Airbus supporting Emergency Response

Global Changes Adaptation Oceania Geospatial Symposium 2022

DEFENCE AND SPACE

Fabrice Triffaut - Canberra





Earth Observation Constellations

Largest commercial satellite constellation with **wide range** of modes, resolutions, swathes and revisit frequencies. **Partnerships** ensure **diversity**, including non-imagery data (HawkEye).

OPTICAL CONSTELLATION



NEXT

Zephyr

CO3D

RADAR CONSTELLATION

[Airbus Amber]

TerraSAR-X Neo

SIGNAL INTELLIGENCE

Pleiades Neo

30 cm

NATIVE RESOLUTION Constellation 4 x IDENTICAL SATELLITES

> 2 million of km² COLLECTED PER DAY

> > 6 Bands

Incl. DEEP BLUE • RED EDGE

3.5m CE90

ACCURACY

EDRS

Space Data Highway

Earth Observation for Security



They fully rely on Airbus' satellite constellation to answer emergency needs







VHR2021, a European Satellite-based Coverage to Support Copernicus

Airbus and its consortium partner GAF AG have delivered to the European Commission and the European Space Agency (ESA) very high-resolution satellite-based coverage of Europe for 2021 for the Copernicus Observation Programme.

For the reference year 2021, six million of square kilometres of freshly acquired very high-resolution, high-accuracy, cloud-free satellite ortho-images are feeding Copernicus geoinformation services and in particular the Land Monitoring Service (CLMS) activities coordinated by the European Environment Agency.

CLMS helps European institutions and governments understand the shape and trend of Europe's land mass and implement their environmental and land management policies.







Airbus Emergency response

International Charter Disaster

Copernicus Emergency

Airbus on-line interfaces (GeoStore, OneAtlas)

Use cases



International Charter Space and Major Disasters Satellite data to support disaster response worldwide

Support National Needs

The Charter is a worldwide collaboration, through which satellite data are made available for the benefit of disaster management. By combining Earth observation assets from different space agencies, the Charter allows resources and expertise to be coordinated for rapid response to major disaster situations; thereby helping civil protection authorities and the international humanitarian community.

This unique initiative is able to mobilise agencies around the world and benefit from their know-how and their satellites through a single access point that operates 24 hours a day, 7 days a week and at no cost to the user.





INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS

A worldwide collaboration through which satellite data are made available for the benefit of disaster management





CHARTER MEMBERS

OPERATING 24 HOURS A DAY

7 DAYS A WEEK





2000 20

FOUNDED BY ESA, CNES AND CSA ON 20 OCTOBER 2000 +20 SUPPORTED BY MORE THAN 20 INTERNATIONAL ORGANISATIONS



MORE THAN 80 NATIONAL USERS FROM OVER 80 COUNTRIES CAN REQUEST DATA FROM THE CHARTER. FIND OUT HOW TO REGISTER THROUGH UNIVERSAL ACCESS: disasterscharter.org/web/guest/how-to-register-as-a-user



International Charter Space and Major Disasters Activating the Charter





An activation starts with an **Authorised User** (AU) - typically a representative of a national civil protection, rescue, or security organisation - who may log in to the Charter Operational System and submit a request to mobilise the space and associated ground resources associated with the Charter members in order to obtain data and information on a major disaster. AU's are the only bodies authorised to directly request an activation of the Charter. They may also request support on behalf of another user with which they co-operate for relief purposes.

International Charter Space and Major Disasters Activating the Charter



AIRRUS

Other mechanisms Via the UN for UN users

The Charter has an agreement with UNOOSA (Vienna) and UNITAR/UNOSAT (Geneva) to provide support to UN agencies. UNOOSA and UNITAR/UNOSAT may submit requests on behalf of users from the United Nations.

Activation for Asia Pacific users via Sentinel Asia's partner, the Asian Disaster Reduction Centre

Sentinel Asia is a regional collaboration for Earth observation based emergency response in 31 Asia Pacific countries. Since 2009 the Charter has granted the Asian Disaster Reduction Centre the right to submit activation requests on behalf of national users of Sentinel Asia.

Further actions to improve Charter access with GEO

In response to a request from the Group on Earth Observation (GEO) to improve access to the Charter during emergencies, collaboration has started with primary focus on users from African countries that do not have a direct access to the Charter. In 2009, the Charter initiated a formal user consultation to address the improvement of Charter access in African countries

International Charter Space and Major Disasters Activating the Charter

Links and contacts

New users without direct access to the Charter should address emergency related enquiries to: <u>executivesecretariat@disasterscharter.org</u>

General enquiries concerning the Charter operations and provisions should be addressed to: <u>webmaster@disasterscharter.org</u>

https://disasterscharter.org/web/guest/home





Copernicus

https://www.copernicus.eu/en/how/how-access-data

Copernicus services catalogue

Access Hubs

Access Points

DIAS

ESA <u>Copernicus Open Access Hub</u> EUMETSAT <u>Copernicus Online Data Access</u> DIAS (for "<u>Data and Information Access Services</u>")

Charter Disaster

https://disasterscharter.org/

Satellite data to those affected by natural or man-made disasters through registered organisations, for use in monitoring and response activities.



Access to Data











WAL CHARTER SPACE & MA 0 ONALE ESPACE EN CATA

Built Up Grading Temperisten Grading # Damaged ----- Head Damaged

- Rosably dan aged ---- Front Frankly demonstra General Information



Map Information

After the encytion of the encommuter roleters kinose-Tengak-kinose-Tengak-tenga neth of Tanga, a basenes was roggered and affering somet basen in the require. The stry near that also below and shock. Compare Methoding the kinoser has basen repeated from the under of Tenga in other annus, the damage assestment is segoring.

Since it is presenting on the formation (see the properties of the properties of the presenting of the present of the presenting of the p

Relevant date records (UTC)

Actuality

Data sources

Prevenuel larger independent of CPUD (2015), contruet by Artise 10, acquired on region provides tools: CPUD (2015), contruent by Artise 10, acquired on region provides tools: CPUD (2016), control or space Artise are 1012, all rights transmit regions: provides tools: CPUD (2016), control or space Artise are 1012, all rights transmit JUD: 000, 01, et approx. The final control or Artise CPUD (2016), and the SPUD (2016) or Artise are 100, and 100,

Indexest region (Provinci IAE) III (2016) CERES (2016), obtained in a planta (EC sequence to the Markov CE sequence to the Array of the Array and Array (2016) CERES (2016), obtained CERES (2016), obtained

Base wear layer (per-Branchig) & (per-Branchig) strategies (2022), (Willingtic etg. Cardinana 2019, Catal Ammanufus Ress (2012), which is the performance meetings, 452 (2013, States Fund 2012, Catalogues (2013)

Pasiation data GHS Possistion Grid C Tampion Commission, 1915

Disclaimer

Products approvaled in this Cognitive TAUS Separit Mapping within your realised in the head of nor allowy within a very whole there applied up to assist table and in iteration. All programmers the matter has a final mapping and the constants, calls and a simplified applied to assist the field in concerning the mattern on the case therein the assister the table product and the table applied app

Densey format are Laurent Genophic PCE Gen./PE3 and vector (ESR statement couple Sett fort, Securitive)

Map protocol by 17HACE released by a GROB 10000. For the latest version of this map and related products yield High-Parkergeness coperation ov/EMS9558

jis era napimapologijes avraja au triburgana snor For fal dovrgiti notis kat itipolininganysoperaka auragong avrabile oppresse rest-meste potis





631586



Emergency Copernicus

Copernicus is an EU programme aimed at developing European information services based on satellite Earth Observation and in situ (non space) data. Copernicus is implemented by the European Commission (EC) with the support from the European Space Agency (ESA) for the Space component and the European Environment Agency (EEA) for the in situ component.

The objective of Copernicus is to monitor and forecast the state of the environment on land, sea and in the atmosphere, in order to support climate change mitigation and adaptation strategies, the efficient management of emergency situations and the improvement of the security of every citizen. Information provided by Copernicus improves people's safety, e.g. by providing information on natural disasters such as forest fires or floods, and thus help to prevent the loss of lives and property, and damages to the environment.

Copernicus is a user driven programme and the information services provided are available to its Users, mostly public authorities, on a **full, open and free-of-charge basis** (<u>https://emergency.copernicus.eu/</u>).









Emergency Copernicus

Who can use the service

Users are entities and organisations at regional, national, European and international level active in the field of crisis management within the EU Member States, the Participating States in the European Civil Protection Mechanism, the Commission's Directorates-General (DGs) and EU Agencies, the European External Action Service (EEAS), as well as international Humanitarian Aid organisations.

There are three distinct user categories:

<u>Authorised Users</u> may trigger the service, by sending a Service Request Form (<u>SRF</u>) directly to the European Response Coordination Centre (ERCC). Authorised Users include National Focal Points (NFPs) in EU Member States and in most countries participating in the European Civil Protection Mechanism as well as EC Services (DGs), the Situation Room of the EEAS and the EU delegations.

Associated Users must coordinate with and go through the Authorised Users in order to trigger the service. Associated Users include local, regional and other public entities; International Governmental Organisations (e.g. UN agencies, World Bank), and National & International Non-Governmental Organisations; the INTCEN, the EU Satellite Centre.

General Public Users are not authorised to trigger the service, but can be informed of an activation request through the web portal. Activations, for which sensitivity restrictions apply, are excluded



Emergency Copernicus EMSR574:

Floods, QLD, Australia (May 2022)

Copernicus EMS Rapid Mapping has been requested by **Emergency Management Australia and states** to assist with situational awareness and impact analysis by providing daily delineation monitoring products.

Copyright Airbus



18

Pleiades images over New South Wales, 07 March 2022

Average delivery time: <02h00.



Pléiades Neo

Cumbre Vieja volcano eruption at La Palma

- 85-days eruption from September 19 to December 13, 2021
- Lava stream 3.5km wide and 6.2km long
- Immense economic and societal damages. The town Todoque has been completely destroyed, La Laguna heavily damaged.





Cumbre Vieja volcano at La Palma island – December 2, 2021 Canary Islands

Pléiades NEO © Airbus DS 2021

Copyright Airbus Defence and Space 2022/Airbus Intelligence for Emergency Response

Cumbre Vieja volcano at La Palma island – December 18, 2021



Cumbre Vieja volcano at La Palma island – December 31, 2021







Copyright Airbus Defence and Space 2022/Airbus Intelligence for Emergency Response



Belo Horizonte

To de

1 neiro

Petropolis - Brazil Pléiades Neo

Timestamp: 2022 02 23 12h50 UTC

Sensor: Pléiades Neo

R.P.: 22°31'46"S / 043°10'17"W

© Copyright Airbus DS 2022





Petropolis - Brazil Pléiades Neo

Timestamp: 2022 02 23 12h50 UTC Sensor: Pléiades Neo R.P.: 22°31'46"S / 043°10'17"W © Copyright Airbus DS 2022









Pléiades for Change Detection

Tanna - Vanuatu

Copyright Airbus Defence and Space 2022/Airbus Intelligence for Emergency Response



Tanna, Vanuatu, Near real time delivery

2013-09-30



2015-03-15



AIRBUS

© CNES, AirbusDS 2013



AIRBUS

Automatic Change Detection

Pléiades Neo for Environment

Mananjary - Madagascar



Copyright Airbus Defence and Space 2022/Airbus Intelligence for Emergency Response



Feb 08, 2022 07:21:18 GMT RP : 21°12'05''S / 048°21'29'E

The analysis of this Pléiades Neo image acquired on February 08th, 2022 highlights the damage that occurred after the passage on February 05th, 2022 of cyclone Batsarai in the city of Mananjary on the east coast of Madagascar.

A comparison with a Pléiades image from June 29th, 2021 highlighted flooded areas as well as destruction of buildings and vegetation.





About 2 km2 of flooded land have been listed on the outskirts and in the town of Mananjary.



Pléiades from 06/29/2021



Pléiades Neo from 02/08/2022

R





Example of damaged buildings.

Feb 08, 2022 07:21:18 GMT

Pléiades from 06/29/2021



Pléiades Neo from 02/08/2022





Example of damaged buildings and residential areas.



Damaged roof

Pléiades from 06/29/2021



Pléiades Neo from 02/08/2022



Example of damaged buildings.



Feb 08, 2022 07:21:18 GMT

Pléiades from 06/29/2021



Example of damaged vegetation, buildings and living areas.





Pléiades from 06/29/2021







Example of damaged vegetation, buildings and living areas.



Very high resolution 3D data as a local complement





Marrakech Pléiades Neo in 3D

38



Airbus supporting Emergency Response

Airbus is providing very operational and reactive emergency and disaster management for many years, capabilities and performance are evolving.

Commercial constellations are a strong contributor, Airbus considers itself as a strong partner to Copernicus and global emergency operations.

International cooperation including data exchange is appreciated, allowing to harmonise needs and for industry to address them more efficiently.



Time for questions and discussion !





Rue du General Gallieni Nouméa 98800 Nouvelle Calédonie +687 35 29 71 geo-contact@insight.nc insight.nc Fabrice.Triffaut@airbus.com 2 Brindabella Circuit Canberra Airport ACT 2609 Australia fabrice.triffaut@airbus.com intelligence-airbusds.com

FOLLOW US:

