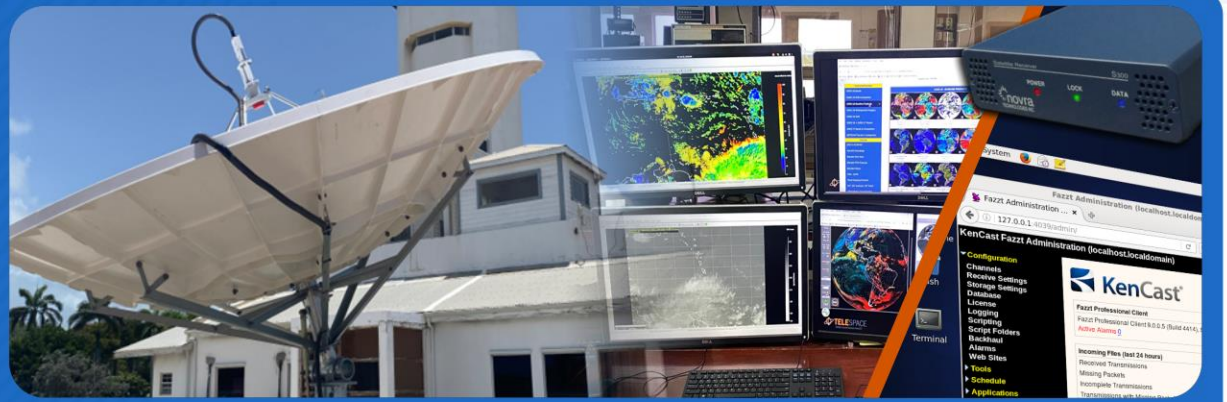
GEONETCast-Americas Webinar in Preparation for CARIBE WAVE 25

March 14th 18:30 UTC

GNC-A Overview, Operation and Product Suite



Diego Souza
diego.souza@inpe.br

DISSM - Meteorological Satellites and Sensors Division
CGCT - General Coordination of Earth Sciences
INPE - National Institute for Space Research

MINISTÉRIO DA
CIÊNCIA, TECNOLOGIA
E INOVAÇÕES

Hi! I'm Diego Souza (INPE - Brazil)

Diego Souza
diego.souza@inpe.br

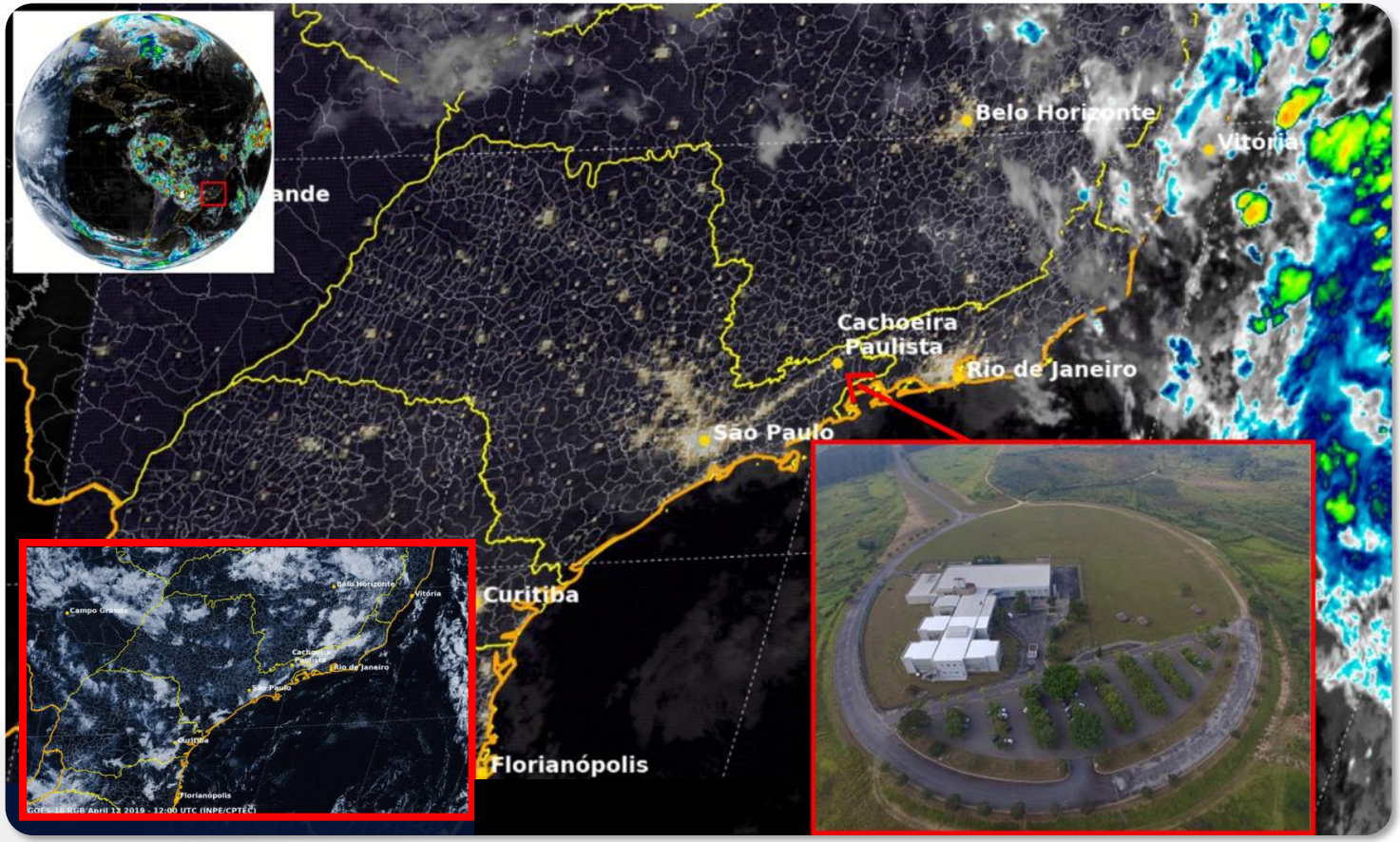
Integration and Testing Laboratory - INPE

Meteorological Satellites Division - INPE

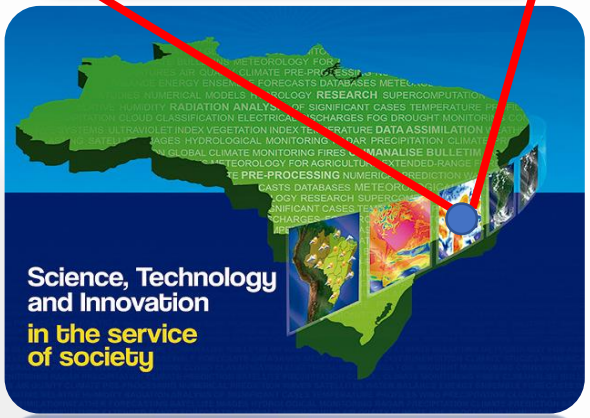
10th Meeting of the VLab Management Group

5th Meeting of the WMO Satellite Data Requirements Group

INPE - DISSM: Meteorological Satellites Division

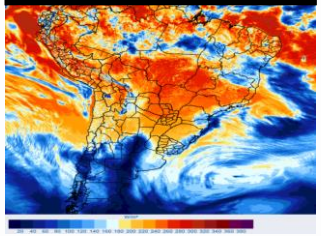


INPE - DISSM: Meteorological Satellites Division

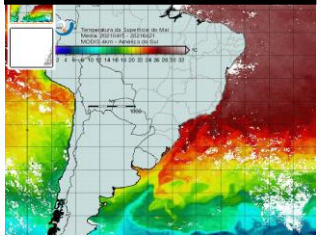


http://satelite.cptec.inpe.br

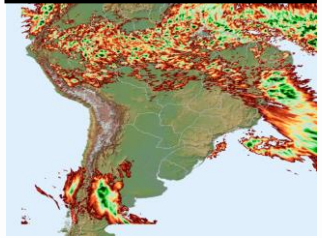
Radiation



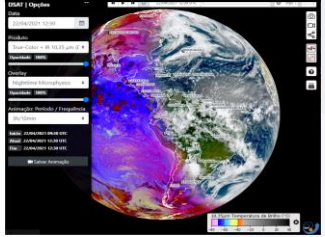
Ocean



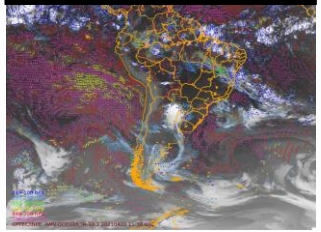
Precipitation



Visualization

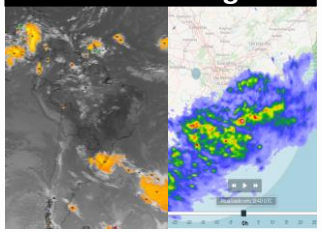


AMV

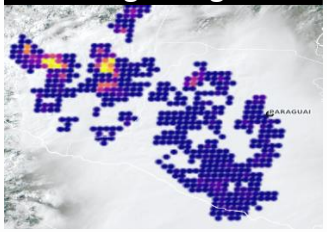


Fire / Hotspots

Nowcasting

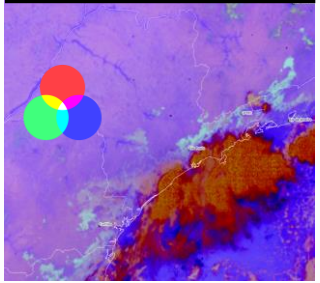


Lightning



DISSM

RGBs / Multispectral



Data Reception and Dissemination

Capacity Building

VLab

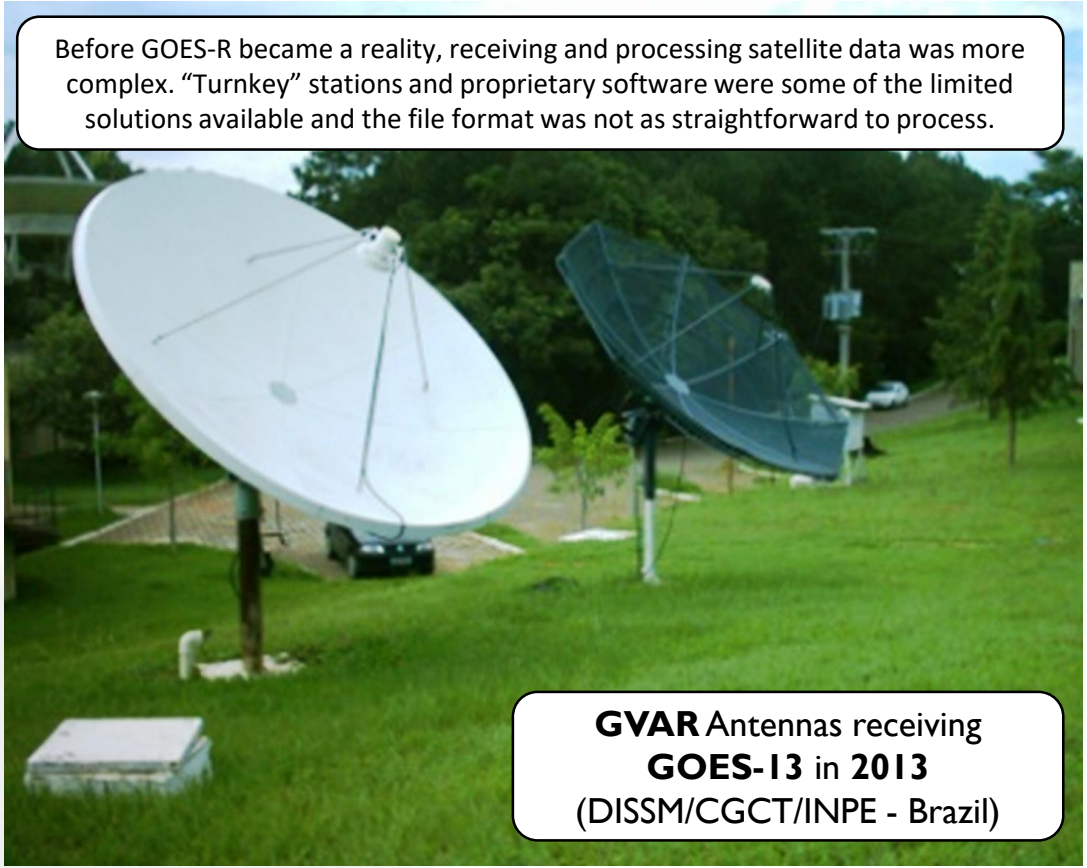
WMO-CGMS Virtual Laboratory
for Education and Training in Satellite Meteorology

Presentation Outline

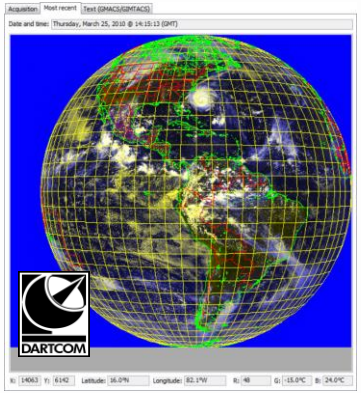
- **GEONETCast-Americas (GNC-A) Overview**
  - Architecture, Hardware and Community
- **Ingestion Directory and Product Suite**
  - Demonstration (Online Ingestion Directory)
  - **Tsunami Products**
  - Demonstration (Online Interface with Products)
- **Disaster Capabilities**
  - No internet required, power outages, portable station and survival wind speed
- **Documentation and Support**
  - Demonstration (Exploring the Documents)

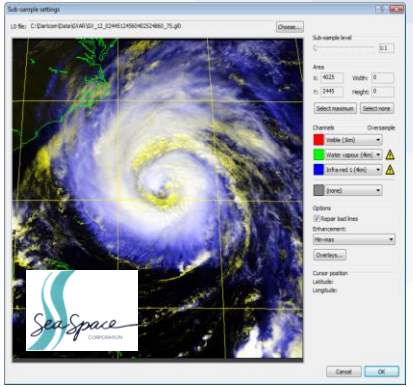
Context: Ten Years Ago

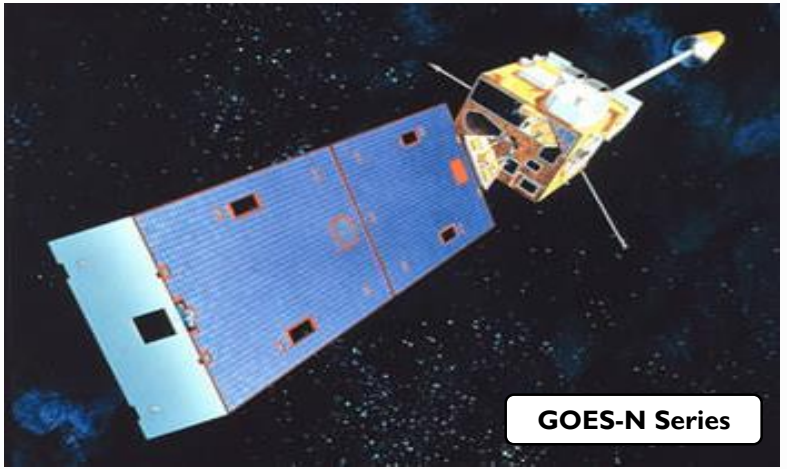
Before GOES-R became a reality, receiving and processing satellite data was more complex. “Turnkey” stations and proprietary software were some of the limited solutions available and the file format was not as straightforward to process.



GVAR Antennas receiving **GOES-13** in **2013** (DISSM/CGCT/INPE - Brazil)







Today: Satellite Data Reception Mechanisms

Direct Readout / Rebroadcast

GRB - GOES REBROADCAST

HRIT / EMWIN

HIGH RATE DATA - HRD

GEONETCAST-AMERICAS (GNC-A)

Cloud Services / Internet

NOAA Open Data Dissemination

amazon web services

Google Cloud

Azure

unidata IDD

EUMETSAT
Data Access Client (EUMDAC)

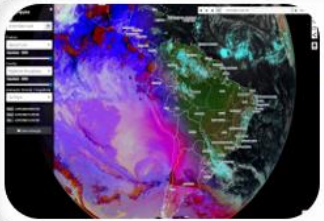
Among others...

Archive

CLASS

EUMETSAT Data Centre

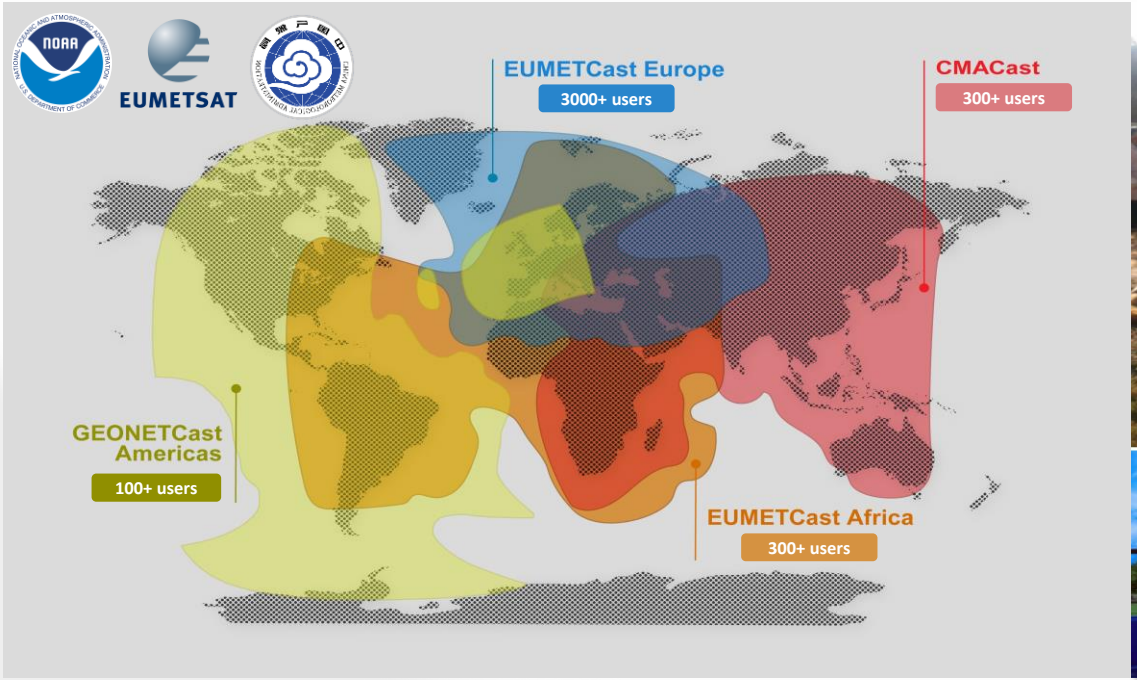
Webpages



And many others

The GEONETCast Global System

- **GEONETCast** is a low-cost global environmental information delivery system that transmits satellite and in-situ data, products, and services to users through commercial TV satellites, using multi-cast, access-controlled broadband capability. **GEONETCast** it is a distribution system for environmental satellite data and products using commercial TV satellites.



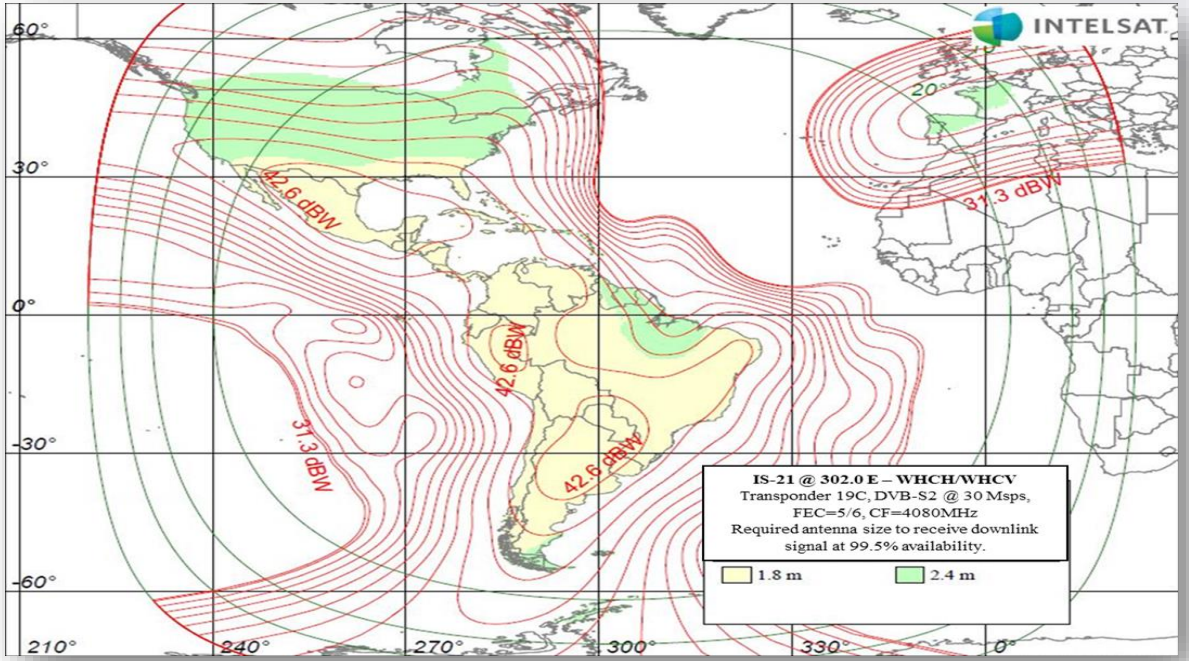
The GEONETCast-Americas (GNC-A) Satellite Broadcast

INTELSAT-21 GEO Satellite @ 58° West	"19C" Transponder
Center Frequency	4080 MHz
Data Rate	20 Mbps
Modulation	8PSK
Polarization	Linear - Vertical
Symbol Rate	30000 Msps
Forward Error Correction	5/6
Data Format	DVB-S2
Packet Identifier	4201
Effective Isotropic Radiated Power Coverage	> 31.3 dBW
Peak G/T (antenna gain-to-noise temperature)	Up to 2.5 dB/K
Datacasting Client Software (Required)	KenCast FAZZT Professional Client

GNC-A is an "Americas" focused C-Band broadcast with a regional footprint that encompasses most of North / South America in exception of Northern Canada and Alaska

GNC-A

GEONETCast-Americas



GEONETCast-Americas User Community

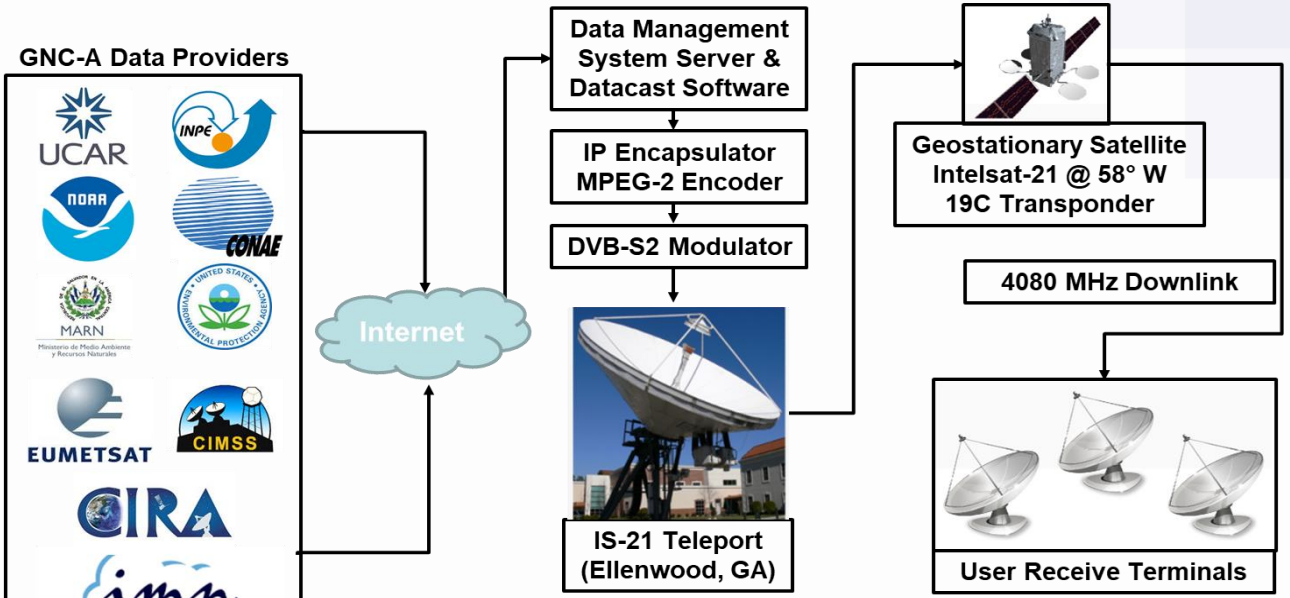
Known GNC-A Stations

https://geonetcast.wordpress.com/stations-gallery/

- Antigua and Barbuda (1)
- Argentina (3)
- Barbados (1)
- Belize (1)
- Brazil (35)
- Chile (2)
- Colombia (6)
- Costa Rica (3)
- Cuba (1)
- Dominica (1)
- Ecuador (2)
- El Salvador (5)
- France (1)
- Grenada (1)
- Guatemala (1)
- Honduras (1)
- Haiti (1)
- Mexico (11)
- Panama (2)
- Paraguay (2)
- Peru (6)
- Dominican Republic (1)
- St. Kitts and Nevis (1)
- St. Vincent & Grenadines (1)
- Uruguay (3)
- USA (7)

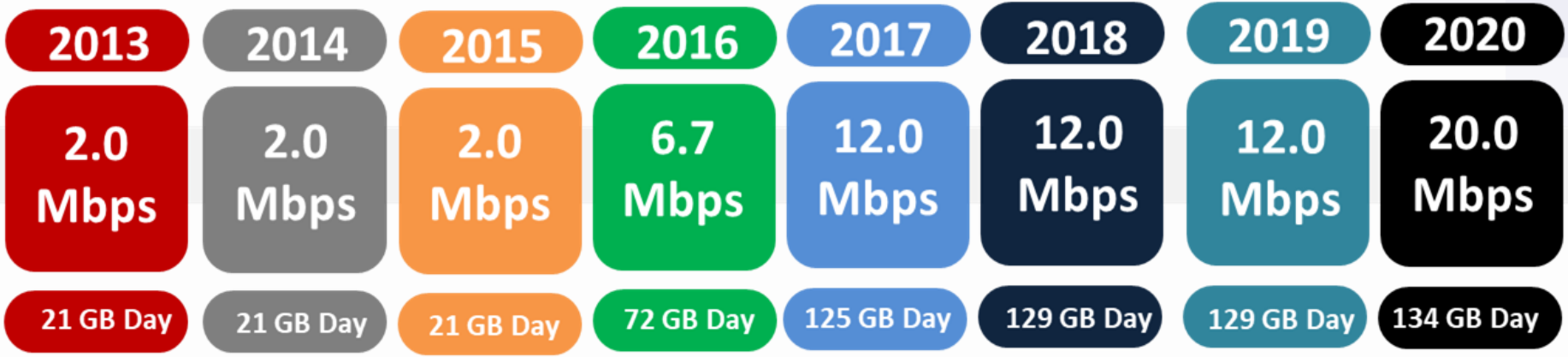
GNC-A System Ground Architecture

- Ground architecture allows for **external data providers** to supply data to the broadcast.
- **No cap or limit** to who can supply data to the broadcast (only bandwidth limitations)
- GNC-A currently has **12 data providers**



Scalable Satellite Data Rate

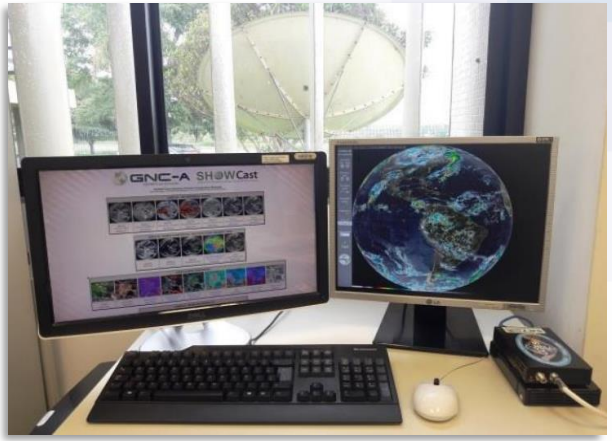
GEONETCast-Americas Bandwidth

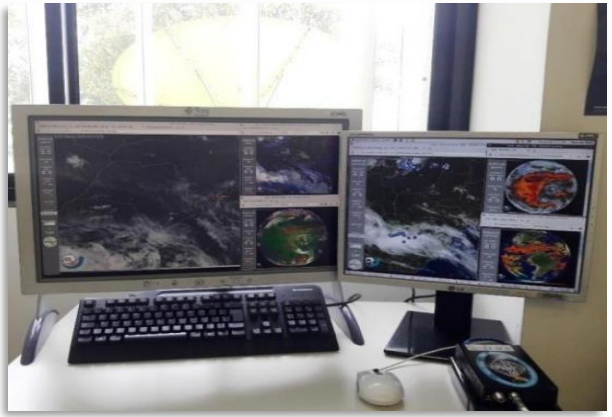


- The GNC-A broadcast has increased its data rate **three times** over the past decade to accommodate both the **JPSS and GOES-R satellite missions**.
- Commercial satellite transponders have the capability to be scalable if **more data** is needed or the need for **better performance**.

GNC-A Station Reception Hardware

BASIC COMPONENTS OF A GNC-A STATION





GNC-A Station Components

Commercial Rebroadcast Satellite

INTELSAT-21

2. LNB / Feed

Amplifies the received signal and then down-converts frequencies to frequencies that are more manageable via common coaxial cable and electronics in the DVB-S2 receiver

5. Processing and Visualization

Data from GNC-A providers may be processed and visualized using proprietary and / or open source solutions

4080 MHz (C-Band)

1070 MHz (L-Band)

1. Antenna

Receives the INTELSAT-21 (IS-21) signal and projects it on the LNB.

3. DVB-S2 Receiver

Converts the signal from the LNB to data that can be managed by a computer

4. FAZZT Professional Client

Un-encapsulates and organizes the received data (in the original format, as shared by GNC-A Data Providers)

UPS (uninterruptible power supply)

Allows the station to keep running for a period of time when incoming power is interrupted

A Real GNC-A Station: St. Kitts (2023)

5. Processing and Visualization

Data from GNC-A providers may be processed and visualized using proprietary and / or open source solutions

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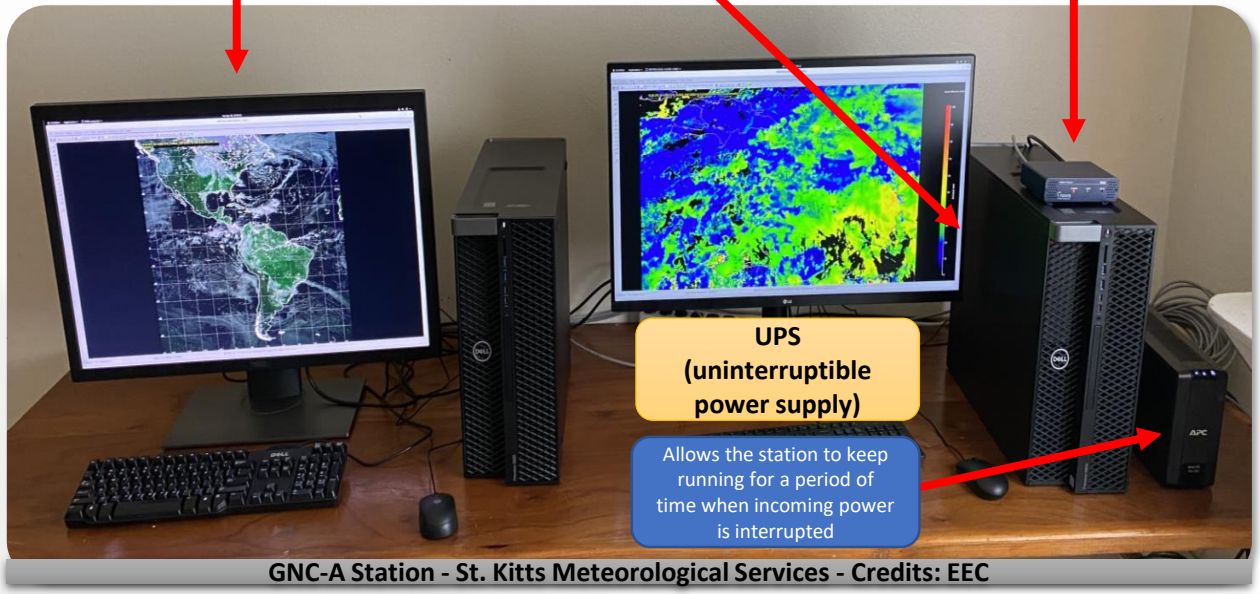

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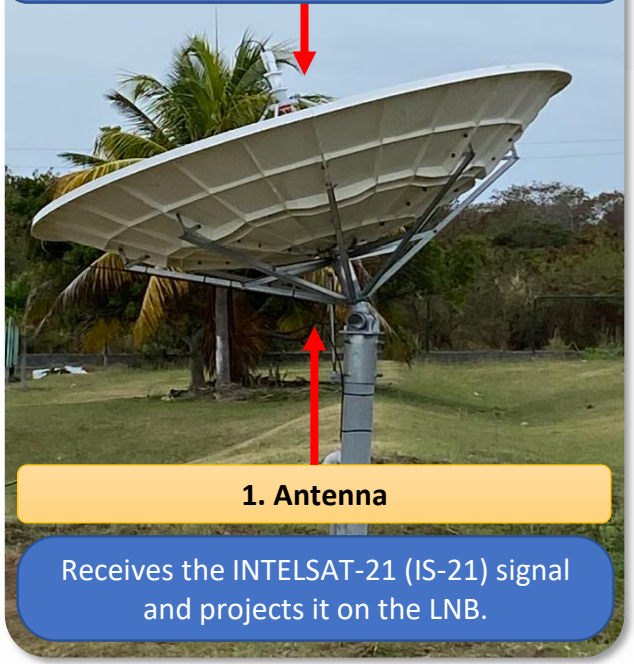
GNC-A Station - St. Kitts Meteorological Services - Credits: EEC



1. Antenna

Receives the INTELSAT-21 (IS-21) signal and projects it on the LNB.

Different Equipment Can Be Used For GNC-A

Different antennas and LNBs	Different DVB-S2 receivers	Different workstations / PCs	Single Client

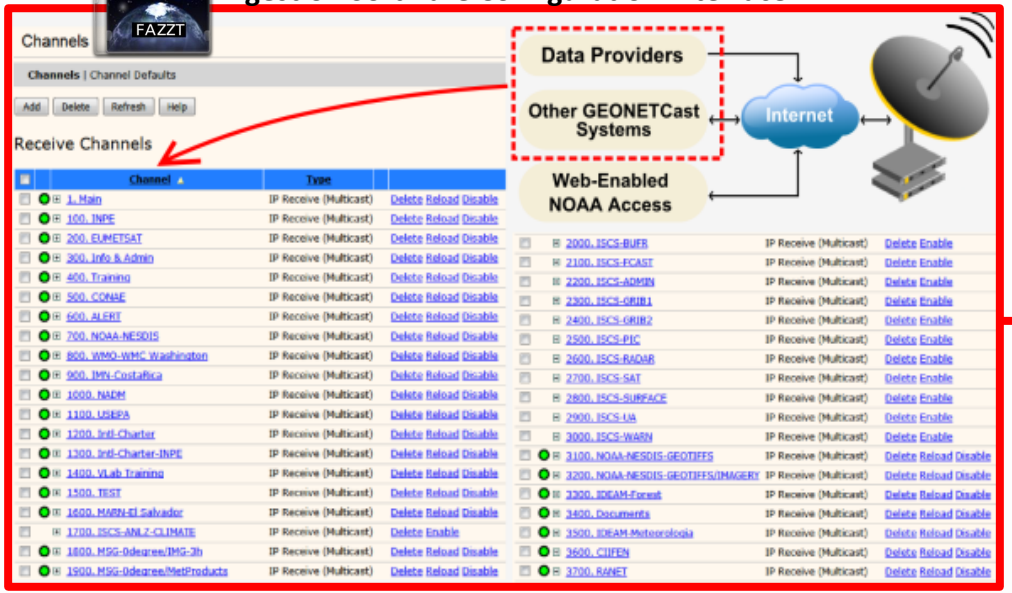
The components for an entire receiving station can be purchased for ~ $10,000.

A Turn-Key system can be purchased by ~ $40,000

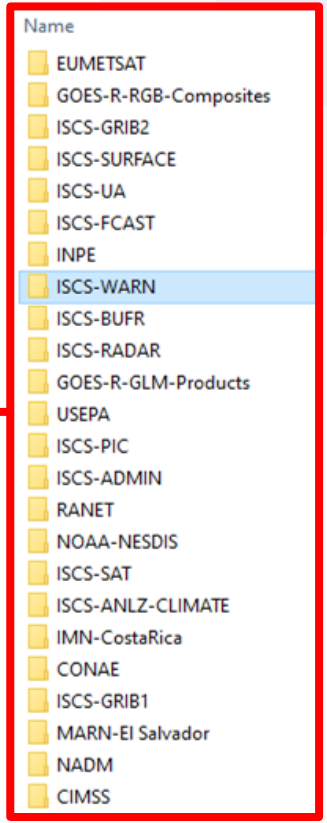
When Everything is Ready, a Lot of Files are Received

- Products are separated by **broadcast channels**
- Users can **activate** channels they wish to receive and **deactivate** the channels they wish not to receive
- **FAZZT** software interface is very user friendly
- Products are still in their **native format and remain unchanged**

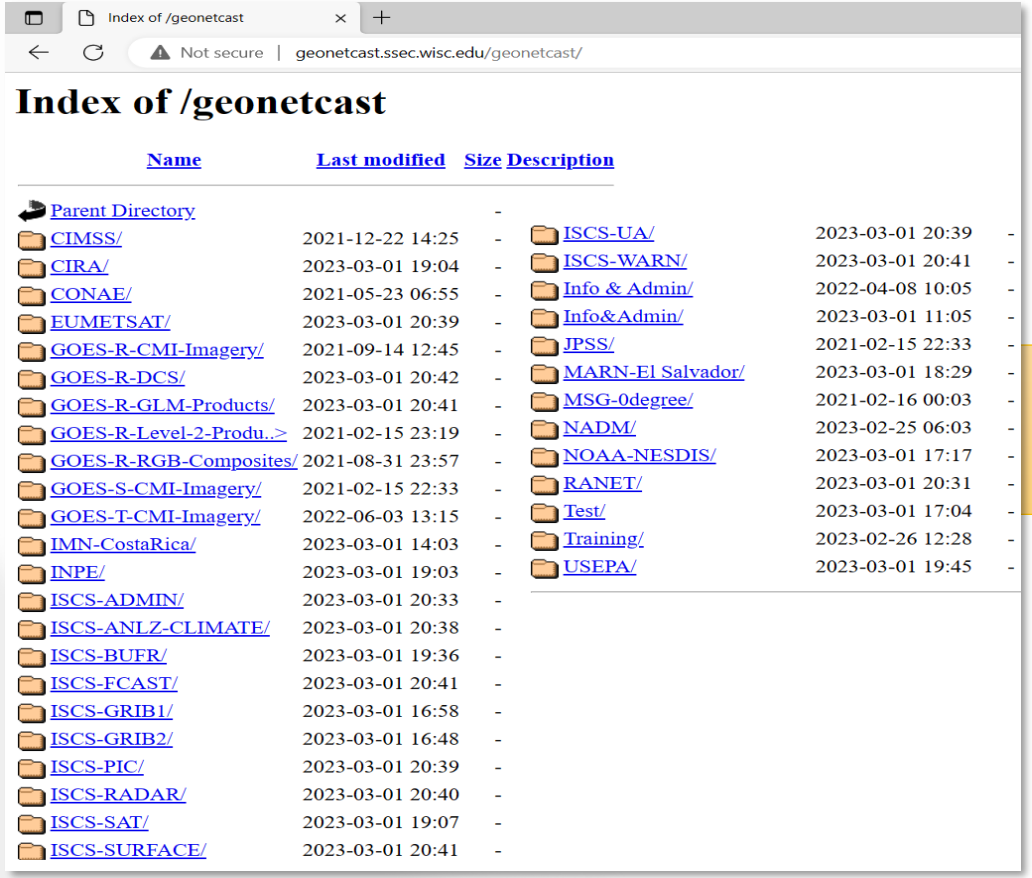
Ingestion Software Configuration Interface



Ingestion Directory



Let's Explore the GNC-A Ingestion Directory



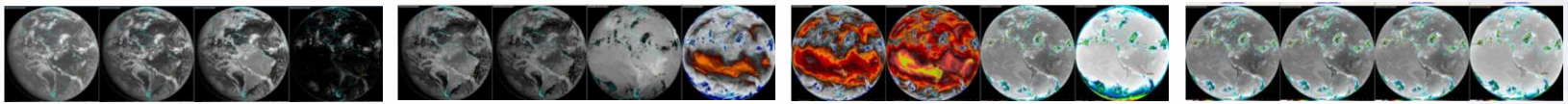
DEMONSTRATION

http://geonetcast.ssec.wisc.edu/geonetcast/

GOES ABI Level II Products on GNC-A

GOES-16 "Cloud and Moisture Imagery": Full Disk

Band 1 Band 2 Band 3 Band 4 Band 5 Band 6 Band 7 Band 8 Band 9 Band 10 Band 11 Band 12 Band 13 Band 14 Band 15 Band 16

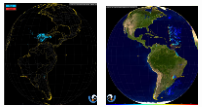


GOES-18 "Cloud and Moisture Imagery": Full Disk

Band 2 Band 9 Band 13

Other GOES-16 Level II Products

Aerosol Detection and Optical Depth

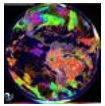


Clear Sky Masks

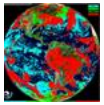
Cloud Optical Depth

Cloud Particle Size

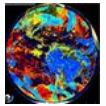
Cloud Top Height



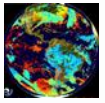
Cloud Top Phase



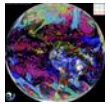
Cloud Top Pressure



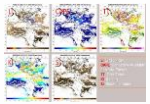
Cloud Top Temperature



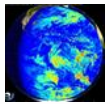
Derived Winds



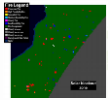
Derived Stability Indices



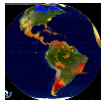
Reflective SW Radiation



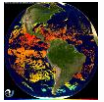
Fire / Hot Spot Characterization



Land Surface Temperature

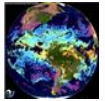


Sea Surface Temperature

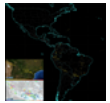


Rainfall Rate / QPE

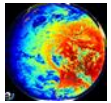
Total Precip. Water



GLM



Downward SW Radiation



Snow Cover

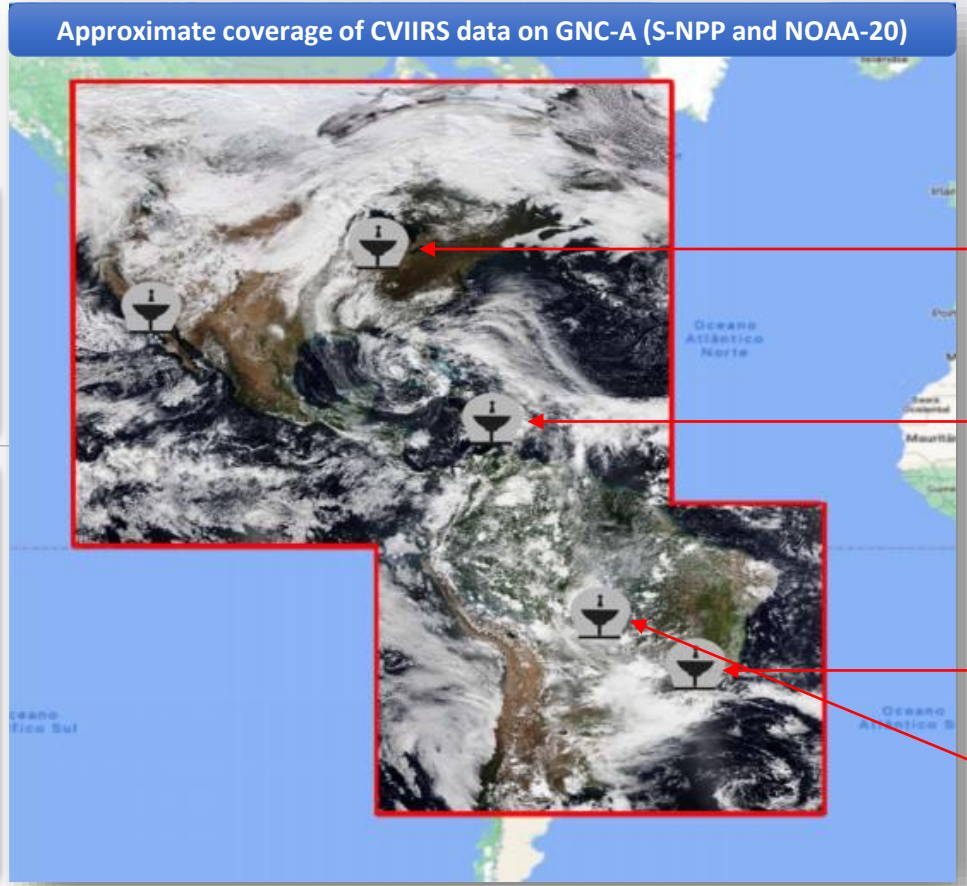
For more product detail please visit

https://geonetcast.wordpress.com/geonetcast-americas-documentation/

JPSS Products on GNC-A

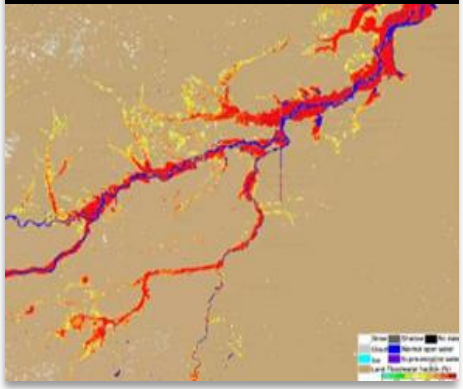
CIMSS - University of Wisconsin provides the following **NOAA-20 and SNPP High Rate Data (HRD)** from **5 separate receive stations:**

