

# Rockwell Collins IMS

## Aviation Voice Services

The Effects of the 10SEP17 Solar Event on HF Voice Comms  
Over the Atlantic



Presented by: Anthony Abate



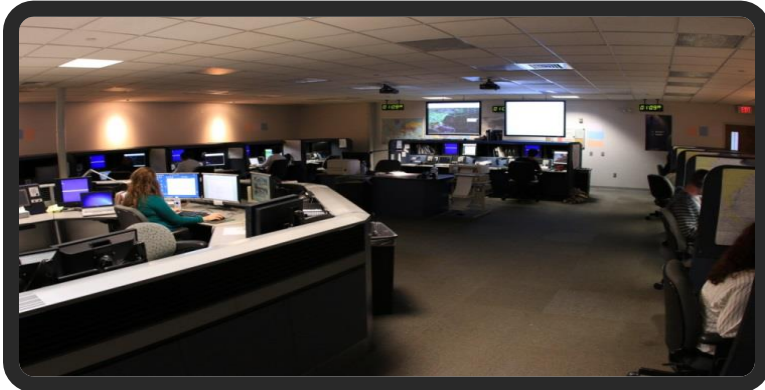
Acquired by Rockwell Collins in 2013,  
ARINC continues to pioneer solutions in  
Commercial and Business Aviation  
Airports  
Rail  
Security Systems

# Rockwell Collins IMS

## Aviation Voice Services

The primary mission of Aviation Voice Services is to provide communications to the air transport industry across all media to support Air Traffic Control and Aeronautical Operational Control.

Communications Centers in California and New York provide message relay and phone patch services throughout the western hemisphere.



