BASIC COMMERCE & INDUSTRIES (BCI), INC
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General Introduction and Availability of Global Cloud Top and Convective Weather

May 24th 2022

Corporate Background

Founded in 1981
~200 Employees
Over $27M annual revenues

Technical Expertise

Research & Analysis
FAA Aviation Weather Research Programs
Meteorological Data Analysis
Mobile Application Development
Quality Management System (QMS)
Information Security
Flexible Terminal Sensor Network (FTSN)
Data Link

System Engineering & Test Support
Common Support Services Weather (CSS-Wx)
NAS Information Display System (NIDS)
Weather Technology in the Cockpit (WTIC)
NextGen Weather Processor (NWP)
Mobile application development
System Wide Information Management (SWIM)
Controller Pilot Data Link Communications

Software Development Commercial & Government Services
Tower Data Link Services (TDLS) – FAA
Electronic Flight Bag (EFB) applications – FAA and commercial
EFB applications – Delta Air Lines/Lufthansa Airlines/Apple appstore

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Federal Aviation Administration

Partners & Customers

Lufthansa

Lufthansa Systems

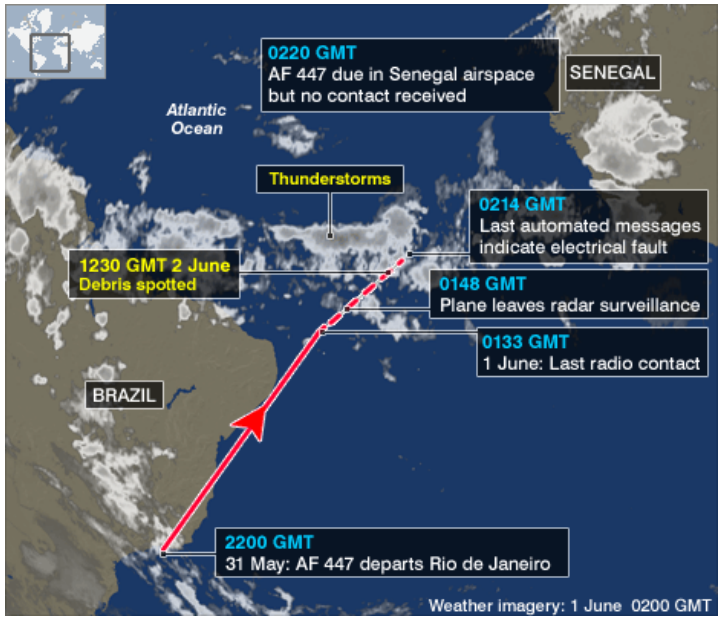
DELTA

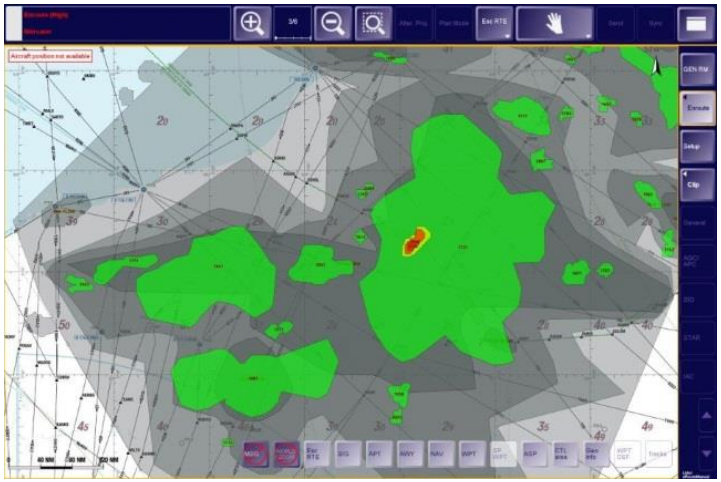
APiJET

Oceanic Weather Data/Product History

Product Shortfall Solution Search

- 1990 - Initial FAA/NCAR oceanic weather research to produce meteorological products utilizing Satellites
- 2006 – NASA/ FAA sponsored MetEval with United Airlines
  - Positive results and feedback
  - Shelved due to bandwidth limitations
- 2009 - Air France Flight 447 incident
  - Investigate benefits of remote oceanic weather for commercial airlines