- **VIIRS M** (750m resolution) 1, 3, 4, 5, 7, 9, 10, 12, 14 and 15 bands
- **VIIRS I** (375m resolution) 1, 2 and 5 bands
- **VIIRS Day/Night Band** (DNB)



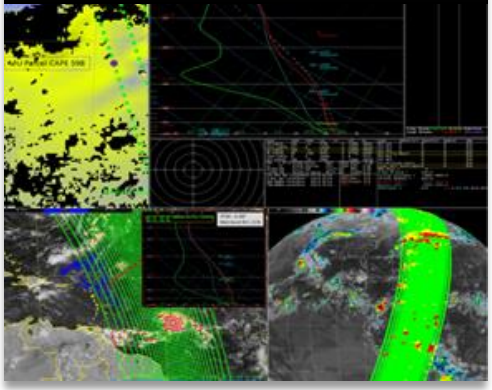
Other JPSS Products on GNC-A

VIIRS / ABI Flood Mapping

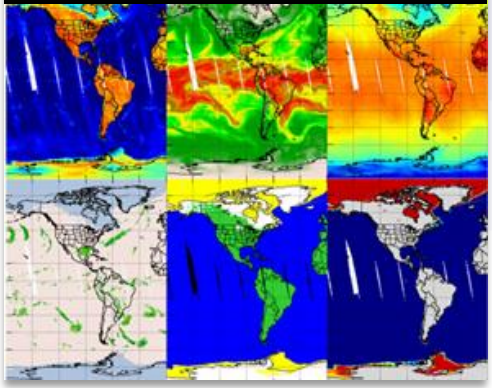


VIIRS Active Fires

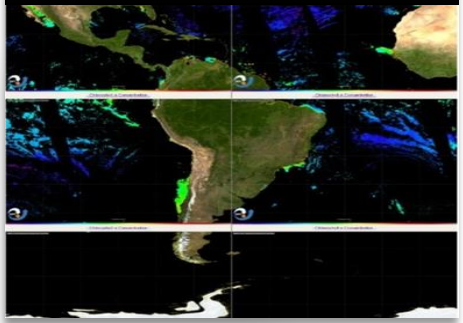
NUCAPS Soundings



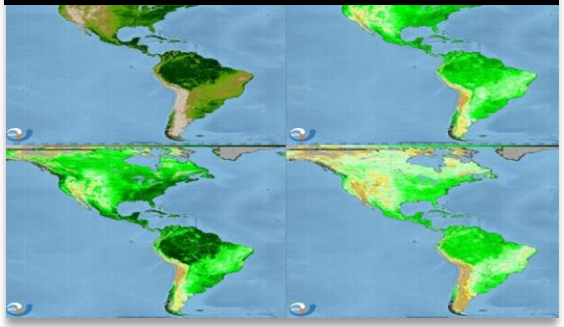
MiRS System



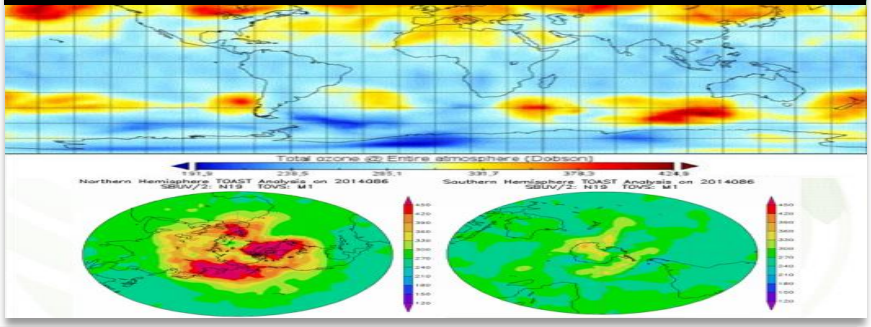
VIIRS Ocean Color



VIIRS Vegetative Fraction and Indices



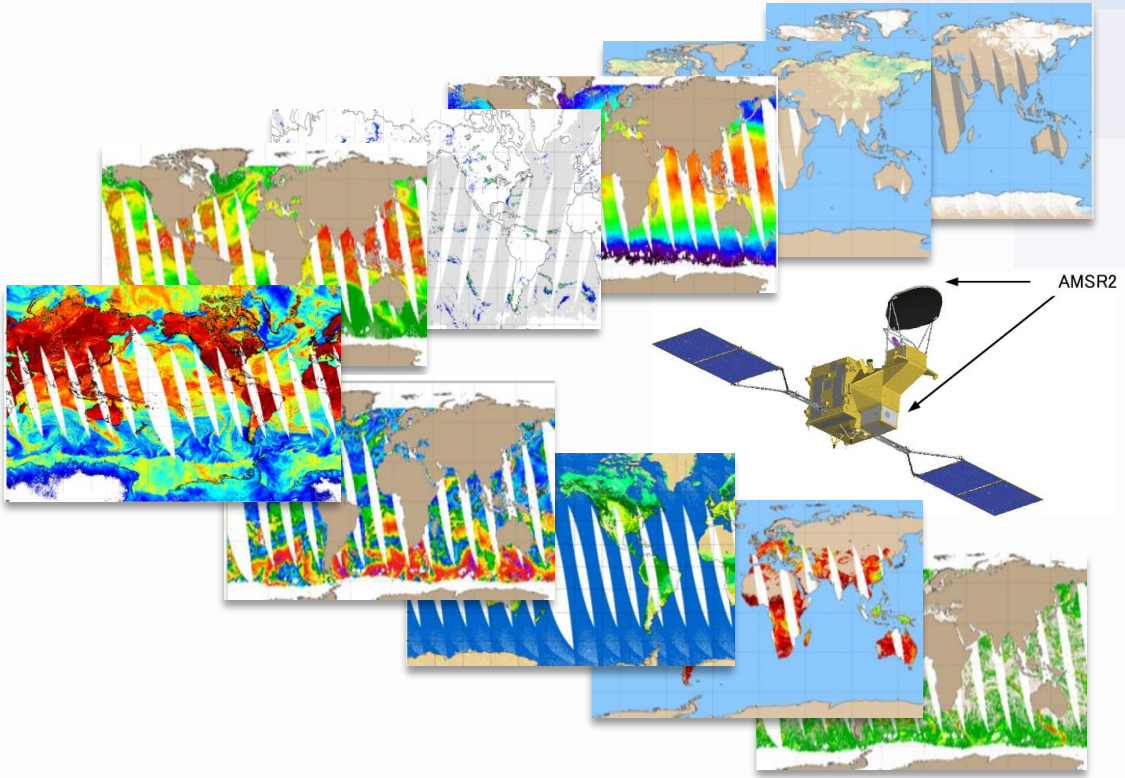
Ozone Products (TOAST)



For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

GCOM-W1 Orbital Products on GNC-A

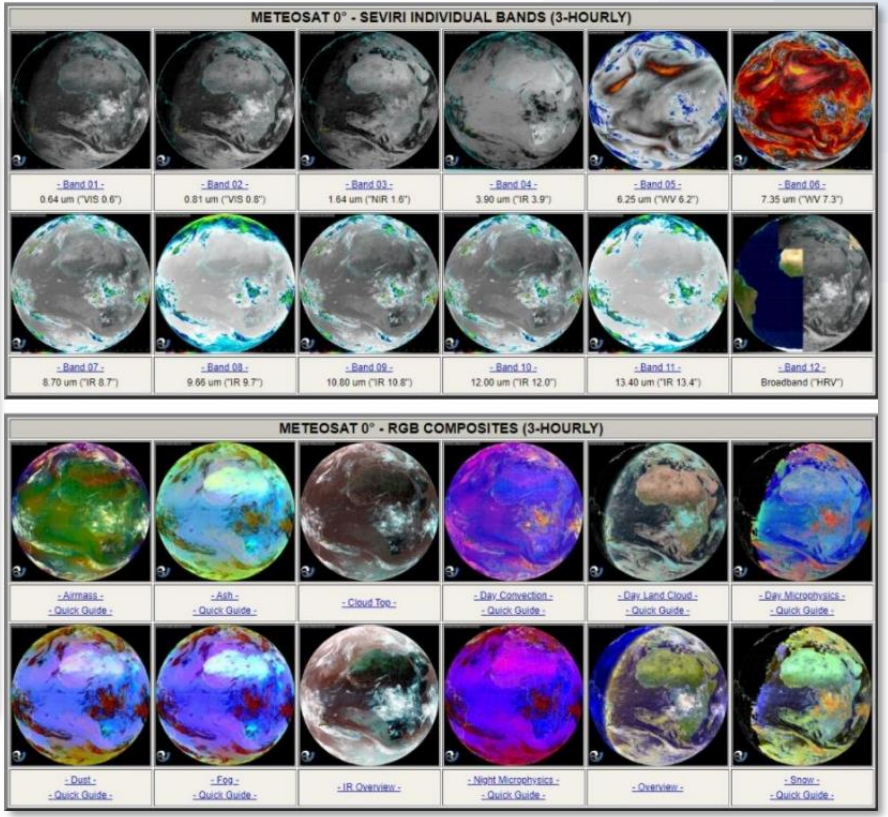
- **AMSR2** Brightness Temps
- **Precipitation** (Rain Rate, Convective and Probability)
- **Soil Moisture**
- **Land Cover Type**
- **Snow Cover**, Depth, Water Equivalent
- **Ocean Products** (SST, Ocean Wind speed, Ocean TPW and Ocean Cloud Liquid Water)
- **Artic Sea Ice** Concentration



For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

EUMETSAT Products on GNC-A

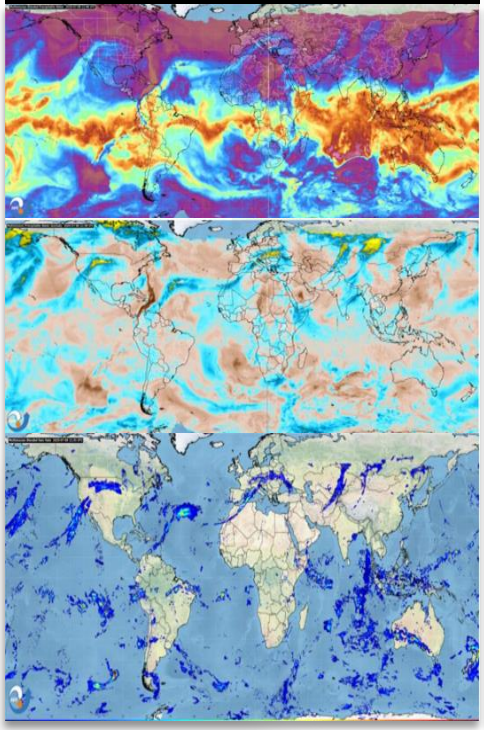
- **SEVIRI** Full Disk Imagery
- **ASCAT** Coastal Winds 12.5km
- **ASCAT** Coastal Winds 25km
- Medium/Low Resolution METOP **Sea Ice Drift**
- Medium/Low Resolution METOP **Sea Ice Concentration**
- **Global Sea Ice** Emissivity
- **METOP SST** IASI
- **METEOSAT 0° SST**
- Active Fire Monitoring
- Atmospheric Motion Vectors
- Cloud Mask
- Cloud Top Height
- Global Instability Index
- Accumulated Precipitation
- METOP/NOAA-19 ATOVS Sounder Products



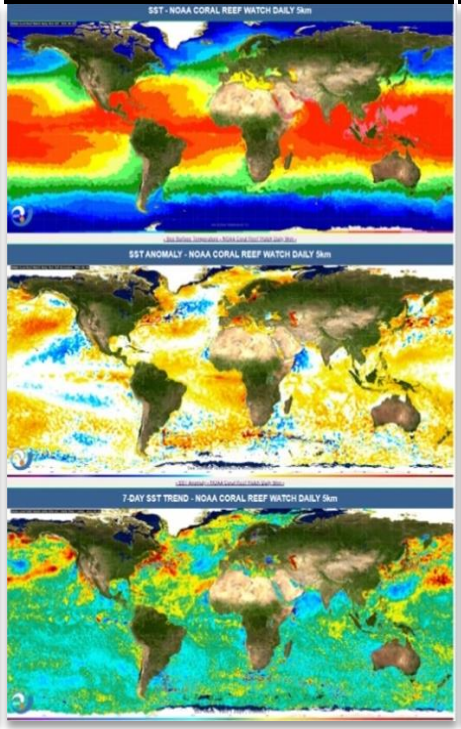
For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

Multi-Satellite Blended Products on GNC-A

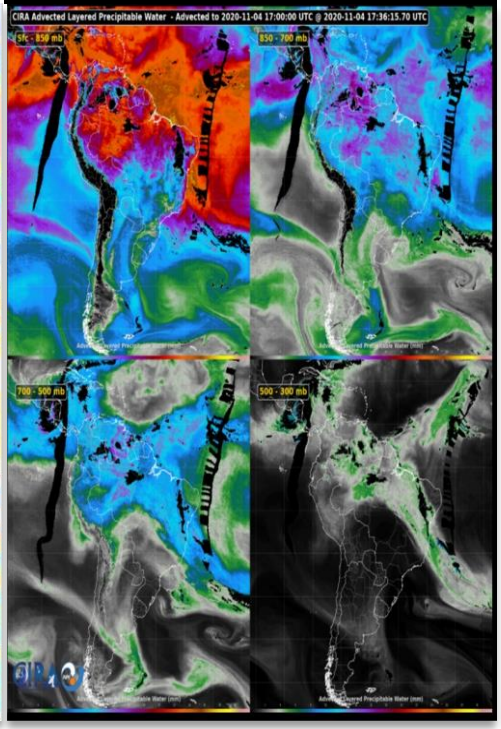
Blended TPW, TPW Anomaly and Rain Rate



Blended SST, 7-Day SST Average and SST Anomaly



CIRA Advected Layered Precipitable Water



Monitoring of Vegetation Fires

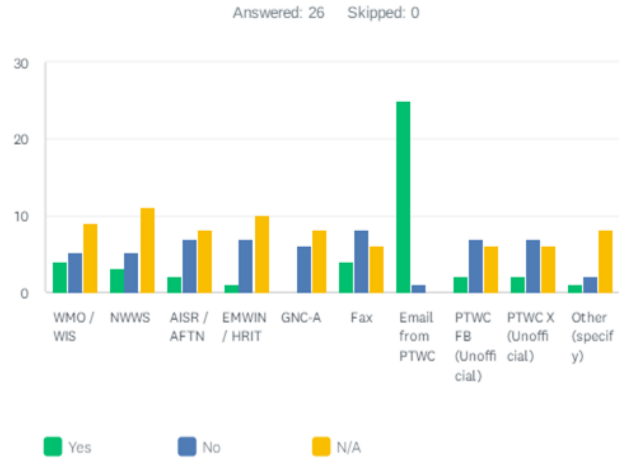
For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

NWS ISCS Products on GNC-A

https://www.weather.gov/iscs/

ISCS Surface: International and WFO METARS and surface observations
ISCS Forecast: Forecast summaries/TAF's
ISCS Warning: Watches/Warnings/Advisories
ISCS Climate: Weather summaries & climate
ISCS BUFR: BUFR atmospheric/oceanic products
ISCS RADAR: Radar PNG/GIF products
ISCS Upper Air: Upper Air products
ISCS GRIB: GRIB GFS forecast products
ISCS SAT: Multiple graphic format products
ISCS PIC: Multiple graphic format products

Q5 The PTWC issued the CARIBE WAVE 24 Dummy Message by several methods. Please check all methods through which the message was received by the TWFP/NTWC.



