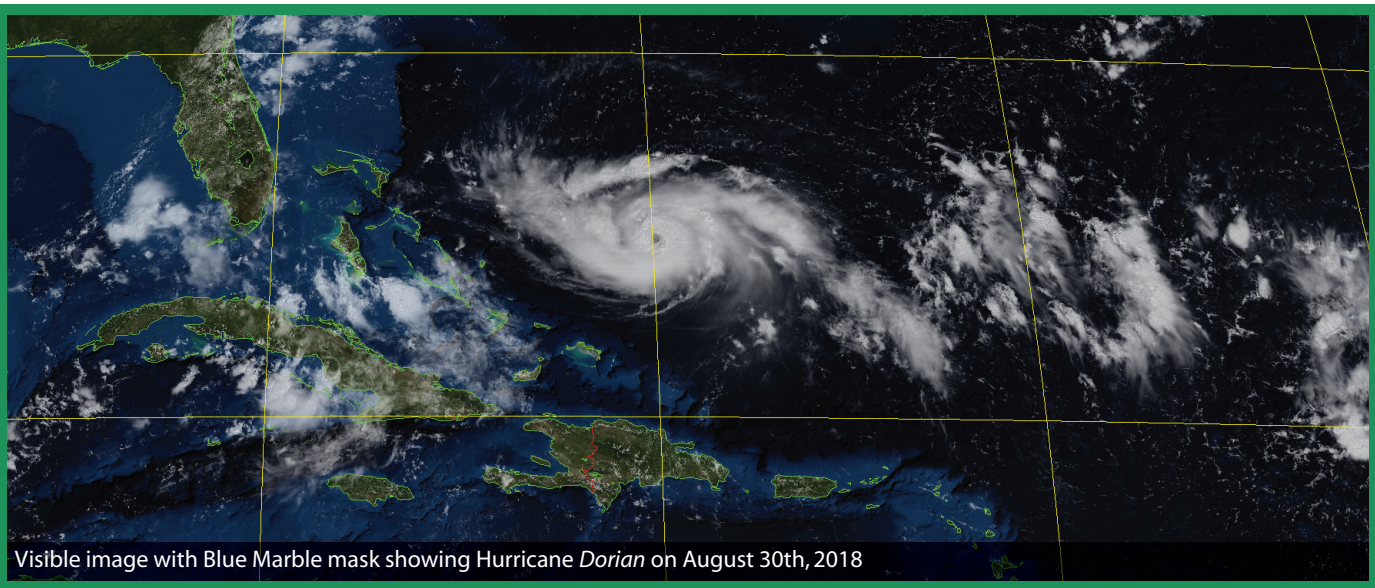
Dartcom

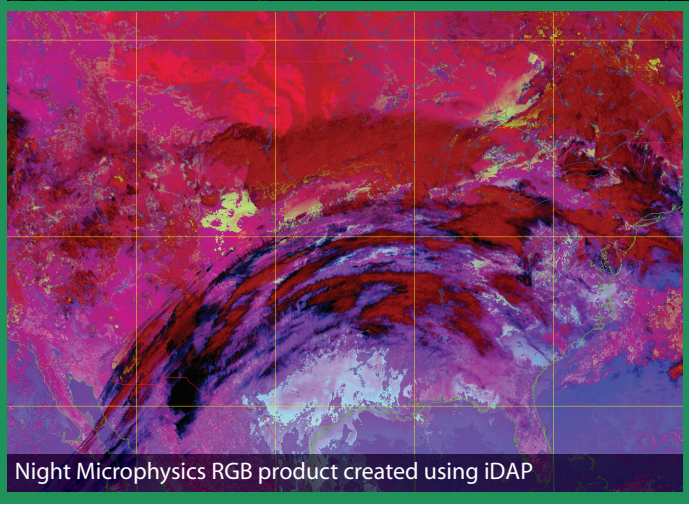
WEATHER SATELLITE AND REMOTE SENSING GROUND STATIONS

GOES HRIT System

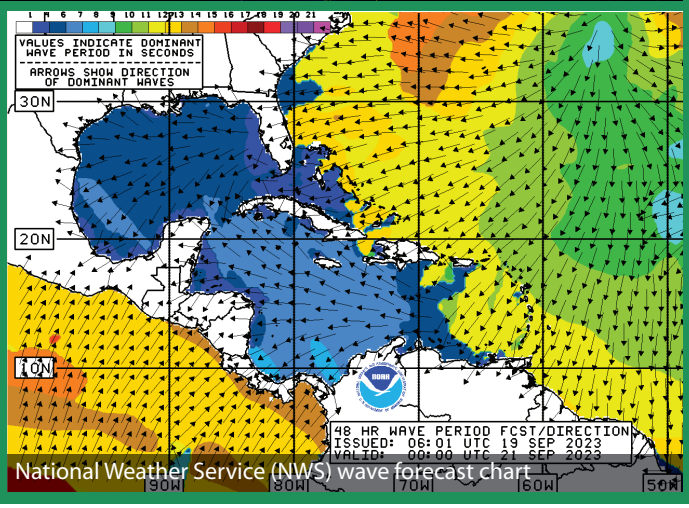
Reliable, high-performance system for receiving and processing HRIT images, NWS charts, EMWIN products and other data from GOES geostationary satellites



Visible image with Blue Marble mask showing Hurricane *Dorian* on August 30th, 2018



Night Microphysics RGB product created using iDAP



National Weather Service (NWS) wave forecast chart

The Dartcom GOES HRIT System can receive, archive, process and display images, charts and other data from the National Oceanic and Atmospheric Administration (NOAA) Geostationary Operational Environmental Satellite (GOES) satellite series.

The hardware comprises a 1.25m parabolic dish antenna with an integrated feed/downconverter and a Dartcom USB receiver.

GOES L-Band direct broadcast data includes HRIT images, National Weather Service (NWS) charts and Emergency Managers Weather Information Network (EMWIN) products.

Images and charts can be viewed and processed using the Dartcom iDAP software, with facilities such as animation, enhancement, RGB products, palette products, reprojection, masking, printing and exporting to third-party file formats.

The Dartcom MacroPro software automates the processing facilities provided by iDAP, enabling fully automatic ingest and processing with full logging and alarms.

Outputs are also available for processing software such as PCI Geomatica, ERDAS IMAGINE and ENVI/IDL, as well as standard interchange formats such as PGM and GeoTIFF.

Components

- **Antenna** – 1.25m L-Band parabolic dish antenna and integrated feed/downconverter.
- **Receiver** – Dartcom USB receiver.
- **Ingest and visualisation PC** – running Dartcom Geostationary Ingester and Dartcom iDAP/MacroPro software. Customers can either supply their own PC, or for a turnkey solution Dartcom can supply a PC fully set-up and tested.

Dartcom can also provide on-site installation and training services.

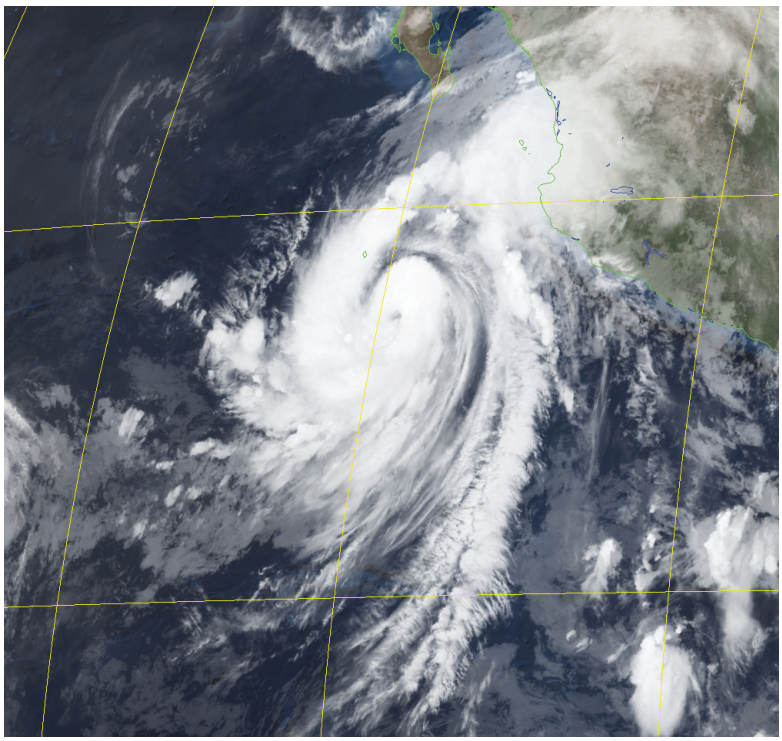
Features

- Fully automatic reception, decryption, decompression, archiving, output and processing.
- Multi-threaded software for optimum timeliness and accelerated processing.
- Proven, robust, reliable hardware and software, with installations all over the world in all climates, temperatures and environments.
- Comprehensive hardware and software diagnostics at all levels, with on-screen and email alarms, and full logging if required.
- Full technical support and regular software updates.

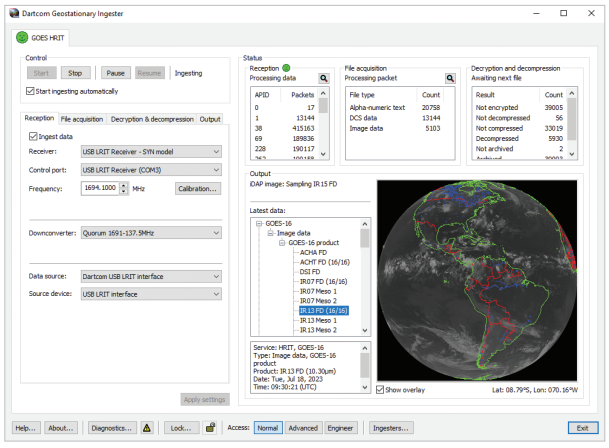
Software

- **Dartcom Geostationary Ingester** – provides automatic ingest, archiving and output of images and other data.
- **Dartcom iDAP** – provides a wide range of image manipulation and processing facilities such as animation, enhancement, RGB products, palette products, reprojection, masking, printing, archiving and exporting to third-party file formats.
- **Dartcom MacroPro** – automates the image processing facilities provided by iDAP, with full logging and alarms.

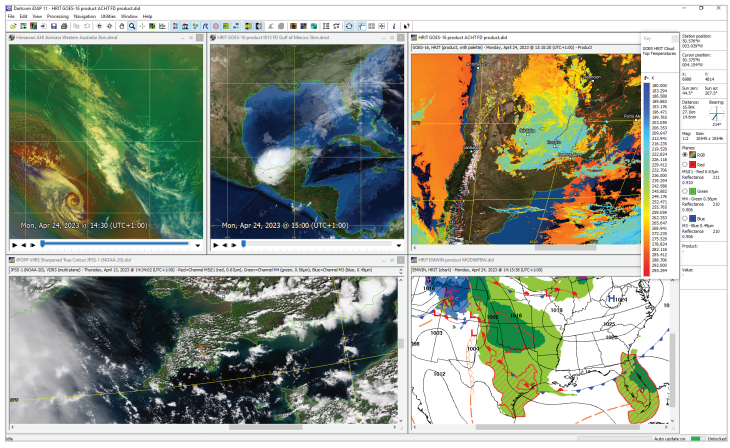
Dartcom GOES HRIT antenna installed at the University of Huaraz in Peru



Infra-red image with Blue Marble mask showing Cyclone Ileana approaching Mexico on August 7th, 2018



Dartcom Geostationary Ingester software



Dartcom iDAP/MacroPro processing and visualisation software

Hardware

Antenna

- Powder-coated solid aluminium 1.25m parabolic reflector.
- Powder-coated steel azimuth/elevation mount and pedestal.
- Integrated feed/downconverter with weatherproof O-ring sealed machined case.
- Up to 100m of RG213 50Ω co-axial cable.

Receiver

- High-quality, low-cost receiver supporting GEO-KOMPSAT-2A (GK-2A) LRIT and GOES HRIT transmissions.
- Housed in a sleek, compact, durable extruded aluminium case.
- USB interface for fast, reliable data transfer to the host computer.
- Fully software controlled, with detailed status reports available.
- Built-in time-stamped fault logging.
- 20-LED real-time signal level display for easy dish alignment and operational signal monitoring.
- Status LEDs for LNB power, signal lock, USB ready, control communications, data buffer status and frame synchronisation.
- Adjustable RF attenuator to accommodate LNB signal inputs between –15dBm and –75dBm.
- Supports QPSK and BPSK demodulation.
- Built-in hardware Viterbi decoding.
- Supplies power to the downconverter via the RF input.
- Supplied with external 100–240V AC switch mode PSU.
- DC–DC converter PSU also available for battery or portable operation (input 10.6–15V DC).

1.25m parabolic dish antenna

Integrated feed/downconverter

Dartcom USB receiver for GK-2A LRIT and GOES HRIT

Parabolic reflector specifications

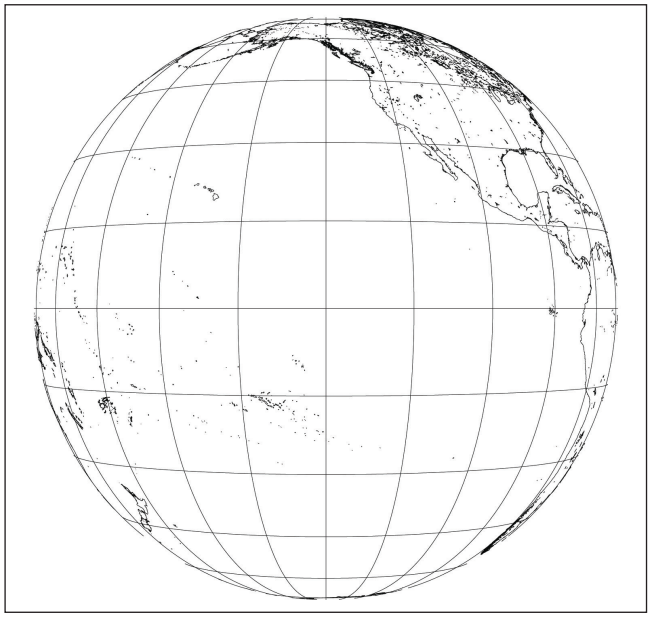
Reflector type	Prime focus parabolic
Reflective material	Solid aluminium, powder-coated
Reflector diameter	1.25m
F/D ratio	0.38
Gain	24.0dBi
Polarisation	Linear
G/T @ 5˚ elevation	2.2dB/K
Wind speeds	112km/h (60kt) operational
	201km/h (109kt) survival

Feed and downconverter specifications

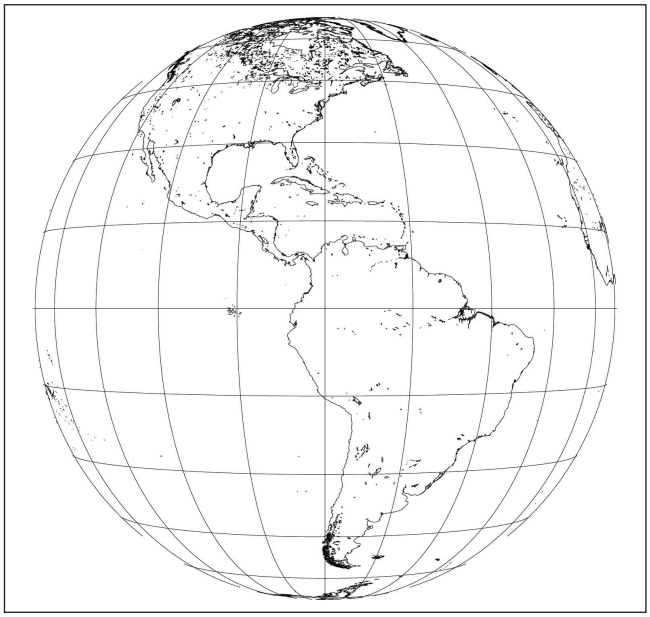
Feed type	PCB patch IFD
Polarisation	Linear
RF input	1691MHz ±25MHz
LNA noise figure	1.2dB typical
Pre-LNA filter	3-pole, –3dB ±60MHz
Total gain	>50dB
LO frequency	1553.5MHz
RF output	137.5MHz ±25MHz

Receiver specifications

RF input frequency	135–144MHz (1688.5–1697.5MHz from a 1691MHz to 137.5MHz LNB)
Frequency resolution	5kHz
RF input connector	50Ω BNC
RF input level	–15dBm to –75dBm
Symbol rates	64ksps to 1024ksps
Viterbi decoding	1/2, K=7, G1=171, G2=133
Demodulator modes	QPSK, BPSK
Data encodings	NRZ-S, NRZ-M, NRZ-L
Digital interface	USB port
Power requirements	15V DC @ 2A
LNB power	14–15V DC nominal @ 0.75A via RF input
PSU	External switch mode, input 100–240V AC 47–63Hz @ 1.2A
Dimensions (W×H×D)	175×60×240mm
Weight	1.7kg (including PSU)



GOES West coverage, centred on 135˚W



GOES East coverage, centred on 75˚W

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