Lufthansa Airlines initiates Global Wx Hazard program

- 2012 ~ 2014 - Lufthansa Airlines contracts BCI
  - Leverage FAA/NCAR oceanic weather research
  - Expanded data coverage to worldwide
  - Weather data optimization
  - Meteorological acceptance trials with airline and German Weather Service
  - Approval to integrate non-government weather into Flight Chart Software

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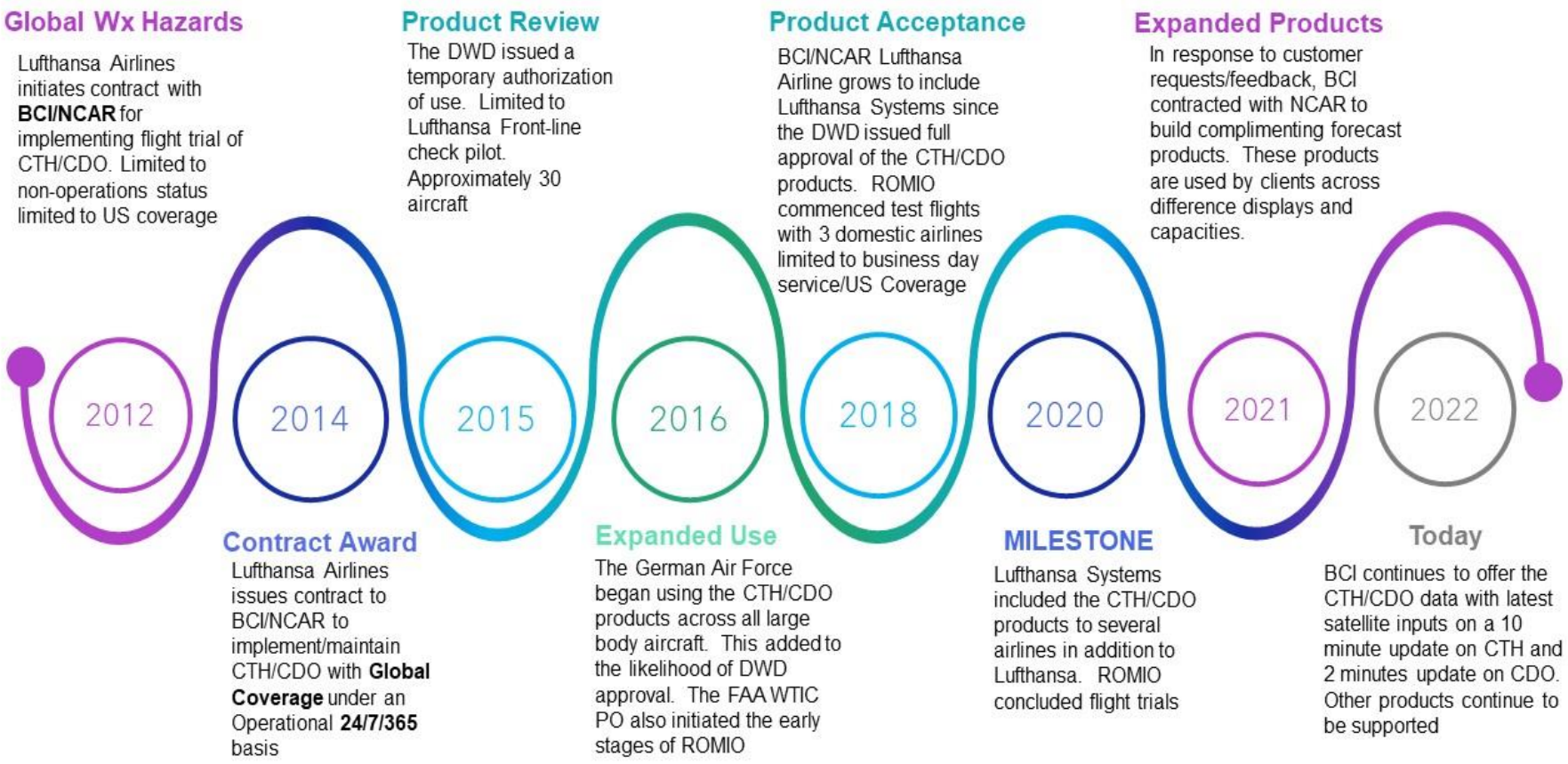
BCI CTH/CDO Timeline transition to Global Operational Status



