NCAR

Cockpit-based Product Dissemination/Display

Tenny Lindholm

National Center for Atmospheric Research

Issues from last year

- Move detailed information on convective hazards from the WFO to the cockpit in real-time
- Expedite getting improved weather information to the cockpit. Is enough being done?
  - Convection
  - Turbulence
  - In-flight icing
- Get nowcasts of oceanic turbulence and convection to the cockpit in real-time—NTSB

Challenges

- Bandwidth limitations and cost
  - Use of simple, gridded format for uplink
- Standardized data link infrastructure
  - Formats, comm links, hardware, software
  - RTCA SC 195 for FIS-B
- Recurring and non-recurring costs
- Weather *information*, not *data*—high “glance value”
- Human factors
  - Display overlays
  - Operational concept for in-flight use

What's being done?

- Oceanic Weather PDT, sponsored by FAA AUA-430 AWRP
  - Oceanic convection, oceanic ITFA, CIT, in-flight icing, volcanic ash dispersion,…
  - Diagnoses, nowcasts, forecasts
  - Dissemination to ATC, dispatch, and en route aircraft. Includes interface with emerging ATC system upgrade programs

Plans and Progress

- Product introduction
  - Convective diagnosis (expert system) FY04/05
  - Oceanic ITFA prototype FY03
- Uplink and ground dissemination
  - Web site
  - Testing complete on 777, 747, Airbus
  - Real-time uplink testing in progress, anticipate full Pacific coverage in the next 12 months

NCAR

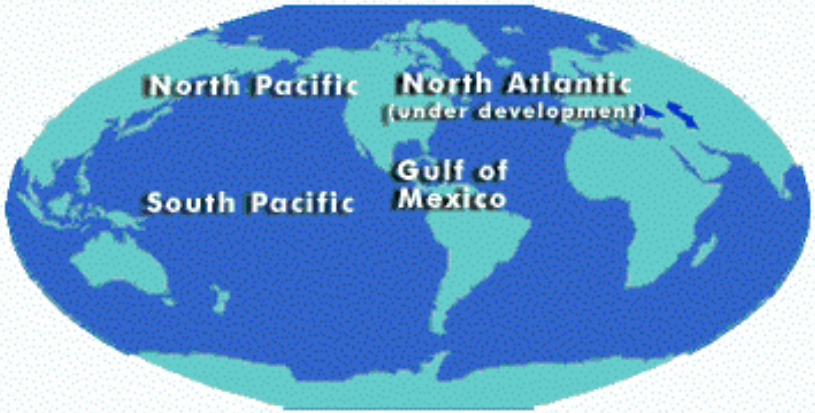
Oceanic Weather

MIT LL | ARINC | NRL | AWC | RAP

Research Applications Program

Oceanic Weather
PRODUCT DEVELOPMENT TEAM

The Oceanic Weather Product Development Team (OWPDT) is addressing oceanic weather needs for aviation along two dimensions – informational weather product development, and dissemination to end users. First, we are developing intelligent weather systems that generate timely information on convective weather (0–6 hour forecasts), convective–induced and clear–air turbulence, high–resolution winds, volcanic ash, and in–flight icing (for extended twin operations, ETOPS, decision support). Second, we are addressing quick product generation, and methods for timely dissemination to air traffic controllers, dispatchers, and airborne flight crews. The OWPDT is sponsored by the **FAA's Aviation Weather Research Program**.



Project Description
Go here to view major areas of research and aviation weather hazards for oceanic/remote areas. Development status can also be found here.

Development Team
Go here to view core team members and their roles.

Working Documents
Here you will find plans, technical papers and presentations, and other materials shared with our sponsors and the research community.