From the 2nd Webinar: "*Note the lack of TWFP/NTWCs using GNC-A - it is important to verify with the Met Services that they are using these systems for the receipt of tsunami messages.*"

For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

NOAA Tsunami Products on GNC-A

T1T2:

- **SE** Surface data - Seismic data
- **NW** Notices - Warning related and/or cancellation
- **WA** Warnings - Airmet
- **WC** Warnings - Tropical cyclone (SIGMET)
- **WE** Warnings - Tsunami
- **WF** Warnings - Tornado
- **WG** Warnings - Hydrological/river flood
- **WH** Warnings - Marine/coastal flood
- **WO** Warnings - Other
- **WR** Warnings – Flash flood
- **WS** Warnings - SIGMET
- **WT** Warnings - Tropical cyclone (typhoon/hurricane)
- **WU** Warnings - Severe thunderstorm
- **WV** Warnings - Volcanic ash clouds (SIGMET)
- **WW** Warnings - Warnings & weather summary

Region	WMO Header	NWS AWIPS ID	TWC	Explanations
Alaska, British Columbia, U.S. West Coast	Example: WEPA41 PAAQ Example: WEPA41 PAAQ Example: WEPA41 PAAQ	TSUWCA	NTWC	Segmented Tsunami Warnings, Watches, and Advisories
	Example: WEAK51 PAAQ Example: WEAK51 PAAQ Example: WEAK51 PAAQ	TSUAK1	NTWC	Tsunami Warnings, Watches, and Advisories
	Example: WEAK61 PAAQ Example: WEAK61 PAAQ Example: WEAK61 PAAQ	TSUSPN	NTWC	Spanish Tsunami Warnings, Watches, and Advisories
	Example: WEAK53 PAAQ	TIBAK1	NTWC	Tsunami Information Statements
	Example: WEAK63 PAAQ	TIBSPN	NTWC	Spanish Tsunami Information Statements
Hawaii	Example: WEHW40 PHEB	TSUHWX	PTWC	Tsunami Warnings, Watches, and Advisories
	Example: WEHW42 PHEB	TIBHWX	PTWC	Tsunami Information Statements
American Samoa	Example: WEZS40 PHEB	TSUPPG	PTWC	Tsunami Warnings, Watches, and Advisories
	Example: WEZS42 PHEB	TIBPPG	PTWC	Tsunami Information Statements
Guam, CNMI	Example: WEGM40 PHEB	TSUGUM	PTWC	Tsunami Warnings, Watches, and Advisories
	Example: WEGM42 PHEB	TIBGUM	PTWC	Tsunami Information Statements
Non U.S. Pacific	Example: WEPA40 PHEB	TSUPAC	PTWC	Tsunami Threat Messages
	Example: WEPA42 PHEB	TIBPAC	PTWC	Tsunami Information Statements
U.S. Atlantic, Gulf of America, Canada	Example: WEXX20 PAAQ Example: WEXX20 PAAQ Example: WEXX20 PAAQ	TSUAT1	NTWC	Segmented Tsunami Warnings, Watches, and Advisories
	Example: WEXX30 PAAQ Example: WEXX30 PAAQ Example: WEXX30 PAAQ	TSUATE	NTWC	Tsunami Warnings, Watches, and Advisories
	Example: WEXX40 PAAQ Example: WEXX40 PAAQ Example: WEXX40 PAAQ	TSUSPA	NTWC	Spanish Tsunami Warnings, Watches, and Advisories
	Example: WEXX32 PAAQ	TIBATE	NTWC	Tsunami Information Statements
	Example: WEXX42 PAAQ	TIBSPA	NTWC	Spanish Tsunami Information Statements
Puerto Rico, Virgin Islands	Example: WECA40 PHEB Example: WECA40 PHEB Example: WECA40 PHEB	TSUCAR	PTWC	Tsunami Warnings, Watches, and Advisories
	Example: WECA50 PHEB Example: WECA50 PHEB Example: WECA50 PHEB	TSUSP1	PTWC	Spanish Tsunami Warnings, Watches, and Advisories
	Example: WECA60 PHEB Example: WECA60 PHEB Example: WECA60 PHEB	TSUCA1	PTWC	Segmented Tsunami Warnings, Watches, and Advisories
	Example: WECA42 PHEB	TIBCAR	PTWC	Tsunami Information Statements
	Example: WECA52 PHEB	TIBSP1	PTWC	Spanish Tsunami Information Statements
Non U.S. Caribbean	Example: WECA41 PHEB	TSUCAX	PTWC	Tsunami Threat Messages
	Example: WECA43 PHEB	TIBCAX	PTWC	Tsunami Information Statements
Test	Example: NTXX98 PHEB	TSTMSG	PTWC	Test Messages
	Example: NTXX98 PAAQ	TSTMSG	NTWC	Test Messages

For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

NOAA Tsunami Products on GNC-A

Tsunami Product Codes - WMO and AWIPS (effective April 2017)

	WMO ID	NWW PIL	AWIPS ID	Message Explanation	
Originated by NTWC	WEPA41 PAAQ	ANCTSUWCA	TSUWCA	Segmented Tsunami Warning/Watch/Advisory	West Coast/BC/Alaska
	WEAK51 PAAQ	ANCTSUAK1	TSUAK1	Tsunami Warning/Watch/Advisory	
	WEAK61 PAAQ	ANCTSUSPN	TSUSPN	Spanish Tsunami Warning/ Watch/ Advisory	
	WEAK53 PAAQ	ANCTIBAK1	TIBAK1	Tsunami Information Statement	
	WEAK63 PAAQ	ANCTIBSPN	TIBSPN	Spanish Tsunami Information Statement	
	WEXX20 PAAQ	ANCTSUAT1	TSUAT1	Segmented Tsunami Warning/Watch/Advisory	US Atl./Gulf/Canada
	WEXX30 PAAQ	ANCTSUATE	TSUATE	Tsunami Warning/Watch/Advisory	
	WEXX40 PAAQ	ANCTSUSPA	TSUSPA	Spanish Tsunami Warning/ Watch/ Advisory	
	WEXX32 PAAQ	ANCTIBATE	TIBATE	Tsunami Information Statement	
	WEXX42 PAAQ	ANCTIBSPA	TIBSPA	Spanish Tsunami Information Statement	
	NTXX98 PAAQ	ANCTSTMSG	TSTMSG	Test Message	Test

	WMO ID	NWW PIL	AWIPS ID	Message Explanation	
Originated by PTWC	WEPA40 PHEB	HFOTSUPAC	TSUPAC	Tsunami Threat Message	Pacific
	WEPA42 PHEB	HFOTIBPAC	TIBPAC	Tsunami Information Statement	
	WEHW40 PHEB	HFOTSUHWX	TSUHWX	Tsunami Warning/Watch/Advisory	Hawaii
	WEHW42 PHEB	HFOTIBHWX	TIBHWX	Tsunami Information Statement	
	WEZS40 PHEB	HFOTSUPPG	TSUPPG	Tsunami Warning/Watch/Advisory	American Samoa
	WEZS42 PHEB	HFOTIBPPG	TIBPPG	Tsunami Information Statement	
	WEGM40 PHEB	HFOTSUGUM	TSUGUM	Tsunami Warning/Watch/Advisory	Guam / CNMI
	WEGM42 PHEB	HFOTIBGUM	TIBGUM	Tsunami Information Statement	
	WECA41 PHEB	HFOTSUCAX	TSUCAX	Tsunami Threat Message	Carib.
	WECA43 PHEB	HFOTIBCAX	TIBCAX	Tsunami Information Statement	
	WECA40 PHEB	HFOTSUCAR	TSUCAR	Tsunami Warning/Watch/Advisory	PR/VI
	WECA50 PHEB	HFOTSUSP1	TSUSP1	Spanish Tsunami Warning/Watch/Advisory	
	WECA60 PHEB	HFOTSUCA1	TSUCA1	Sepgented Tsunami Warning/Watch/Advisory	
	WECA42 PHEB	HFOTIBCAR	TIBCAR	Tsunami Information Statement	
	WECA52 PHEB	HFOTIBSP1	TIBSP1	Spanish Tsunami Information Statement	
	NTXX98 PHEB	HFOTSTMSG	TSTMSG	Test Message	Test

For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

Where to Find Tsunami Warnings on GNC-A

Index of /geonetcast

Name	Last modified
Parent Directory	
CIMSS/	2021-12-22 14:25
CIRA/	2025-03-06 12:17
CONAE/	2021-05-23 06:5
EUMETSAT/	2025-03-06 13:0
GOES-R-CMI-Imagery/	2023-09-08 01:14
GOES-R-DCS/	2025-03-06 13:14
GOES-R-GLM-Products/	2025-03-06 13:14
GOES-R-Level-2-Produ..>	2021-02-1 23:19
GOES-R-RGB-Composites/	2021-08-1 23:57
GOES-S-CMI-Imagery/	2021-02-5 22:33
GOES-T-CMI-Imagery/	2022-0 03 13:15
IMN-CostaRica/	2025-03-05 14:04
INPE/	2025-03-01 03:01
ISCS-ADMIN/	2025-03-06 13:06
ISCS-ANLZ-CLIMATE/	2025-03-06 13:01
ISCS-BUFR/	2025-03-06 13:07
ISCS-FCAST/	2025-03-06 13:14
ISCS-GRIB1/	2025-03-06 10:17
ISCS-GRIB2/	2025-03-06 10:45
ISCS-PIC/	2025-03-06 13:02
ISCS-RADAR/	2025-03-06 13:02
ISCS-SAT/	2025-03-06 13:07
ISCS-SURFACE/	2025-03-06 13:14
ISCS-UA/	2025-03-06 13:10
ISCS-WARN/	2025-03-06 13:10
Info & Admin/	2022-04-08 10:05
Info&Admin/	2025-03-06 11:05
JPSS/	2021-02-15 22:33
MARN-El Salvador/	2025-03-06 06:10
MSG-0degree/	2021-02-16 00:03
NADM/	2025-03-05 06:03
NOAA-NESDIS/	2025-03-06 09:14
RANET/	2025-03-06 12:30
Test/	2025-03-06 00:05
Training/	2025-03-02 12:16
USEPA/	2024-03-21 11:4

Index of /geonetcast/ISCS-WARN

T_WEAK53PAAQ121734_C..>	2025-03-12 17:35 1.3K
T_WEAK53PAAQ121734_C..>	2025-03-12 17:36 1.2K
T_WEAK53PAAQ212131_C..>	2025-02-21 21:33 1.2K
T_WEAK53PAAQ212131_C..>	2025-02-21 21:34 1.2K
T_WEAK53PAAQ250543_C..>	2025-02-25 05:45 1.2K
T_WEAK53PAAQ250543_C..>	2025-02-25 05:46 1.2K
T_WEAK63PAAQ031305_C..>	2025-03-03 13:06 1.4K
T_WEAK63PAAQ031305_C..>	2025-03-03 13:27 1.3K
T_WEAK63PAAQ062246_C..>	2025-03-06 22:48 1.4K
T_WEAK63PAAQ062246_C..>	2025-03-06 22:50 1.3K
T_WEAK63PAAQ092008_C..>	2025-03-09 20:08 1.4K
T_WEAK63PAAQ092008_C..>	2025-03-09 20:16 1.3K
T_WEAK63PAAQ121734_C..>	2025-03-12 17:35 1.4K
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T_WECA42PHEB100244_C..>	2025-03-10 02:45 2.5K
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T_WECA43PHEB100244_C..>	2025-03-10 02:44 2.1K
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T_WECA52PHEB250554_C..>	2025-02-25 05:56 2.6K
T_WEPA40PHEB042230_C..>	2025-03-04 22:30 2.0K
T_WEXX20PAAQ251730_C..>	2025-02-25 17:34 3.2K
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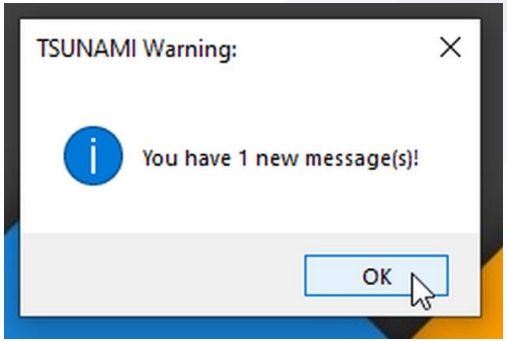
T_WEXX32PAAQ100239_C..>	2025-03-10 02:42 1.5K

Originated by PTWC

WMO ID	NWW PIL	AWIPS ID	Message Explanation	
WEPA40 PHEB	HFOTSUPAC	TSUPAC	Tsunami Threat Message	Pacific
WEPA42 PHEB	HFOTIBPAC	TIBPAC	Tsunami Information Statement	Pacific
WEHW40 PHEB	HFOTSUHWX	TSUHWX	Tsunami Warning/Watch/Advisory	Hawaii
WEHW42 PHEB	HFOTIBHWX	TIBHWX	Tsunami Information Statement	Hawaii
WEZS40 PHEB	HFOTSUPPG	TSUPPG	Tsunami Warning/Watch/Advisory	American Samoa
WEZS42 PHEB	HFOTIBPPG	TIBPPG	Tsunami Information Statement	American Samoa
WEGM40 PHEB	HFOTSUGUM	TSUGUM	Tsunami Warning/Watch/Advisory	Guam / CNMI
WEGM42 PHEB	HFOTIBGUM	TIBGUM	Tsunami Information Statement	Guam / CNMI
WECA41 PHEB	HFOTSUCAX	TSUCAX	Tsunami Threat Message	Carib.
WECA43 PHEB	HFOTIBCAX	TIBCAX	Tsunami Information Statement	Carib.
WECA40 PHEB	HFOTSUCAR	TSUCAR	Tsunami Warning/Watch/Advisory	PR/VI
WECA50 PHEB	HFOTSUSP1	TSUSP1	Spanish Tsunami Warning/Watch/Advisory	PR/VI
WECA60 PHEB	HFOTSUCA1	TSUCA1	Sepgented Tsunami Warning/Watch/Advisory	PR/VI
WECA42 PHEB	HFOTIBCAR	TIBCAR	Tsunami Information Statement	PR/VI
WECA52 PHEB	HFOTIBSP1	TIBSP1	Spanish Tsunami Information Statement	PR/VI
NTXX98 PHEB	HFOTSTMSG	TSTMSG	Test Message	Test



This is an example of how a programming language like Python can be used to monitor and filter incoming warnings, triggering specific tasks, such as activating an alarm like in this example (it could be an email relaying this message to other organizations, etc.)