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BCI Operational Product Overview

Operation Global Cloud Top and Convective Products Flexible Delivery

- BCI established a backend system and network co-located at a meteorological data center. BCI purchased and owns their own racks and systems, benefits from critical power plus backup services on data, power and communications. Since BCI developed and implemented 100% of the backend and client facing systems, we can customize to client's individual needs.

- BCI maintains the contract/license with NCAR for algorithm performance enhancements and complimenting product development.

- Lufthansa utilizes data delivery across various networks
  - Lufthansa's original mechanism was DataLink before WIFI migration
  - Lufthansa continues to ingest "vector" data

- Other Users receive tailored products
  - Multiple Users receive the Global Sat/IR product
  - Google Loon contracted BCI to develop a 50K to 75K product
  - Google Loon contracted BCI to develop complimenting CTH/CDO forecast products
  - Clients with TBO requested special products with specific thresholds and blended data

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BCI Operational Weather Data Provisions

Global Cloud Top and Convective Product Implementation

- Contracted to Lufthansa Airlines to provide:
  - Global Cloud Top Height and Motion Vectors
  - Global Convective Diagnosis for Oceanic Areas and Motion Vectors
  - Global SIGMET, AIRMET and VAAC
- Hosted Operational service for Lufthansa and Subsidiary Airlines
  - Service utilizes licensed NCAR Algorithms
- Maintains contract with NCAR
  - Algorithm performance enhancement
  - Future product development
- Incorporate User Feedback
  - Product maintenance and upgrade
  - Weekly interactions with customers and stakeholders

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BCI Product Enhancements and Sustainability

BCI added satellites for global coverage as well as for backup services

- Originally deployed with GOES E/W, MSG3, MeteoSat 7, and COMS in 2015
  - Added/Migrated to GOES R, Himawari, MeteoSat 10, MeteoSat 11, FY
  - Added Global Lighting from multiple vendors and Satellite resources
  - BCI worked with NCAR to provide “No Coverage” areas
  - BCI optimized the polygon processing to minimize bandwidth utilization
- Introduced new data product “No Coverage”
- Implement additional quality control on NCAR produced vector products
- Additional tuning of CDO levels
- Customer tailored Products:
  - Additional cloud top level from 50K to 75K for Google Loon
  - Additional cloud top forecast products for Google Loon
  - Increase cloud top height vertical resolution from 5k to 2k
  - Custom CTH/CDO blended products for Trajectory Based Operation clients
  - Custom raster format for Sheorey Digital Systems

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Enterprise Service

- Data Center
  - Co-located at meteorological data center w/ BCI owned hardware
  - Critical power, data and communication backup
  - Reduce latency of raw data feeds
  - Duplicated systems for failover redundancy
- Data Distribution
  - Leveraging commercial cloud infrastructure
  - Web Feature Service (WFS)
  - Web Mapping Service (WMS)
  - Local Data Manager (LDM)
  - FTP
- Data Format
  - IWXXM
  - GeoJSON
  - NetCDF
  - PNG

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BCI Brings Value-Added CTH/CDO benefits

Experienced

- 7+ years working under NCAR license
- Operationalized and evolving CTH/CDO
- Delivering to EFB and ground products