# Air Ground International Radio

## Air Traffic Control Communications

150,000 Messages per Month for FAA, Mazatlan & Piarco



SYSTEM REDUNDANCY KEEPS ATC COMMUNICATIONS  
OPERATING AT > 99.99%

CLEARANCES ARE DELIVERED WITHIN 3 MINUTES.  
REQUESTS & ADVISORIES WITHIN 5 MINUTES

# Aviation Voice Services

Services

Message Relay | Phone Patches | Position Reporting | Weather

Media

HF Radio

VHF Radio

SatVoice

Geographic  
Coverage

Pacific

Atlantic

Coastal  
Asia

CONUS &  
Coastal Alaska

Mexico

INMARSAT

South  
America

Polar Routes

Caribbean

Maritime  
Canada

Caribbean

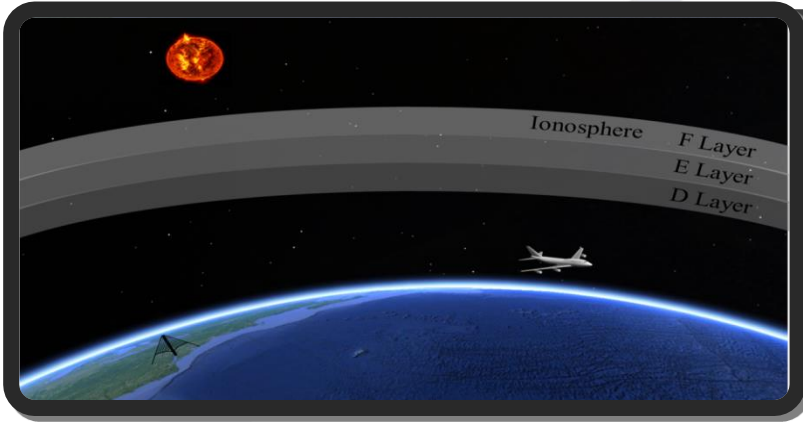
Iridium

Customers

FAA | Airlines | Foreign ANSPs | General Aviation

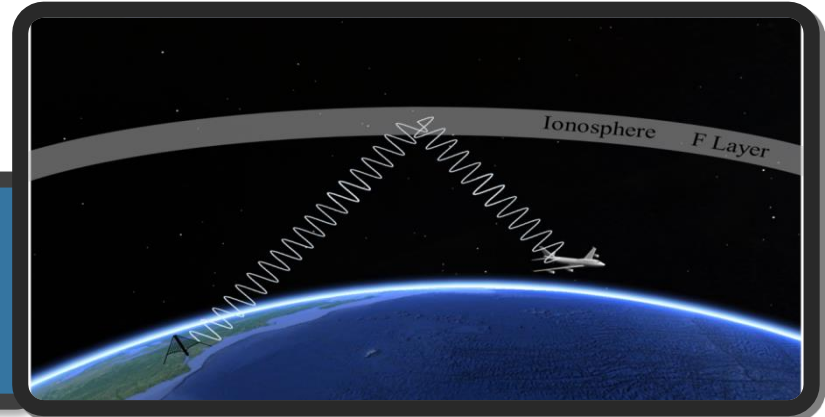


# HF Propagation

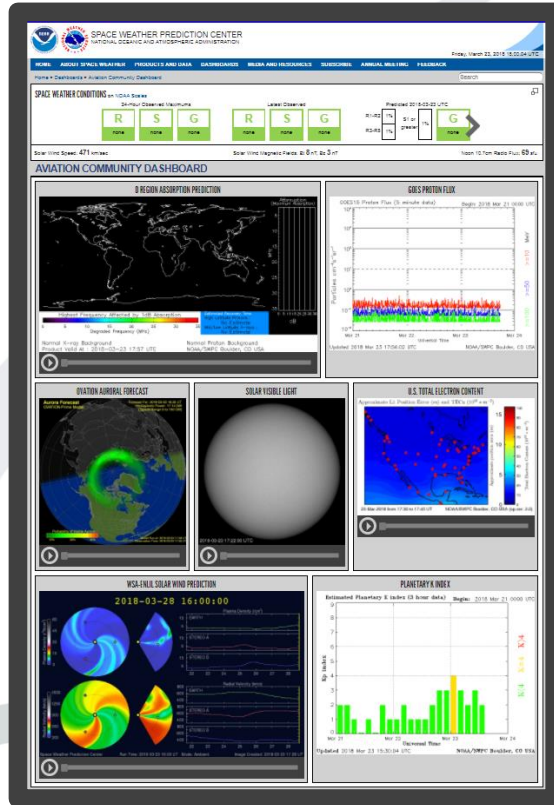


During daylight hours, the sun's energy further charges the ionosphere creating additional layers and worsening absorption, requiring the use of higher frequencies

Selection of the correct frequency for time of day and distance to target ensures successful communications

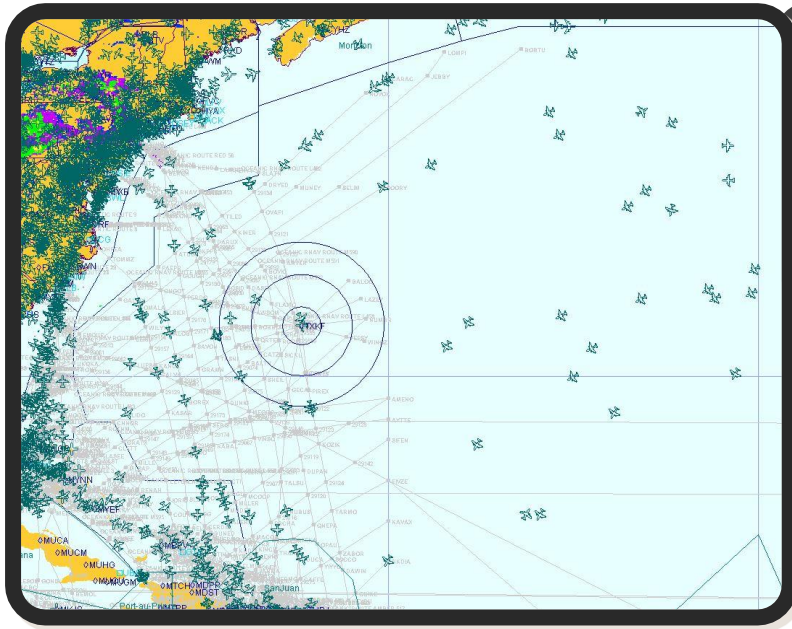


# “Follow the Sun”



**SWPC – Aviation Community Dashboard-**  
The science behind what the Rockwell Collins Radio Operators experienced “over the air”.

# Sunday, September 10, 2017



Weekends are historically a busier time for air traffic.



# Sunday, September 10, 2017



In the days and weeks before this event, nature dealt the Caribbean islands quite a strong blow with a few major hurricanes, so the air traffic in the Western Atlantic was lighter than normal.

# Sunday, September 10, 2017

There were some X ray flares the week prior to September 10th that impacted our voice operation enough that we were operating on the highest end of the aeronautical frequency spectrum. Looking back, this was like the Sun's proverbial "shot across our bow".