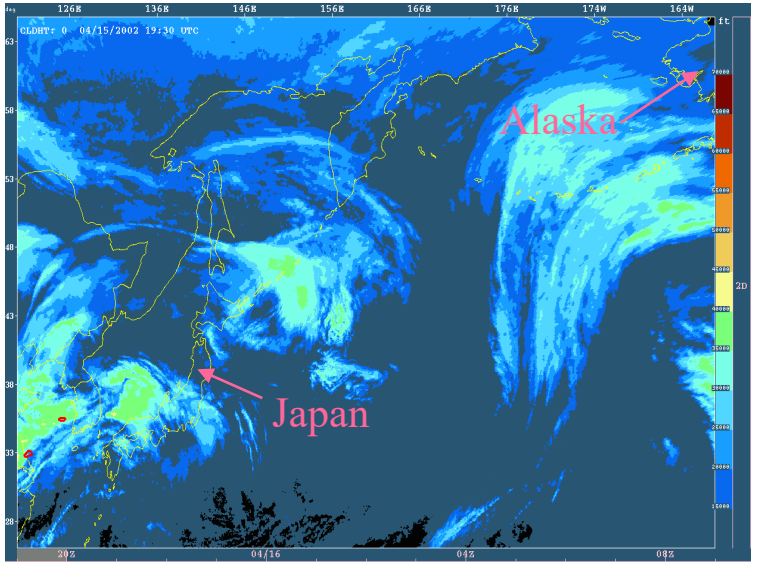
Realtime Prototype Systems
Go to your desired region to view currently available oceanic/remote weather products.

ziady@ucar.edu

Updated 02/22/2002

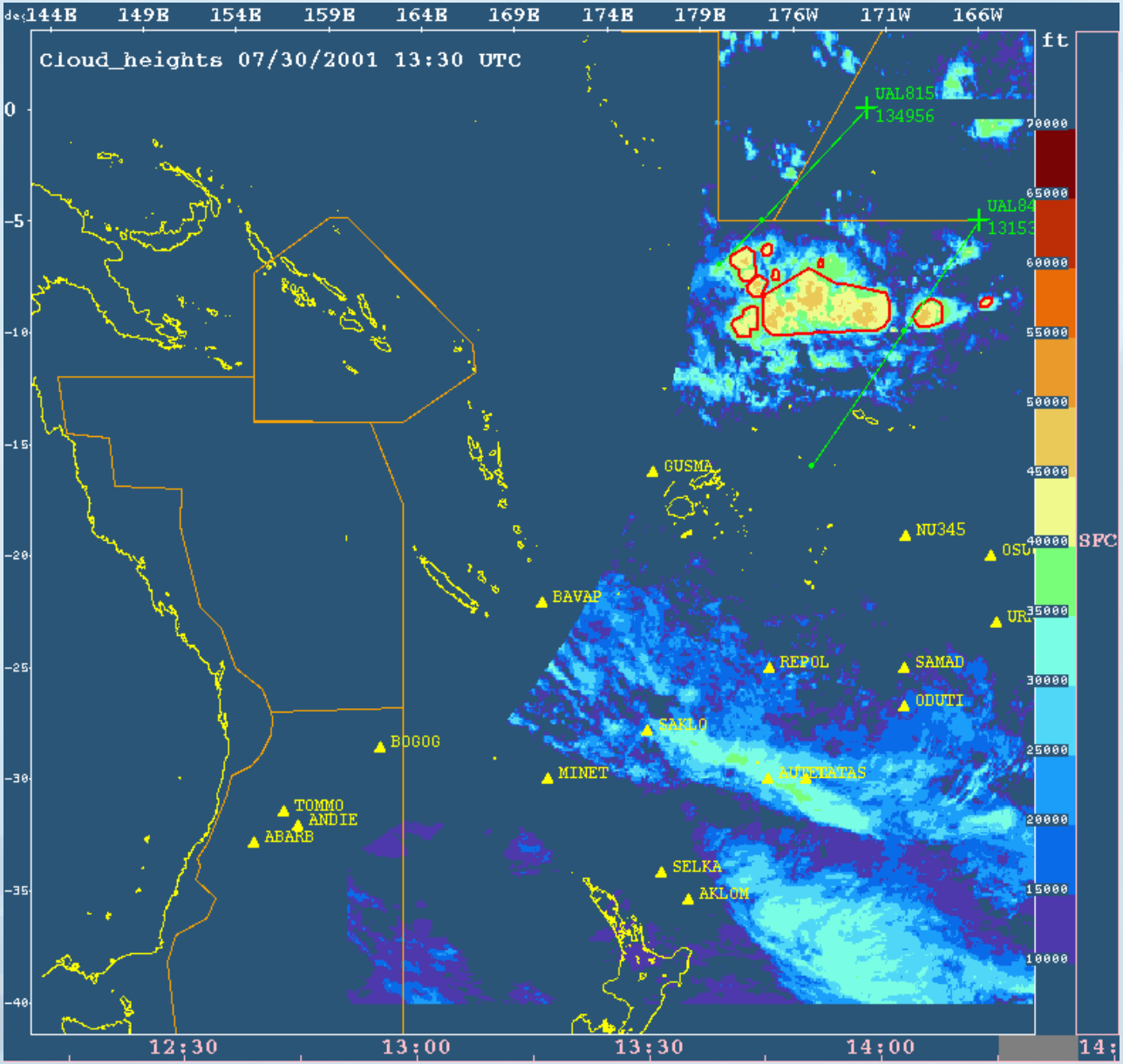
Oceanic Weather Regions

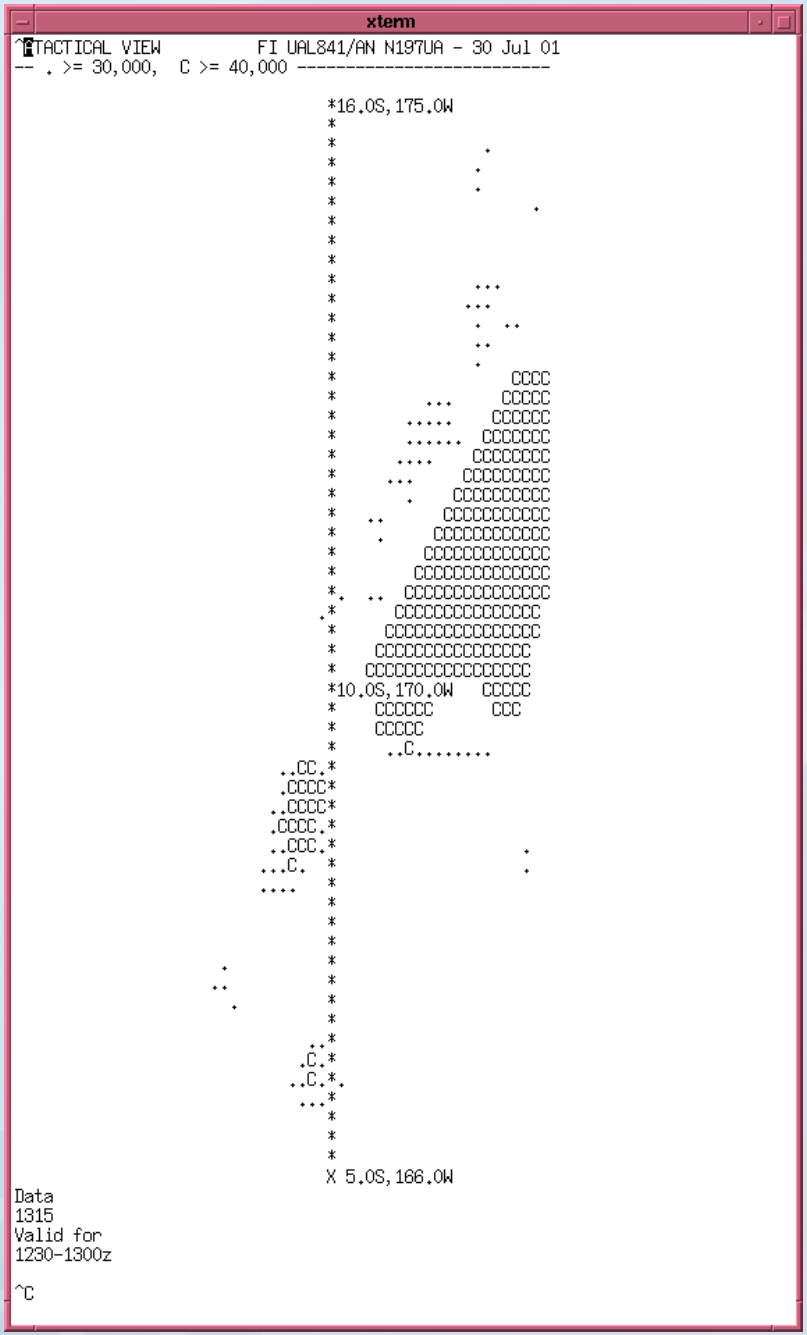
- Pacific
- Gulf of Mexico
- North Pacific
- North Atlantic (exact region not defined)



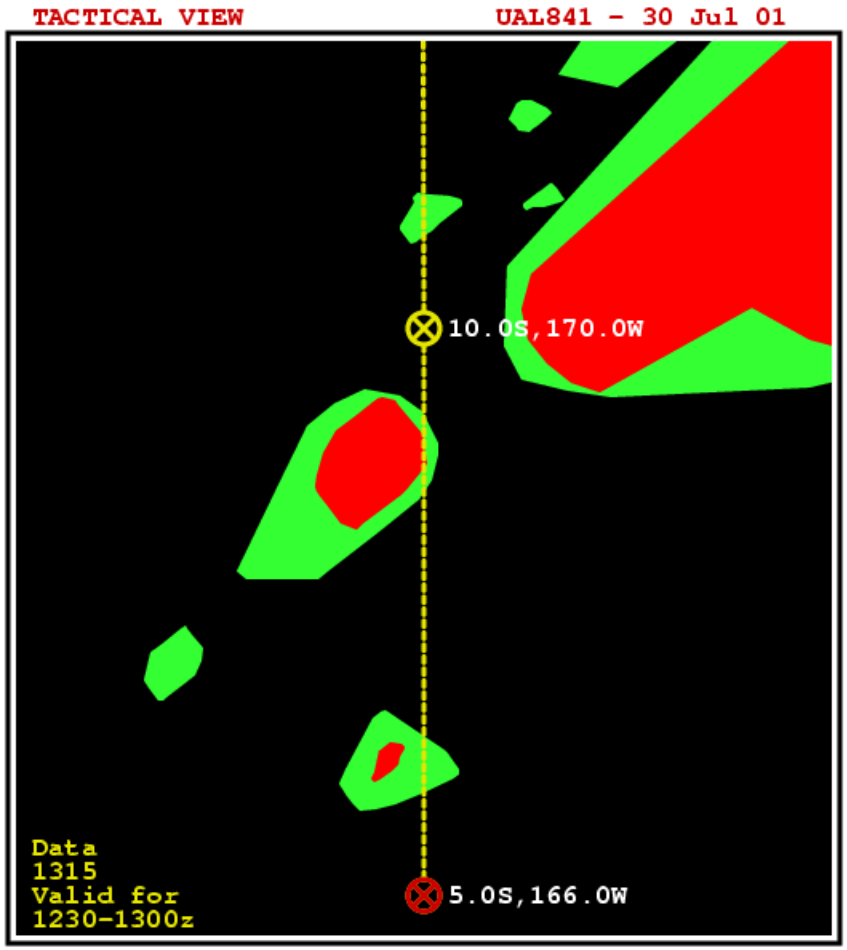
Thunderstorm Nowcasting Domain Size

NCWF Domain Size


Cloud_heights 07/30/2001 13:30 UTC
144E
149E
154E
159E
164E
169E
174E
179E
176W
171W
166W
0
-5
-10
-15
-20
-25
-30
-35
-40
ft
70000
65000
60000
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
SFC
UAL815
134956
GUSMA
NU345
BAVAP
REPOL
SAMAD
ODUTI
SAKLO
BOGOG
MINET
TOMMO
ANDIE
ABARB
SELKA
AKLOM
12:30
13:00
13:30
14:00


xterm
^[TACTICAL VIEW FI UAL841/AN N197UA - 30 Jul 01
-- . >= 30,000, C >= 40,000
*16.0S,175.0W
*10.0S,170.0W
X 5.0S,166.0W
Data
1315
Valid for
1230-1300z
^C

NCAR


TACTICAL VIEW
UAL841 - 30 Jul 01
10.0S,170.0W
5.0S,166.0W
Data
1315
Valid for
1230-1300z

What else is being done?

- Flight information service-broadcast (FIS-B)
- Electronic flight bag initiatives
- AWIN commercialization
- Development and operational tech transfer of low bandwidth, high information content weather products
- Communication infrastructure development
- Advanced user interfaces
- Human factors studies and simulations

What else needs to be done?

- Establish NWS dissemination infrastructure suitable for ground transmission of data that
  - Minimizes bandwidth and transmission time (compression)
  - Permits on-the-fly processing
  - Interfaces with uplink infrastructure and formats without lengthy processing
- Further commercialization