Operational

- Providing CTH/CDO data now
- Enterprise-grade delivery and monitoring
- Integration capabilities with your systems

Customer-focused

- Customer needs driven
- Airlines/operators should have choices!
- Data agnostic approach

Philosophy

- Strongly believe in the CDO/CTH tech
- Working to bring this tech into operations
- Value-driven, aviation met data provider

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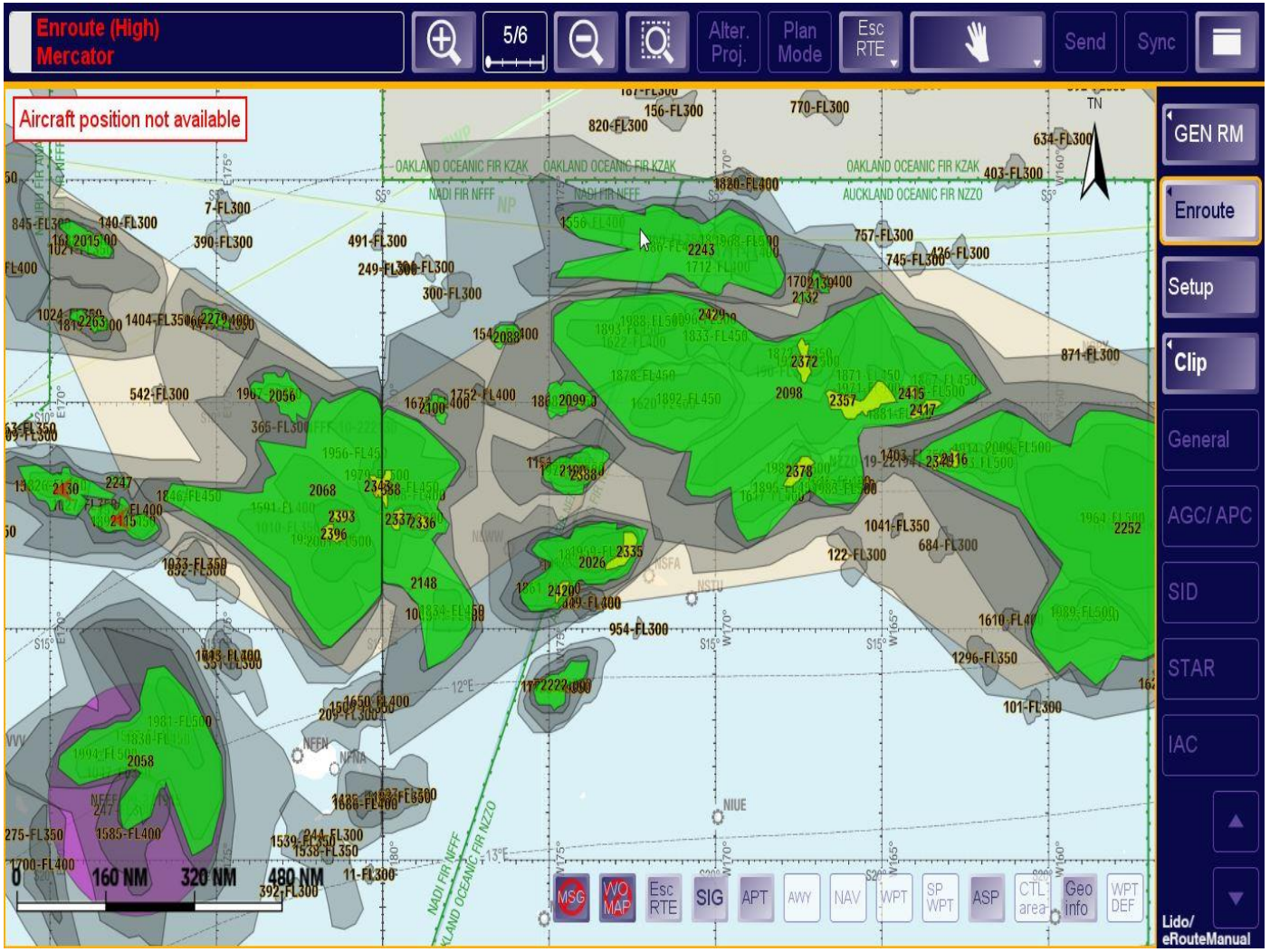
Lido eRoute Manual