For more product detail please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

Example Issued by PTWC

	WMO ID	NWW PIL	AWIPS ID	Message Explanation	
Originated by PTWC	WEPA40 PHEB	HFOTSUPAC	TSUPAC	Tsunami Threat Message	Pacific
	WEPA42 PHEB	HFOTIBPAC	TIBPAC	Tsunami Information Statement	
	WEHW40 PHEB	HFOTSUHWX	TSUHWX	Tsunami Warning/Watch/Advisory	Hawaii
	WEHW42 PHEB	HFOTIBHWX	TIBHWX	Tsunami Information Statement	
	WEZS40 PHEB	HFOTSUPPG	TSUPPG	Tsunami Warning/Watch/Advisory	American Samoa
	WEZS42 PHEB	HFOTIBPPG	TIBPPG	Tsunami Information Statement	
	WEGM40 PHEB	HFOTSUGUM	TSUGUM	Tsunami Warning/Watch/Advisory	Guam / CNMI
	WEGM42 PHEB	HFOTIBGUM	TIBGUM	Tsunami Information Statement	
	WECA41 PHEB	HFOTSUCAX	TSUCAX	Tsunami Threat Message	Carib.
	WECA43 PHEB	HFOTIBCAX	TIBCAX	Tsunami Information Statement	
	WECA40 PHEB	HFOTSUCAR	TSUCAR	Tsunami Warning/Watch/Advisory	PR/VI
	WECA50 PHEB	HFOTSUSP1	TSUSP1	Spanish Tsunami Warning/Watch/Advisory	
	WECA60 PHEB	HFOTSUCA1	TSUCA1	Sepgented Tsunami Warning/Watch/Advisory	
	WECA42 PHEB	HFOTIBCAR	TIBCAR	Tsunami Information Statement	
	WECA52 PHEB	HFOTIBSP1	TIBSP1	Spanish Tsunami Information Statement	
	NTXX98 PHEB	HFOTSTMSG	TSTMSG	Test Message	Test

```
****0000002224****
WECA41 PHEB 061530

TSUCAX


TEST...TSUNAMI DUMMY - COMMUNICATIONS TEST...TEST

NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI

1530 UTC THU MAR 6 2025


THIS IS A TEST MESSAGE. THIS MESSAGE APPLIES ONLY TO COUNTRIES

AND TERRITORIES WITHIN AND BORDERING THE CARIBBEAN SEA THAT

PARTICIPATE IN THE TSUNAMI AND OTHER COASTAL HAZARDS WARNING

SYSTEM FOR THE CARIBBEAN AND ADJACENT REGIONS - THE CARIBE-EWS.


...THIS MESSAGE IS FOR TEST PURPOSES ONLY...

...TEST PTWC MONTHLY CARIBE-EWS COMMUNICATIONS TEST...


PLEASE NOTE - THE WEBSITE FOR PTWC MESSAGES IS NOW AT

                    TSUNAMI.GOV

          THE FORMER WEBSITE HAS NOW BEEN RETIRED.

          PLEASE UPDATE YOUR BOOKMARKS ACCORDINGLY.


THIS IS A TEST MESSAGE. THIS IS A SCHEDULED TEST OF THE

COMMUNICATION METHODS USED TO DISSEMINATE TSUNAMI INFORMATION

FROM THE PACIFIC TSUNAMI WARNING CENTER TO THE CARIBE-EWS

TSUNAMI WARNING FOCAL POINTS AND NATIONAL TSUNAMI WARNING

CENTERS.


THIS TEST IS CONDUCTED ON THE FIRST THURSDAY OF EACH MONTH AT

1530 UTC. THE MESSAGE IS SENT BY SEVERAL COMMUNICATIONS METHODS

INCLUDING THE GLOBAL TELECOMMUNICATIONS SYSTEM OR GTS... THE

AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK OR AFTN... BY

EMAIL... AND BY TELEFAX.


THIS MESSAGE SHOULD ARRIVE BY ALL DESIGNATED METHODS WITHIN A

FEW MINUTES OF ITS BEING DISSEMINATED. TSUNAMI WARNING FOCAL

POINTS AND NATIONAL TSUNAMI WARNING CENTERS SHOULD CHECK THAT

IT WAS RECEIVED BY ALL METHODS IN A TIMELY FASHION.


RESPONSE - IT IS ONLY NECESSARY TO RESPOND IF THE TEST WAS

UNACCEPTABLY DELAYED OR NOT RECEIVED BY ONE OR MORE DESIGNATED

COMMUNICATION METHODS. IN THAT CASE... PLEASE NOTIFY THE PACIFIC

TSUNAMI WARNING CENTER BY EMAIL... INDICATING WHICH METHOD OR

METHODS FAILED AND THE EMAIL OF A PERSON OR PERSONS TO

CORRESPOND WITH REGARDING THE PROBLEM.


PACIFIC TSUNAMI WARNING CENTER EMAIL - COMMS@PTWC.NOAA.GOV


THE IOC... THE U.S. CARIBBEAN TSUNAMI WARNING PROGRAM... AND

THE PACIFIC TSUNAMI WARNING CENTER WILL WORK TO RESOLVE ANY

COMMUNICATIONS PROBLEMS THAT ARE IDENTIFIED.


THIS IS A TEST MESSAGE. THANK YOU FOR YOUR PARTICIPATION IN THIS

TEST.
```

T_WECA41PHEB061530_C_KWBC_20250306153035_20316596-6074-TSUCAX.txt

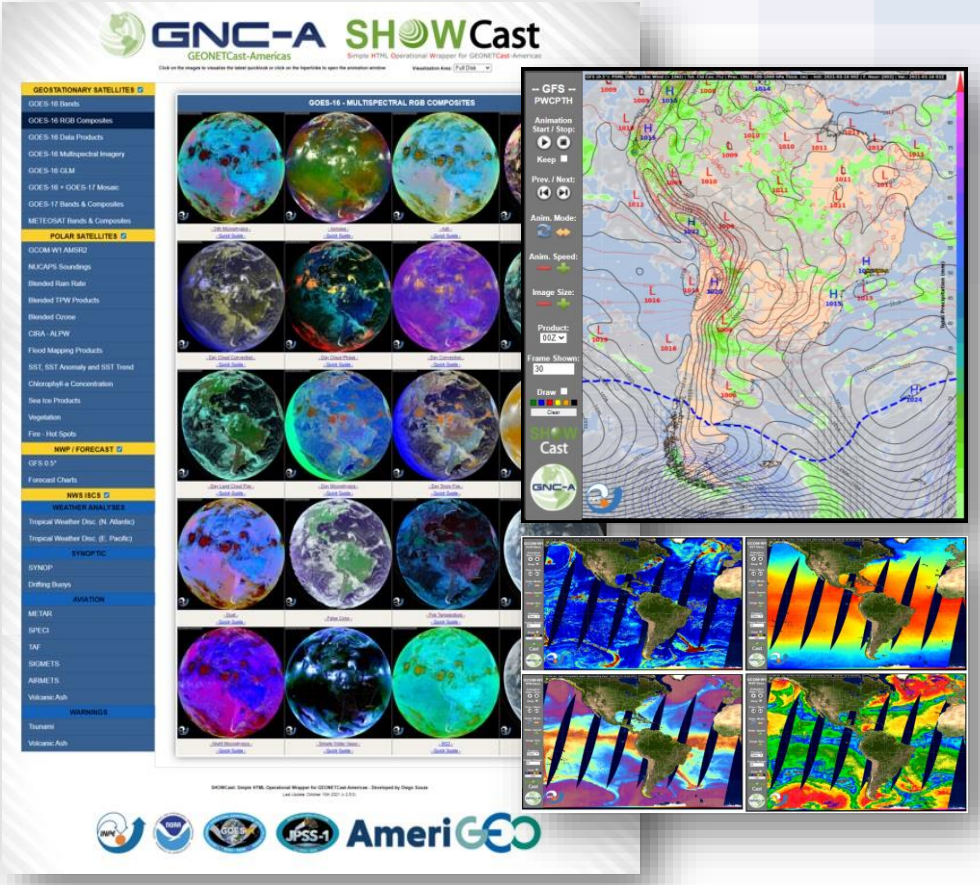
Product Visualization and Manipulation

SHOWCast

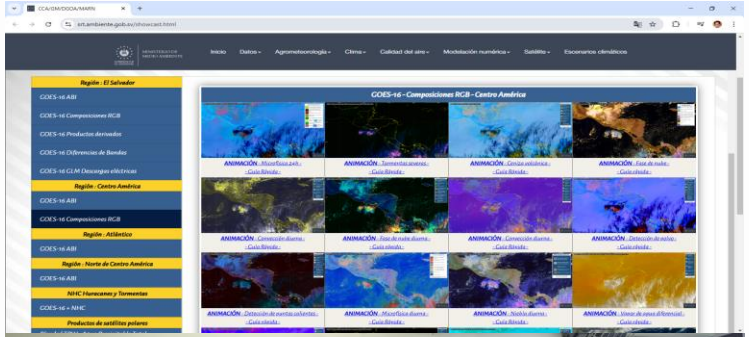
(Simple HTML Operational Wrapper for GEONETCast-Americas)

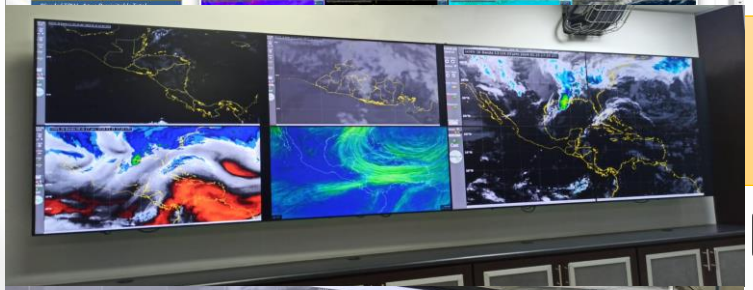
https://github.com/diegormsouza/showcast

- Developed by Brazilian GNC-A partner **National Institute for Space Research (INPE)** in November 2019 for GNC-A users
- **Open source** software visualization suite, available for download off INPE's GNC-A blog/ GitHub and the broadcast stream
- Allows users to visualize and animate over **120+ different GNC-A products** in **Windows** or **Linux** OS
- Provides / allows terrestrial internet cloud capability (AWS and UNIDATA) for contingencies and data gaps



Let's Explore an Online Interface Displaying GNC-A Data





The imagery you will see in this online page have been generated using **Python**

DEMONSTRATION

http://srt.ambiente.gob.sv/showcast.html

GNC-A Disaster Capabilities

While internet and other communications means exist, satellite broadcasts are inexpensive to operate and provide a method of communication removed from other terrestrial network limitations of periodic failures.

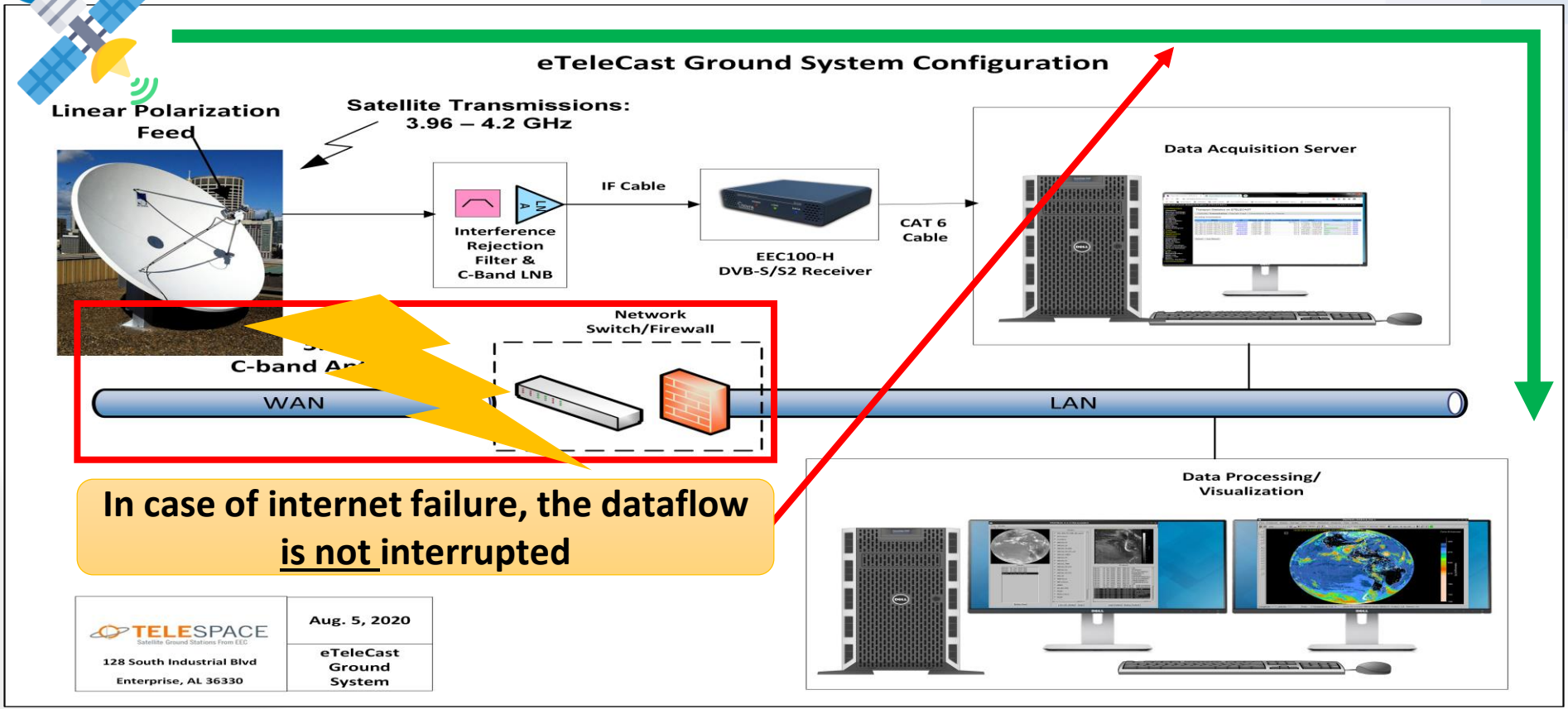
UPLINK (Ellenwood, Georgia, USA)

REBROADCAST (INTELSAT-21)

RECEPTION (User Ground Station)

