b>	Centro de Informações de Recursos. Ambientais e Hidrometeorologia de Santa Catarina	
<b>Address</b>	EPAGRI/CIRAM, Brazil	
<b>Phone</b>		
<b>Fax</b>		
<b>Mail</b>		
Type of disaster		
<input checked="" type="checkbox"/> flood	<input type="checkbox"/> storm/hurricane	<input type="checkbox"/> earthquake
<input type="checkbox"/> landslide	<input type="checkbox"/> fire	<input type="checkbox"/> oil spill
<input type="checkbox"/> volcano	<input type="checkbox"/> ice	<input type="checkbox"/> other (specify) _____

Affected area details	
Geographical location	Geographical Coordinates in Degrees, minutes, seconds
<p>Approximate geographical location and surface extent</p> <p>Location:</p> <p><b>Santa Catarina, Brazil</b></p>	<p>a) Center Point</p> <p>Lat ...°...'..." N Long ...°...'..." E</p> <p>b) Upper left Lat 26°00'00" S Long 50°00'00" W</p> <div data-bbox="965 521 1272 705" style="border: 1px solid black; width: 192px; height: 82px; margin: 10px auto;"></div> <p style="text-align: right;">Lower right Lat 29°00'00" S Long 48° 00'00" W</p>
Comments or Special instructions	
<p><b>Data delivery:</b> <a href="ftp://charterpm@uranus.esrin.esa.it/WhiteBoard">ftp://charterpm@uranus.esrin.esa.it/WhiteBoard</a>, or: ftp uranus.esrin.esa.it  username: charterpm  password: awlb9d  cd WhiteBoard; cd CALL_235</p>	

## Emergency Request Form-DMC



Email the completed form to [CharterActivation@dmcii.com](mailto:CharterActivation@dmcii.com)

Call ID #  Request Date

### Data Type Request

Archived Data

Programmed Data

Archived Acquisition Window
Start Date <input type="text"/>
End Date <input type="text"/>

Programmed Acquisition Window
Start Date <input type="text"/>
End Date <input type="text"/>

### Product Level

- L0R  Radiometrically corrected, single band images
- L1R  Radiometrically corrected, band and bank registered images
- L1T  Orthorectified and georeferenced L1R images  
*(Please note that it is not always possible to supply this product level)*

### Data Delivery

All data will be delivered by FTP.

**UPLOAD**  DMCII will upload the data directly to the recipient's FTP

FTP Address   
Username   
Password

**DOWNLOAD**  Download the data directly from the DMCII FTP  
*DMCII will provide FTP details when the data is available for download*

Email the completed form to [CharterActivation@dmcii.com](mailto:CharterActivation@dmcii.com)

## Emergency Request Form-ESA

### ESA Emergency Request Form (specific part)

<b>ESA Emergency Request</b>	<b>Id</b>	235
Date/time received at ESA		

#### ERS Scenes detail

Orbit	Track	Frame	Date (dd-mmm-yyyy)

#### ERS Product details

<input type="radio"/> RAW	<input type="radio"/> SLCI	<input type="radio"/> PRI
---------------------------	----------------------------	---------------------------

ERS FTP pick up available only for acquisitions within visibility of ESA stations Matera and Kiruna.

Any ERS acquisition on an area outside Europe and North Africa will require data transfer on media from station to ESA. Therefore the delivery of the data to Charter user will be delayed of some weeks.

#### ENVISAT ASAR Scenes detail

Orbit	Swath (WS, 1-7)	Polarization (*)	Centr. Lat (N/S deg:min)	Centr. Long (E/W deg:min)	Date (dd-mmm-yyyy)
34031	WS	VV	-27:16'	-49:46'	02-09-2008
32800	WS	VV	-27:07'	-50:26'	08-06-2008
33301	I2	VV	-27:30'	-48:49'	13-07-2008
35262	I4	HH	-27:26'	-49:06'	27-11-2008

(\*) Polarizations: **VV, HH (WS & IM Mode), HH/VV, HH/HV, VV/VH (AP Mode only).**

#### Product details ENVISAT ASAR Narrow Swath

<input type="radio"/> IMS/APS (SLC)	<input type="radio"/> IMP/APP (PRI)	<input type="radio"/> WSM (Wide Swath Medium res)
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#### Recipient details

Destination	<input checked="" type="radio"/> AUTHORIZED USER	<input type="radio"/> END USER
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User e-mail	SEE GENERAL ERF FOR DETAILS
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**Emergency Request Form-CSA**

**RADARSAT EMERGENCY REQUEST FORM (specific part)**

**Charter Space and Major Disasters**

<b>Date/Time received at CSA:</b>	
<b>CSA On-Call Officer:</b>	<b>OCP:</b>

CSA Internal Use Only

**Call\_ID #: 235**

<b>Number of Acquisitions Requested:</b>		(Maximum 5 image frames)
<b>First Frame:</b>	<input type="checkbox"/> New Acquisition	<input checked="" type="checkbox"/> Archive Data
Cycle: 105 070.57873	Relative Orbit Start Time: 36169.57873	Duration: 21.21      Beam: W2
Gain Control:	<input checked="" type="checkbox"/> Automatic Gain Control	<input type="checkbox"/> Fixed Gain
<b>Date &amp; Time of Image (UTC): 2002-Oct-09 08:37:46.37</b>		
<b>Second Frame:</b>	<input checked="" type="checkbox"/> New Acquisition	<input type="checkbox"/> Archive Data
Cycle: 198 313.57744	Relative Orbit Start Time: 68311.57744	Duration: 21.98      Beam: W1
Gain Control:	<input checked="" type="checkbox"/> Automatic Gain Control	<input type="checkbox"/> Fixed Gain
<b>Date &amp; Time of Image (UTC): 2008-Dec-05 08:41:50.47</b>		
<b>Third Frame:</b>	<input checked="" type="checkbox"/> New Acquisition	<input type="checkbox"/> Archive Data
Cycle: 198 292.91545	Relative Orbit Start Time: 68290.91545	Duration: 16.83      Beam: W3
Gain Control:	<input checked="" type="checkbox"/> Automatic Gain Control	<input type="checkbox"/> Fixed Gain
<b>Date &amp; Time of Image (UTC): 2008-Dec-03 21:59:58.77</b>		
<b>Fourth Frame:</b>	<input checked="" type="checkbox"/> New Acquisition	<input type="checkbox"/> Archive Data
Cycle: 199 049.91979	Relative Orbit Start Time: 68390.91979	Duration: 21.15      Beam: W2
Gain Control:	<input checked="" type="checkbox"/> Automatic Gain Control	<input type="checkbox"/> Fixed Gain
<b>Date &amp; Time of Image (UTC): 2008-Dec-10 21:56:13.15</b>		
<b>Fifth Frame:</b>	<input checked="" type="checkbox"/> New Acquisition	<input type="checkbox"/> Archive Data
Cycle: 199 070.57590	Relative Orbit Start Time: 68411.57590	Duration: 21.78      Beam: W2
Gain Control:	<input checked="" type="checkbox"/> Automatic Gain Control	<input type="checkbox"/> Fixed Gain
<b>Date &amp; Time of Image (UTC): 2008-Dec-12 08:37:29.25</b>		

Call\_ID# : 235

**PROCESSING DETAILS:**

Product:  Path Image (SGF)  Path Image Plus (SGX)  Single Look Complex (SLC)  
 ScanSAR Narrow (SCN)  ScanSAR Wide (SCW)  Signal (RAW)

Processing

Remarks:

Media:  CD-ROM  Exabyte (2GB)  Exabyte (5GB)  Electronic - ITN  
Data Format:  CEOS  MrSID  TIFF  GeoTIFF  JPEG

Application:  Geology  Forestry  Oceans  Agriculture  Ice  
 Hydrology  Other -specify:

**DELIVERY DETAILS:**

Who is to receive the data:  Authorized User  End User

Type of delivery:  FTP  Courier  Other

FTP IP address: <ftp://charterpm@uranus.esrin.esa.it/WhiteBoard>, or: ftp uranus.esrin.esa.it  
cd WhiteBoard; cd CALL\_235

Login: charterpm

Password: n2daa

Courier special instructions:

Target Delivery Date:

**Approved by CSA:**

**Date / Time:**

**Comments:**

Emergency Request Form-USGS

**USGS Data Acquisition Request Form**  
**International Charter**

Archive Search requested – Yes

New Acquisitions requested – Yes

◆ Additional remarks \_\_\_ PLEASE SEE GENERAL ERF FOR DETAILS

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Emergency Request Form-JAXA

**JAXA EMERGENCY REQUEST FORM (Specific Part)**

International Charter on “Space and Major Disasters”

<b>Date and Time of Request</b>	<u>11/28/2008</u> (MM/DD/YYYY) <u>01:37</u> (UTC)
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**ALOS Data Request**

<b>New Acquisition</b>				
Sensor	Mode	AcquisitionDate (MM/DD/YYYY)	Path	Remarks
<input type="checkbox"/> PRISM	<input type="checkbox"/> OB1 <input type="checkbox"/> OB3			Pointing Angle (    deg.)
<input type="checkbox"/> AVNIR-2	OBS			Pointing Angle (    deg.)
<input checked="" type="checkbox"/> PALSAR	<input checked="" type="checkbox"/> FBS <input type="checkbox"/> FBD <input type="checkbox"/> PLR <input checked="" type="checkbox"/> WB1			Off-nadir Angle (    deg.) Polarization: <input checked="" type="checkbox"/> HH <input type="checkbox"/> VV (FBS/WB1) <input type="checkbox"/> HH+HV <input type="checkbox"/> VV+VH (FBD)

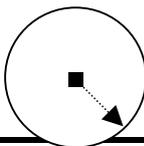
Archive Data					
Sensor	Mode	Acquisition Date (MM/DD/YYYY)	Path	Frame	Remarks
PALSAR	WB1	09/10/2008	385	4200	
PALSAR	WB1	09/10/2008	385	4150	

**Processing Level:** All products will be processed at the Level 1B2 for AVNIR-2/PRISM and Level 1.5 for PALSAR unless specified below.  
AVNIR-2, PRISM: \_\_\_\_\_ PALSAR:

**Delivery Details:** Upload to the recipient's FTP server  
 FTP address: \_\_\_\_\_  
 Username: \_\_\_\_\_ Password: \_\_\_\_\_  
Download from JAXA FTP server  
Other: \_\_\_\_\_

**Additional Remarks**  
 SEE GENERAL ERF FOR DETAILS

### Emergency Request Form-CNES

EMERGENCY REQUEST FORM FOR SPOT DATA (specific part) International Charter on Space and Major Disasters	
<b>Requested image location details: <u>mandatory</u></b>	
<u>Area Name / Country :</u>  <b>Santa Catarina, Brazil</b>	<u>Coordinates of image center point :</u> (ONLY in Degrees, Minutes, seconds)  Latitude : <b>27 ° 30 ' 00" S</b> Longitude : <b>49 ° 00 ' 00" W</b>   (Radius = 30 km)
<b>New acquisition request (*):</b>	
<input checked="" type="checkbox"/> First acquisition date : 30 /11 / 2008 (dd/mm/yy) or <input type="checkbox"/> As soon as possible	
N.B. : the programming on this area will be activated for one week nominally	
<b>Requested image(s) :</b>	
<input type="checkbox"/> Any resolution, as soon as possible  <b>OR</b> <input type="checkbox"/> 10m-20m <input checked="" type="checkbox"/> 5m -2.5m	<input type="checkbox"/> Black and white <input checked="" type="checkbox"/> Colour

Pre-processing level : <input checked="" type="checkbox"/> 1A or <input type="checkbox"/> 1B or <input type="checkbox"/> 2A	
Additional instructions :	
<b>Archive data request (*):</b>	
<input type="checkbox"/> archive search requested	<b>OR</b> <input checked="" type="checkbox"/> image ID: 57144040707211325332J
Pre-processing level : <input checked="" type="checkbox"/> 1A or <input type="checkbox"/> 1B or <input type="checkbox"/> 2A	
Additional instructions :	
(*) CAUTION: a maximum of 2 images in total (for example one archive plus one new acquisition) shall be ordered by the ECO, on the same area (If more images or extension of the target area, or extension of the programming period are needed, an agreement must be requested to CNES via SPOT IMAGE : <a href="mailto:charter.disasters@spotimage.fr">charter.disasters@spotimage.fr</a> )	
<b>Media :</b>	Will be issued through FTP
<b>Shipping to:</b>	
<input checked="" type="checkbox"/> Authorized User	<input type="checkbox"/> End User
	<input type="checkbox"/> : (Other) (please mention email address)
Additional information :	<b>SEE GENERAL ERF FOR DETAILS</b>

**Issues Encountered**

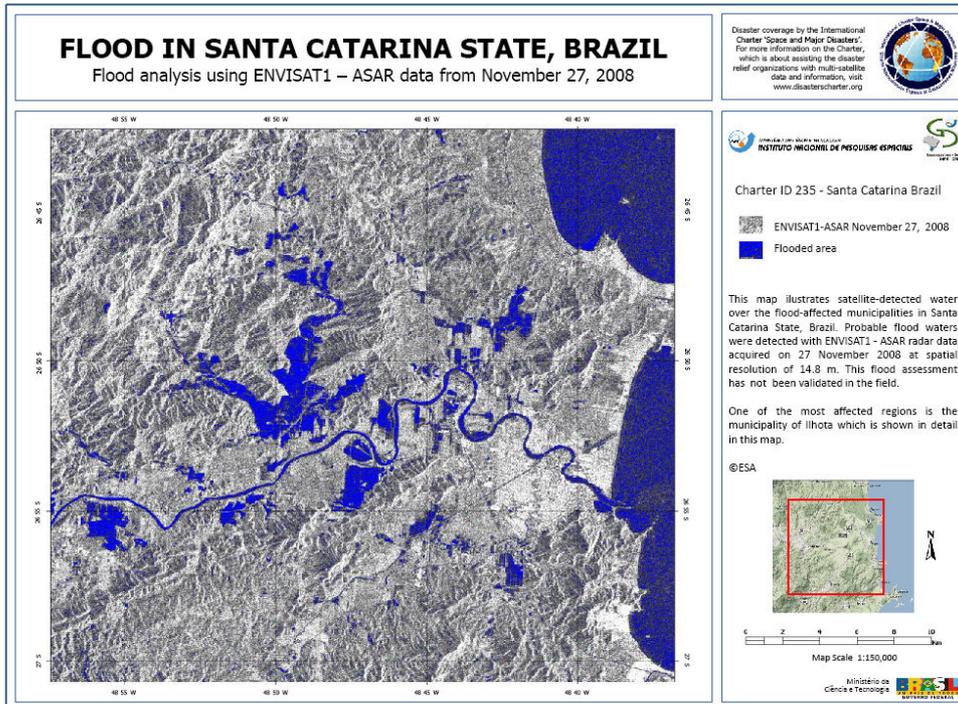
ECO's email server didn't work until 28/11/2008 08:25. All emails with information about Call 235 received at about 08:26. Because of that the new ERF had to be sent to the agencies to inform about the correct password to the ftp uranus.esrin.esa.it.

## Appendix E Copy of final value added products delivered

Map of flooding areas from Ilhota Municipality, Santa Catarina Image-PALSAR Image



Map of flooding areas from Ilhota Municipality, Santa Catarina State-ENVISAT Image



Flood and land cover map from Ilhota Municipality, Santa Catarina State-ENVISAT Image