## NYCXA – HF

|   | NAT-A      |   | NAT-E      |   | CAR-A      |   | CAR-B      |   | NAT A/E    |   | LDOCF      |
|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|
| 1 | 3016 - QA  | 1 | 2962 - QE  | 1 | 2887 - QH  | 1 | 5520 - EN  | 1 | 2962 - QE  | 1 | 3494 - RP  |
| 2 | 5598 - TA  | 2 | 6628 - TE  | 2 | 3455 - CS  | 2 | 6586 - UJ  | 2 | 5520 - EN  | 2 | 6640 - UO  |
| 3 | 8906 - VA  | 3 | 8825 - VE  | 3 | 5550 - TL  | 3 | 8918 - VQ  | 3 | 8846 - VF  | 3 | 8933 - VW  |
| 4 | 11396 - XO | 4 | 11309 - XE | 4 | 6577 - UI  | 4 | 11330 - LS | 4 | 11330 - LS | 4 | 11342 - XF |
| 5 | 13306 - YA | 5 | 13354 - YE | 5 | 8846 - VF  | 5 | 13297 - YG | 5 | 11396 - XO | 5 | 13348 - YV |
| 6 | 17946 - ZA | 6 | 17952 - ZE | 6 | 11396 - XO | 6 | 17907 - ZD | 6 | 13306 - YA | 6 | 17925 - ZH |
| 7 | 21925 - PZ | 7 | 21964 - PE | 7 |            | 7 | 21985 - PU | 7 | 13354 - YE | 7 | 21964 - PN |
| 8 |            | 8 |            | 8 |            | 8 |            | 8 | 17907 - ZD | 8 |            |

## INTERNATIONAL VHF

|   | CAR A/B    |   | Bolivia<br>LDOC |   |
|---|------------|---|-----------------|---|
| 1 | 3455 - CS  | 1 | 3494 - RB       | 1 |
| 2 | 5520 - EN  | 2 | 6640 - UB       | 2 |
| 3 | 5550 - TL  | 3 | 8933 - VB       | 3 |
| 4 | 6586 - UJ  | 4 | 11342 - XB      | 4 |
| 5 | 8918 - VQ  | 5 | 13348 - YB      | 5 |
| 6 | 11396 - XO | 6 | 17925 - ZB      | 6 |
| 7 | 13297 - YG | 7 | 21964 - PB      | 7 |
| 8 |            | 8 |                 | 8 |

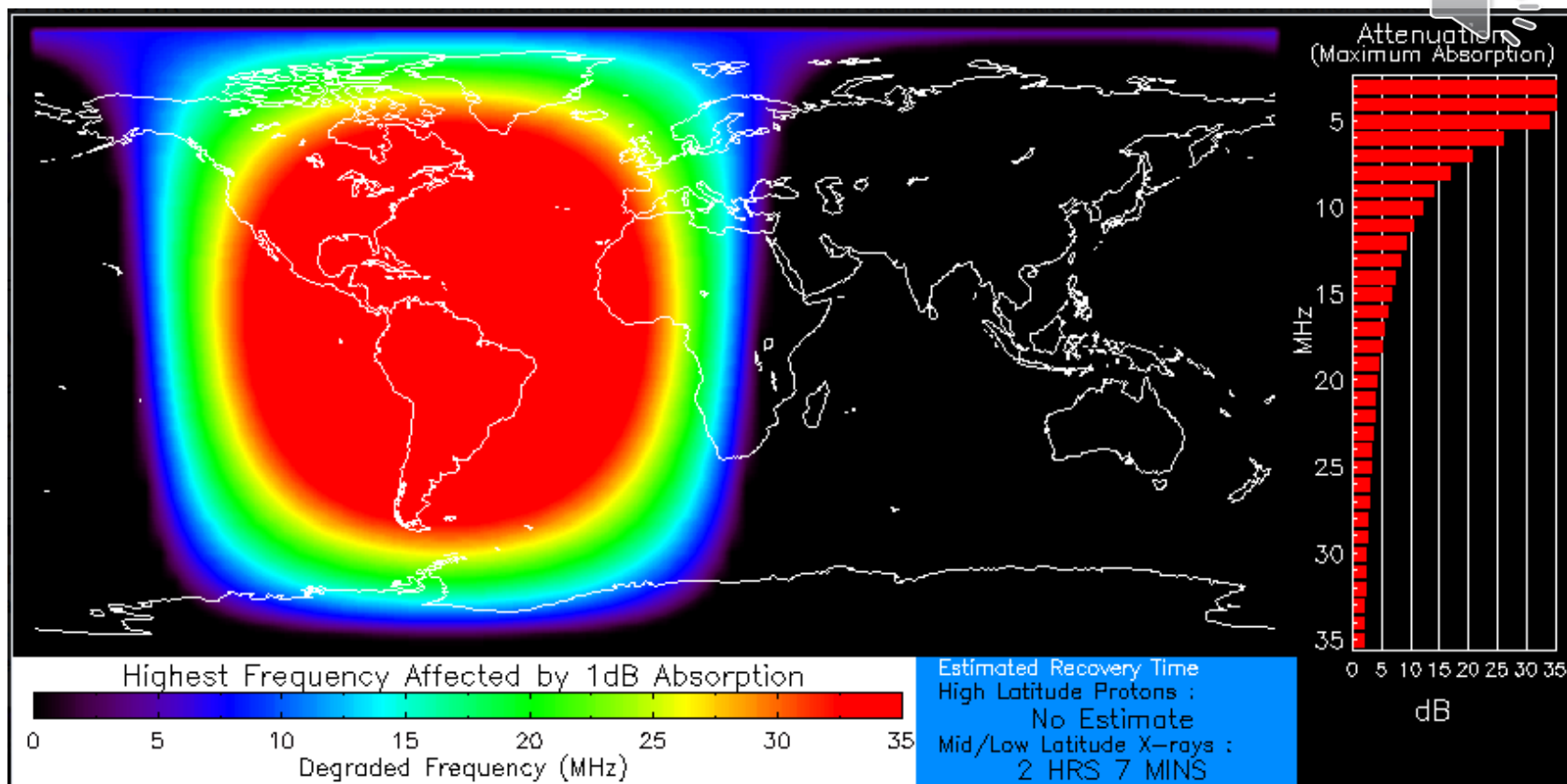
Maritime Net JW/129.90  
 Gulf Net KA/130.70  
 NAT/CAR air-to-air 123.45

NYCXA SATVOICE ZNY Oceanic SATVOICE  
 436623 – SP 436695 – MNPS  
 (631) 244-2492 436696 – WATRS

# Sunday, September 10, 2017

Here in NYC,  
the NOAA SWPC Aviation  
Dashboard forecasts are  
part of or rotating  
situational display in the  
center of our radio room  
floor.



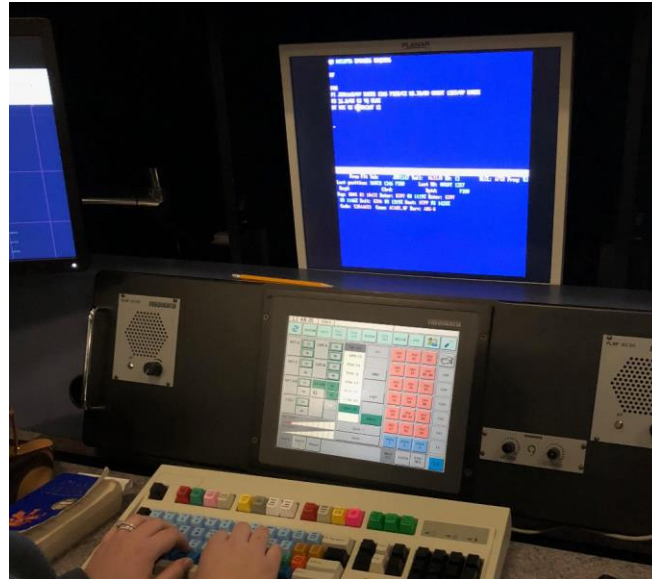


Strong X-ray flux  
Product Valid At : 2017-09-10 16:00 UTC

Normal Proton Background  
NOAA/SWPC Boulder, CO USA

# Sunday, September 10, 2017

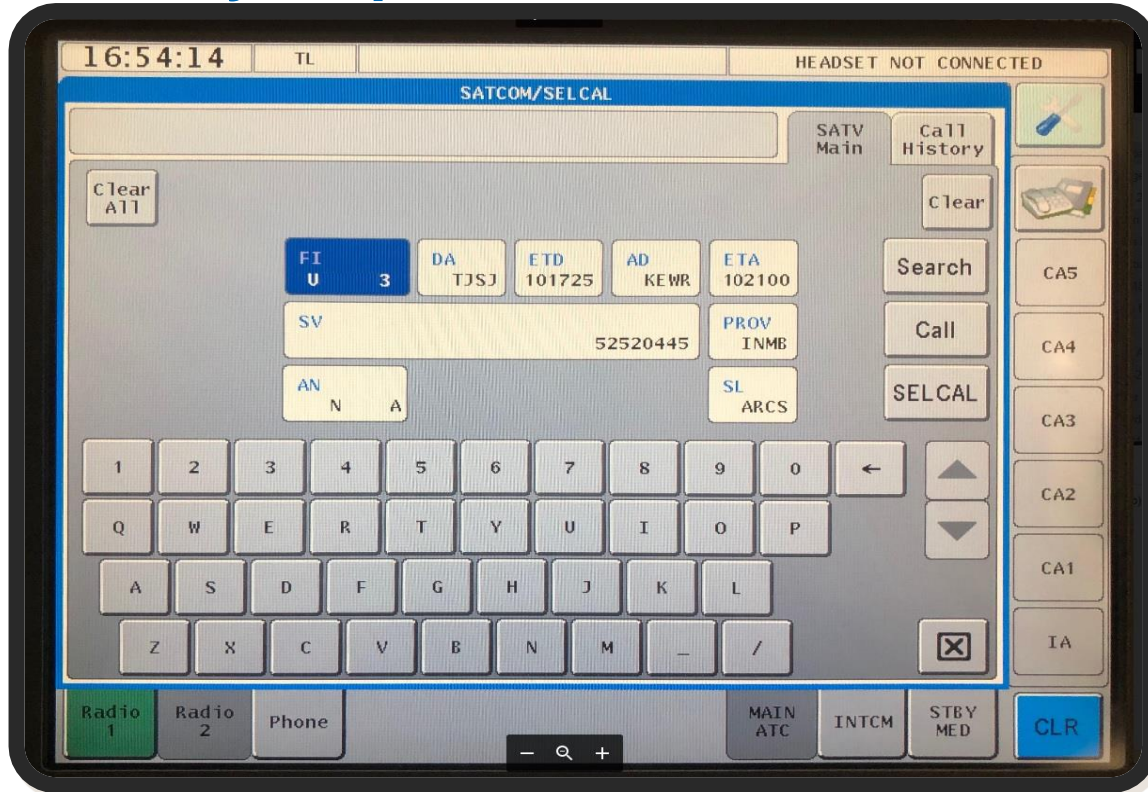
NYC Radio Operators were already utilizing the highest available HF frequencies for every geographic area we provide communications for, anticipating another event.







# Sunday, September 10, 2017




For a time from 1600z -1710z we utilized SatVoice and VHF radio while HF was affected.

# Sunday, September 10, 2017

HF comms normalized  
approximately 1850z when  
normal operations resumed.

Rockwell Collins Aviation Voice  
Services current frequencies  
can be found at  
<http://radio.arinc.net>



Atlantic

Pacific

Login

Atlantic HF Frequency Assignments

Valid from April 3, 2018, 1100Z - 1900Z

|  | Air Traffic Control |           | LDOC / Phone Patch |           |
|--|---------------------|-----------|--------------------|-----------|
|  | Primary             | Secondary | Primary            | Secondary |
| Gulf of Mexico / S. America                                    | 11330 kHz           | 8918 kHz  | 11342 kHz          | 8933 kHz  |
| Caribbean / N. Atlantic  | 6586 kHz            | 8918 kHz  | 6640 kHz           | 8933 kHz  |
| Northeast U.S.   | 6577 kHz            | 5550 kHz  | 6640 kHz           | 8933 kHz  |
| Eastern Atlantic   | 13306 kHz           | 11396 kHz | 13348 kHz          | 11342 kHz |
| Coastal VHF Maritime Canada to Virginia                        | 129.90 MHz          |           |                    |           |
| Coastal VHF Carolinas to Florida and Gulf of Mexico            | 130.70 MHz          |           |                    |           |
| New York ARINC SatVoice  | 436623              |           |                    |           |
| For more information contact New York ARINC at +1-631-589-7272 |                     |           |                    |           |

\*Flights may call on-ground VHF for HF frequency assignments at the designated gateways or on the extended range VHF when airborne.