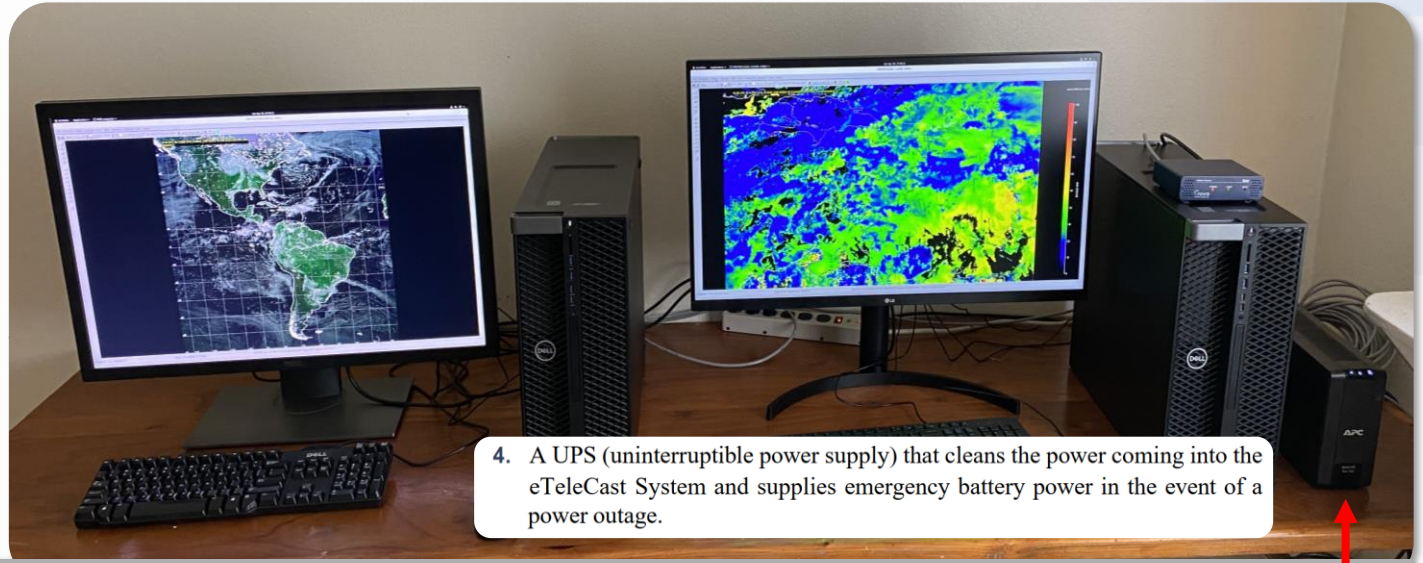
Antigua & Barbuda Meteorological Services - Credits: EEC

GNC-A Disaster Capabilities: No Internet Required



eTeleCast Ground System Configuration - Credits: EEC

GNC-A Disaster Capabilities: Power Outages



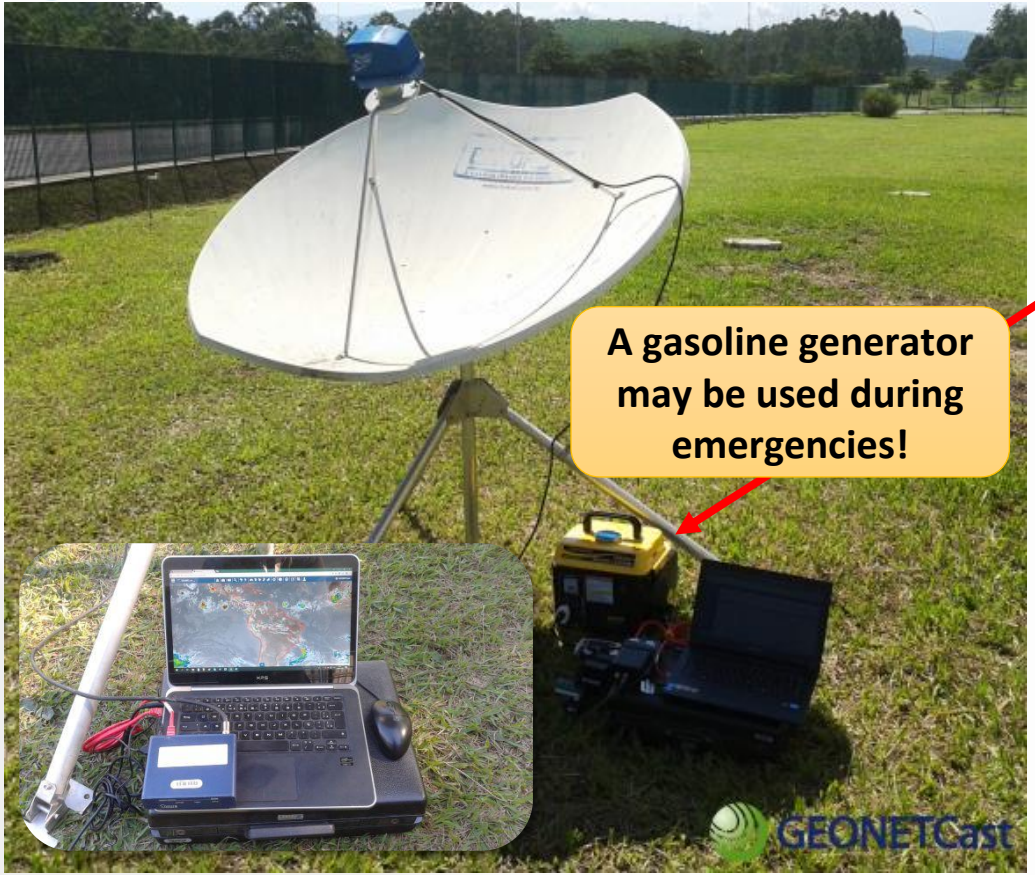
GNC-A Station - St. Kitts Meteorological Services - Credits: EEC

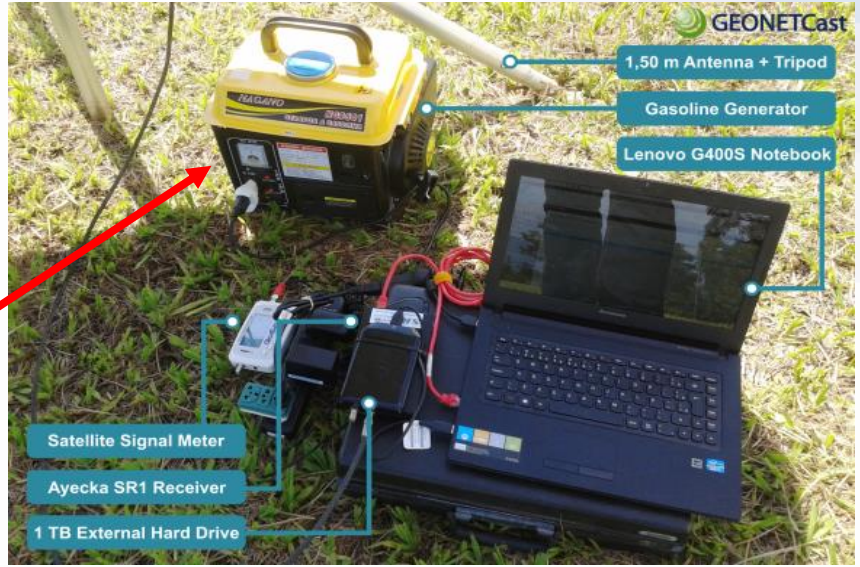
Only need power for the computer(s) and DVB-S2 Receiver (the DVB-S2 receiver provides power to the LNB circuitry).

UPS (uninterruptible power supply)

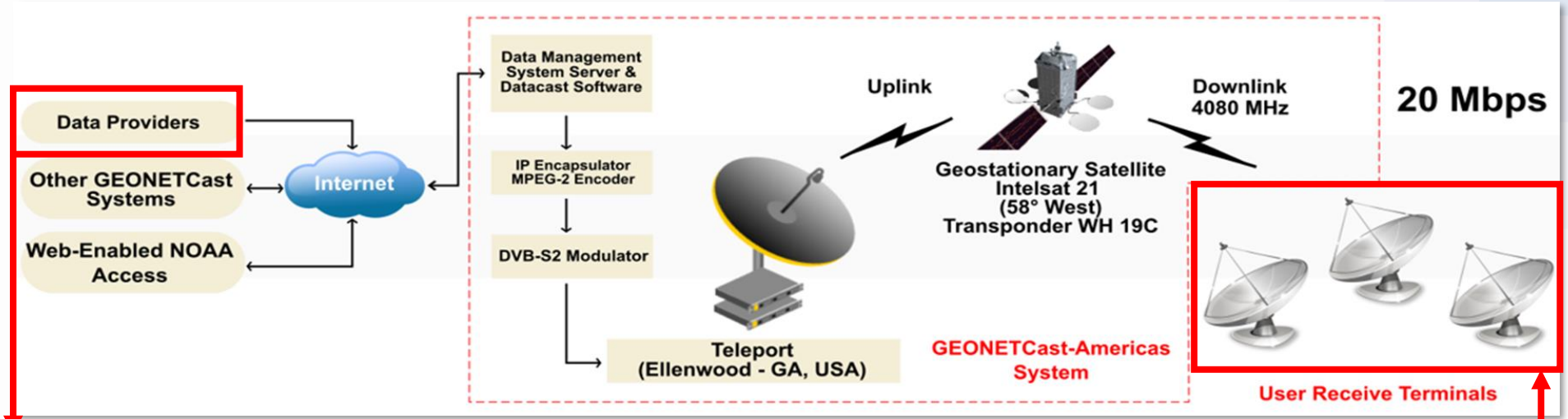
Allows the station to keep running **for a period of time** when incoming power is **interrupted**

GNC-A Disaster Capabilities: Power Outages





GNC-A Disaster Capabilities: Data Upload (Ad-Hoc)



Apart from the data that is normally broadcasted, ability to add data to GNC-A on a ad-hoc basis: no format restriction

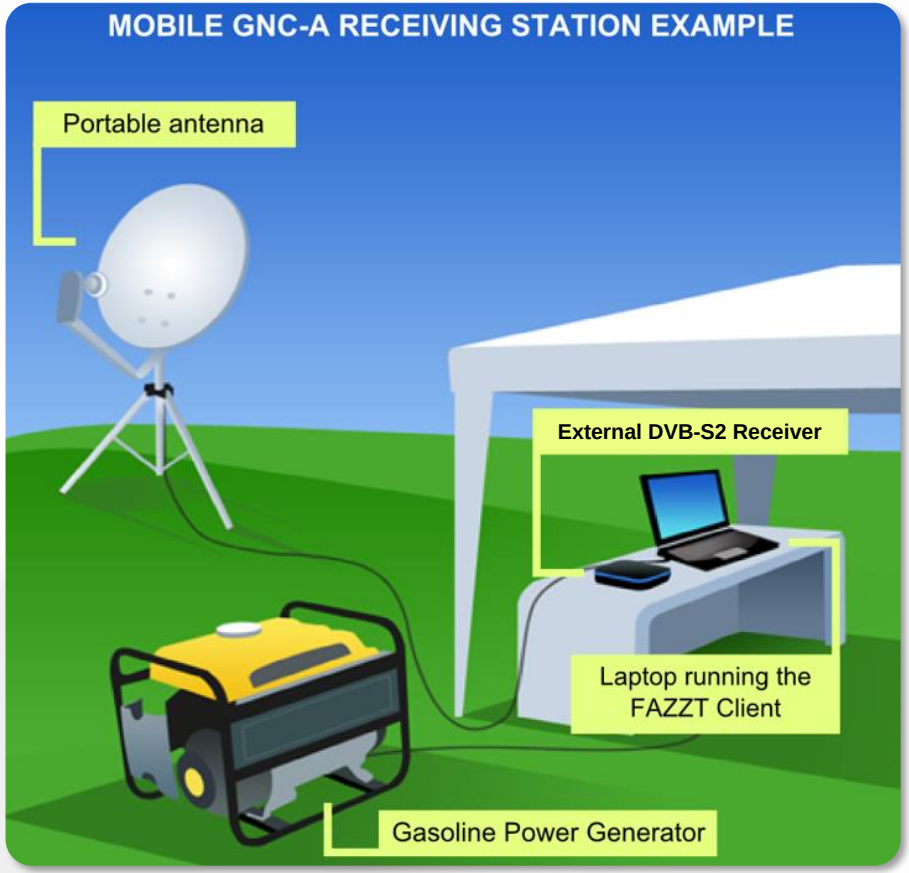
Text Files, Imagery, Alerts, etc.
Requires coordination between project managers and GNC-A management.

Ability to add data prepared within or outside of the region of interest

GNC-A Data Provider(s)

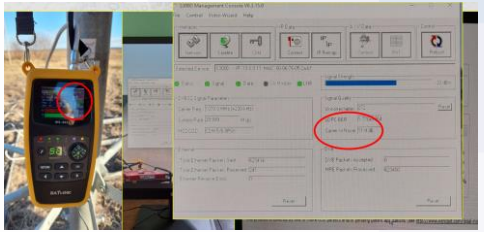
GNC-A User(s) Under Emergency Situation

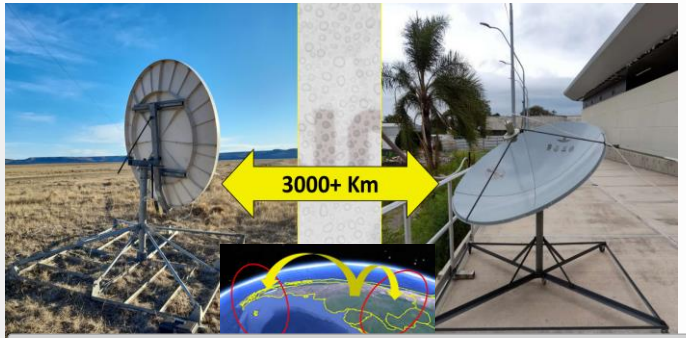
GNC-A Disaster Capabilities: Portable Stations



GNC-A Portable Station - Credits: Argentinean Air Force

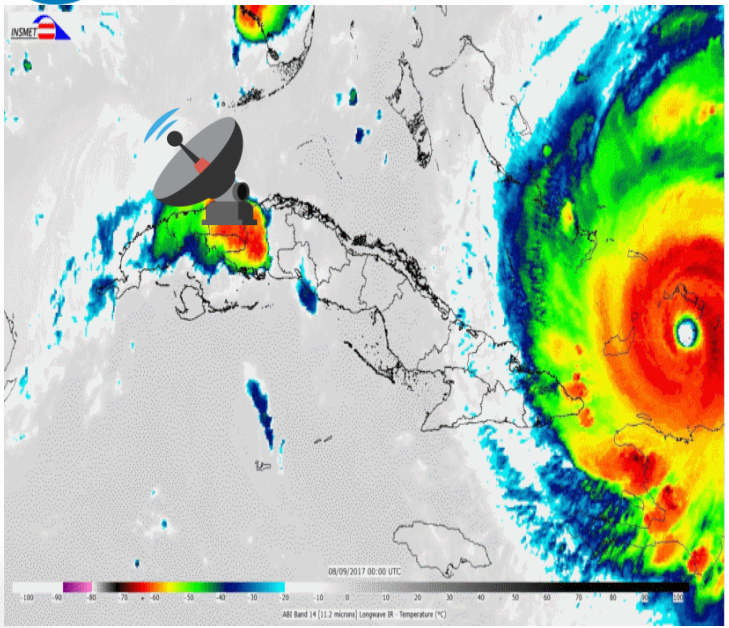
GNC-A Disaster Capabilities: Portable Stations





GNC-A Portable Station - Credits: Argentinean Air Force

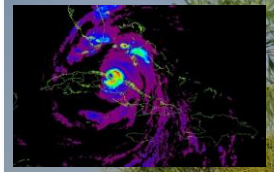
GNC-A Disaster Capabilities: Survival Wind Speed



Hurricane Irma
9 Sept. 2017 0000 UTC
10 Sept. 2017 2300 UTC
Animation kindly provided by CIMO - INSMET - Cuba