Lido eRoute Manual

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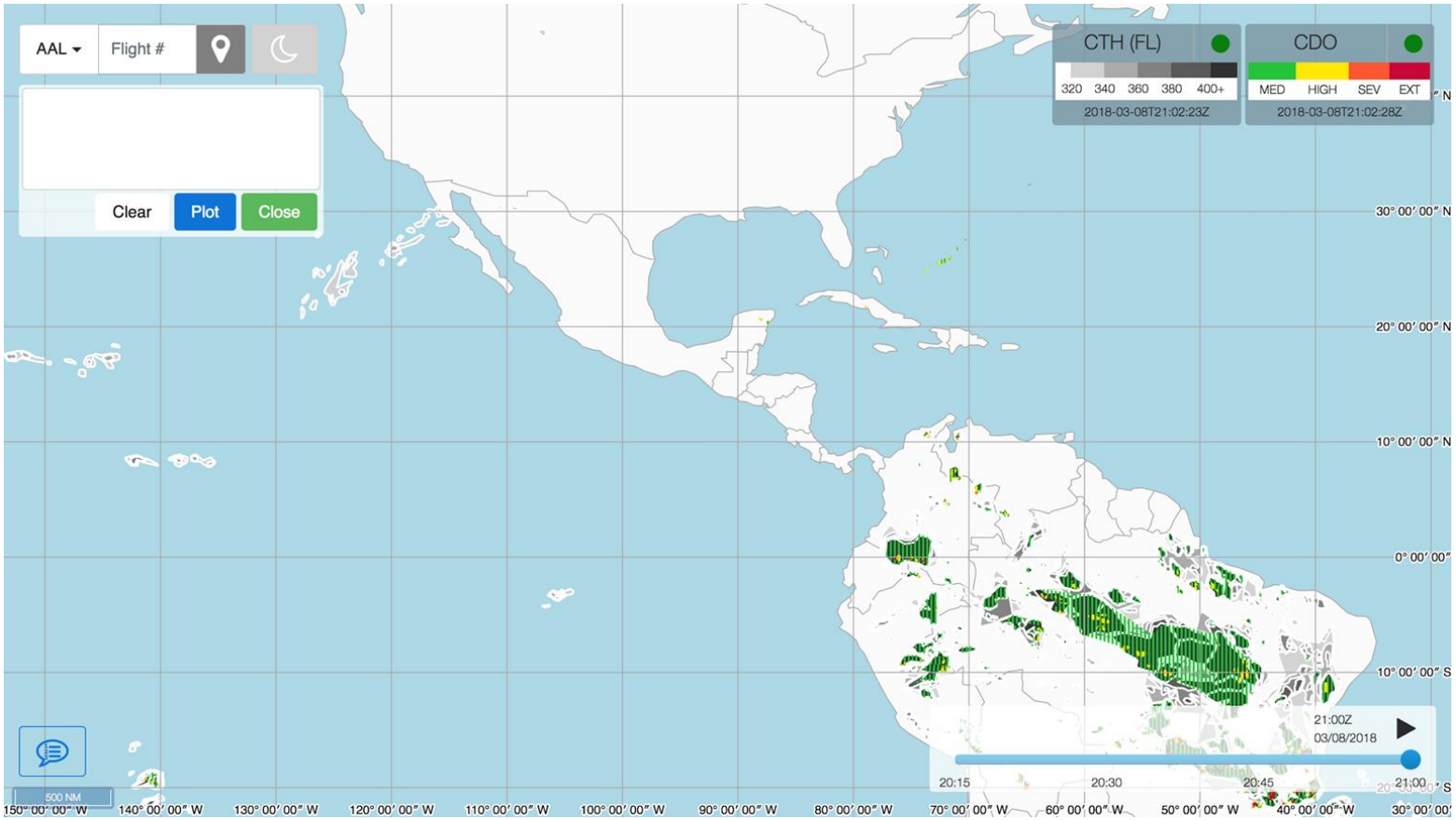

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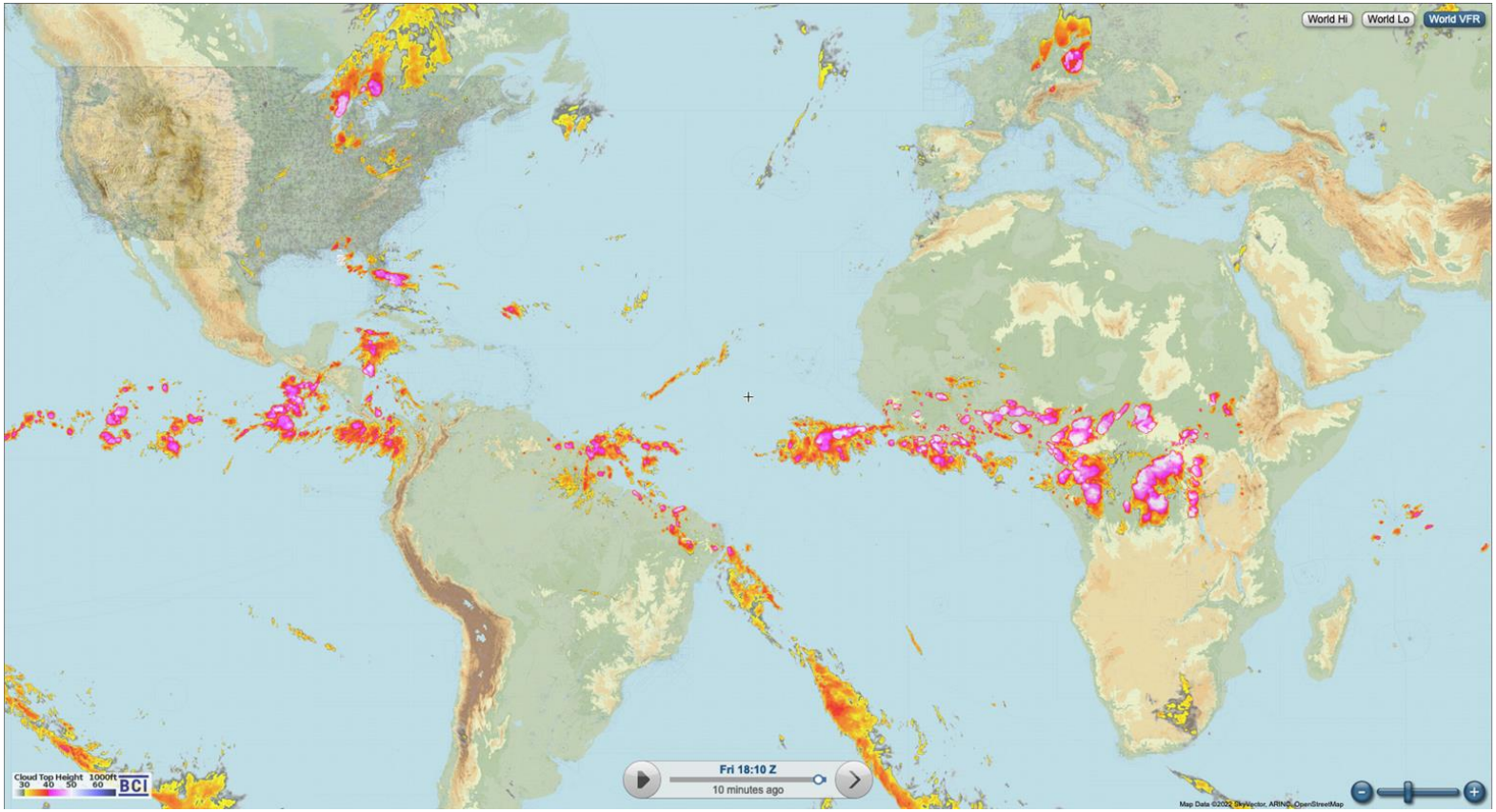
Skyvector



https://skyvector.com/
Go to Layers; Select SAT IR4 or Cloud Tops Heights

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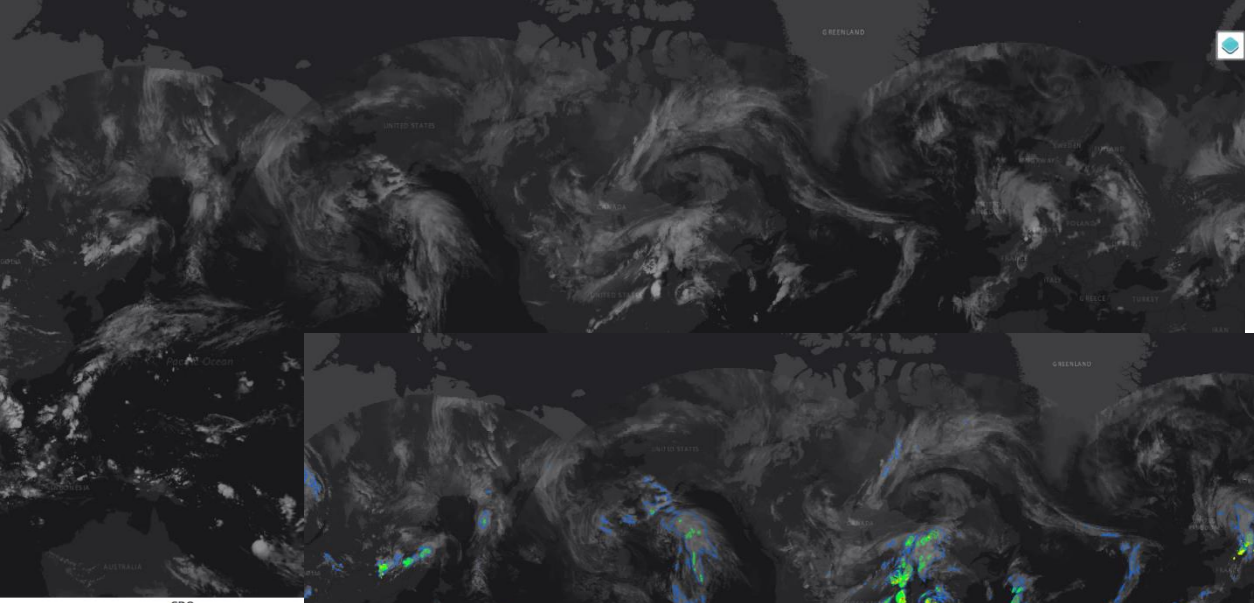

CDO

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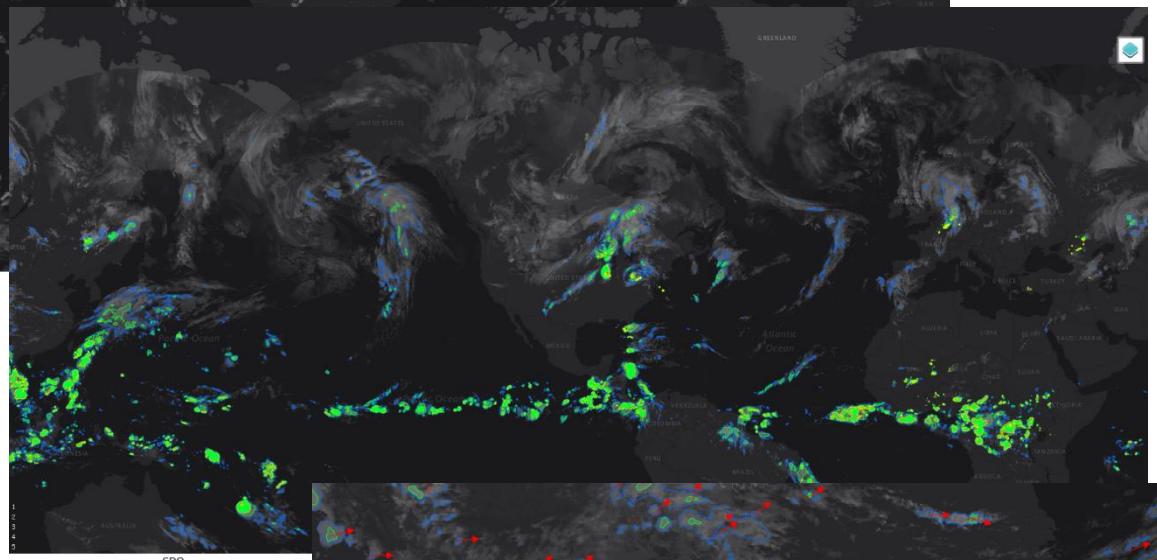

CDO

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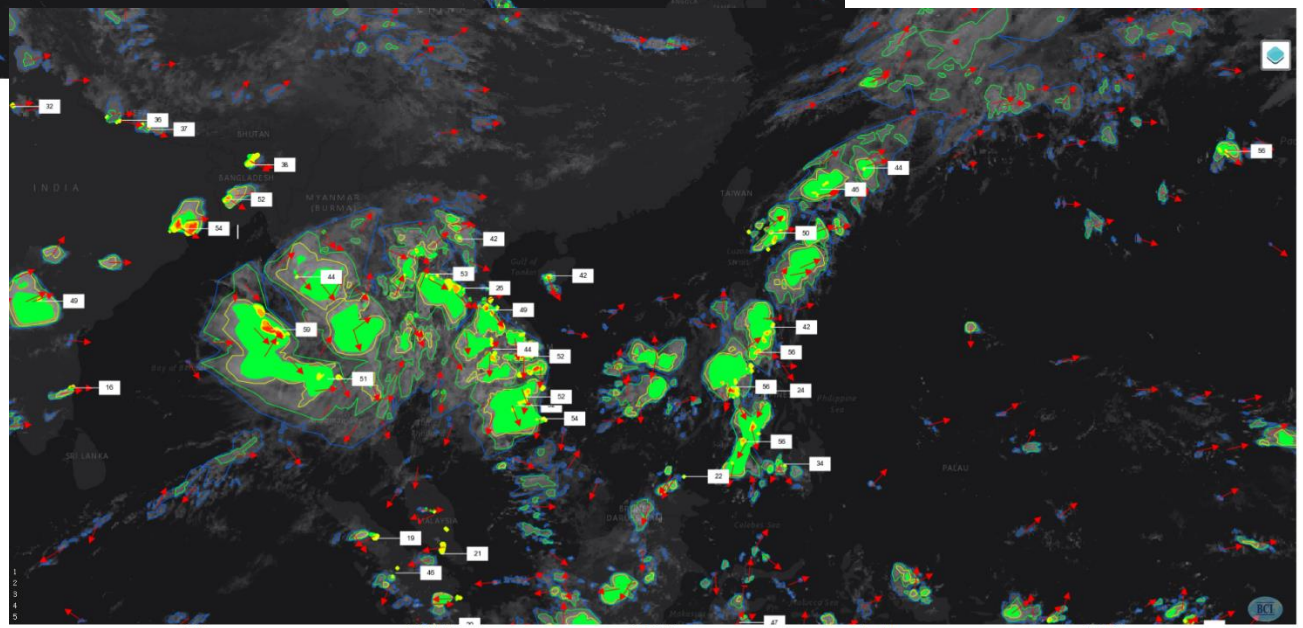

CDO CCTH MV CDO MV Max Ht RADAR

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