

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS

The International Charter "Space and Major Disasters"

Laercio Namikawa - Executive Secretariat - INPE laercio.namikawa@inpe.br An international agreement by Satellite Operators to provide priority access to satellite data in the event of Major Disasters.

Founded by Space Agencies in 1999 following UNISPACE III. Declared operational November 13, 2000.

- Disaster response
- Multi-satellite Free Data Priority & fast access
- Satellite Tasking and Archive data
- Data processing to pre-determined level



Charter Members





Charter Satellites









ABAE VRSS-1, VRSS-2

CNES PLEIADES, SPOT

CBERS-4, GF-1, GF-2, GF-3, GF-4, FY-3C, JILIN-1, OVS-1, OHS-2,

CNSA Beijing-2

CONAE SAOCOM-1A

CSA RCM-1, RCM-2, RCM-3

DLR TerraSAR-X/TanDEM-X

DMC UK-DMC2, Alsat-B

ESA Sentinel-1, Sentinel-2

EUMETSAT Meteosat, Metop

ISRO Cartosat-2, Resourcesat-2, Resourcesat-2A

INPE CBERS-4, CBERS-4A

JAXA ALOS-2, KIBO HDTV-EF

KARI KOMPSAT-2, KOMPSAT-3, KOMPSAT-3A, KOMPSAT-5

NOAA POES, SUOMI-NPP, GOES

PLANET Planetscope

ICEYE, SATELLOGIC

ROSCOSMOS

RESURS-DK, METEOR-M, KANOPUS-V, KANOPUS-V-IK,

RESURS-P

UAESA DubaiSat-2, Khalifasat

USGS Landsat-7, Landsat-8, WorldView, Geoeye



Disasters Types Supported

Designed to address requests concerning major disasters caused by:

Natural events

Earthquakes

Fires

Floods

Ice jams

Landslides

Tsunamis

Ocean storms

Volcanic eruptions

Man-made events

Oil spills

Industrial accidents













Activating the Charter: Authorized Users (AU)

The only bodies authorized to **directly** request the Charter to be activated are **Authorized Users** - AUs (typically civil protection agencies, governmental relief organizations, or other authorities with a mandate related to disaster management).





Authorized Users

- Must be a national disaster
 management authority or its
 delegated agency in that country
- 2. Must have the capacity to download and use maps

3. Must be able to submit and pursue an activation request in English









Mechanisms to Activate the Charter

- **Direct:** The bodies authorized to directly request the Charter to be activated for a disaster occurring in their country are the 'Authorized Users' (AUs). Typically civil protection agencies, governmental relief organizations, or other authorities with a mandate related to disaster management.
- Via an Authorized User on behalf of a user from another country without AU: Authorized Users can request support for a disaster in another country with which they cooperate for relief purposes.
- Via the UN for UN users: The Charter has an agreement with UN OOSA (Vienna) and UNITAR/UNOSAT (Geneva) to provide support to UN agencies. UN OOSA and UNITAR/UNOSAT may submit requests on behalf of users from the United Nations.
- Asia Pacific users via Sentinel Asia: Sentinel Asia is a regional collaboration for satellite based emergency response in Asia Pacific. The Asian Disaster Reduction Centre (Since 2009) can submit activation requests on behalf of Sentinel Asia's national users.



Charter Operational Loop

Verifies the identity of the caller and the completeness of the Request.
Sends the URF to the ECO

Sends to the ODO the User Request Form (URF).
The AU can also submit requests on behalf of an End User



Processes the info received.

Sends the tasking requests to the agencies' Mission Planner.

Sends the PM a dossier with the summary of the performed actions

Executive Secretariat

Member Agencies Mission Planners

> Value Adder

Final Value Added
Products are
delivered to the
final user

The PM, nominated by the Executive Secretariat, contacts the AU/EU to collect more information on the disaster and assesses their needs. Reviews the dossier prepared by the ECO and requests more satellite tasking as needed.

Receives the products from the agencies' order desk and prepare Value (VAPs)

Further processes and interprets the data, and delivers VAPs to the EU via the PM



Charter Activations (by type)

		2000	2001	2002	2003	2004	2002	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Sub-	totals
Solid Earth	Earthquake		3	1	3	5	3	2	5	4	3	5	5	3	4	1	5	4	7	3	4	1	71	
	Landslide	1	1	2	2			1			4	2	1		1	6	2		1	2	4	2	32	140
	Volcano		1	1	2	2	1	1	2	3	3	2	2	1	3	2	4	1		4	1	1	37	
Technological	Oil spill		3	2				4	3	4		1	1		1	1	1		V			3	20	
	Others					1						3				2	2		2	1	2	1	14	34
Weather / Atmospheric	Fire	Ī			5	1	2		4	2	4	1	3	2	2	3	2	4	5	3	6	3	52	506
	Flood/Ocean wave*		3	8	4	9	13	16	22	24	19	26	17	25	24	20	17	16	17	13	18	25	336	
	Ice/Snow hazard								1			1	1		***************************************	1						1	5	
	Storm/Hurricane**			1	2	3	6	1	8	7	7	10	2	9	3	5	5	11	12	7	8	6	113	
	Total / year	1	11	15	18	21	25	25	45	40	40	51	32	40	38	41	38	36	44	33	43	43		

TOTAL

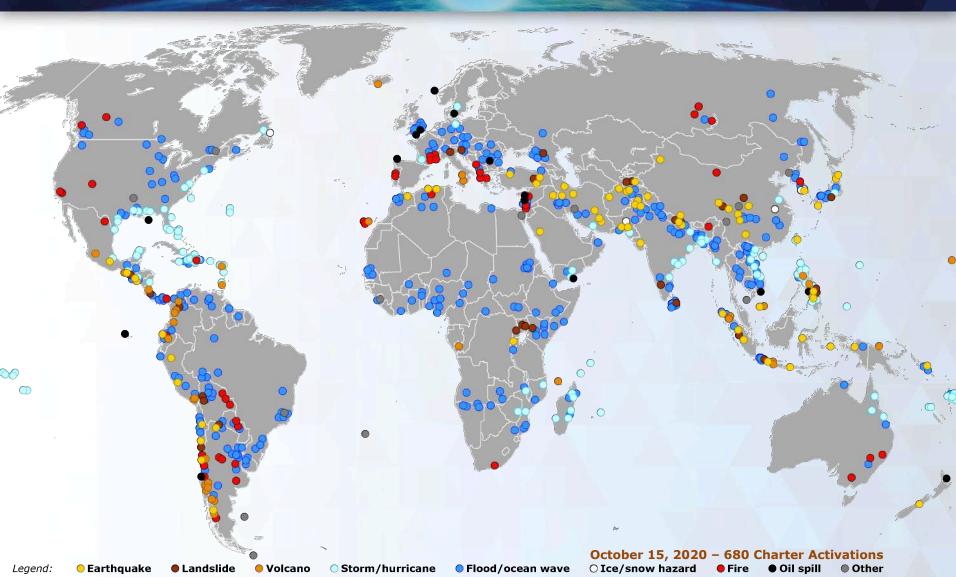
680

 $[\]hbox{*Includes solid earth related phenomenon of a tsunami.}$

^{**}Includes all wind type storms (hurricane, cyclone, typhoon and tornado).



Charter Activations (by distribution)





Number of Activations

31/December/2020:

692 Charter Activations

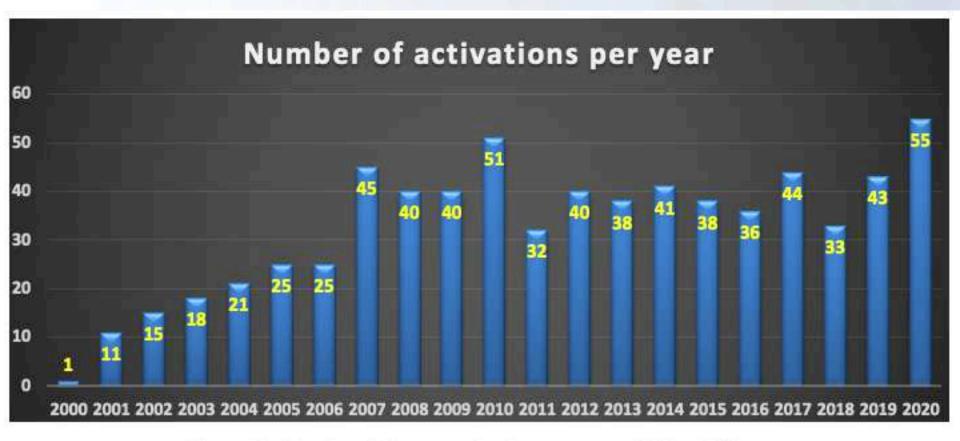
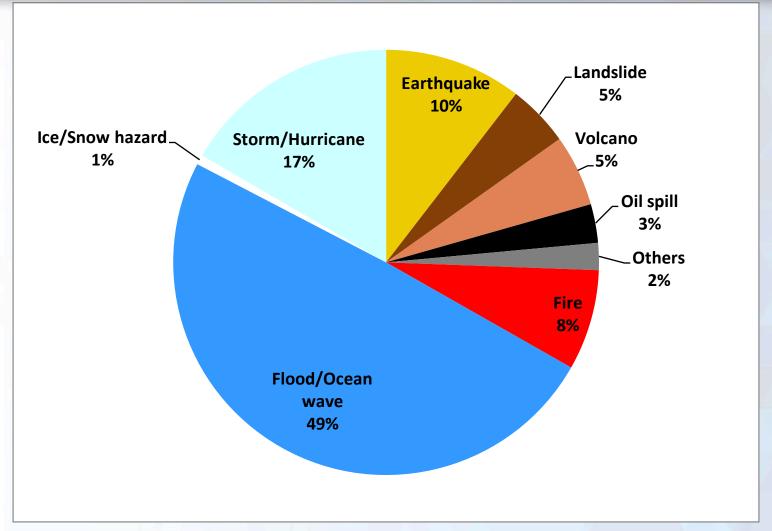


Figure 3-1. Number of Charter activations per year (2000 - 2020)



Activations by Disaster Type





Activations by Disaster Type

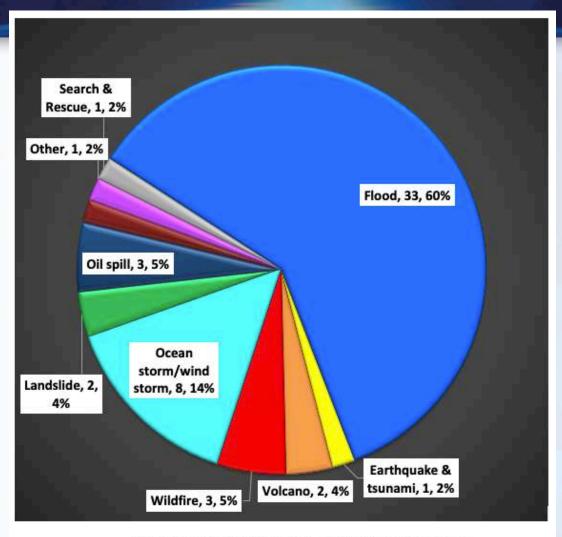
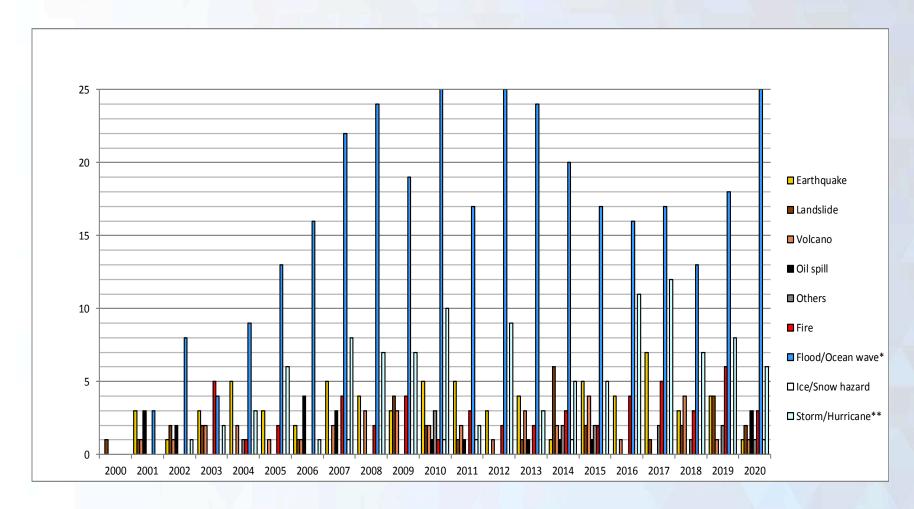


Figure 3-7. 2020 Number of activations by hazard type



2000-2019 Distribution of Activations by Hazard Type



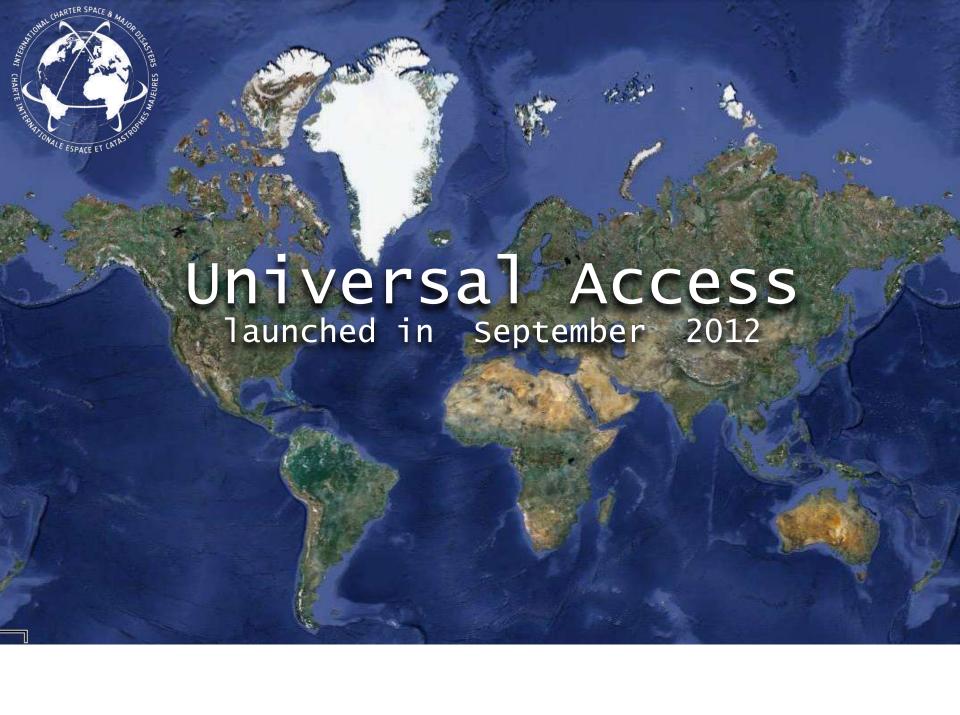
^{*}Includes solid earth related phenomenon of a tsunami.

^{**}Includes all wind type storms (hurricane, cyclone, typhoon and tornado).



Charter Summary Facts

- Space technologies can deliver key information that brings benefit to the definition, planning, implementation, monitoring & assessment of disaster relief operations.
- The Charter is focused on the immediate response phase and services of national disaster management centres and the International Humanitarian community (e.g. UN).
- It is growing: 680 disasters covered since 2000 in 126 countries worldwide.
- Building on a decade of success in making satellite data available to users for disaster response, the Charter is now opening its doors even wider with Universal Access.
- Universal Access benefits national users in countries beyond those of the Charter members, who were previously unable to make direct requests to the Charter during emergency situations.
- Currently, there are 28 new AUs were accepted thanks to the UA process in the following countries: Australia, Belarus, Bolivia, Cayman Islands, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Eswatini, Ghana, Guatemala, Haiti, Iraq, Madagascar, Malawi, Myanmar, New Caledonia, Pakistan, Paraguay, Peru, Sri Lanka, Sudan, Trinidad & Tobago, Togo, Tunisia, and Uruguay and the list is growing.





Universal Access Already 41 countries since 2012





Become an Authorised User

A registration form* (in English, French and Spanish) is available for national authorities to express interest in becoming a Charter Authorized User.

- 1. The candidate fills in the questionnaire providing all required information.
- The questionnaire, with an official cover letter from the organisation, must be sent to: <u>ExecutiveSecretariat@disasterscharter.org</u>
- 3. The request is assessed by the Charter members.



*The form may be downloaded together with the

Universal Access Information brochure from the Charter website:

www.disasterscharter.org/web/guest/activating-the-charter

or www.disasterscharter.org/web/guest/home



Atuação do INPE no Atendimento aos Desastres na Carta

http://www.obt.inpe.br/OBT/assuntos/cooperacao-internacional/international-charter-space-and-major-disasters

http://www.obt.inpe.br/OBT/assuntos/cooperacao-internacional/imagens-para-o-disasters-charter

Acesso à Informação



Últimas Notícias

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International Charter - Space & Major Disasters



O Programa Disasters Charter é um consórcio de instituições e agências espaciais que fornece dados orbitais em situações de emergências causadas por desastres naturais em todo o mundo. O Programa foi criado em 2000 a partir das recomendações da 3ª Conferência das Nações Unidas sobre a Exploração e Uso Pacífico do Espaço Exterior (Unispace III), realizada em Viena em julho de 1999. O INPE formalizou seu ingresso no Programa em novembro/2011.

As agências espaciais que trabalham dentro do Charter unem forças para adquirir imagens de satélite o mais rápido possível, dedicando-se a garantir que os dados estejam disponíveis para uso humanitário.

Uma Ativação do Charter é iniciada por um Usuário Autorizado (UA) (24 horas por dia, 7 dias por semana). Os Usuários Autorizados são as agências responsáveis pelo gerenciamento do desastre em cada país. Com a Ativação, o Charter é mobilizado automaticamente para obter recursos de satélite, com imagens e mapas informativos.

Após algumas horas da Ativação ocorre a entrega dos primeiros produtos, permitindo extrair informações dos dados de sensoriamento remoto. Os dados são disponibilizados para os usuários autorizados que acionam equipes para a resposta em campo aos desastres permitindo a busca, o salvamento e a avaliação de danos.



Vídeo explicativo do Disasters Charter (legendas em português)

Últimas Ativações do Disasters Charter

Ativações no Brasil

Imagens para o Disasters Charter

Calendário 2021

Outros Desastres Monitorados

Ferramentas de Monitoramento e Alerta de Desastres

Estrutura do Charter no INPE

Contato

Imagens para o Disasters Charter



Imagens CBERS-4 e/ou 4A / INPE para o Disasters Charter (em ordem cronológica). Acesse o link abaixo de nossa Galeria de Imagens ou website do Disasters Charter para os mapas e imagens produzidas:

IMAGENS 2018

IMAGENS 2019 IMAGENS 2020

IMAGENS 2021

Mapas 2021 (Value Added Products):

Inundação na Bolívia - Ativação 693 (04/01/2021):

Mapa 1 com imagem WPM/CBERS-4A

Mapa 2 com imagem WPM/CBERS-4A

Derrame óleo, SriLanka - Ativação 715 (04/06/2021) Mapa com imagem PAN/CBERS-4





Inundação na Bolívia - Ativação 693 (04/01/2021): Imagens WPM/CBERS-4A

Deslizamentos em Eswatini - Ativação 697 (27/01/2021): Imagens MUX/CBERS-4A

Cicione Seroia, Timor Leste - Ativação 701 (07/04/2021): Imagens CBERS-4

Inundação na Rússia - Ativação 704 (12/04/2021): Imagens CBERS-4A



Inundação em Marrocos - Ativação 694 (12/01/2021): Imagens MUX/CBERS-4A















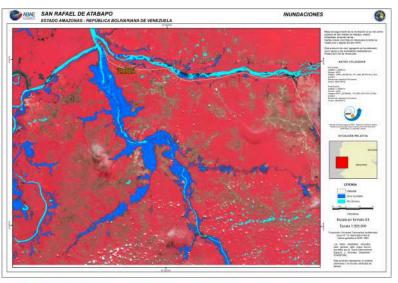
Atuação do INPE no Atendimento aos Desastres na Carta

CBERS4 a partir de Ago/ 2018

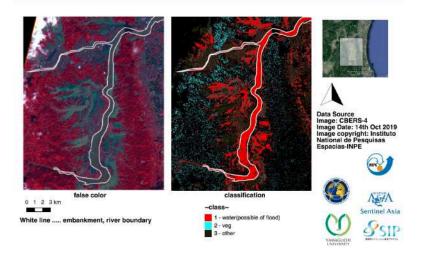
2018: 4 imagens usadas em um produto

2019: 56 imagens usadas em 16 produtos

2020: 73 imagens CBERS4 e 20 CBERS4A usadas em 9 produtos

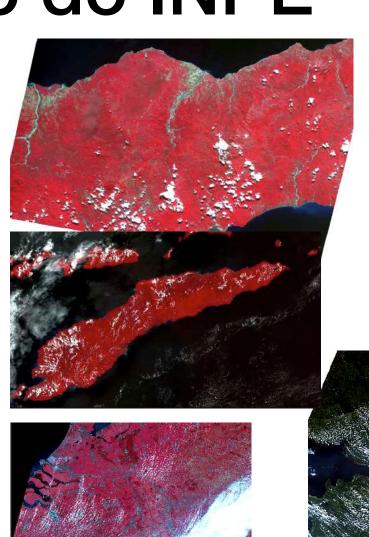


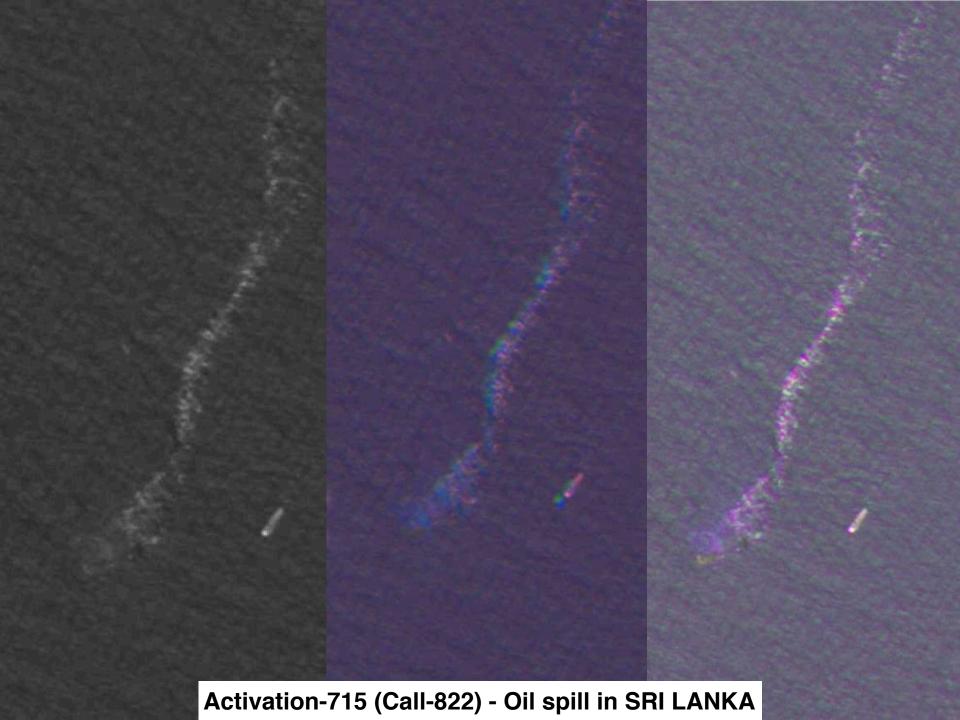
Flood in Abukuma River basin at Marumori and Kakuda

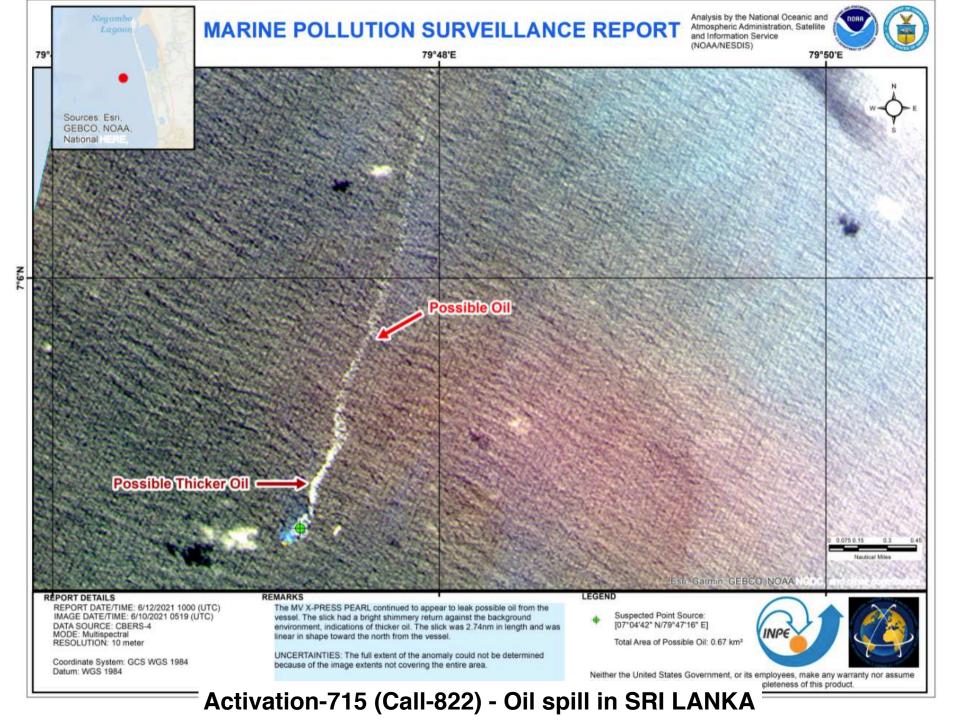


Atuação do INPE - 2021

Bolívia, Marrocos, Eswatini, Chile, Indonésia, Timor Leste, Rússia, Somália, SriLanka, Luxemburgo, Suíça







Disaster Charter no INPE Atendendo um Chamado

URF (User Request Form) e ERF (Emergency Request Form)

Definição da Aquisição - CORCR (Coord. Rastreio, Controle e Recepção de Satélites)

AAP (Acquisition and Archive Plan)

Upload de Imagem de Arquivo

Upload de Imagem Adquirida

URF (User Request Form) e ERF (Emergency Request Form)

URF - AU (Usuário Autorizado) preenche um formulário no COS-2 (Charter Operating System).

URF é recebido verificado pelo ODO (On-Duty Officer). Caso o URF seja válido, é enviado ao ECO (Emergency On-Call Officer)

ERF é gerado pelo ECO e enviado ao orderdesk@inpe.br



ERF

Específico para cada Satélite/ Agência de acordo com tipo de desastre

Exemplo com pedido de CBERS4A, sensor WPM

Aquisição mais próxima possível e imagem de arquivo mais recente possível

Link para o KML com áreas de interesse





INPE EMERGENCY REQUEST FORM (specific part)

Call ID: CallID

DATE/Time received at INPE: INPE On-Call:

INPE Internal Use Only Order ID #:

Planning Order:

☑ CBERS-4A WPM (Res: 2m; AoI swath: 92km; scene length: 92km)

First Acquisition:

- O First Acquisition Date: yyyy/mm/dd
- As Soon as Possible

Area of Interest (download KML file with all areas including precise locations)

☑ ID 797-1 Tetouan priority 1

☑ ID 797-2 Kenitra priority 1

☑ ID 797-3 Casablanca priority 1

Archived Order:

□ CBERS-4A

Acquisition:

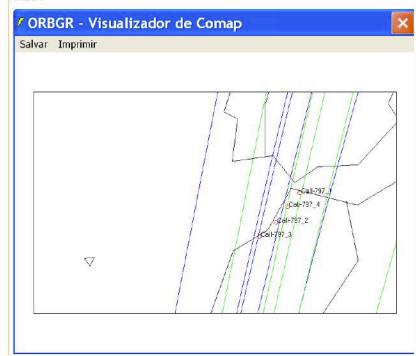
- Most Recent
- O Same Season

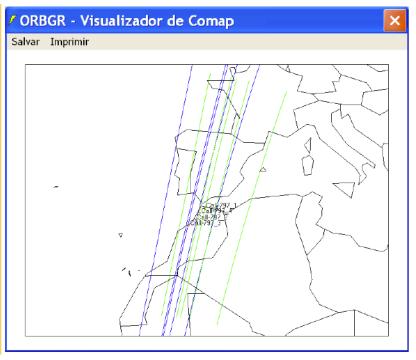
ERF Analisado pelo CORCR

Em 12/01/2021 16:35, CBERS escreveu:

Boa tarde.

Seguem abaixo propostas preliminares de gravação com CBERS-4 (verde) e 04A (azul), ambos em 2021-01-15. A WFI cobriria todo o alvo, mas para PAN (CBERS-4) e WPM + MUX (04A) seriam necessárias visadas fora de nadir para aquisição parcial. Entretanto, no caso do CBERS-4 temos conflito com gravação da CRESDA.





STORBI 7148747.4 0.000131 98.648 82.463 96.657 343.629 06. 01. 2021. 16. 00. 00.

SCOLOR 3 STDATE 15. 01. 2021. 11. 01. 00. 15. 01. 2021. 11. 08. 30.

STIMAC -27, 27. **PLORBI**

STIMAG -13.5 -9.5

PLORBI

STORBI 6999707.6 0.000166 98.058 86.962 332.389 339.676 06. 01. 2021. 16. 00. 00.

SCOLOR 4

STDATE 15. 01. 2021. 11. 30. 00. 15. 01. 2021. 11. 40. 00. STIMAG -27, 27.

PLORBI

STIMAG 2. 10.

PLORBI

Side-looking Used Payloads Satellite Imaging Orbit Start Time End Time Identification Mode Numb CBERS04 recording 2021-01-15.11:00:002021-01-15.11:05:00-1.98 PAN+IRS+MUX+WFI3201;

Aguardo comentários e priorização de alvos para definição de ângulo de visada.

Obrigado.

Jun

Bom dia. Obrigado. Jun Em 12/01/2021 17:07, Laercio Massaru Namikawa escreveu: Jun,

Os alvos 2 e 3 me parecem mais importantes. Entao, vamos imagear estes alvos.

Obrigado,

Laercio

Em 12/01/2021 17:03, CBERS escreveu:

Boa tarde.

Quais alvos adquirimos para MUX e WPM, dado que no ERF todos os alvos estão com mesma prioridade?

Nas figuras da mensagem anterior apliquei visada lateral 6 graus para tentar adquirir simultaneamente os alvos 2 (Kenitra?) e 3 (Casablanca?), ficando de fora o alvo 1 (Tetouan?). (O alvo 4 seria o centro do retângulo que engloba os outros 3...)

Obrigado.

Jun

Em 12/01/2021 16:52, Laercio Massaru Namikawa escreveu:

Boa tarde Jun,

Podemos imagear somente com a CBERS4A, WFI, MUX e WPM.

Obrigado

Laercio

Em 12/01/2021 16:35, CBERS escreveu:

Boa tarde.

Aquisição Definida e Programada

Dear Sirs,

We received an acquisition request from the International Charter Space and Major Disasters concerning floods in Morocco (Charter Call 797).

We are changing the previous schedule of CBERS 04A as follows.

From:

Satellite Identification | Imaging Identification | CBERS04A | Company | Com

Recording 2021-01-15.11:29:002021-01-15.11:40:30

Thank you very much for your attention.

Best Regards.

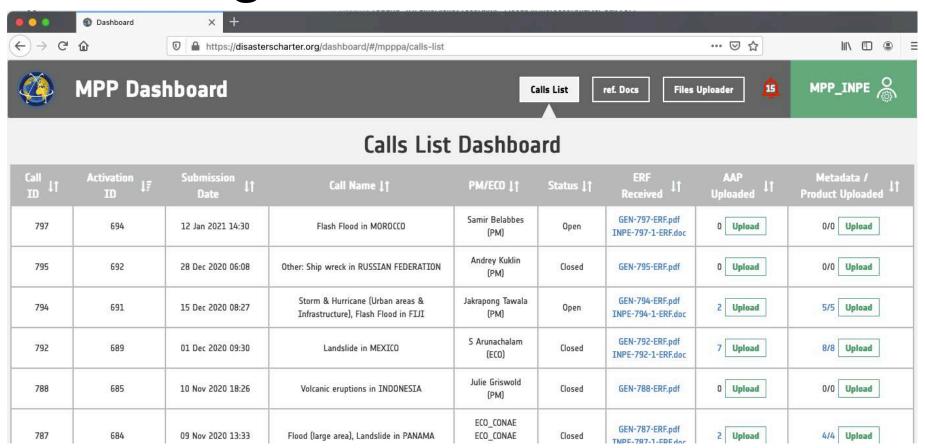
CBERS04A

INPE SCC CBERS Operations Team

Satellite Imaging Start End Side- Used Orbit Recei Imagin Priority Operator Anten Compre Param DDR Identifica Mode Time Time Lock Powled Num ving Moroc emerge INPE A 4:1/2:1 2 record

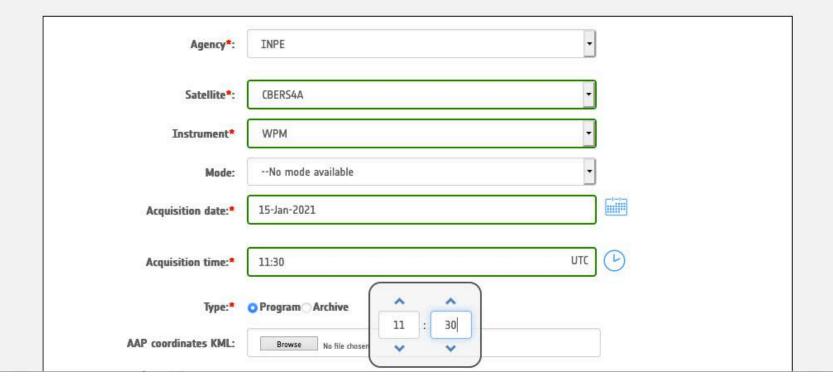
6WPM+MUX+WFI

Login como MPP_INPE



Satellite Imaging Start End Side- Used Orbit Recei Imagin Priority Operator Anten Compre Param DDR Identific Mode Time Time Look Poylood Num ving G Level Noroc emerge INPE A 4:1/2:1 2 record

AAP Upload Dashboard: Activation-694 (Call-797) - Flash Flood in MOROCCO



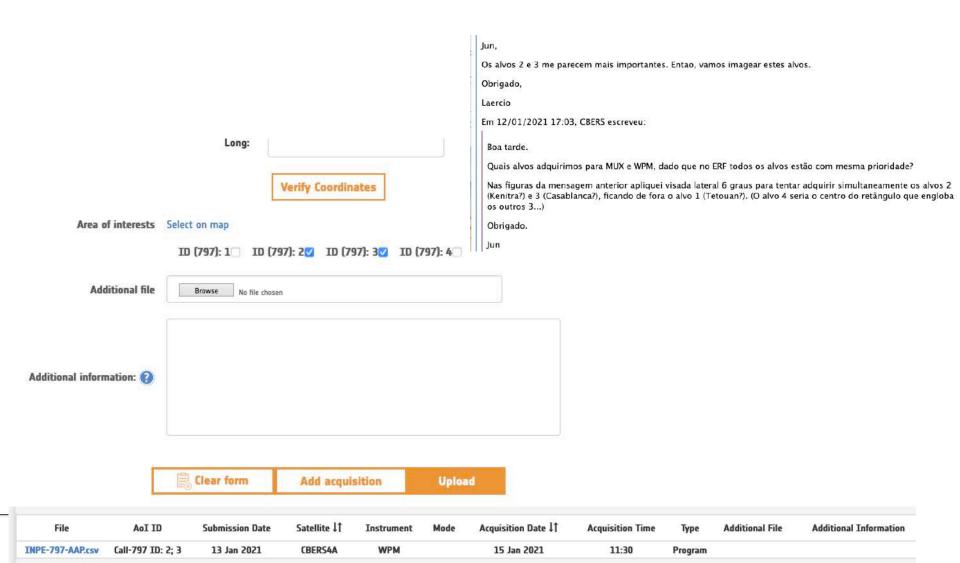
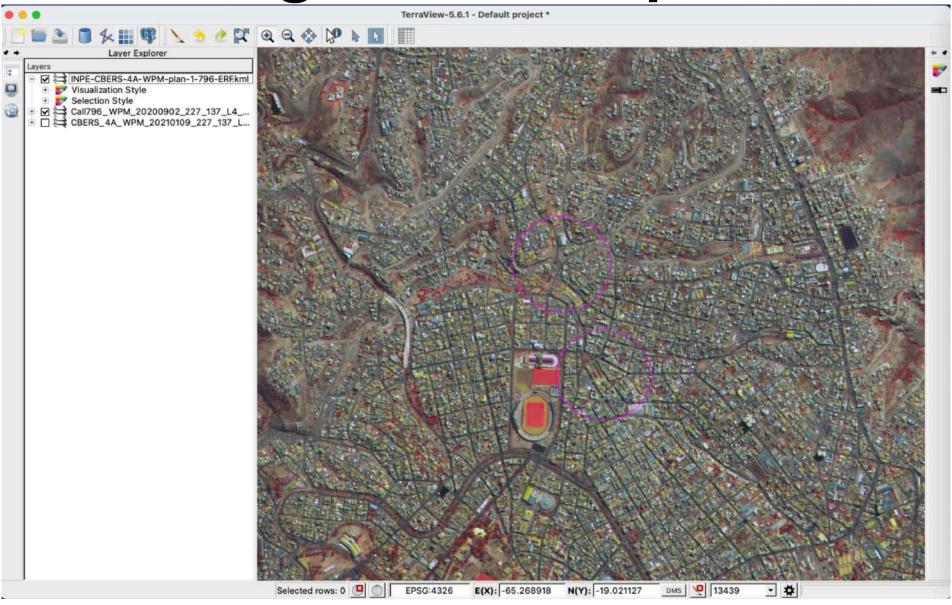


Imagem de Arquivo



Nova Aquisição

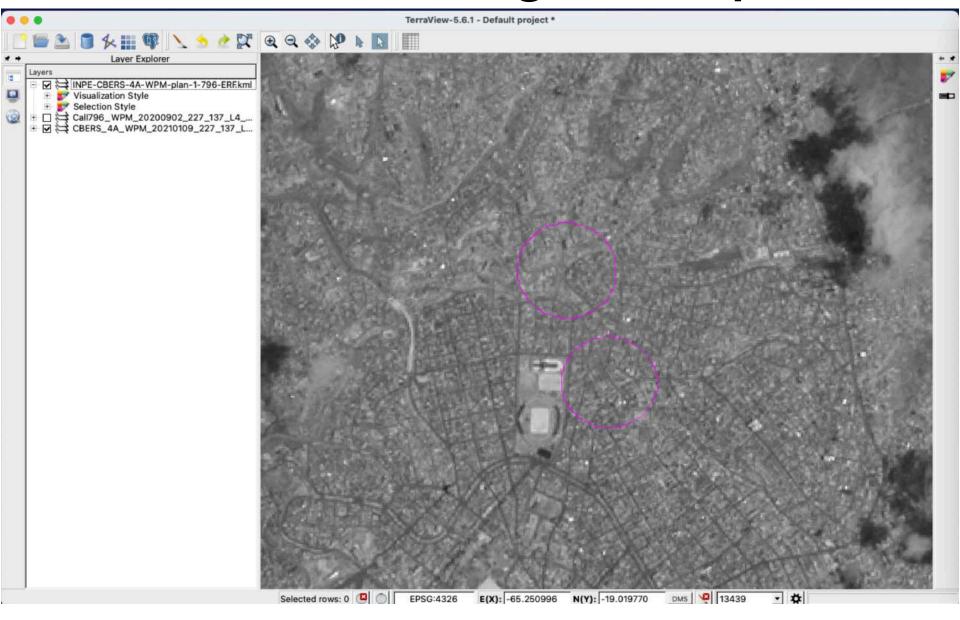
segue abaixo o link para acesso às imagens http://imagens.dgi.inpe.br/cdsr/CHARTER_BOLIVIA_CALL796

09:03

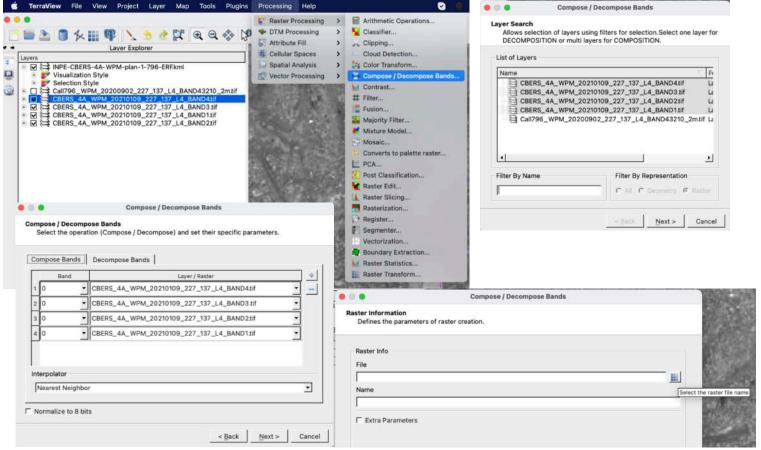
Index of /cdsr/CHARTER BOLIVIA CALL796/2021 01 09/WPM

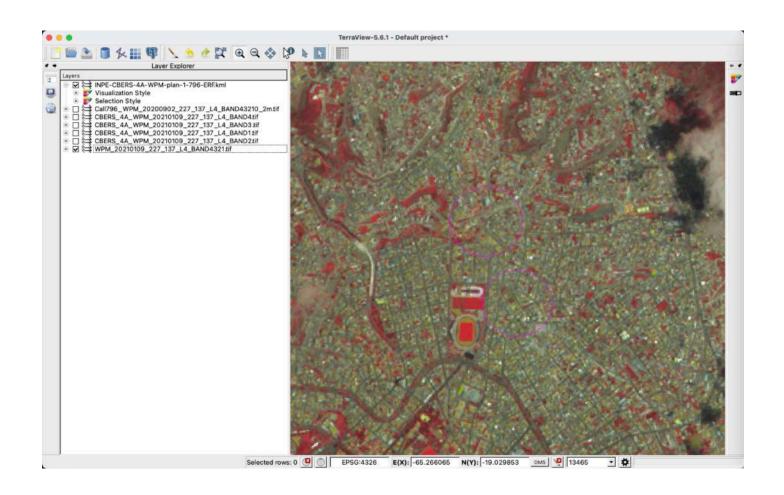
- Parent Directory
- CBERS 4A WPM 20210109 227 136.h5 0.cpf
- CBERS 4A WPM 20210109 227 136.h5 0.ison
- CBERS 4A WPM 20210109 227 136.png
- CBERS 4A WPM 20210109 227 136.png.aux.xml
- CBERS 4A WPM 20210109 227 136 L4 BANDO.tif
- CBERS 4A WPM 20210109 227 136 L4 BANDO.xml CBERS 4A WPM 20210109 227 136 L4 BAND1.tif
- CBERS 4A WPM 20210109 227 136 L4 BAND1.xml
- CBERS 4A WPM 20210109 227 136 L4 BAND2.tif
- CBERS 4A WPM 20210109 227 136 L4 BAND2.xml
- CBERS 4A WPM 20210109 227 136 L4 BAND3.tif
- CBERS 4A WPM 20210109 227 136 L4 BAND3.xml
- CBERS 4A WPM 20210109 227 136 L4 BAND4.tif
- CBERS 4A WPM 20210109 227 136 L4 BAND4.xml
- CBERS 4A WPM 20210109 227 137.h5 0.cpf
- CBERS 4A WPM 20210109 227 137.h5 0.json
- CBERS 4A WPM 20210109 227 137.png
- CBERS 4A WPM 20210109 227 137.png.aux.xml
- CBERS 4A WPM 20210109 227 137 L4 BANDO.tif
- CBERS 4A WPM 20210109 227 137 L4 BAND0.xml
- CBERS 4A WPM 20210109 227 137 L4 BAND1.tif
- CBERS 4A WPM 20210109 227 137 L4 BAND1.xml
- CBERS 4A WPM 20210109 227 137 L4 BAND2.tif
- CBERS 4A WPM 20210109 227 137 L4 BAND2.xml
- CBERS 4A WPM 20210109 227 137 L4 BAND3.tif CBERS 4A WPM 20210109 227 137 L4 BAND3.xml
- CBERS 4A WPM 20210109 227 137 L4 BAND4.tif
- CBERS 4A WPM 20210109 227 137 L4 BAND4.xml
- CBERS 4A WPM 20210109 227 138.h5 0.json
- CBERS 4A WPM 20210109 227 138.png
- CBERS 4A WPM 20210109 227 138.png.aux.xml
- CBERS 4A WPM 20210109 227 138 L2 BANDO.tif
- CBERS 4A WPM 20210109 227 138 L2 BAND0.xml
- CBERS 4A WPM 20210109 227 138 L2 BAND1.tif
- CBERS 4A WPM 20210109 227 138 L2 BAND1.xml
- CBERS 4A WPM 20210109 227 138 L2 BAND2.tif
- CBERS 4A WPM 20210109 227 138 L2 BAND2.xml
- CBERS 4A WPM 20210109 227 138 L2 BAND3.tif
- CBERS 4A WPM 20210109 227 138 L2 BAND3.xml
- CBERS 4A WPM 20210109 227 138 L2 BAND4.tif CBERS 4A WPM 20210109 227 138 L2 BAND4.xml

Verificando a Imagem Adquirida

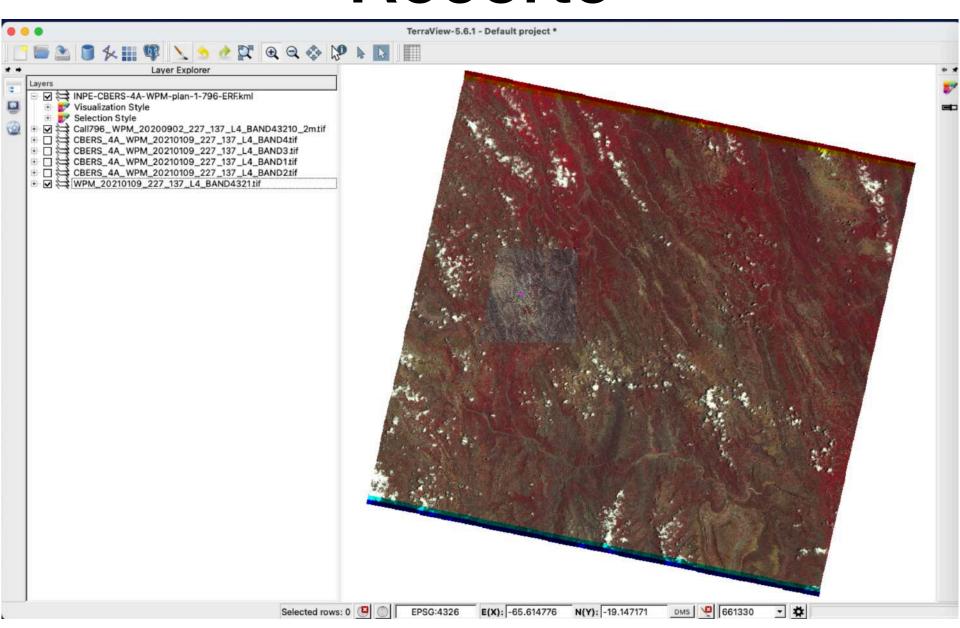


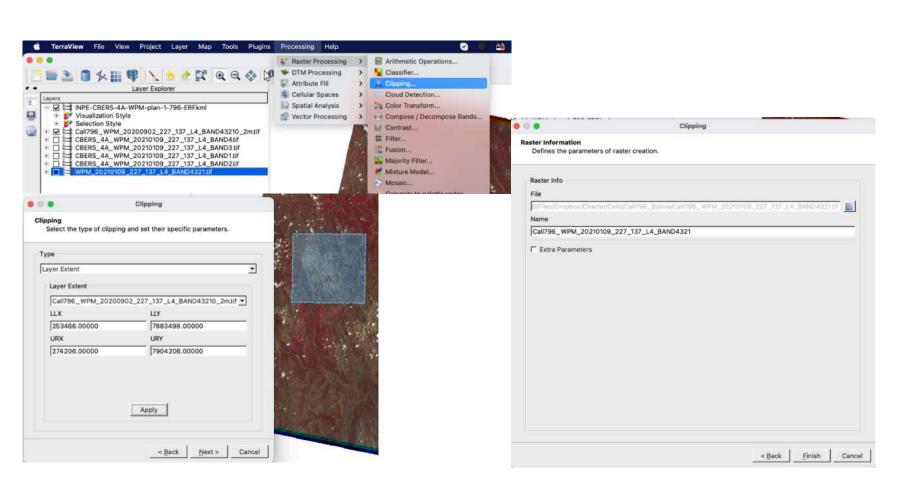
Criando Composição

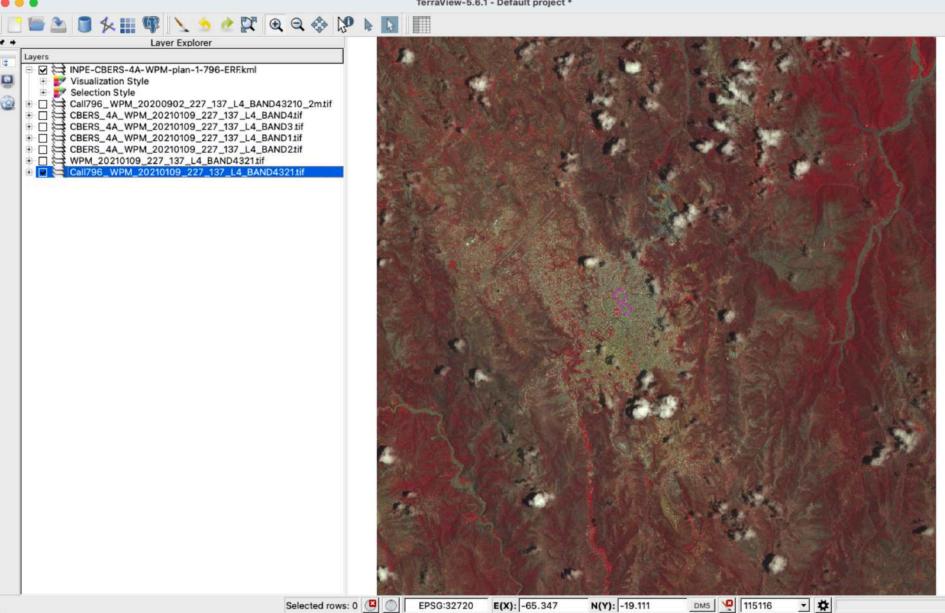




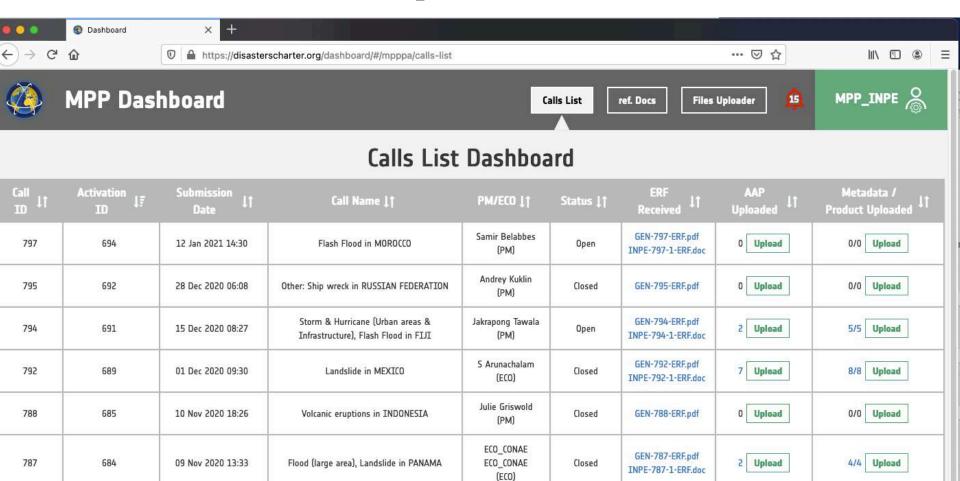
Recorte



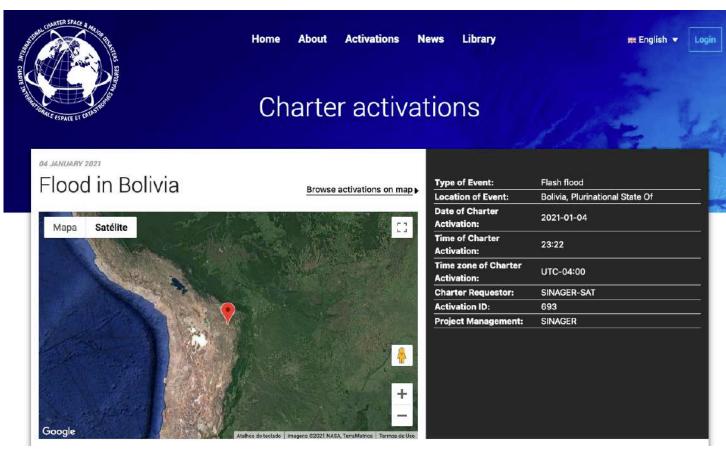




Upload



Produto Valor Agregado (VAP)



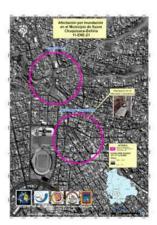
Produto Valor Agregado (VAP)

A hailstorm in Bolivia caused flash flooding in the city of Sucre on 4 January.

The hailstorm lasted only thirty minutes, but was enough to block flood drains and flood streets in the city, sweeping away some vehicles and market stalls. People caught out in the open during the flash flood took hold of nearby lamposts or trees to withstand the waves of water.

Four people were killed, at least six were missing, and seven were reported to be injured.

Products



Flooding in the Municipality of Sucre Chuquisaca-Bolivia

Source: CBERS-4A

Acquired: CBERS-4A: 02/09/2020

Copyright: Map produced by INPE

copyright (2020) INPE



Flash Flood in the Municipality of Sucre Chuquisaca-Bolivia

Source: CBERS-4A

Acquired: CBERS-4A: 02/09/2020

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