Winds of 120 km/h

INSMET
Instituto de Meteorología

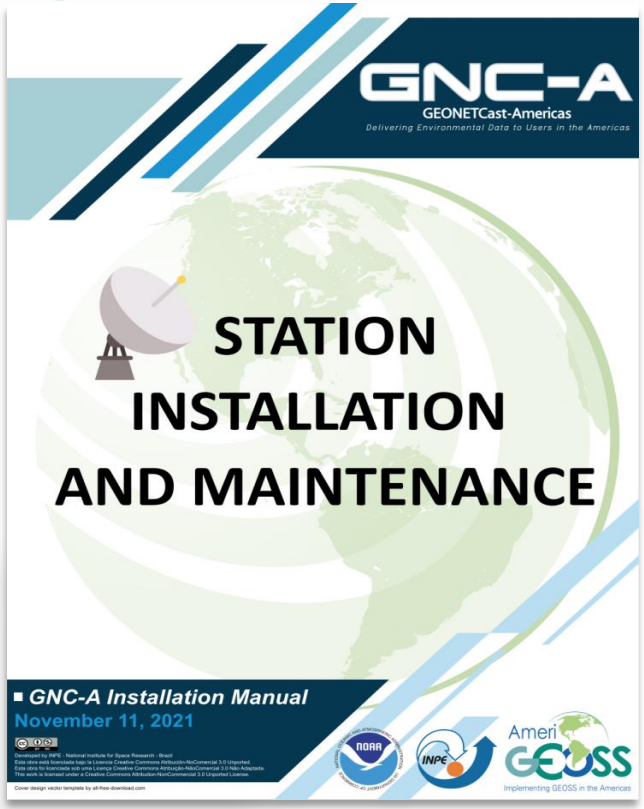


Survival wind speed is the maximum wind speed at which there is no permanent deformation of the antenna or any of its components

Antenna Specifications	
Survival Wind Speed	201 km/h
Antenna Optics	Prime Focus, Axisymmetric
Reflector Diameter	3.0m
Reflector Material	Eight Segment Glass Fiber Reinforced Polyester SMC
Mast Pipe Size	6" SCH 80 Pipe (6.62" OD)
Azimuth Travel	360°
Elevation Travel	0° to 90°
Temperature Range	-40° to +60° C
Relative Humidity	0 to 100% with condensation
Total Weight	350 kg

GNC-A Station Antenna (PRODELIN 3.0 m) - Credits: CIMO - INSMET - Cuba

GNC-A Documents: Stations, Products and Data Processing



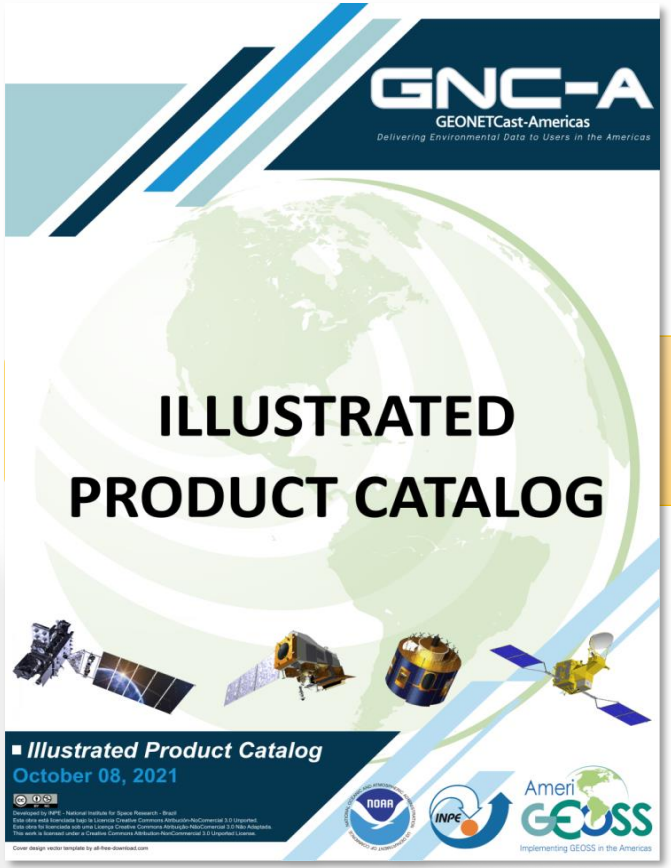
For more details please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

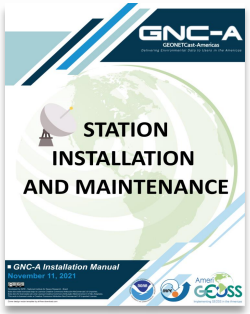
GNC-A Documents: Reference Slides

For more details please visit: https://geonetcast.wordpress.com/geonetcast-americas-documentation/

Procedure to access CIMHs Moodle: https://geonetcast.wordpress.com/2023/07/14/geonetcast-python-training-for-eastern-caribbean-states-moodle-is-now-open/

Let's Explore the GNC-A Documentation





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https://geonetcast.wordpress.com/geonetcast-americas-documentation/

The GNC-A User Group Webinar

A series of User Group webinars to facilitate communication among, and provide updates to GEONETCast-Americas users.

The first edition was held on 20 June 2018. Since then, we had 14 editions, the latest on 2 March 2023.

The GNC-A User Group Webinars

GEONETCast-Americas GNC-A user group webinar #12

Save the Date! - ¡Reserva la Fecha!

We will hold the 12th GNC-A User Group Webinar on
Thursday February 10, 2022 at 13:00 EST / 18:00 UTC until 14:30 EST / 19:30 UTC

Realizaremos el 12° Seminario Web del Grupo de Usuarios de GNC-A el
jueves, 10 de febrero de 2022 a las 18:00 UTC hasta las 19:30 UTC

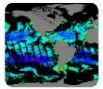
Realizaremos a 12° Webinar do Grupo de Usuários GNC-A na
quinta-feira, 10 de fevereiro de 2022, às 18:00 UTC até 19:30 UTC

Webex link: https://spsd.webex.com/spsd/j.php?MTID=m955f9a0fe3e32ba90a8cf0955b63f044

Agenda

- **NOAA & INPE Updates - Actualizaciones - Atualizações:**
  GNC-A / GOES-R / JPSS / GeoXO

GEONETCast GOES-R JPSS-1 GeoXO



- **NOAA Product Usage Training:**
  NOAA-20 VIIRS Chlorophyll-A Merge Ocean Color Product

- **GEONETCast-Americas User Case Study:**
  PUCV (Pontifical Catholic University of Valparaiso - Chile)
  GNC-A Station n°95

- **Data Processing and Visualization:**
  GEOOs: Open Source Observational Geoportal Associated with a Collaborative Development Information System (PUCV)

- **Mesoescale Domain Sector (MDS) International Requests:**
  SMN Argentina - Case Study

Servicio Meteorológico Nacional Argentina

GEONETCast-Americas GNC-A user group webinar #13

Save the Date! - ¡Reserva la Fecha!

We will hold the 13th GNC-A User Group Webinar on
Thursday May 19, 2022 at 13:00 EST / 17:00 UTC until 14:30 EST / 18:30 UTC.

Realizaremos el 13° Seminario Web del Grupo de Usuarios de GNC-A el
jueves, 19 de mayo de 2022 a las 17:00 UTC hasta las 18:30 UTC.

Realizaremos o 13° Webinar do Grupo de Usuários GNC-A na
quinta-feira, 19 de maio de 2022, às 17:00 UTC até 18:30 UTC.

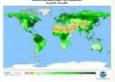
Webex link: https://spsd.webex.com/spsd/j.php?MTID=m0dee1e869ef8c92b2734b80ee9a8419

Agenda

- **NOAA & INPE Updates - Actualizaciones - Atualizações:**
  GNC-A / GOES-R / JPSS / GeoXO

GEONETCast GOES-R JPSS-1 GeoXO

- **GOES DCS:**
  Data Collection System
  Overview
  Tests on GNC-A



- **NOAA Product Usage Training:**
  VIIRS Vegetation Products

- **GEONETCast-Americas User Case Study:**
  Solar Energy Laboratory (LES)
  University of the Republic (Udelar) - Uruguay
  GNC-A Station n°61

GEONETCast-Americas GNC-A user group webinar #14

Save the Date! - ¡Reserva la Fecha!

We will hold the 14th GNC-A User Group Webinar on
Thursday March 02, 2023 at 12:00 EST / 17:00 UTC until 13:30 EST / 18:30 UTC.

Realizaremos el 14° Seminario Web del Grupo de Usuarios de GNC-A el
jueves, 02 de marzo de 2023 a las 17:00 UTC hasta las 18:30 UTC.

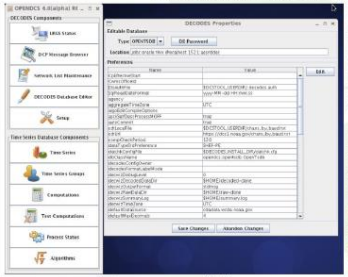
Realizaremos o 14° Webinar do Grupo de Usuários GNC-A na
quinta-feira, 02 de março de 2023, às 17:00 UTC até 18:30 UTC.

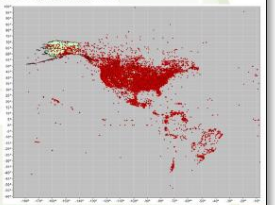
Webex link: https://spsd.webex.com/spsd/j.php?MTID=m486050c5771b469deadee1a3805d4049

Agenda

- **openDCS: an open-source software package for retrieving and manipulating GOES Data Collection System messages.**

The GEONETCast-Americas broadcast includes DCS messages broadcast by Data Collection Platforms within the reception footprints of the GOES-East and West satellites.

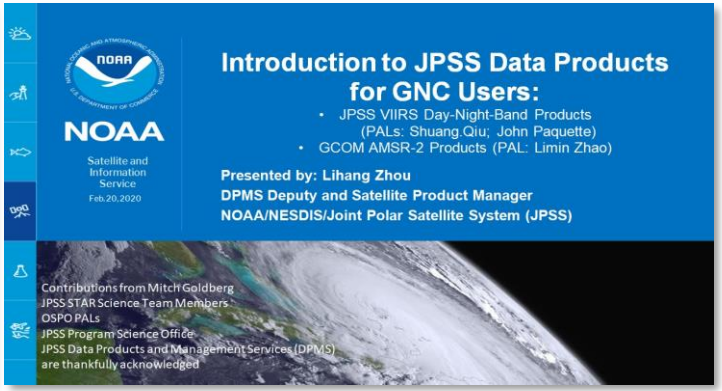


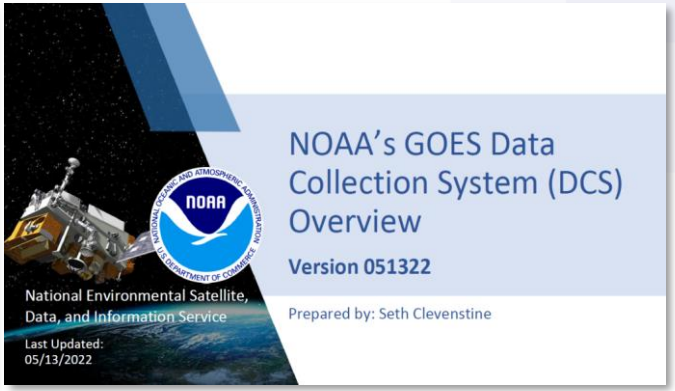


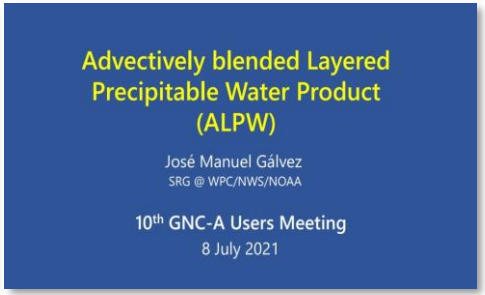
GEONETCast-Americas Webinar in Preparation for CARIBE WAVE 25 | **Overview, Operation and Products**

The GNC-A Product Usage Trainings

https://geonetcast.wordpress.com/gnc-a-product-usage-trainings/

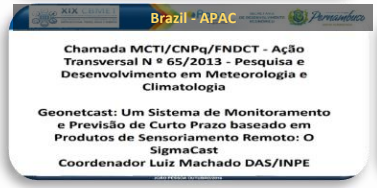


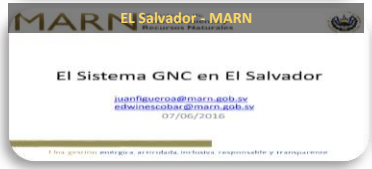


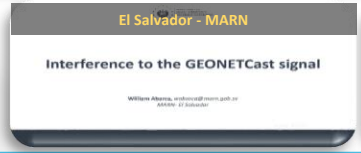


The GNC-A User Case Studies

https://geonetcast.wordpress.com/gnc-a-user-study-cases/







GEONETCast-Americas Contacts and Links

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GEONETCast-Americas (GNC-A Program Management)

Elliott Matthews: elliott.matthews@noaa.gov

NESDIS International and Interagency Affairs

Diego Souza (INPE)

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Kelvin Xu: kelvin.xu@noaa.gov and Toby Hutchings: toby.hutchings@noaa.gov

Chief, Direct Services Branch | Direct Readout Program Manager

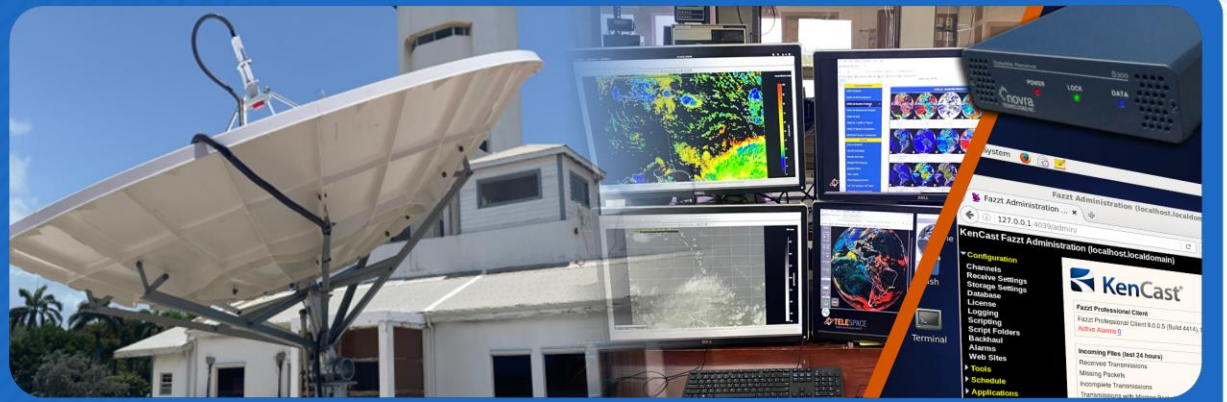
Web Pages: www.geonetcastamericas.noaa.gov | www.geonetcast.wordpress.com

GEONETCast-Americas Webinar in Preparation for CARIBE WAVE 25

March 14th 18:30 UTC

GNC-A Overview, Operation and Product Suite

THANK YOU! QUESTIONS?



Diego Souza

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DISSM - Meteorological Satellites and Sensors Division
CGCT - General Coordination of Earth Sciences
INPE - National Institute for Space Research

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES