



## Marine Weather Review

### North Pacific Area

### September through December 2001

*George Bancroft*

#### Introduction

The weather pattern began with low-pressure systems tracking east across or just south of the Bering Sea and into the Gulf of Alaska with former tropical systems in the mix, especially through October when the tropics were most active. There were seven tropical cyclones which appeared on MPC oceanic analysis charts and either became extratropical before entering MPC's high seas area (see Reference 2) or actually moved into the high seas waters as tropical cyclones. All came from the tropical western North Pacific and passed near or east of Japan before recurving northeast.

As the fall season progressed the main track of lows shifted south with a southern track from near Japan to the Gulf of Alaska becoming more active, producing some intense lows. Sometimes the upper-air flow pattern became more amplified and steered storms coming off Japan northward toward the Kamchatka Peninsula or the southwest Bering Sea. Many of the low-pressure systems produced storm force winds; hence, attention is focused mainly on those out-of-the-ordinary

systems producing hurricane-force winds.

#### Tropical Activity

**Typhoon Wutip:** Still a typhoon with maximum sustained winds of 70 kt with gusts to 85 kt near 31°N, 150°E at the start of September, Wutip weakened to a tropical storm at 1800 UTC September 1. At 1200 UTC September 1 the ship **DGLO** reported a southwest wind of 45 kt and 10-m seas (32 ft). Wutip became extratropical at 0000 UTC September near 39°N, 161°E and raced northeast along a front associated with a gale in the Bering Sea without redeveloping.

**Tropical Storm Danas:** Just east of Japan near 42°N, 146°E at 0000 UTC September 12 with maximum sustained winds of 45 kt with gusts to 55 kt, Danas moved northeast and became an extratropical gale near the Kurile Islands within 12 hours. The system later intensified into a storm just south of the eastern Aleutians at 1200 UTC September 14. The ship **ELXX6** near 44N, 166E reported a southwest wind of 45 kt at 0600 UTC September 13. QuikScat scatterometer winds at 0600 UTC September 14 showed winds to 60 kt west and southwest

of the center (not shown). The storm then weakened to a low in the southern Gulf of Alaska late on September 16.

**Typhoon Vipa:** Vipa passed just south of Japan on September 19 with maximum sustained winds of 70 kt with gusts to 85 kt. By 1800 UTC September 21 Vipa was a tropical storm with maximum winds 45 kt with gusts to 55 kt. The system then merged with a low in the western Bering Sea by 1200 UTC September and moved east while intensifying, developing a 968-mb central pressure in the western Gulf of Alaska at 0000 UTC September 14. The ship **ELOT3** reported a northwest wind of 50 kt and 10.5-m seas (35 ft) near 52°N, 170°W., and the same wind with 13-m seas (42 ft) near 52°N, 171°W. at 1800 UTC September 13 and 0000 UTC September 14, respectively. The **President Truman** (W NDP) near 54°N, 164°W. experienced northwest winds of 60 kt at 1200 UTC September 14. The storm then weakened and drifted east.

**Typhoon Francisco:** Francisco attained maximum strength with maximum winds of 100 kt and gusts to 125 kt near 26°N, 148°E at 1200 UTC September 23 and began to weaken 24 hours later



while drifting north. Francisco then weakened to a tropical storm near 37°N. 150°E at 0600 UTC September 25 and accelerated northeast, becoming an extratropical storm 44°N. 160°E eighteen hours later. The system then weakened while passing south of the Aleutians on the 26<sup>th</sup> and 27<sup>th</sup>, before re-intensifying to a storm near the Queen Charlotte Islands at 1200 UTC September 29. Buoy 46004 reported southwest winds of 40 kt and 7.5-m seas (25 ft) at this time. The system moved inland and weakened later that day.

**Typhoon Krosa:** Tropical Storm Krosa formed south of Japan near 16°N. at 0600 UTC October 4 and moved northwest, rapidly intensifying to a typhoon with maximum sustained winds of 105 kt with gusts to 130 kt near 20°N. 137°E at 1200 UTC October 5 before recurving northeast and weakening. Figure 1 depicts Krosa as a tropical storm merging with a frontal zone to the north and rapidly re-intensifying into a hurricane-force extratropical storm over a 36-hour period. The central pressure dropped 32 mb in the 24-hour period ending at 1800 UTC October 10. The **President Wilson** (WCY3438) encountered south winds of 65 kt near 40°N. 177°E at 0600 UTC October 10. Twelve hours later this ship was at 39°N. 178°W. reporting west winds of 50 kt and 13.5-m seas (44 ft). A QuikScat image for 1548 UTC October 10 (Figure 2) reveals hurricane force winds up to 75 kt to the south and north of the center. The storm

subsequently tracked northeast and weakened in the northern Gulf of Alaska on October 12.

**Super Typhoon Podul:** Podul attained a maximum strength of 140 kt with gusts to 170 kt at 0600 UTC October 24 near 17°N. 157°E while drifting north northeast, then began to weaken after 0600 UTC October 26. Figure 3 shows Podul approaching a front to the north and becoming extratropical 24 hours later. The typhoon actually entered the MPC high seas area at 1200 UTC October 27 before becoming extratropical. Figure 4 is a GMS infrared satellite image showing Podul as a white circular cloud mass entering the southern end of a northeast to southwest frontal band. The ship **JRZH** reported north winds of 50 kt and 9-m seas (30 ft) near 36°N. 157°E at 1200 UTC October 27. The system then redeveloped northeast near the eastern Aleutians on the 28<sup>th</sup> and reached the Gulf of Alaska on October 30.

**Super Typhoon Faxai:** Faxai approached the southwest corner of MPC's high seas waters near 29°N. 158°E at 1800 UTC December 25 as a minimal typhoon, before becoming extratropical six hours later near 31°N. 161°E. Prior to this, Faxai was once a super typhoon with maximum sustained winds of 150 kt and gusts to 180 kt. The system then moved east and rapidly weakened.

### Other Significant Events

#### Gulf of Alaska Storm of 2-3

**November:** This system developed rapidly as depicted in Figure 5, absorbing an arctic low-pressure system and cold front to the north, and deepening by 29 mb in the 24-hour period ending at 1800 UTC November 3. The system was at maximum intensity in the second analysis of Figure 5. The GOES-10 infrared satellite image of the storm (Figure 6) reveals an "eye" at the center, a characteristic of an intense system. Figure 7 is a high-resolution QuikScat image of scatterometer winds around the storm about 14 hours prior to the time of maximum intensity. There are 70 kt wind barbs off the coast of Southeast Alaska. At 1541 UTC November there was a ship (callsign unknown) reporting south winds of 70 kt near 55°N. 132°W. The vessel **WCD7842** at 57°N. 143°W. reported southwest winds of 50 kt and 9-m seas (30 ft) at 2100 UTC November 3. The storm then drifted toward the west and weakened.

#### Western Pacific Storm of 12-14

**November:** Figure 8 depicts the rapid development of this storm over 36 hours. Initial deepening was 32 mb in the 24-hour period ending at 0600 UTC November 13, with this storm certainly qualifying as a meteorological "bomb". Between 0000 UTC and 0600 UTC November 13 the storm center passed the ship **DHDH** which reported an east wind of 35 kt shifting to west 115 kt with the latter location at 39°N. 155°E. This latter wind may appear high

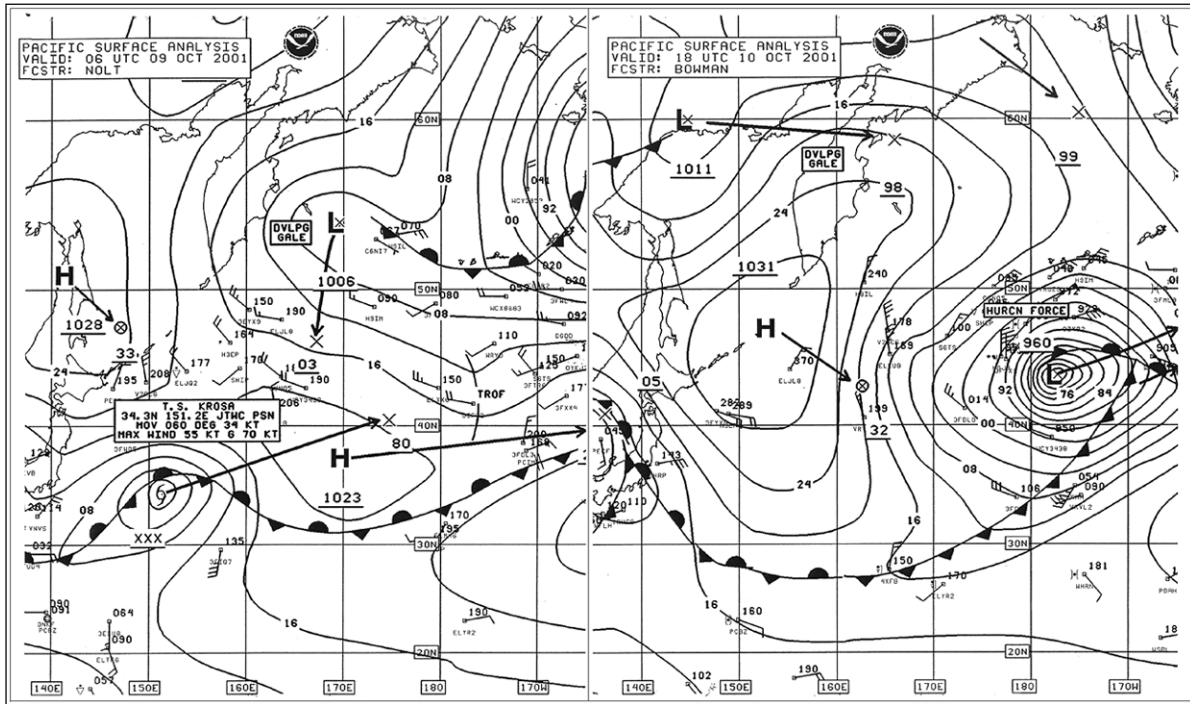


Figure 1 - MPC North Pacific surface analysis charts (Part 2) valid 0600 UTC October 9 and 1800 UTC October 10, 2001.

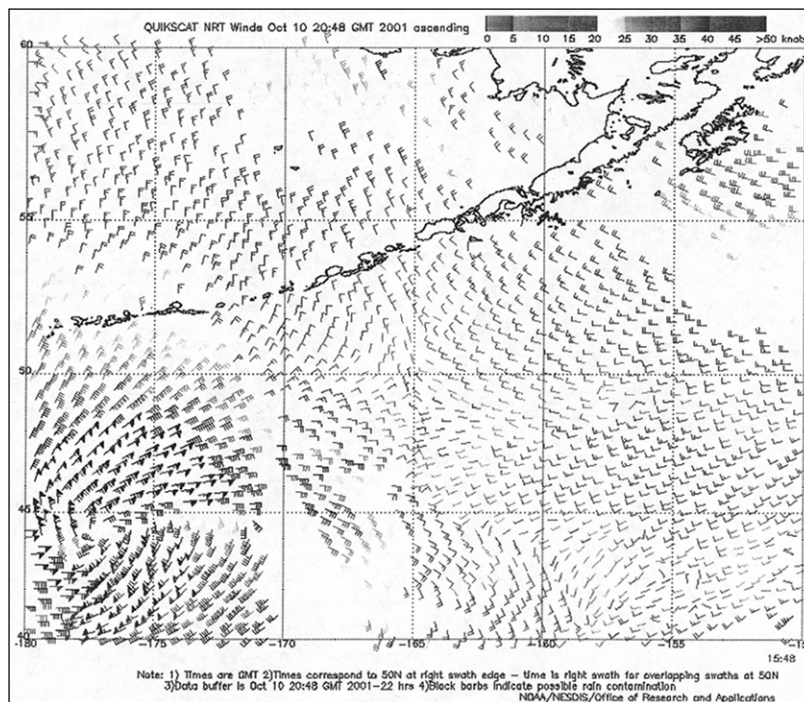


Figure 2 - QuickScat scatterometer winds valid about 1548 UTC October 10, 2001. Image is courtesy of NOAA/NESDIS/Office of Research and Applications.

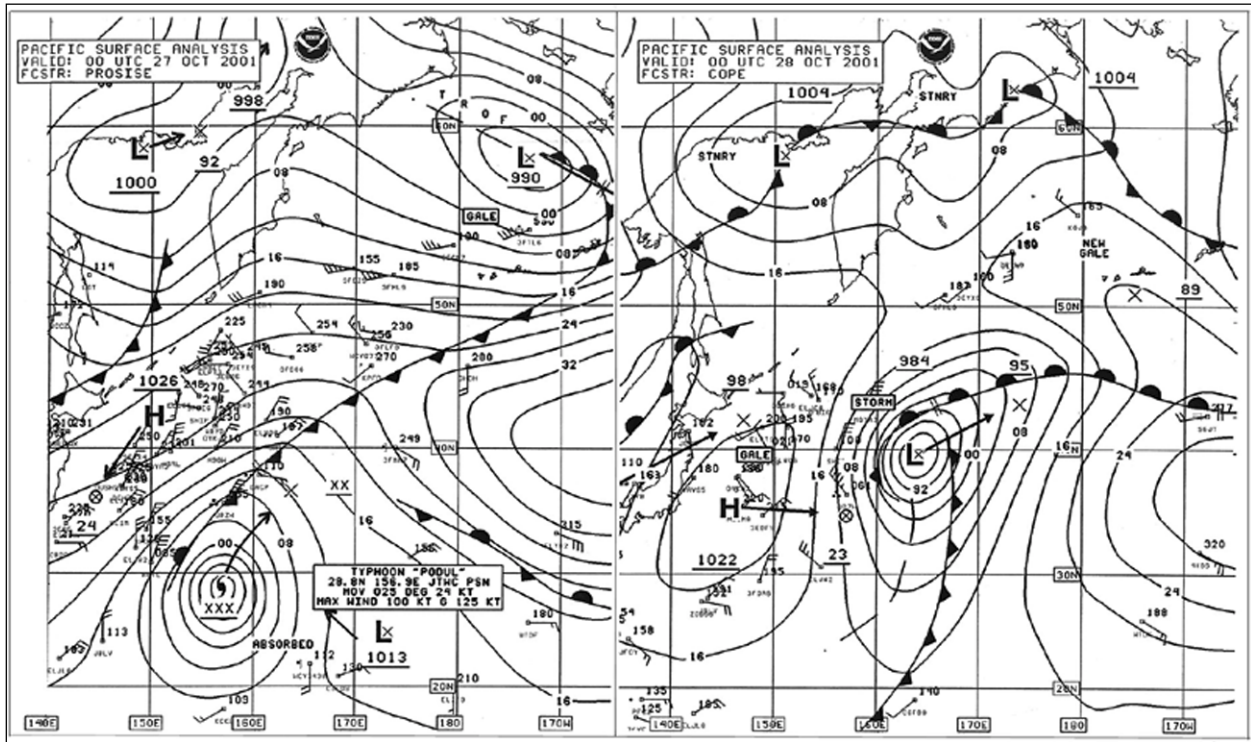


Figure 3 - MPC North Pacific surface analysis charts (Part 2) valid 0000 UTC October 27 and 28, 2001.

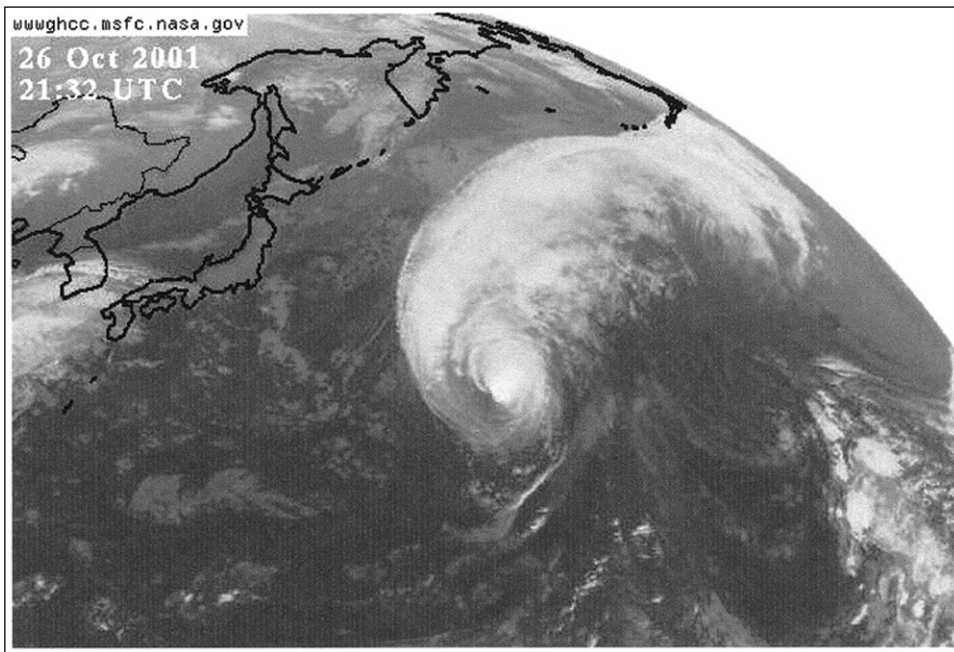


Figure 4 - GMS-5 infrared satellite image valid 2132 UTC October 26, 2001. Satellite senses temperature on a scale from cold (white) to warm (black) in this type of image. The valid time is about two and one-half hours prior to time of first surface analysis in Figure 3. (from NASA Global Hydrology and Climate Center)

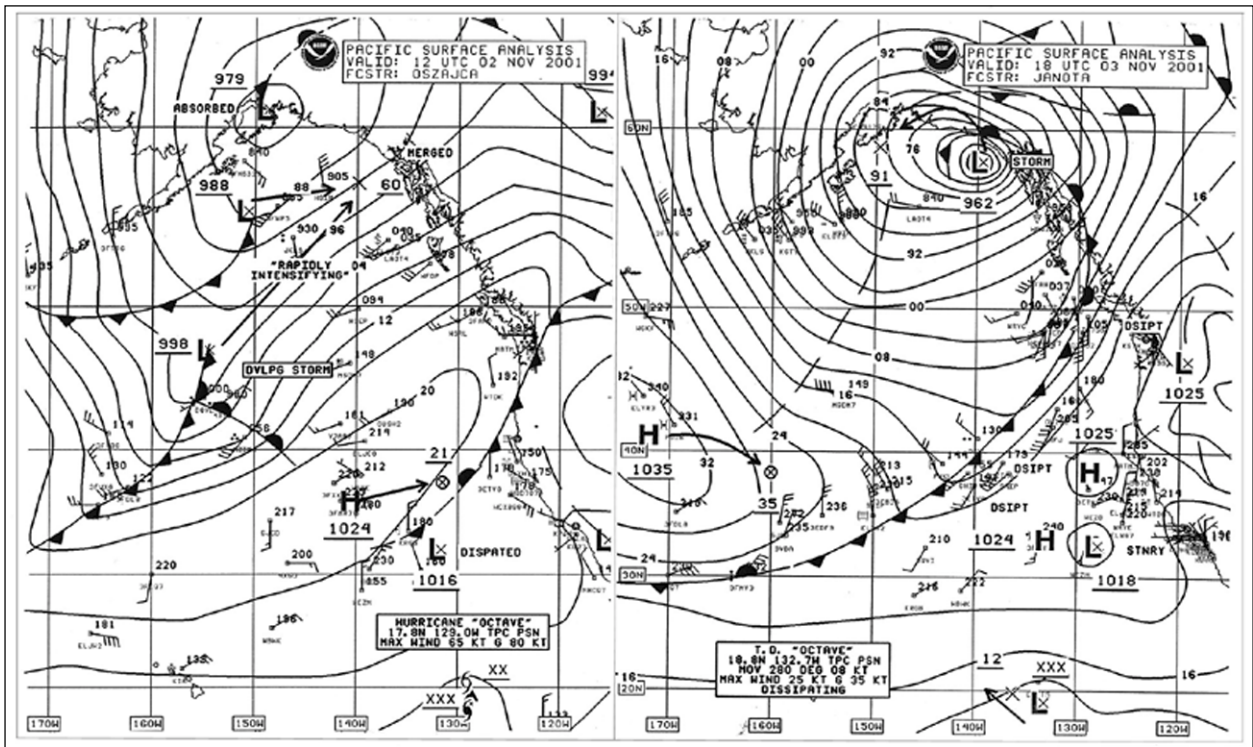


Figure 5 - MPC North Pacific surface analysis charts (Part 1) valid 1200 UTC November 2 and 1800 UTC November 3, 2001.

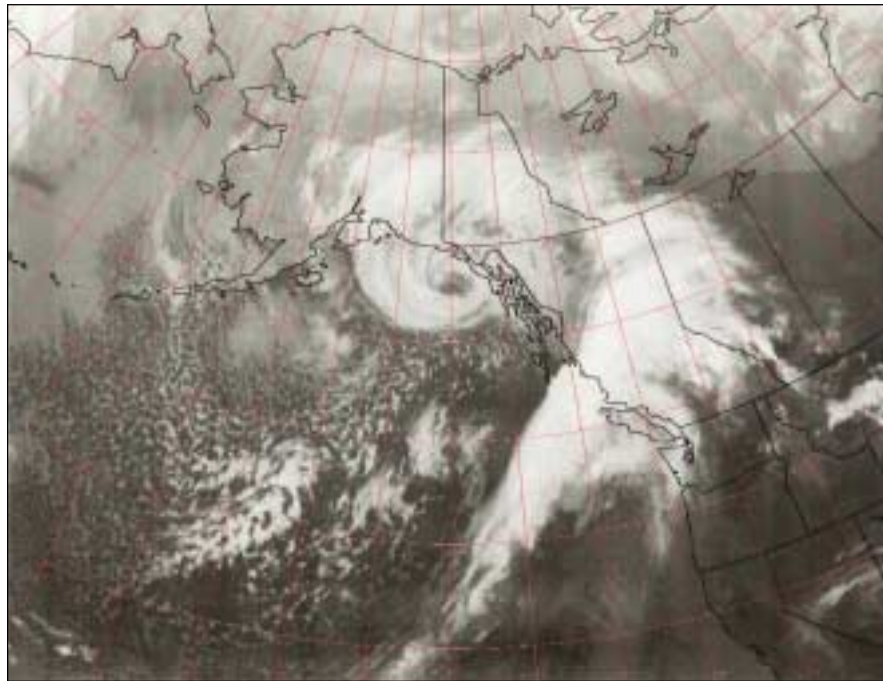


Figure 6 - GOES-10 infrared satellite image valid 1800 UTC November 3, 2001 (same as valid time of second analysis in Figure 5).

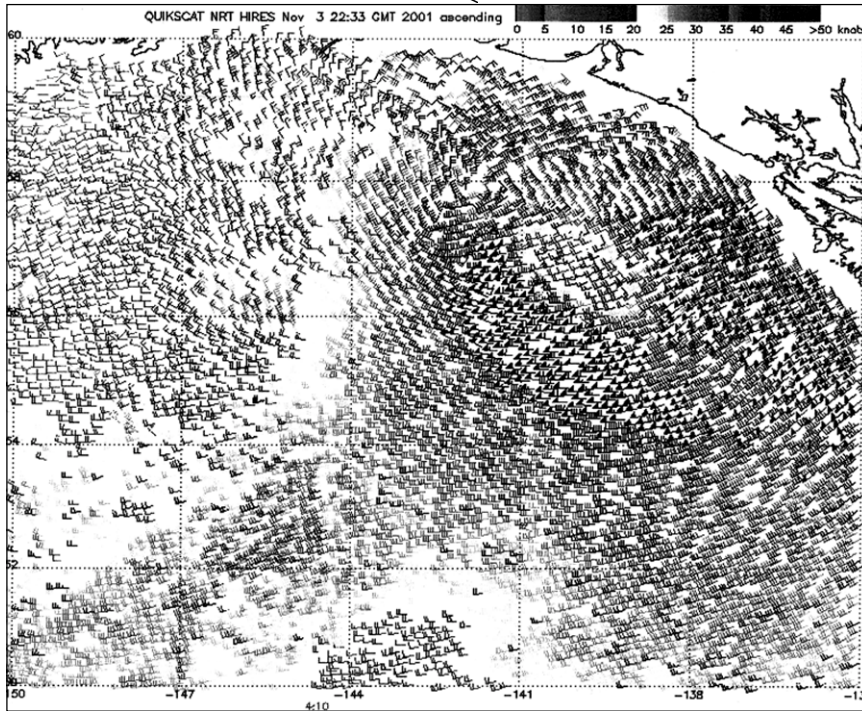


Figure 7 - High-resolution QuickScat image of scatterometer winds valid about 0410 UTC November 3, 2001. The resolution is 12.5 km in this image, versus 25 km for regular QuickScat imagery. (from NOAA/NESDIS Office of Research and Applications)

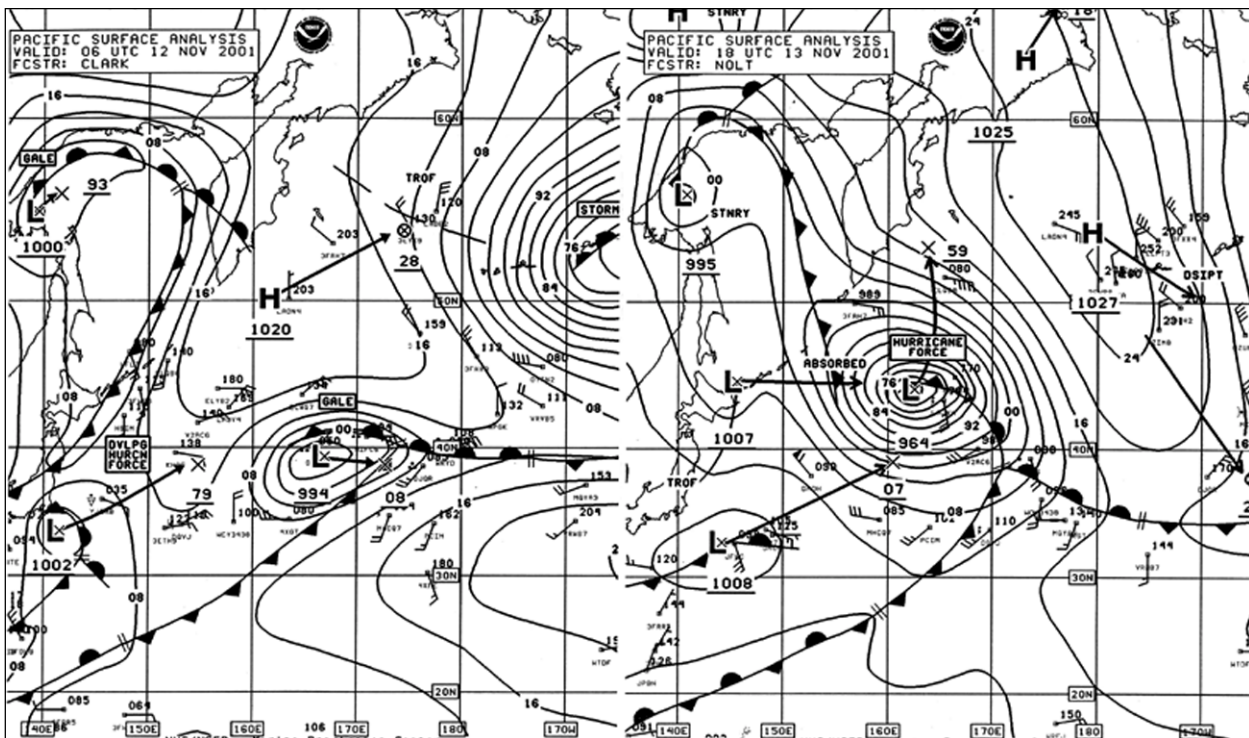


Figure 8 - MPC North Pacific surface analysis charts (Part 2) valid 0600 UTC November 12 and 1800 UTC November 13, 2001.

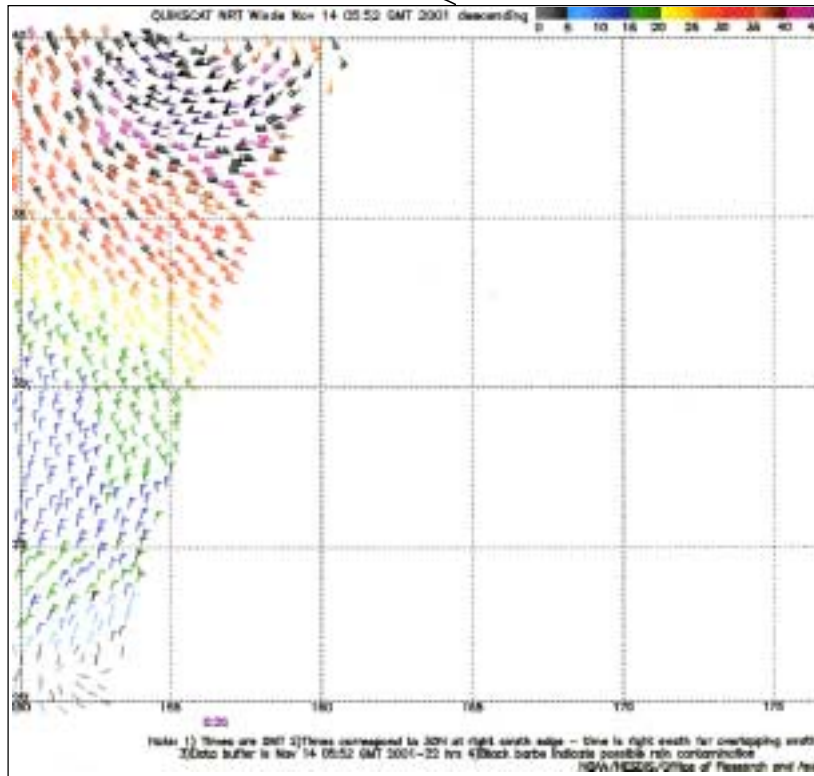


Figure 9 - QuikScat satellite image of scatterometer winds valid 0826 UTC November 13, 2001. (from NOAA/NESDIS/Office of Research Applications)

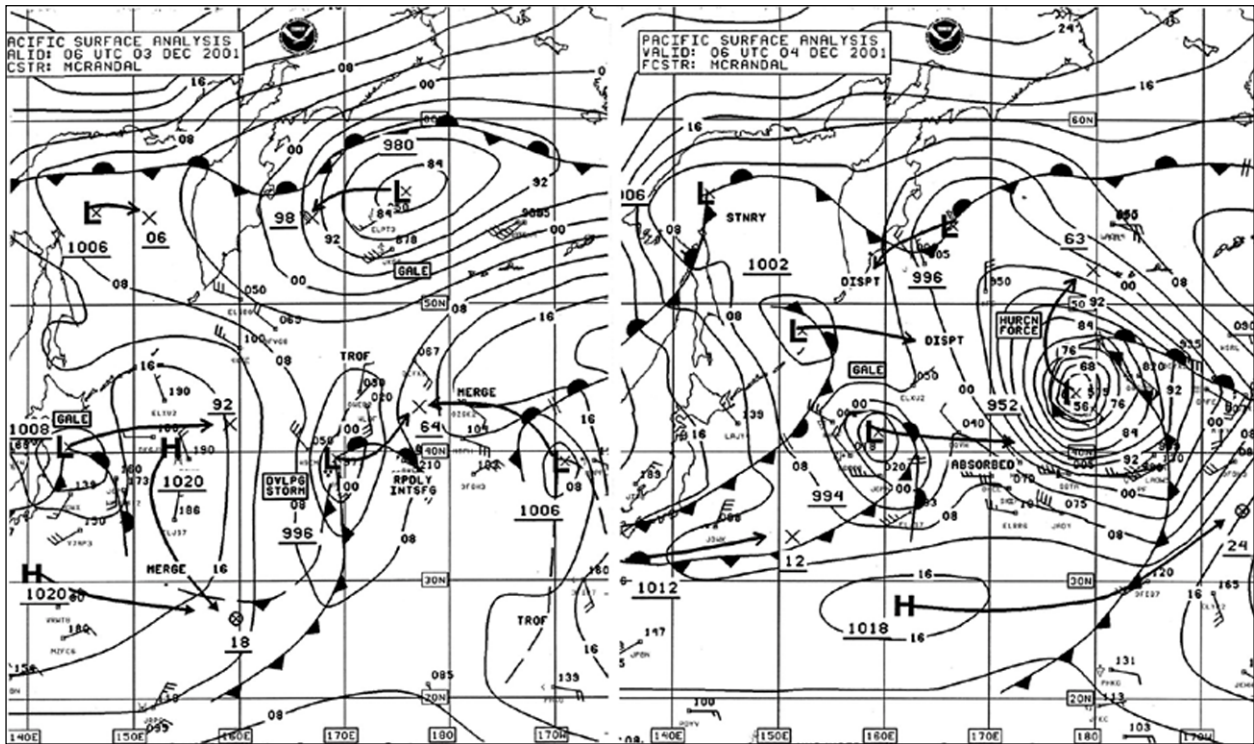


Figure 10 - MPC North Pacific surface analysis charts (Part 2) valid 0600 UTC December 3 and 4, 2001.

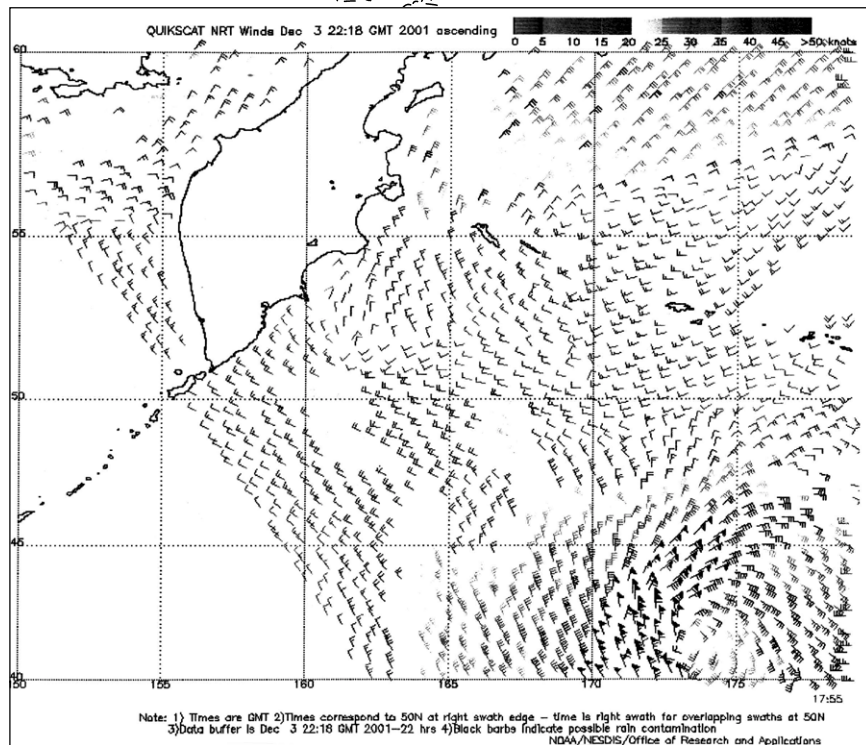


Figure 11 - QuickScat scatterometer winds valid 1755 UTC December 3, 2001. (from NOAA/NESDIS/Office of Research and Applications)

for the open ocean outside a typhoon, but a QuickScat pass for 0826 UTC November 13 (Figure 9) has an 80 kt wind barb near the location of the ship. Reported seas were 9.5 meters (31 ft) in the second report. The storm then moved north to near the Kamchatka Peninsula with a 960 mb central pressure before beginning to drift southwest and weaken. The **APL China (S6TA)** encountered southwest winds of 50 kt and 11.5-m seas (38 ft) near 50°N, 171°E at 1800 UTC November 14.

**Western Pacific Storm of 3-4 December:** In Figure 10 the 996-hPa developing storm is depicted deepening by 44 hPa in the 24-hour period ending at 0600 UTC December 4. This is perhaps the most impressive intensification rate in either ocean during the four-month period. The **APL**

**China** reported a northwest wind of 69 kt and 16.5-m seas (54 ft) near 39°N, 172°E at 1800 UTC December 3, while the **Essen Express (DHEE)** nearby encountered northwest winds of 65 kt. The **Westwood Belinda (H9IM)** at 39°N, 171°E reported northwest winds of 50 kt and 16-m seas (53 ft) at 0000 UTC December 4, while ahead of the system, the **Mayview Maersk (OWEB2)** encountered southeast winds of 60 kt and 8-m seas (27 ft) near 45°N, 179°W. Figure 11 is a QuickScat image of satellite-sensed winds valid at 1755 UTC December 3 featuring 65-kt north wind barbs on the back side of the storm. This system then turned toward the north, to just south of the Aleutians at 1800 UTC December 4, before drifting northwest and weakening.

**Two Hurricane-Force Storms in North Pacific, 22-24 December:**

This situation was made possible by the presence of two major upper-level troughs and a very strong jet stream. Figure 12 depicts the surface developments over a 36-hour period, while the 500-mb analysis in Figure 13 corresponds to the time of rapid intensification of both systems and depicts strong jet streams and short-wave troughs supporting development. See Reference 1 for more information on the relationships of the 500-mb chart to surface features. The western storm is shown in the second part of Figure 12 at maximum intensity. This was the most intense storm of the four-month period in either ocean. The eastern storm is shown rapidly intensifying, but the peak intensity of 960 mb was reached six hours prior to the valid time of the second surface analysis. Figure 14 is an infrared satellite



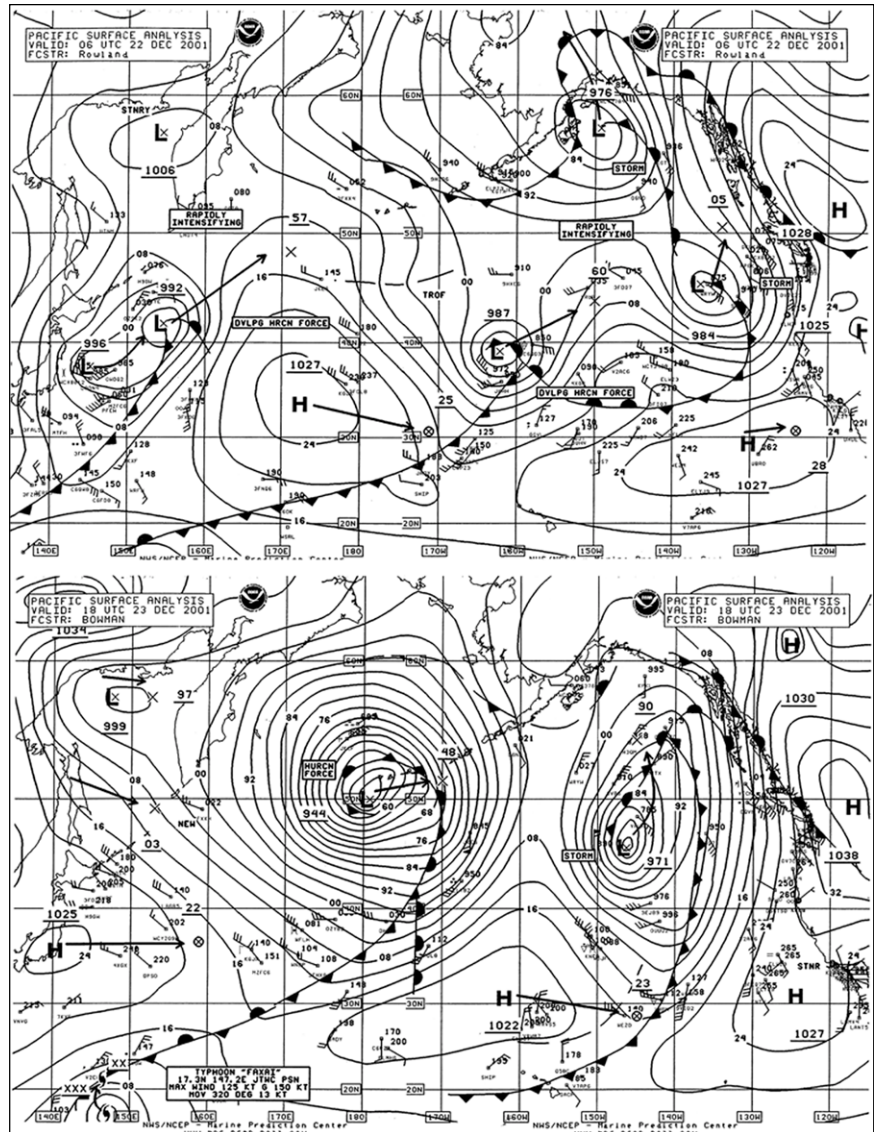


image of the North Pacific showing both storms, with the western storm at maximum intensity. The spiral cloud pattern around the well-defined center is indicative of a very intense system. The highest wind reported by a ship was a southwest wind of 61 kt from the **Westwood Marianne** (C6QD3) near 40°N. 156°W. at 1200 UTC December 22. The same ship reported a northwest wind of 50 kt and 14.5-m seas (48 ft) near 39°N. 156°W. six hours later, the highest reported in these two storms. Ship data was lacking near the western storm, except on the fringes. The **Mackinac Bridge** (JKES) near 46°N. 164°W. reported a south wind of 60 kt and 8-m seas (26 ft) at 0000 UTC December 24. Buoy 46035 (57°N. 178°W.) had northeast winds up to 40 kt and seas of 10.5 meters (34 ft) at 0600 UTC December 24. On the southern periphery of the storm, the **CSX Reliance** (WFLH) near 39°N. 170°W. encountered northwest winds of 45 kt and 11-m seas (36 ft). A QuikScat image (Figure 15) valid about 0439 UTC December 23 reveals hurricane force winds on the back side of the eastern storm, and also shows the eastern edge of the western storm which has some 60-kt wind barbs.

The eastern storm subsequently moved into the Gulf of Alaska and weakened later on December 24. The stronger western storm endured a bit longer, drifting east while slowly weakening and becoming absorbed by a storm passing to the south by December 27. ↴

## References

1. Sienkiewicz, J. and Chesneau, L., *Mariner's Guide to the 500-Mb Chart* (Mariners Weather Log, Winter 1995).
2. Bancroft, G., *High Seas Text Bulletins Issued by MPC* (Mariners Weather Log, Vol. 40, No. 2, Summer 1996).



**Figure 12 - MPC North Pacific surface analysis charts valid 0600 UTC December 22 and 1800 UTC December 23, 2001.**

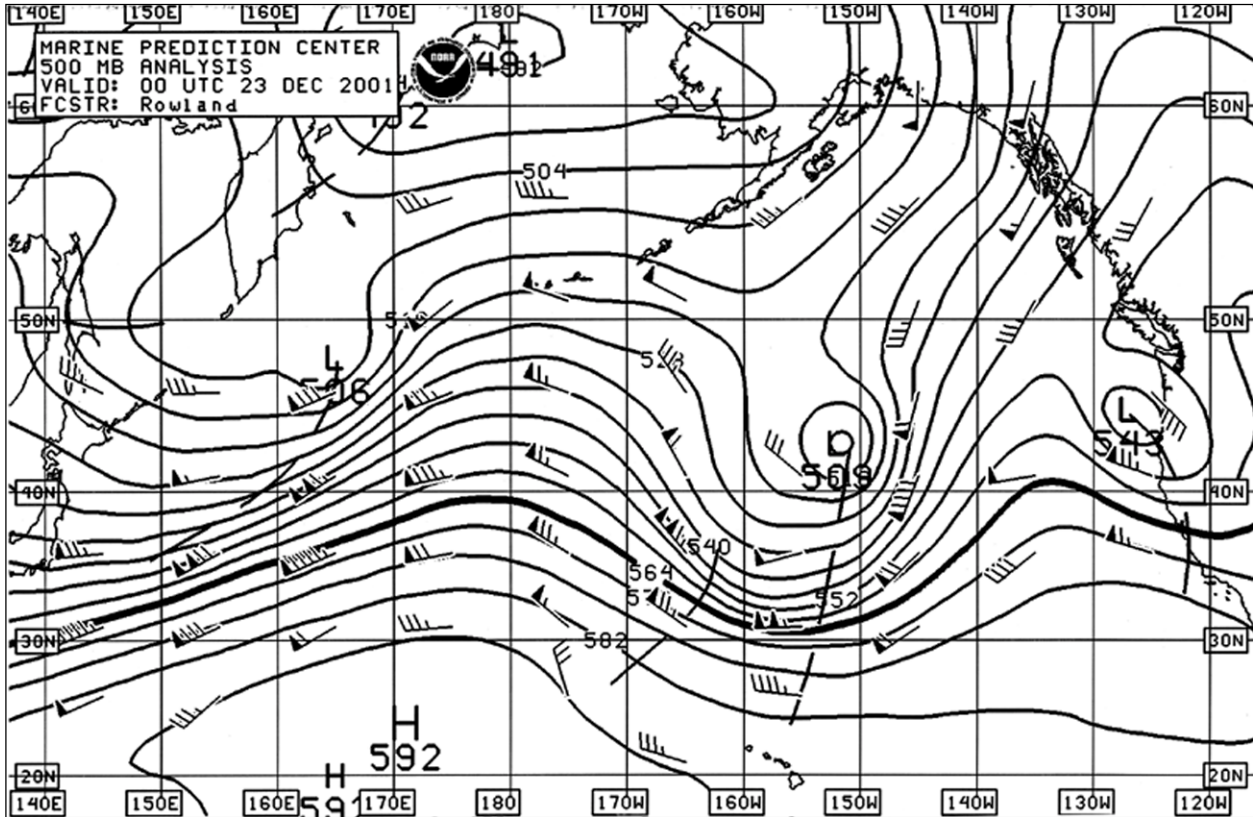


Figure 13 - MPC 500-hPa analysis valid 0000 UTC December 23, 2001. The valid time is halfway between the analysis times of the two charts in Figure 12.

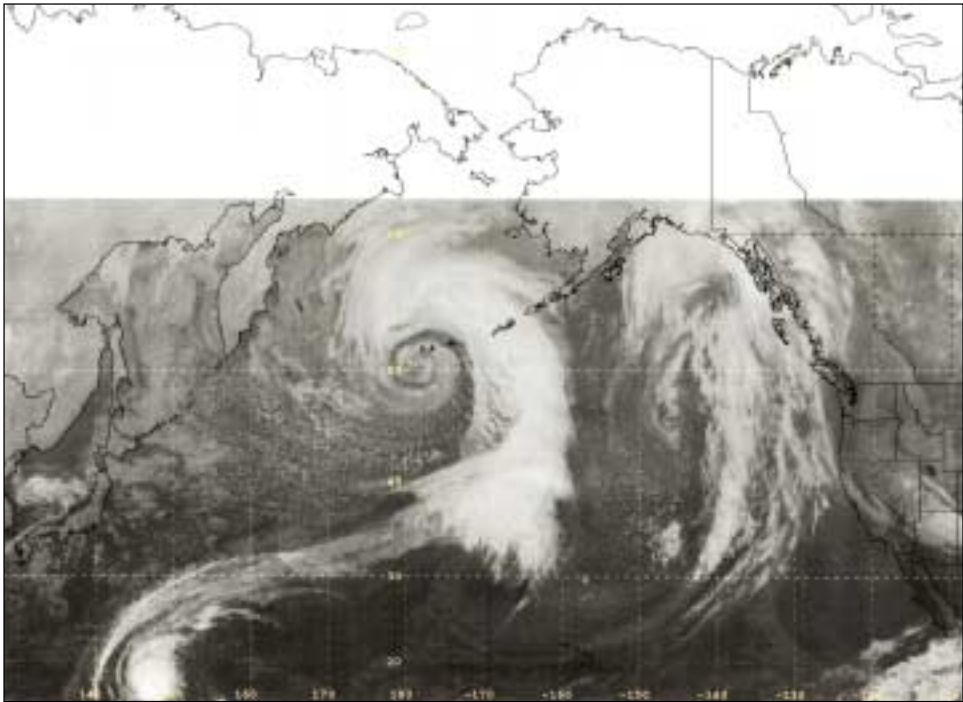


Figure 14 - Composite image made up of GOES-10 and GMS infrared satellite imagery valid 1830 UTC December 23, 2001.

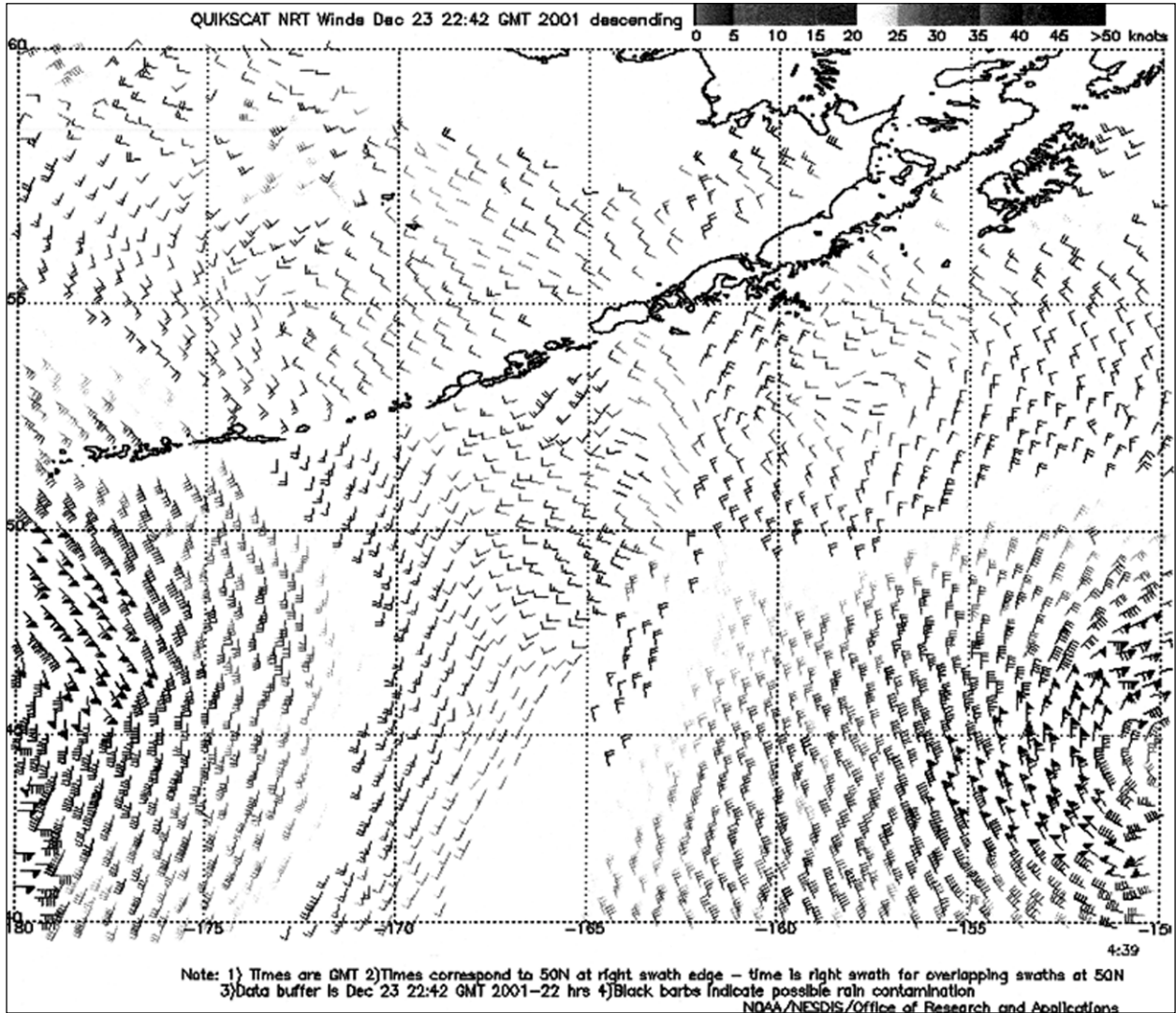


Figure 15 - QuikScat scatterometer winds valid about 0439 UTC December 23, 2001. (from NOAA/NESDIS/Office of Research and Applications).