Overview of all Falcon missions during T-PARC 2008

26 August to 1 October 2008


ILA
wOOt!

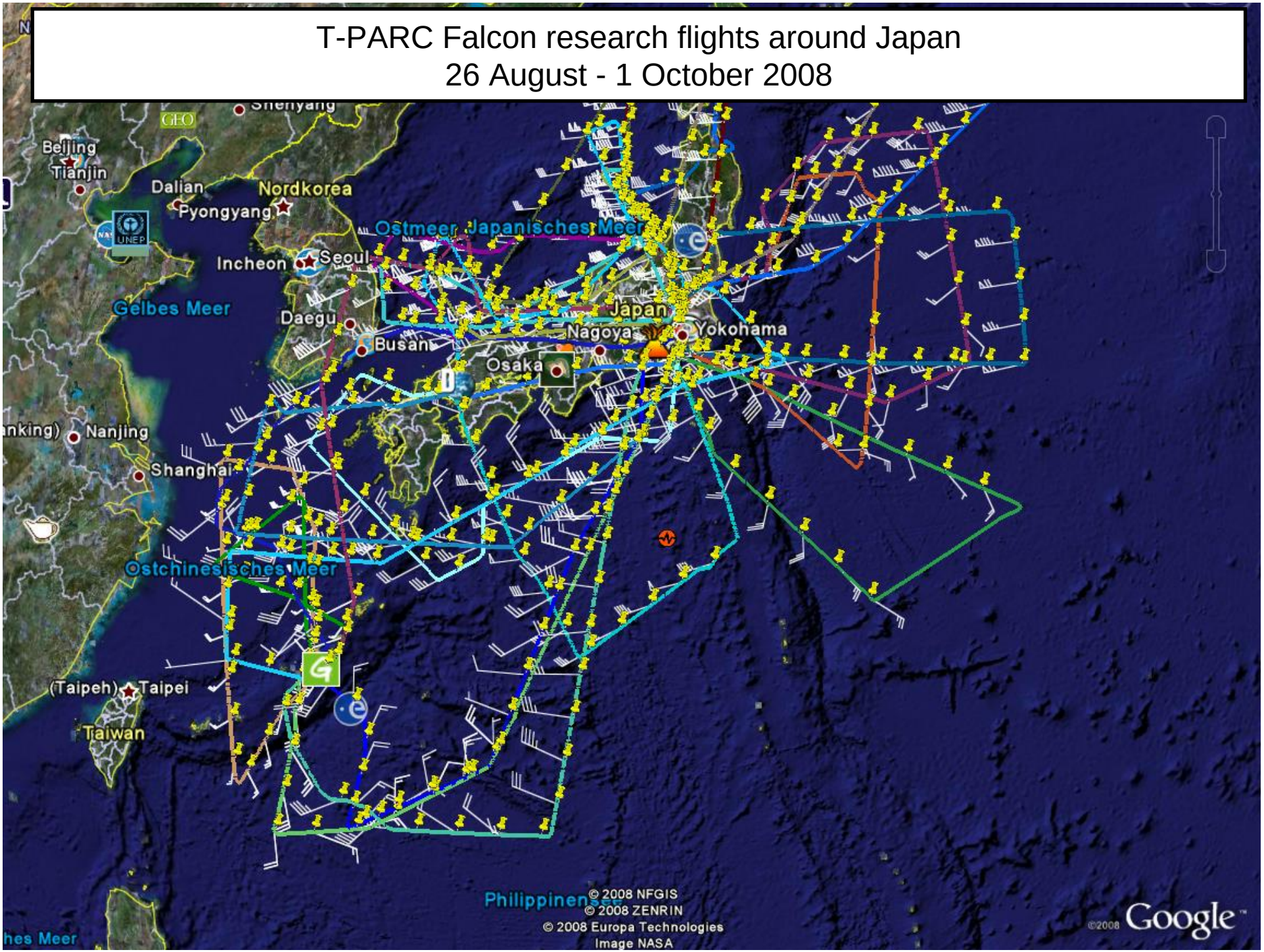

170

Atsugi operations center

lidar repairs in clean room tent

Bessho-san in the Falcon

T-PARC Falcon research flights around Japan
26 August - 1 October 2008

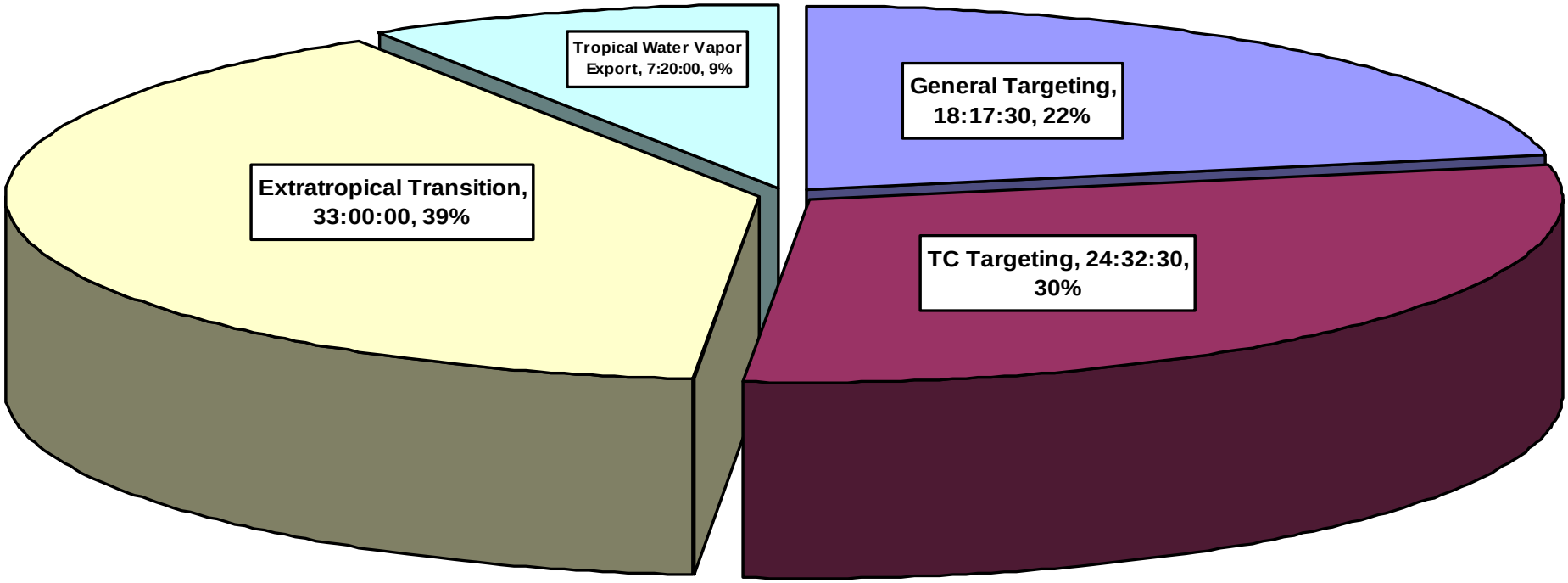


Some numbers and facts

- **25** research flights, 1 test flight
- overall **83:10** hours for research
  (93 hours in total including preflight and test flights)
- **323** dropsondes
- **2** main typhoon events:
  Sinlaku (**42:25** h; **158** sondes)
  Jangmi (**23:30** h; **76** sondes)

wind lidar: ~ 60 fligth hours

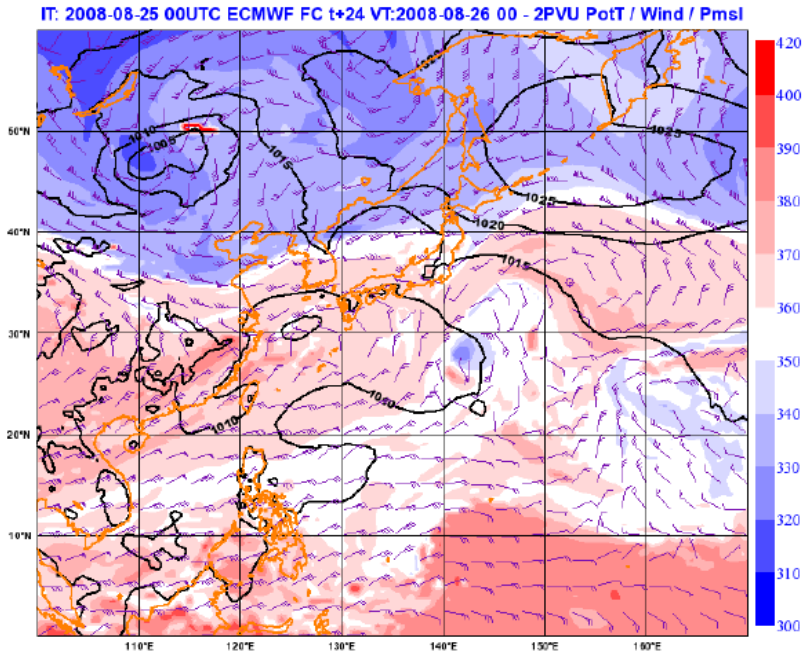
water vapour lidar: all flights (except in clouds...)

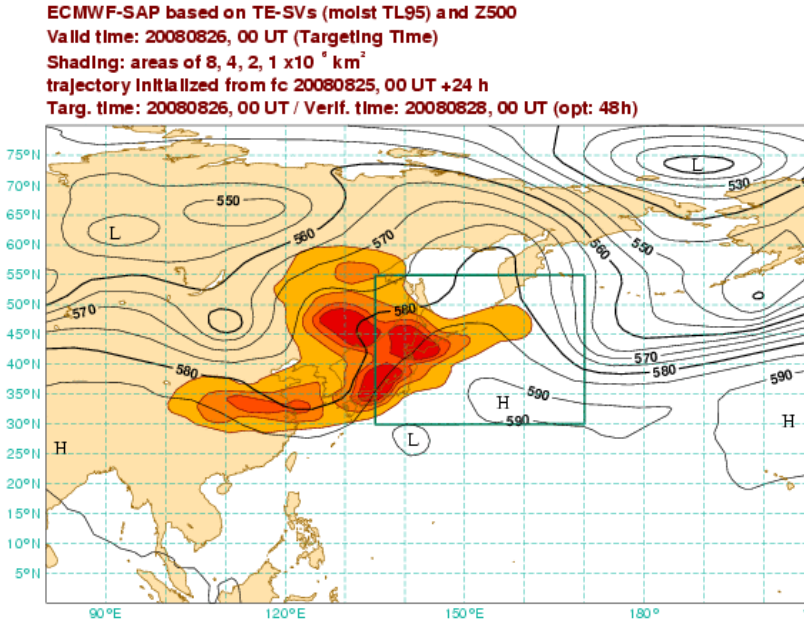


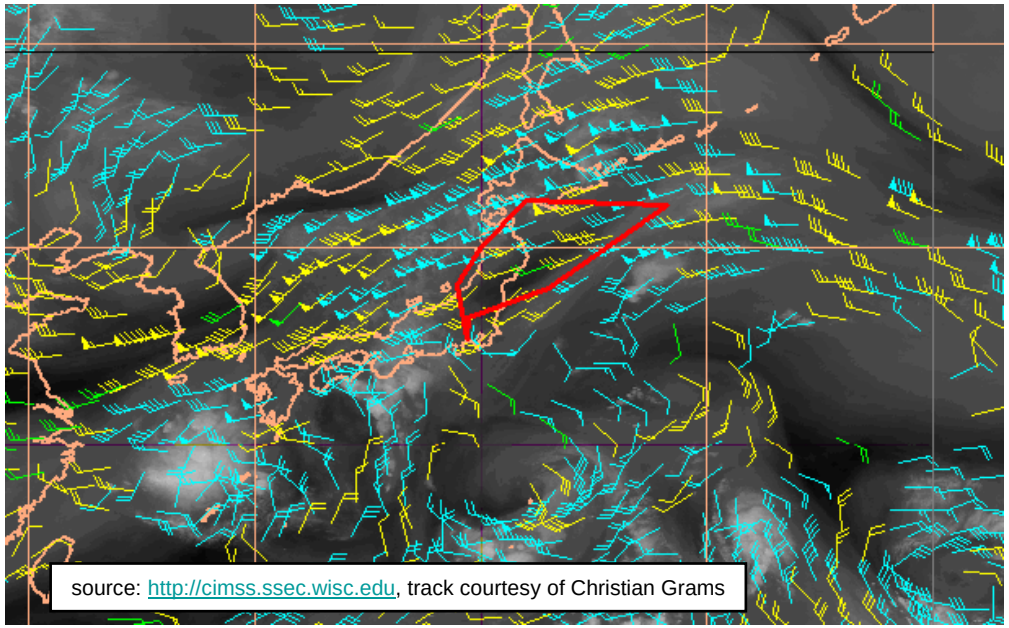
Flight	Location		Start Date	Flight Time					Block Time	Drops.	Type	System
				LT		UTC						
	from	to	Atsugi	Start	End	Start	End	Duration	Duration			
T1	DLR OP	DLR OP							1:30:00	0	test flight	---
1	Atsugi	Atsugi	26.08.2008	07:20	10:55	22:20	01:55	3:35:00	3:50:00	9	T, RB	
T2	Atsugi	Atsugi	27.08.2008						2:30:00	0	test flight	
2	Atsugi	Atsugi	30.08.2008	07:10	10:35	22:10	01:35	3:25:00	3:40:00	15	TWE, ET	TCS25
3	Atsugi	Atsugi	31.08.2008	07:10	11:05	22:10	02:05	3:55:00	4:10:00	15	TWE, ET	TCS26
4	Atsugi	Atsugi	02.09.2008	07:20	10:50	22:20	01:50	3:30:00	3:45:00	17	midlat T	
5	Atsugi	Atsugi	04.09.2008	06:55	10:35	21:55	01:35	3:40:00	3:55:00	15	midlat T	
6	Atsugi	Atsugi	09.09.2008	07:10	10:50	22:10	01:50	3:40:00	3:55:00	18	T, ET	TCS37
7	Atsugi	Okinawa	11.09.2008	12:20	16:20	03:20	07:20	4:00:00	4:00:00	19	TT	Sinlaku
8	Okinawa	Atsugi		17:15	21:20	08:15	12:20	4:05:00	4:20:00	17	TT	Sinlaku
9	Atsugi	Iwa-Kuni	14.09.2008	08:30	12:15	23:30	03:15	3:45:00	4:00:00	22	TT	Sinlaku
10	Iwa-Kuni	Atsugi		13:45	14:55	04:45	05:55	1:10:00	1:25:00	0	TT	Sinlaku
11	Atsugi	Okinawa	16.09.2008	06:35	10:20	21:35	01:20	3:45:00	4:00:00	17	TT	Sinlaku
12	Okinawa	Atsugi		14:00	17:00	05:00	08:00	3:00:00	3:15:00	3	TT	Sinlaku
13	Atsugi	Iwa-Kuni	17.09.2008	12:20	15:35	03:20	06:35	3:15:00	3:30:00	17	ET	Sinlaku
14	Iwa-Kuni	Atsugi		16:50	20:15	07:50	11:15	3:25:00	3:40:00	15	ET	Sinlaku
15	Atsugi	Atsugi	18.09.2008	12:25	16:20	03:25	07:20	3:55:00	4:10:00	14	ET	Sinlaku
16	Atsugi	Misawa	19.09.2008	07:35	08:55	22:35	23:55	1:20:00	1:35:00	3	ET	Sinlaku
17	Misawa	Atsugi		10:10	14:10	01:10	05:10	4:00:00	4:15:00	19	ET	Sinlaku
18	Atsugi	Atsugi	21.09.2008	07:05	11:05	22:05	02:05	4:00:00	4:15:00	12	ET	Sinlaku
19	Atsugi	Okinawa	28.09.2008	12:10	16:00	03:10	07:00	3:50:00	4:05:00	12	TT	Jangmi
20	Okinawa	Okinawa		17:45	20:10	08:45	11:10	2:25:00	2:40:00	8	TT	Jangmi
21	Okinawa	Okinawa	29.09.2008	12:50	16:10	03:50	07:10	3:20:00	3:35:00	10	TT	Jangmi
22	Okinawa	Atsugi	30.09.2008	07:20	10:40	22:20	01:40	3:20:00	3:35:00	12	ET, T	Jangmi
23	Atsugi	Atsugi		12:50	15:55	03:50	06:55	3:05:00	3:20:00	8	ET, T	Jangmi
24	Atsugi	Iwa-Kuni	01.10.2008	14:25	17:40	05:25	08:40	3:15:00	3:30:00	16	ET	Jangmi
25	Iwa-Kuni	Atsugi		19:40	22:10	10:40	13:10	2:30:00	2:45:00	10	TT	Jangmi
								83:10:00	93:10:00	323		

1.Mission: Ats - Ats (20080826 2220-0150Z)

-map as much as possible of the maximum
-of the **sensitive region**, in a shallow trough directly upstream of a ridge.
-investigate the gradient between trough
-and ridge as well as the **ridge building** which might also be reinforced by the upper level circulation of the cut-off low south east of Japan (142E, 28N).
-**instrument test**



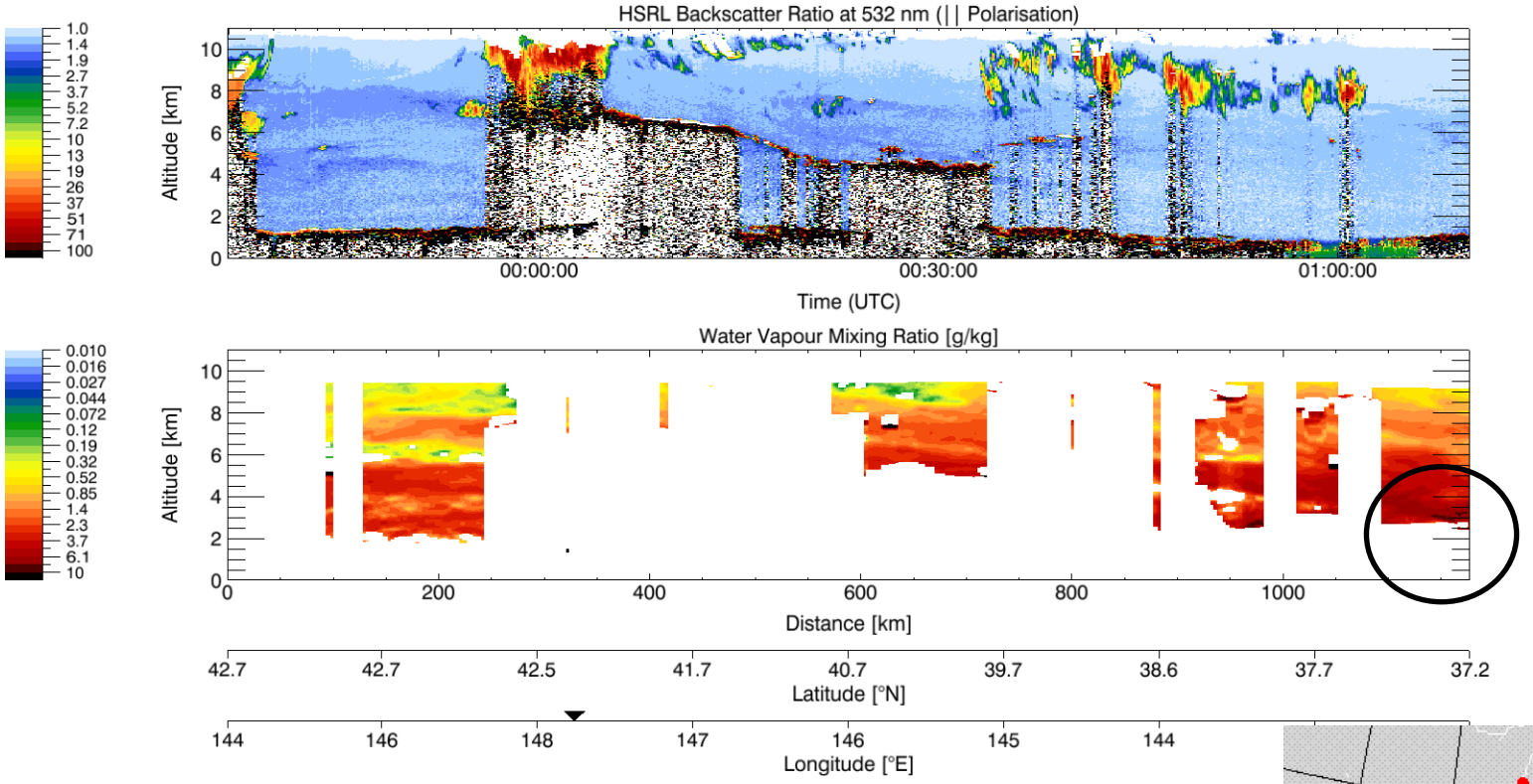




WALES

T-PARC 25-08-2008

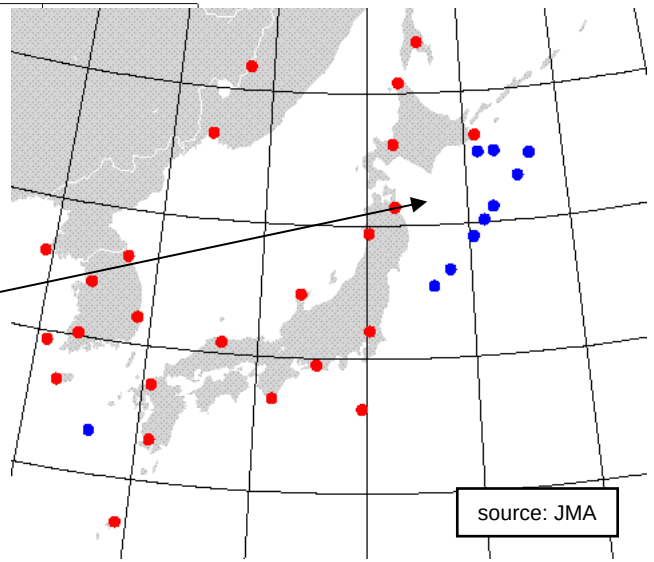
1. Flight



Observations:
- 9 dropsondes
- DIAL

before adjustment of absorption lines

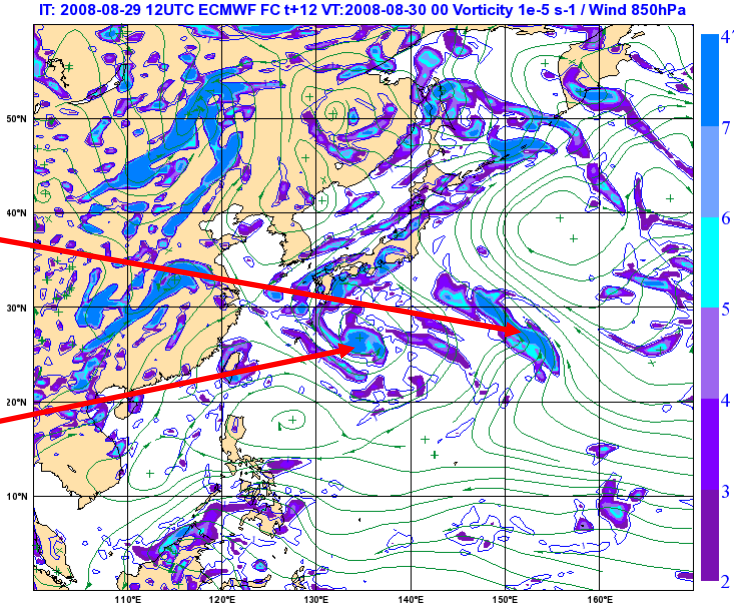
no drops over/near land

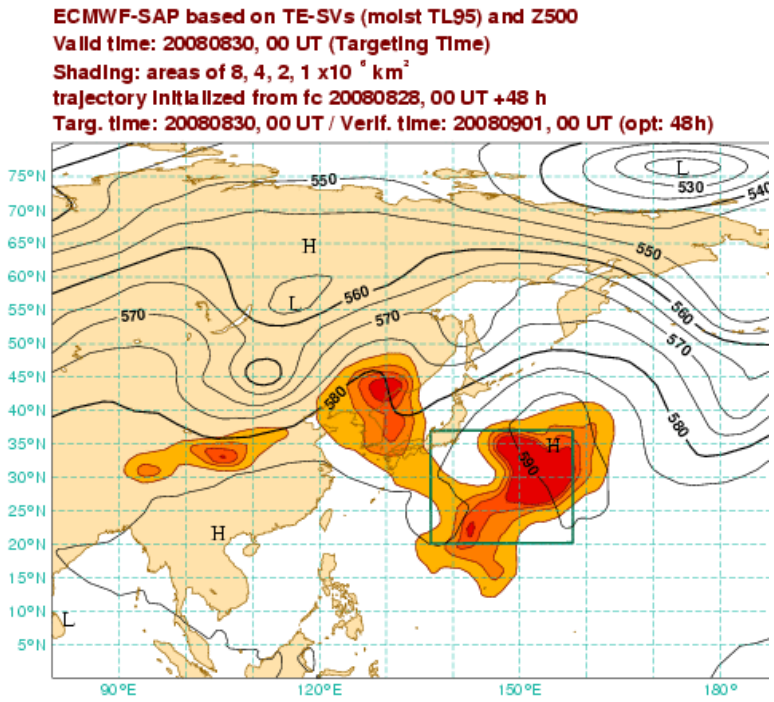


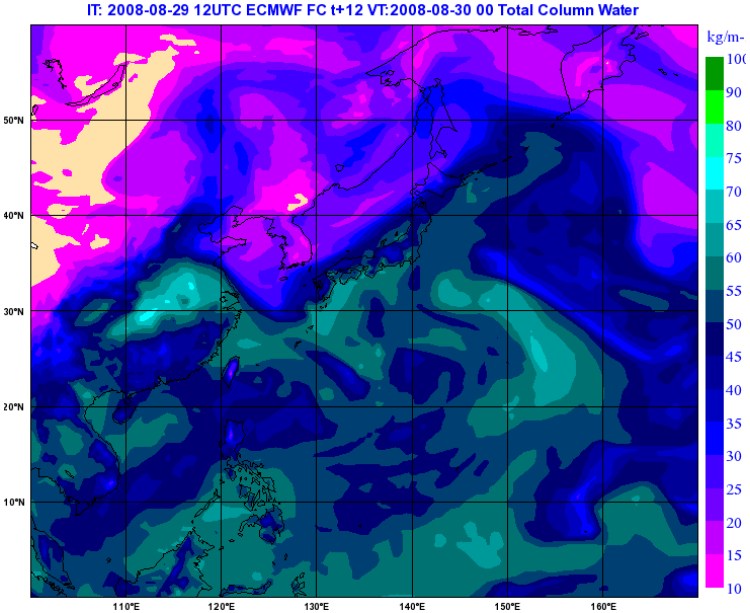
2.Mission: Ats - Ats (20080830 2210-0135Z)

- measure in the region of high relative vorticity and high **water vapor transported** towards the north by **TCS025**
- measure the interaction of the system of high relative vorticity with the jet
- no sensitive regions are indicated for this flight.

extra-tropical system



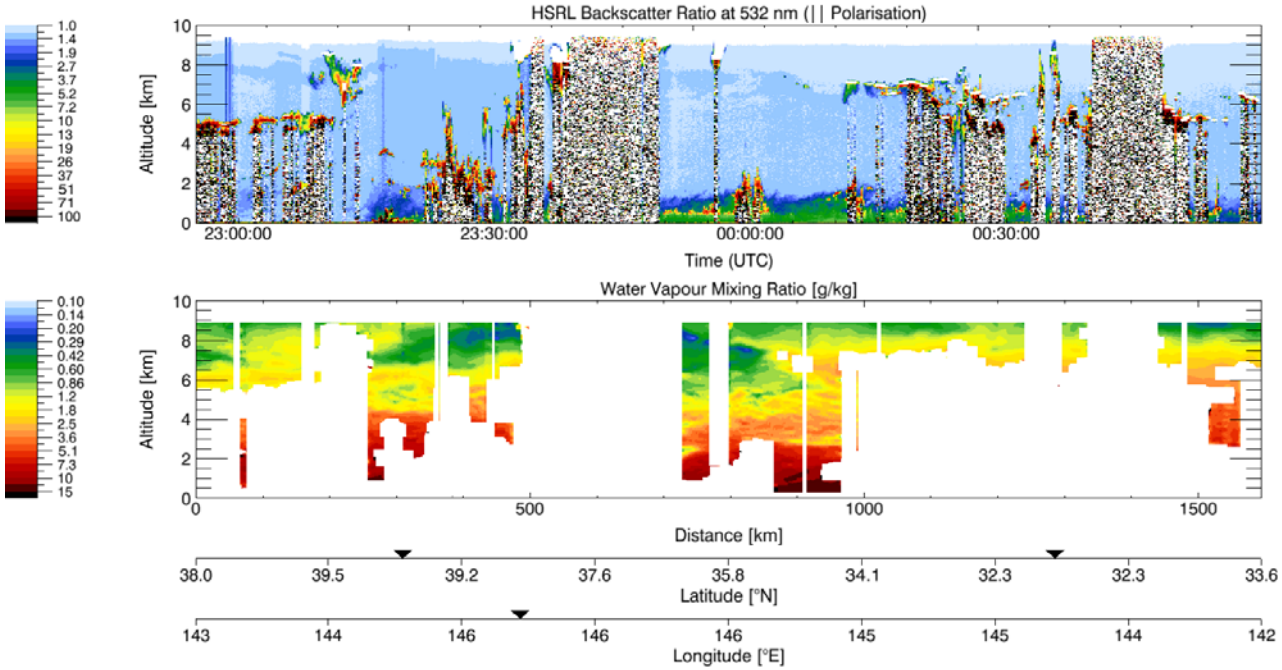




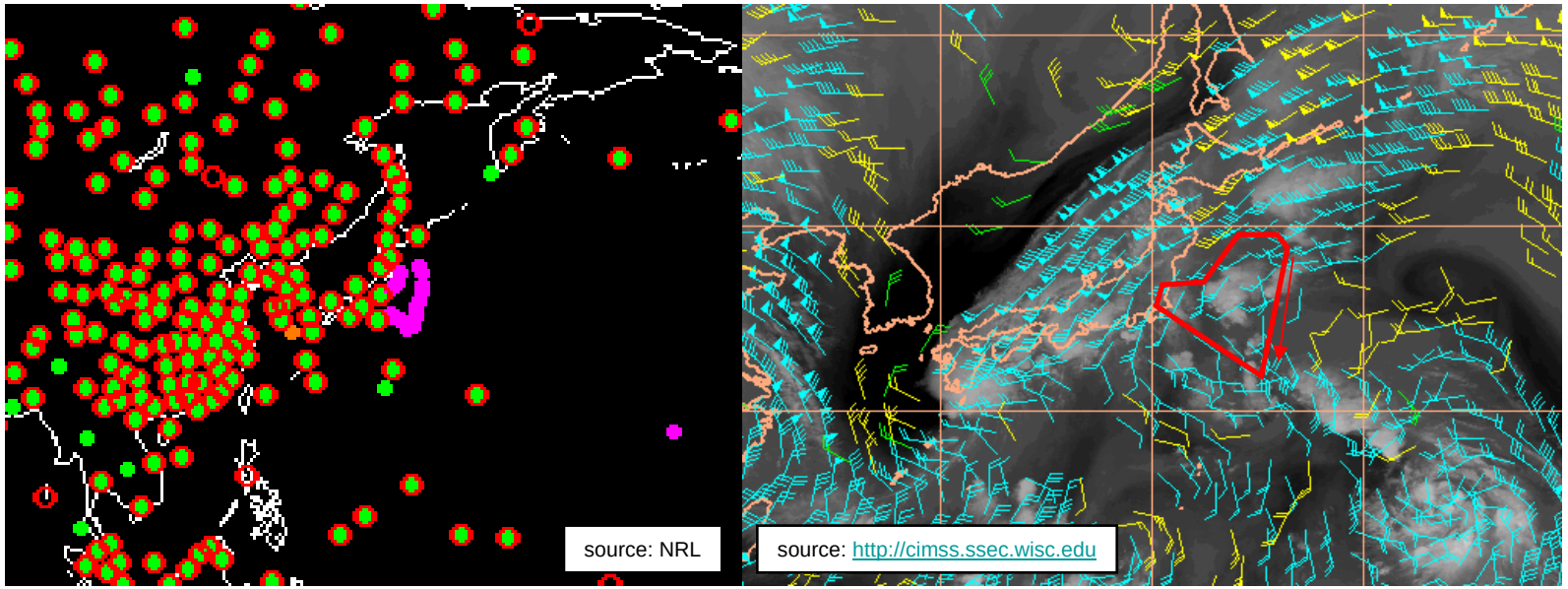
WALES

T-PARC 29-08-2008

3. Flight

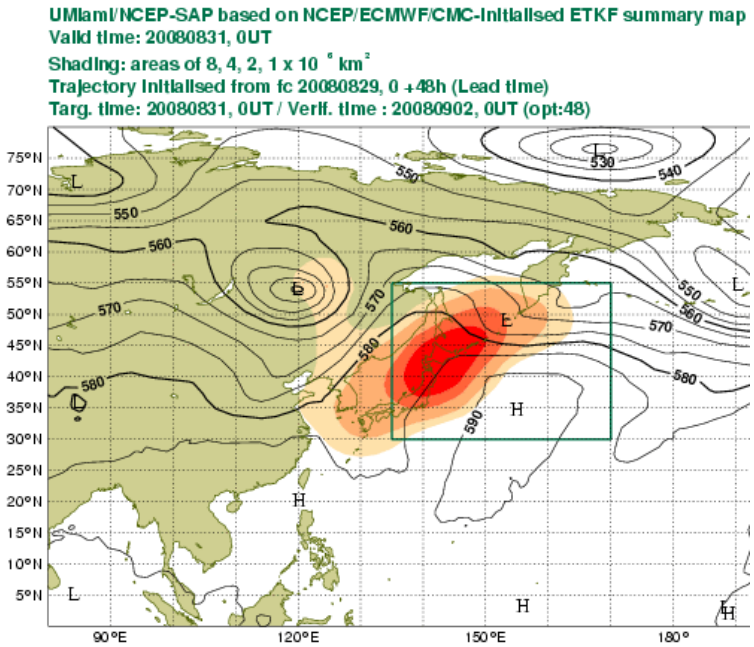


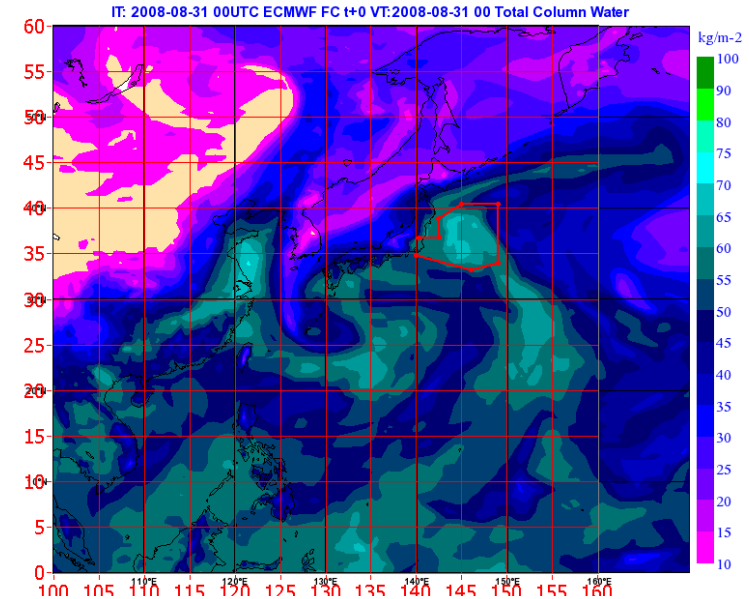
Observations:
- 15 dropsondes
- DIAL

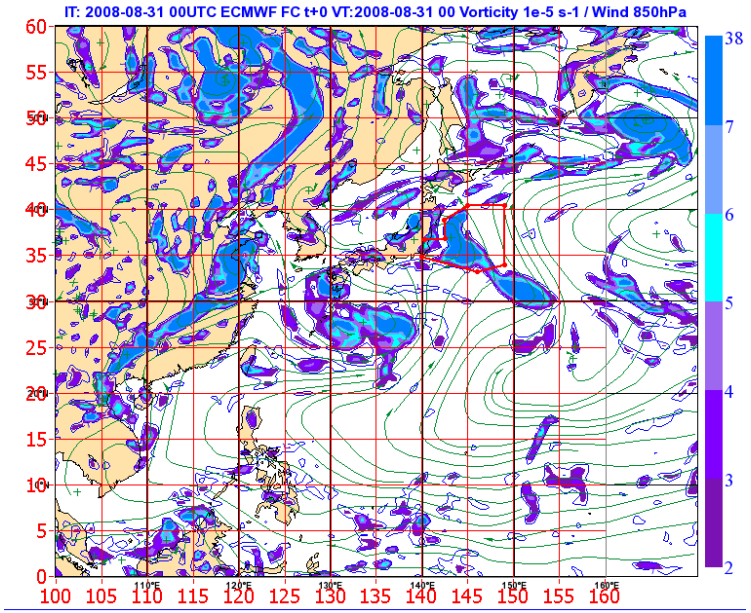


3.Mission: Ats - Ats (20080831 2210-0205Z)

- sample the **developing cyclone**, its frontal structure, **water vapor content and outflow** into the westerlies to the north. The water vapor sampling is needed to see if the moisture is originating in the tropics and establish consistency with the mission of 30 August 00 UTC.
- **moderate sensitivities** near the northeast point of the flight track



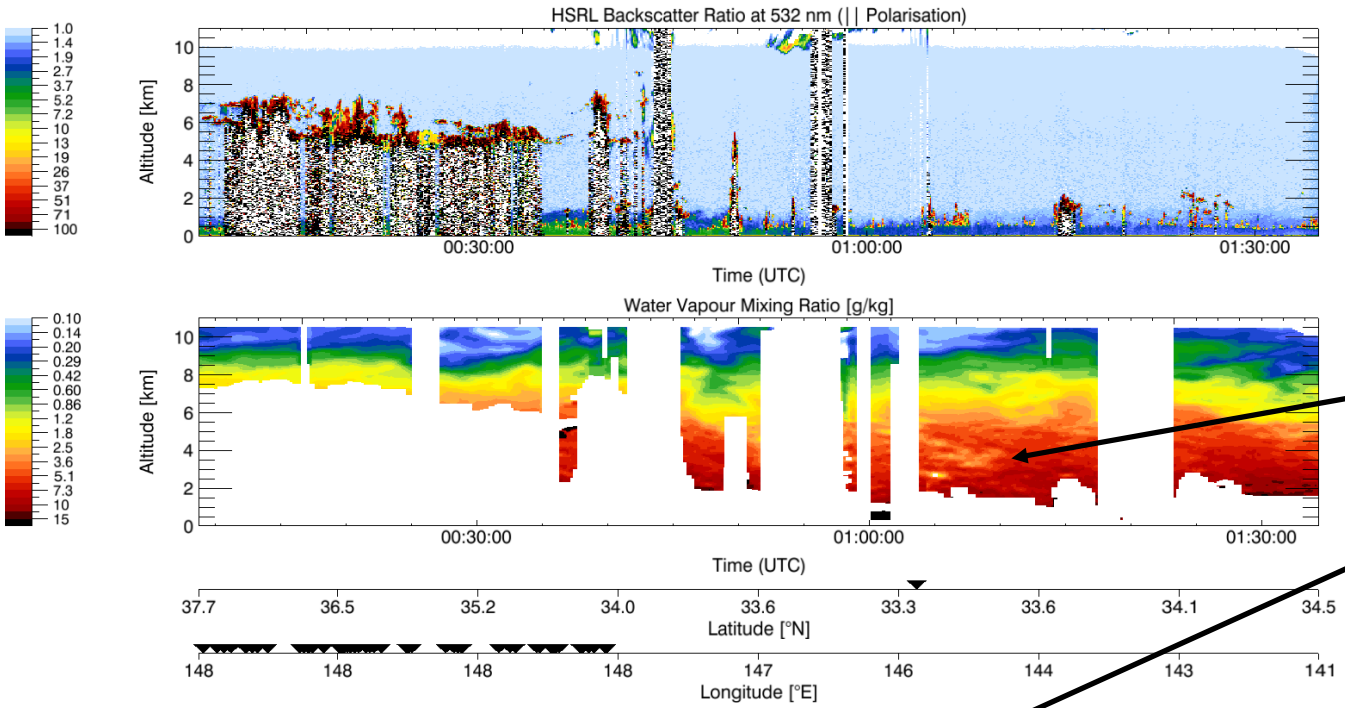




WALES

T-PARC 31-08-2008

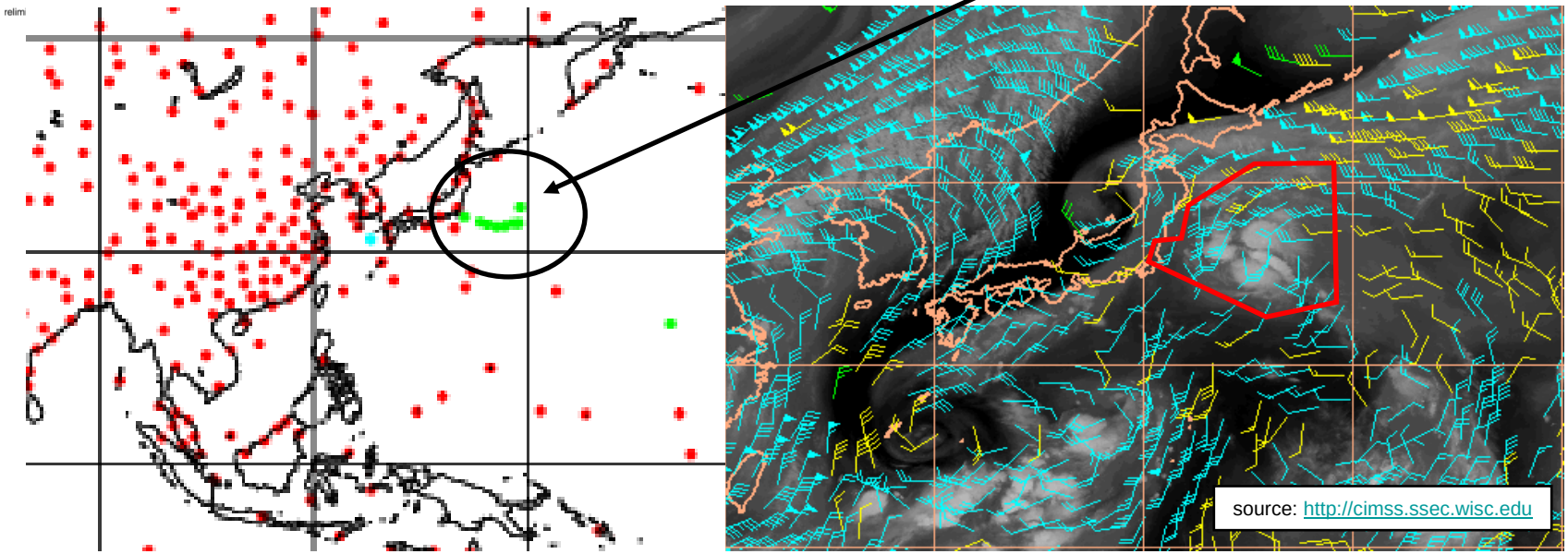
4. Flight



Observations:
- 15 dropsondes
- DIAL

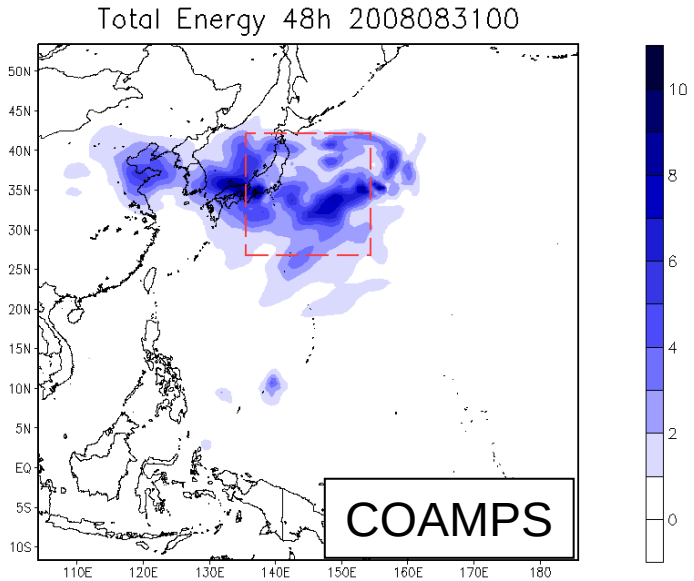
good TWE obs

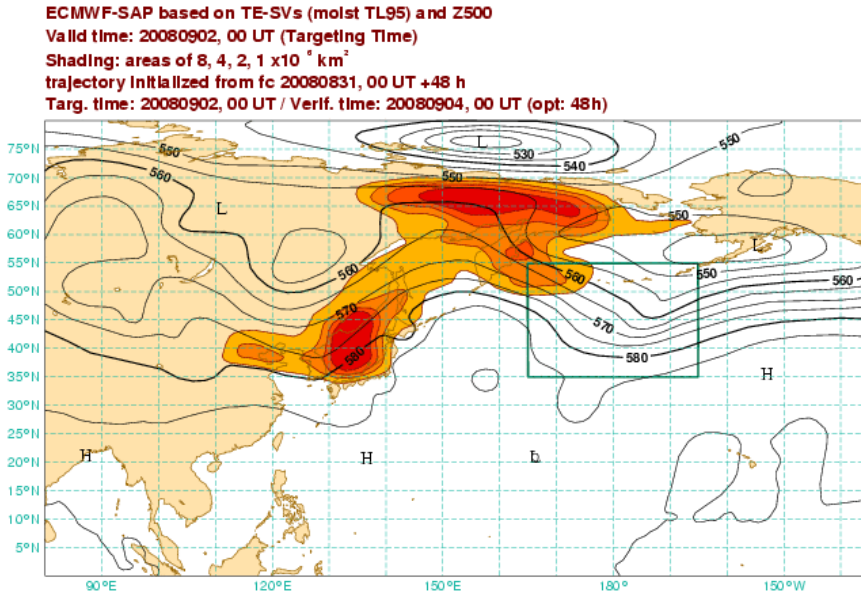
problems with time allocation of sondes in DA

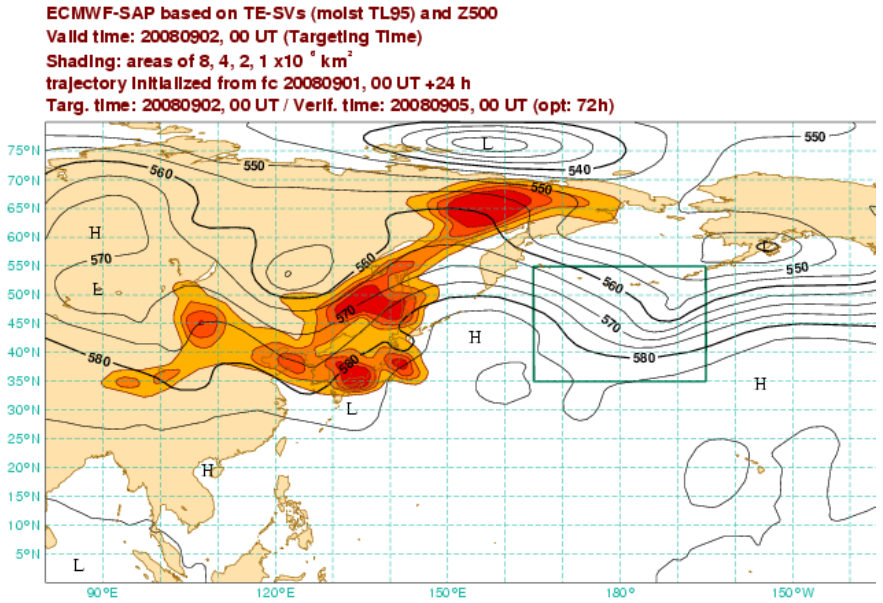


4.Mission: Ats - Ats (20080902 2220-0150Z)

- sample **sensitive areas** located over the Japanese Sea. Targeting products for the downstream region over the North Pacific simulate areas of increased sensitivity just west of Japan. Also for other verification areas the flight track was located in sensitive areas.
- confirm the misleading promising results from the wind lidar





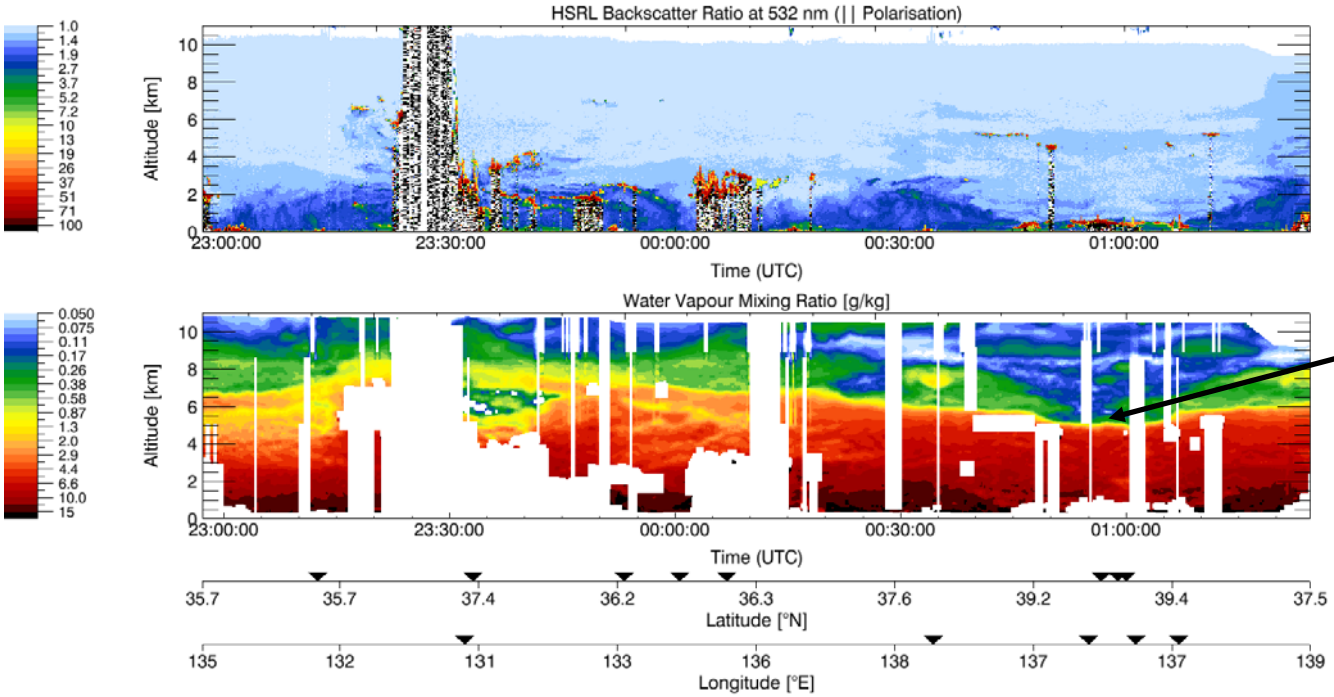


WALES

DLR

T-PARC 01-09-2008

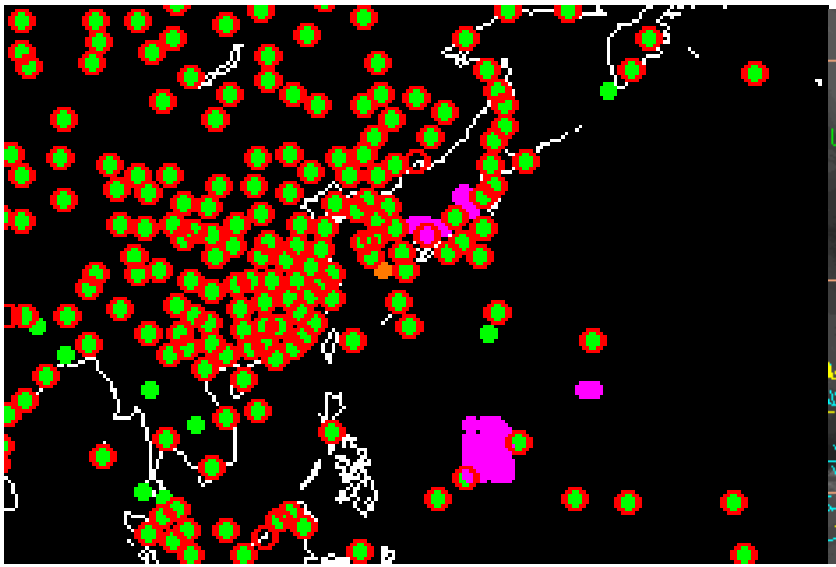
5. Flight

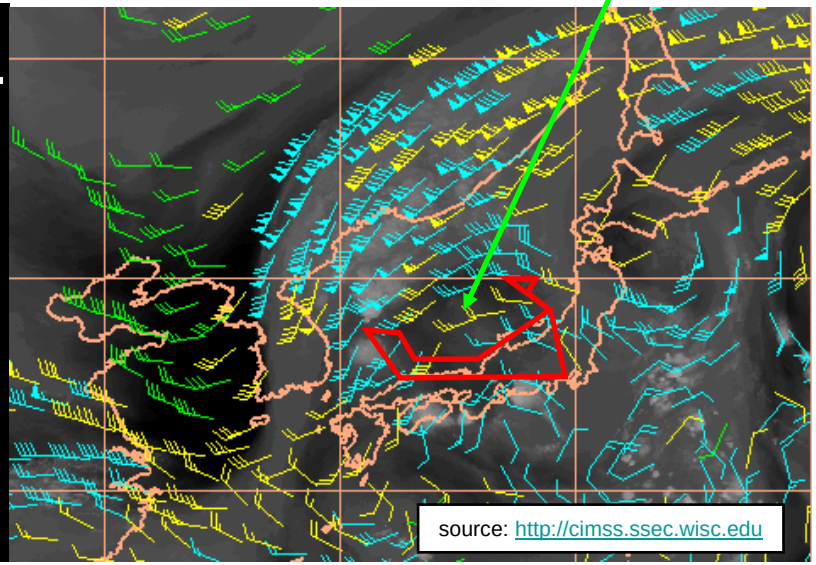


Observations:
- 17 dropsondes
- DIAL

sharp gradient

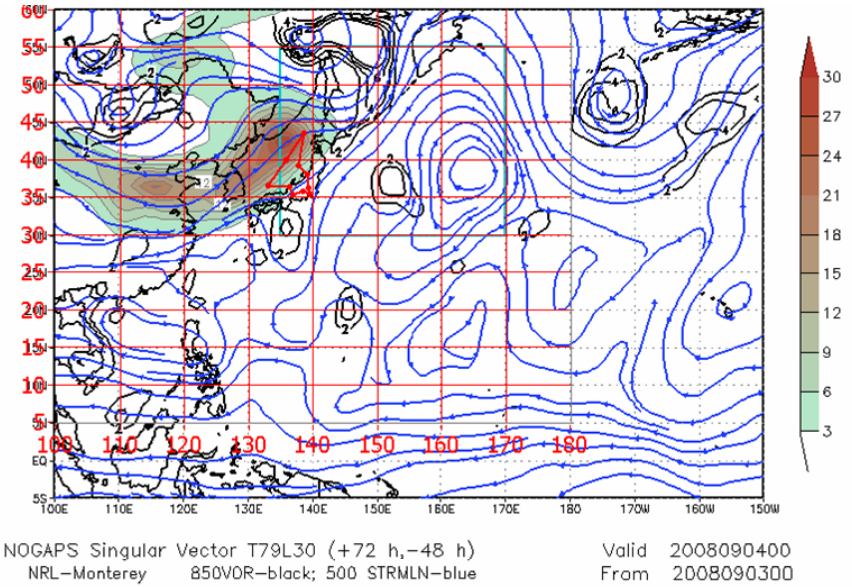
nice mission, but drops close to coast due to no access to training area; in-flight adjustment

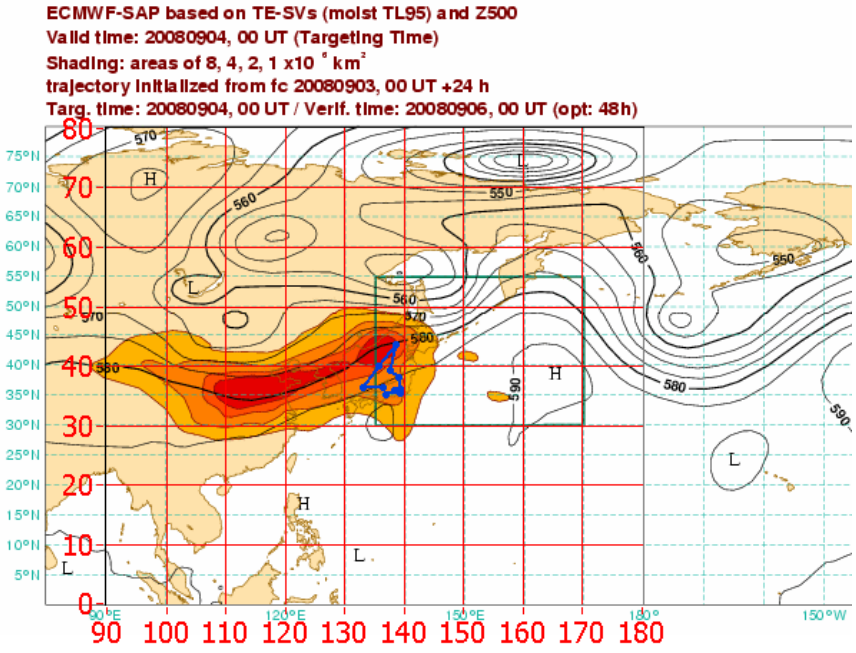


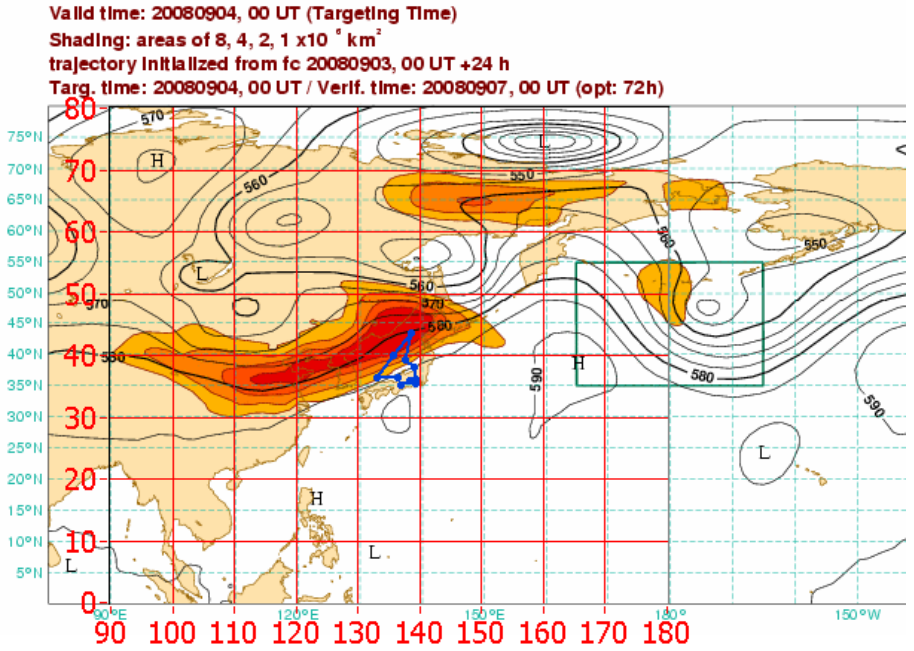


5.Mission: Ats - Ats (20080904 2155-0135Z)

- sample the **sensitive regions**. Several targeting products pointed to regions west of Japan, partly located over the Japanese Sea. NOGAPS SV indicated that this sensitivity is related to mid-level temperature and wind fields.



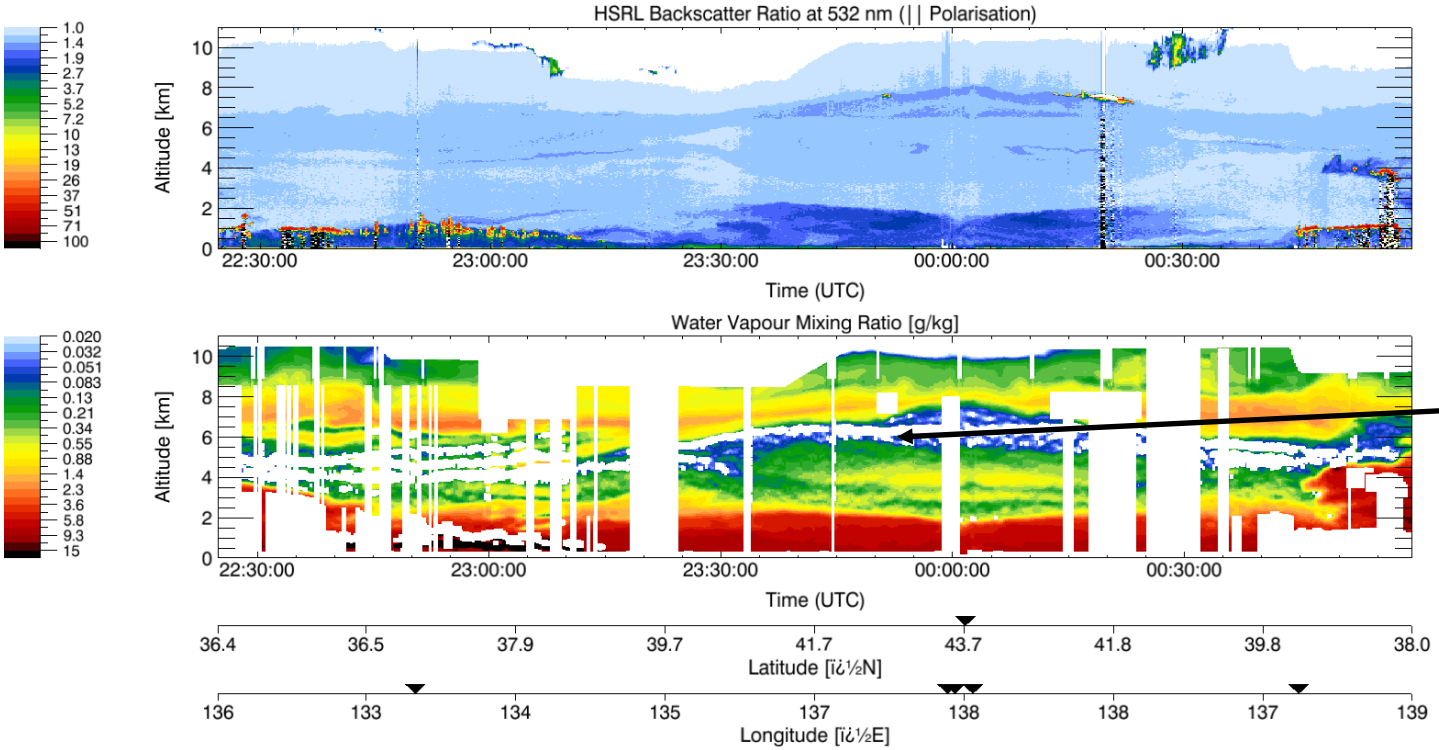




WALES

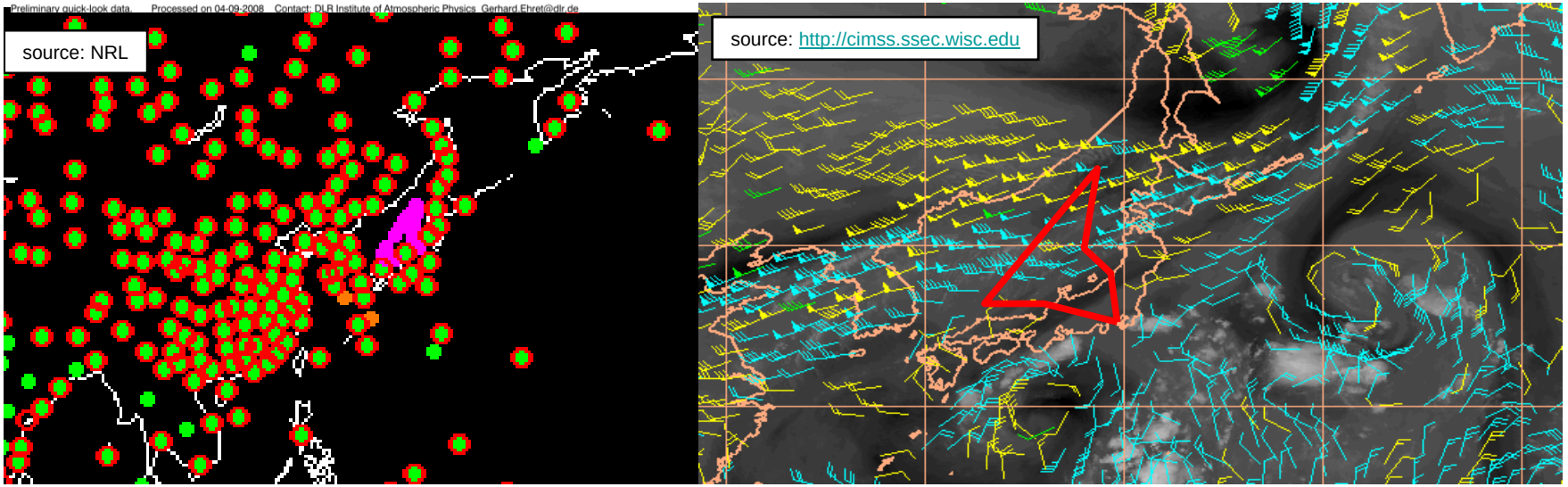
T-PARC 03-09-2008

5. Flight



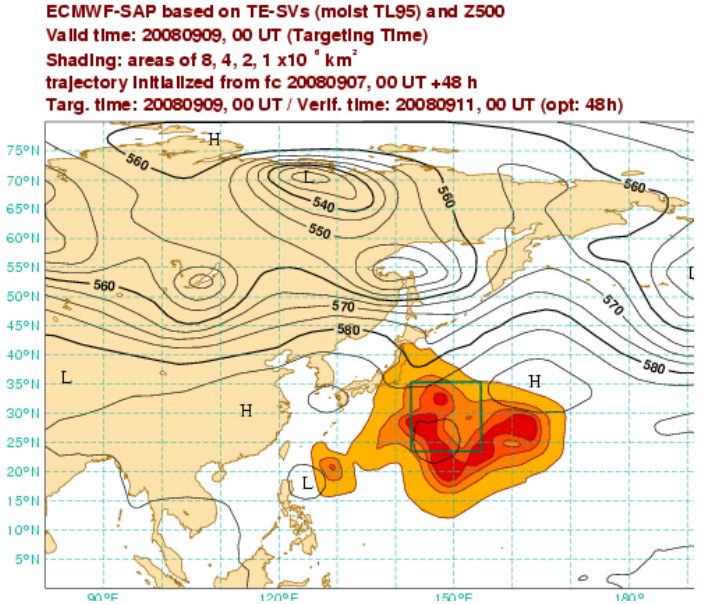
Observations:
- 15 dropsondes
- DIAL

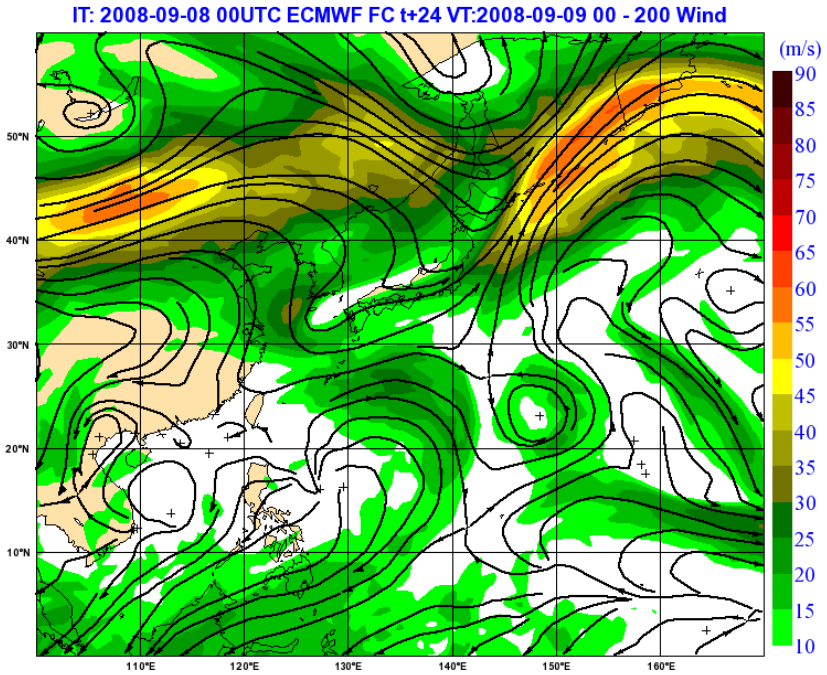
dry layer

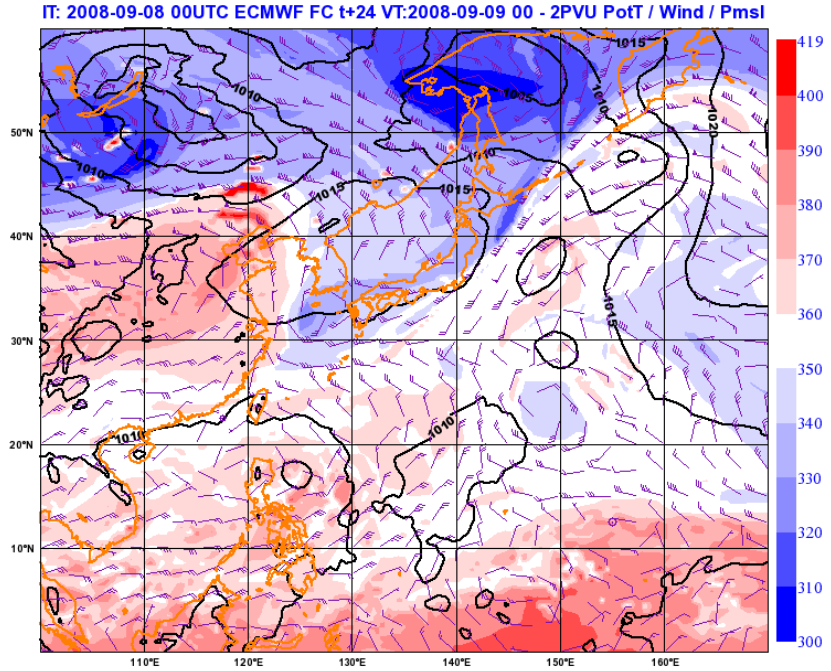


6.Mission: Ats - Ats (20080909 2210-0150Z)

- sample **TCS037 a few hours before it is forecast to interact with a front** associated with a short wave upstream trough. The interests were focused on the outflow of the TCS, the convection within the system and the gradient of the dynamic tropopause between the system and the upstream trough.
- the flight track was placed **partly within areas of high sensitivity associated with TCS037**



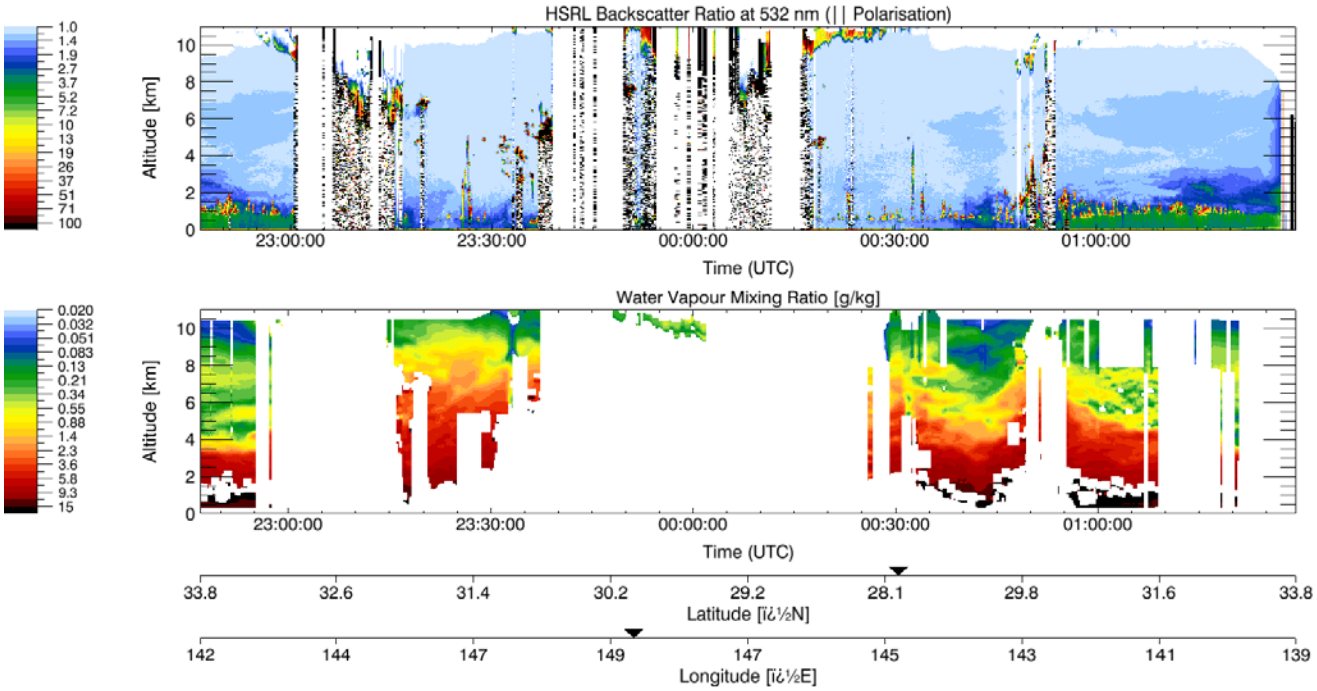




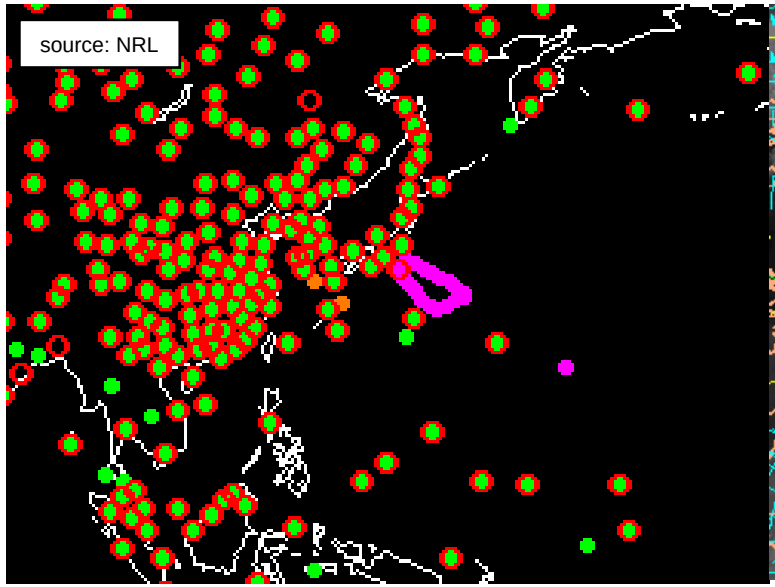
DLR **WALES**

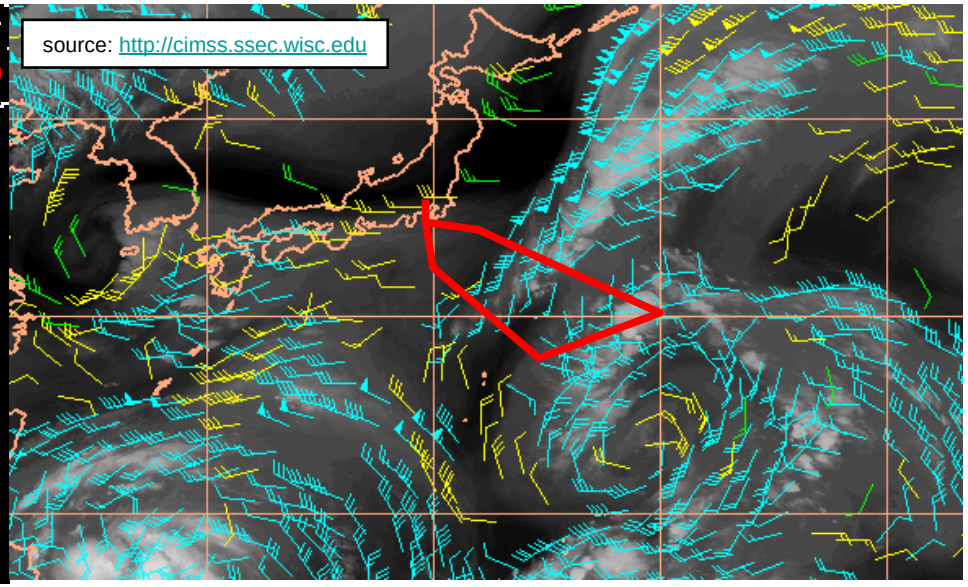
T-PARC 08-09-2008

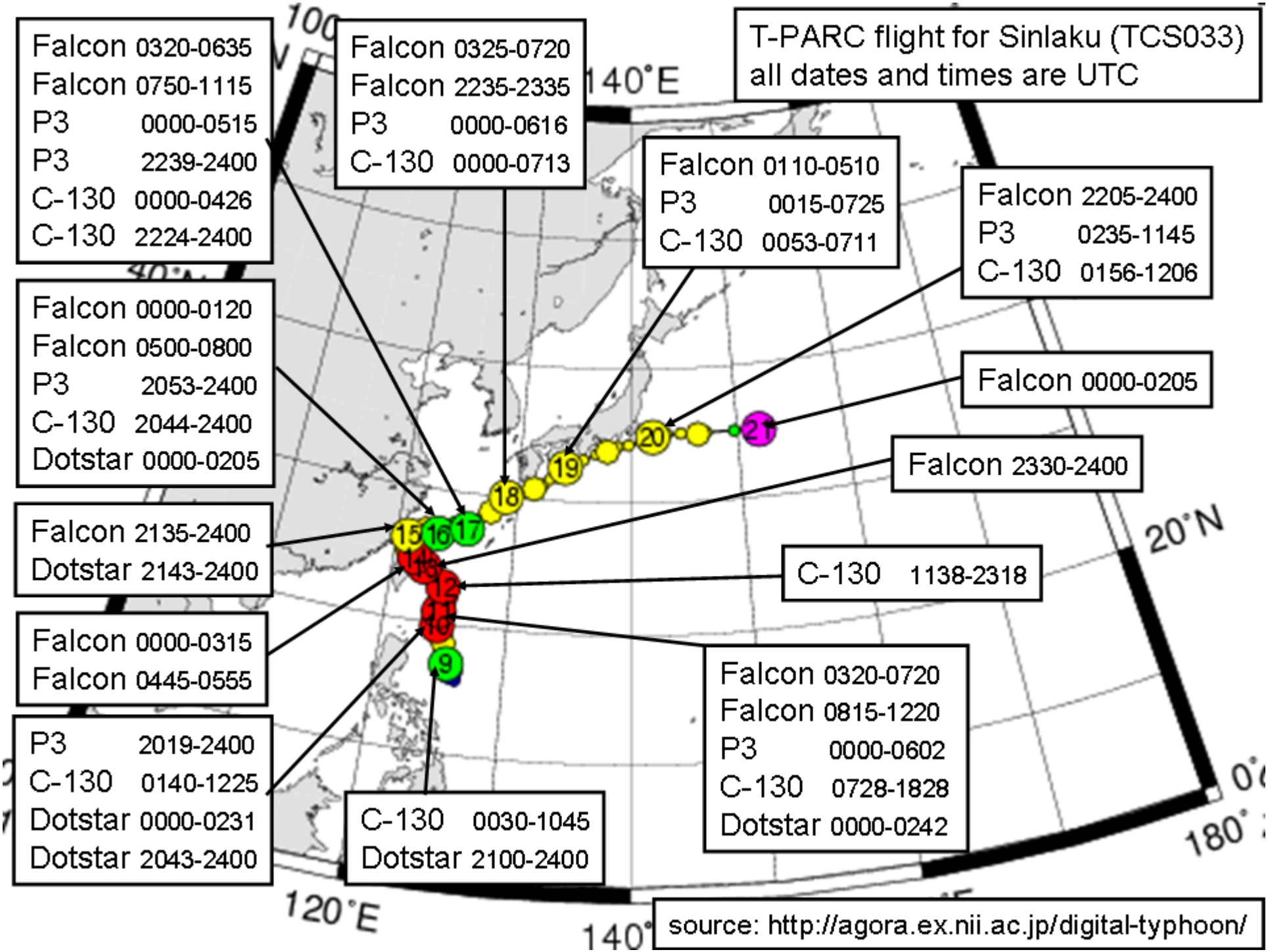
7. Flight / 1st mission to MCS037



Observations:
- 18 dropsondes
- DIAL



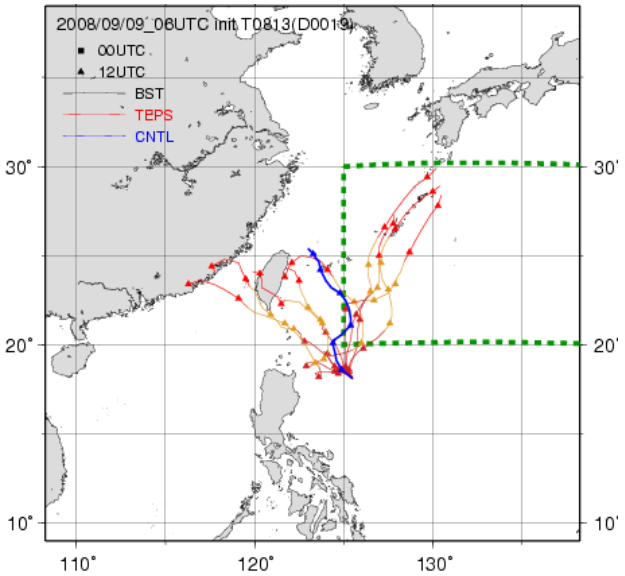



T-PARC flight for Sinlaku (TCS033)
all dates and times are UTC
Falcon 0320-0635
Falcon 0750-1115
P3 0000-0515
P3 2239-2400
C-130 0000-0426
C-130 2224-2400
Falcon 0325-0720
Falcon 2235-2335
P3 0000-0616
C-130 0000-0713
Falcon 0110-0510
P3 0015-0725
C-130 0053-0711
Falcon 2205-2400
P3 0235-1145
C-130 0156-1206
Falcon 0000-0205
Falcon 2330-2400
Falcon 0000-0120
Falcon 0500-0800
P3 2053-2400
C-130 2044-2400
Dotstar 0000-0205
Falcon 2135-2400
Dotstar 2143-2400
C-130 1138-2318
Falcon 0000-0315
Falcon 0445-0555
Falcon 0320-0720
Falcon 0815-1220
P3 0000-0602
C-130 0728-1828
Dotstar 0000-0242
P3 2019-2400
C-130 0140-1225
Dotstar 0000-0231
Dotstar 2043-2400
C-130 0030-1045
Dotstar 2100-2400
source: http://agora.ex.nii.ac.jp/digital-typhoon/
140°E
20°N
120°E
140°
180°

EPS track forecasts (from M. Yamaguchi)

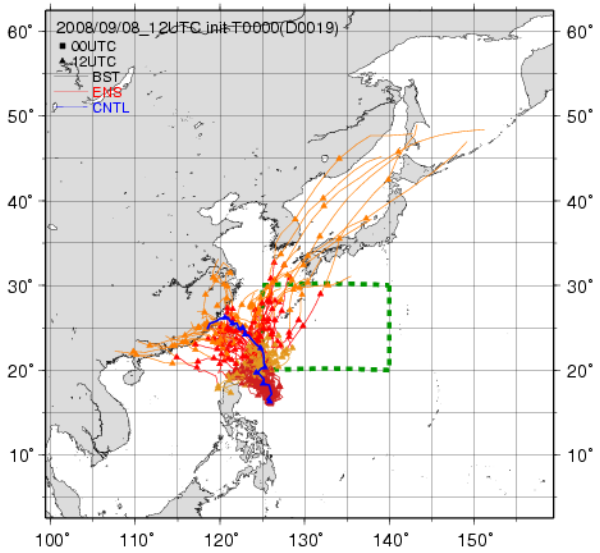
JMA Typhoon EPS

2008.09.09 06UTC ini +132h



JMA Medium-Range EPS

2008.09.08 012UTC ini +216h



ECMWF EPS

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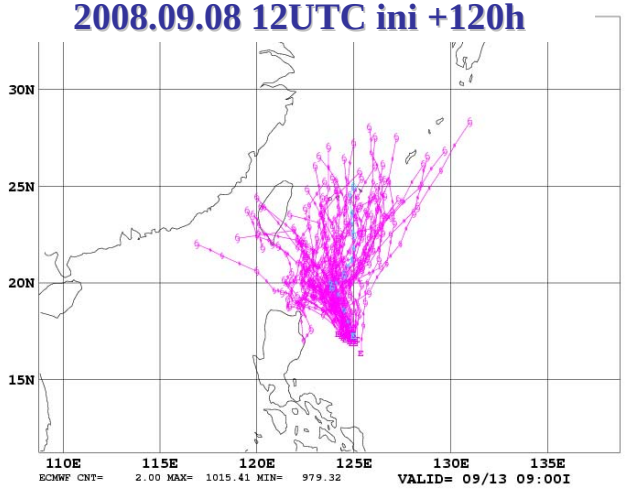
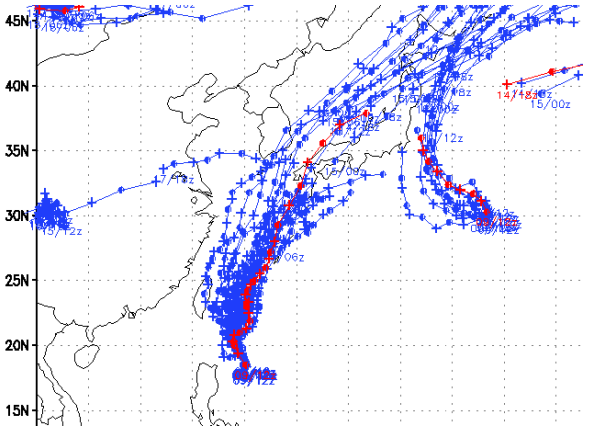


GFS EPS

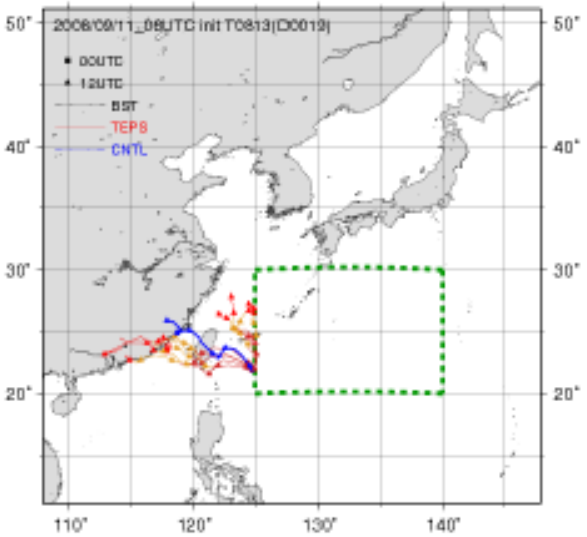
2008.09.09 12UTC ini +???h



EPS track forecasts (from M. Yamaguchi)

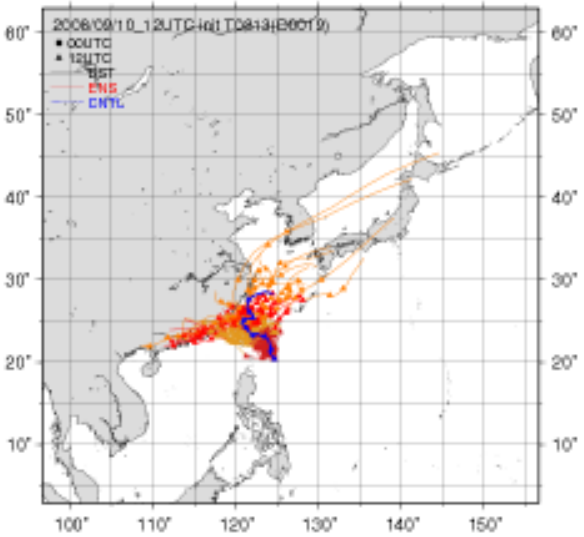
JMA Typhoon EPS

2008.09.11 06UTC ini +132h



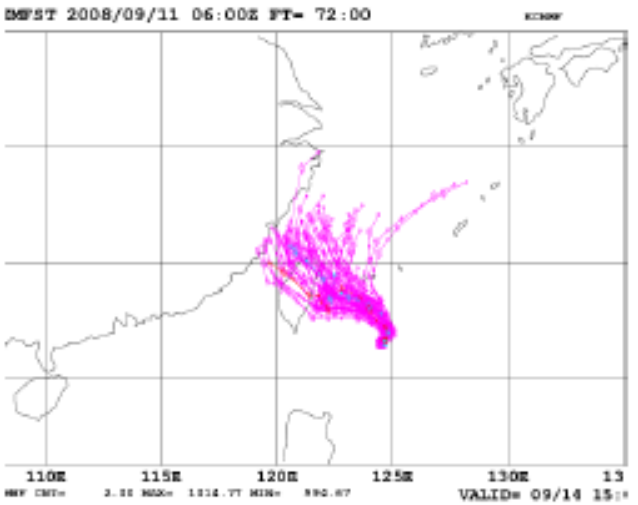
JMA Medium-Range EPS

2008.09.10 012UTC ini +216h



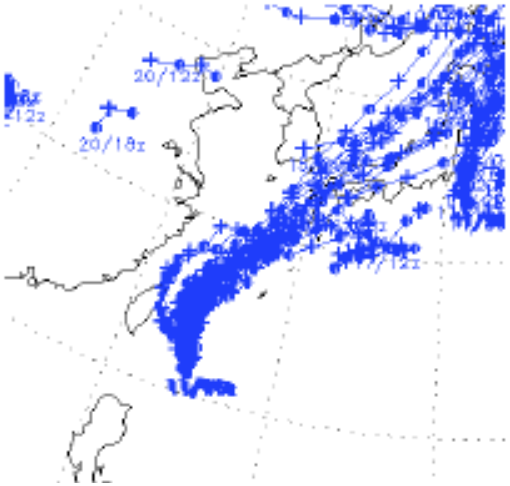
ECMWF EPS

2008.09.11 00UTC ini +78h



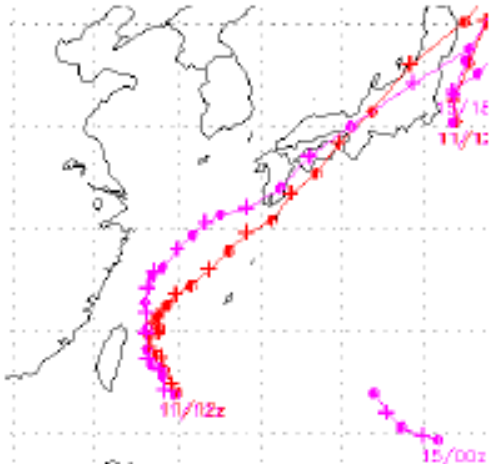
GFS EPS

2008.09.11 06UTC ini +???h



Model EPS

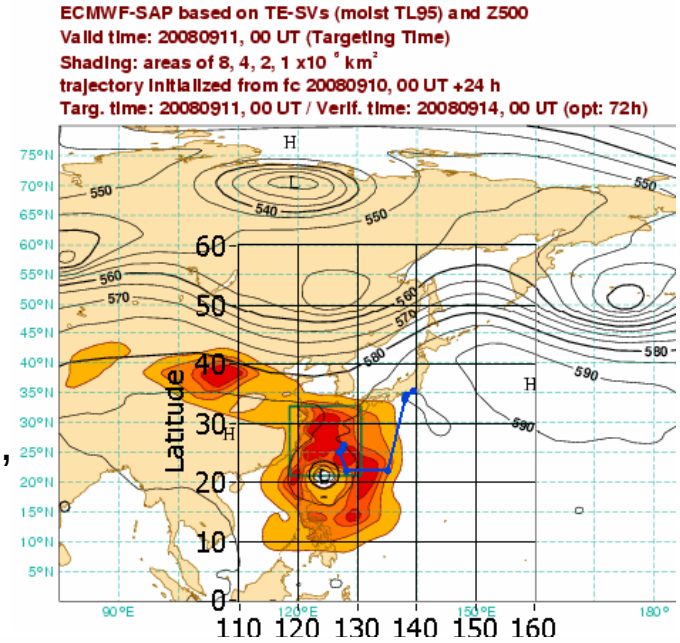
2008.09.11 12UTC ini +???h

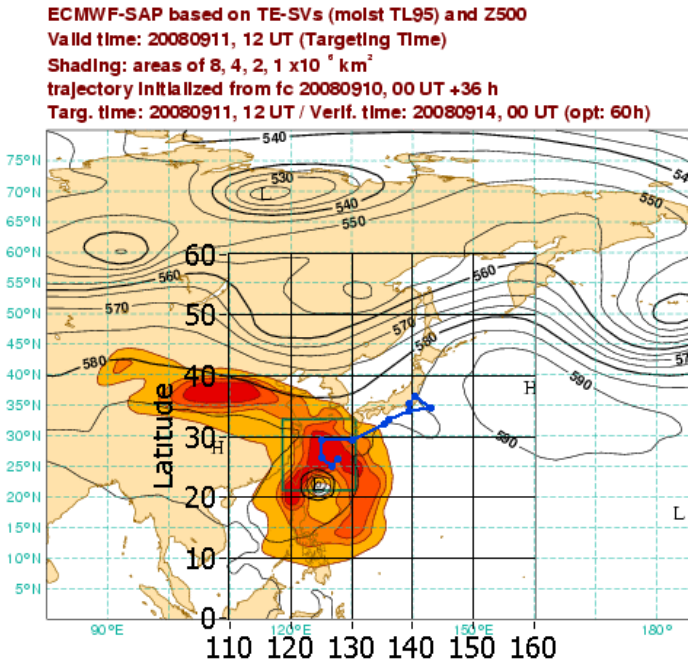


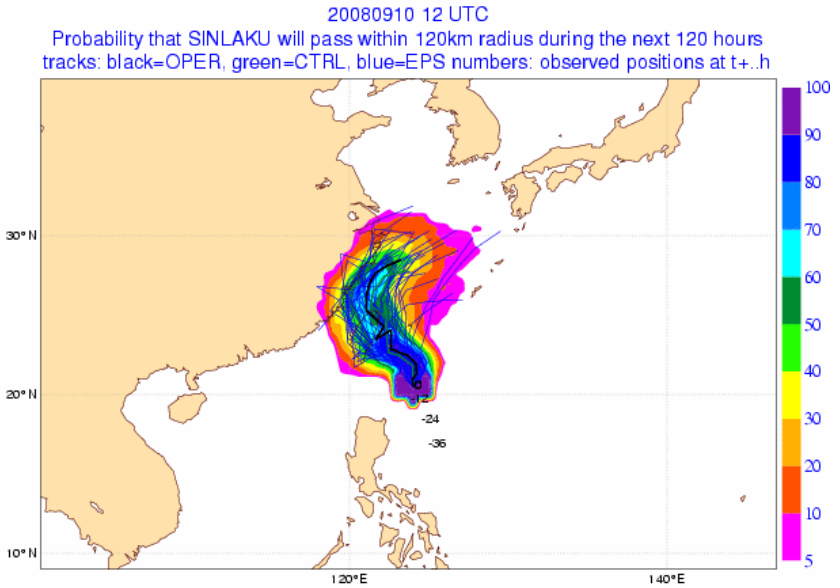
We still have a large uncertainty on the timing of recurvature or recurvature itself…

7.Mission: Ats - Oki (20080911 0320-0720Z)
8.Mission: Oki - Ats (20080911 0815-1220Z)

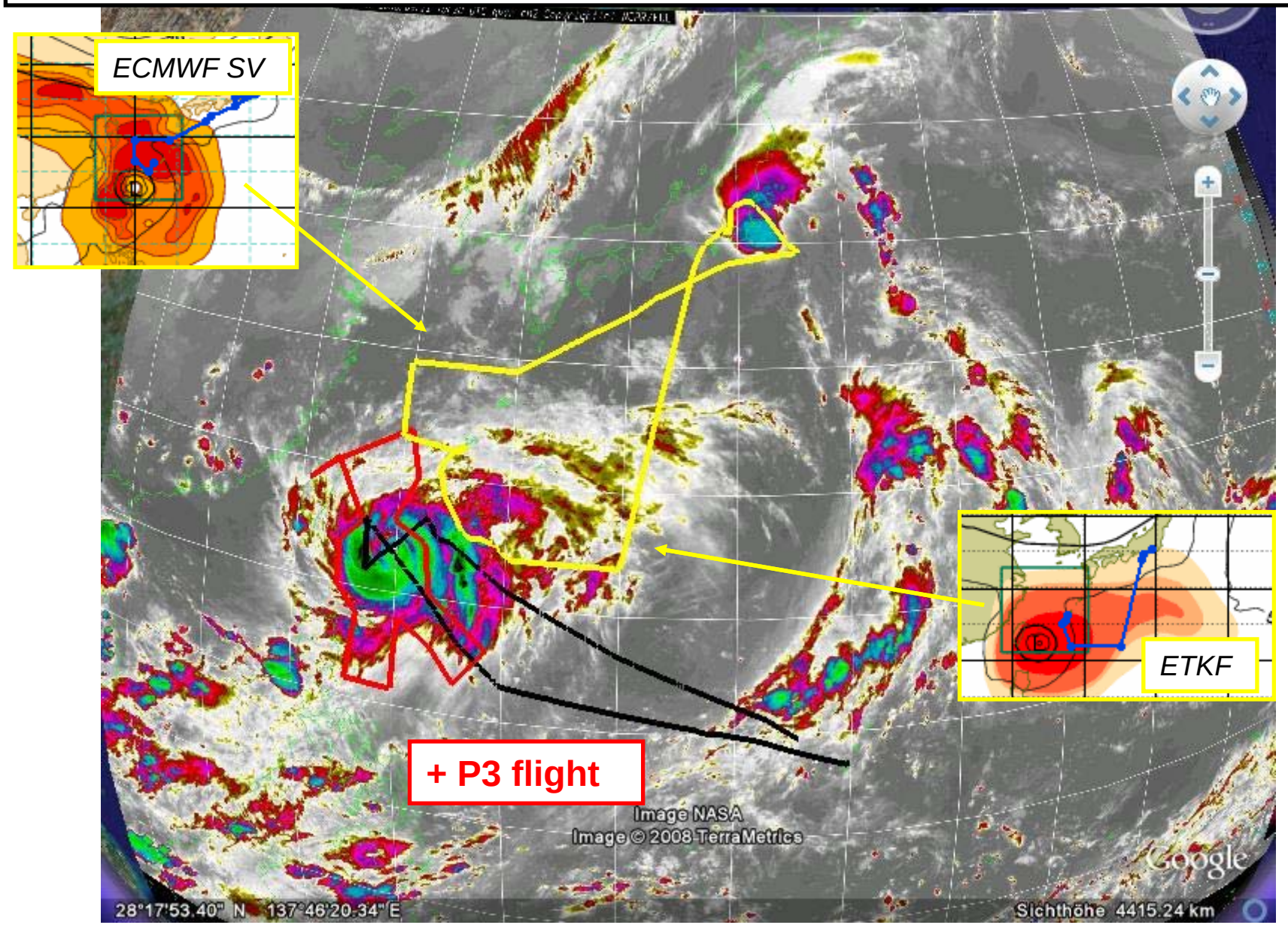
- combined **DOTSTAR** mission
- sample observations and release dropsondes in the area east and north of typhoon Sinlaku.
- **sensitivity guidance** recommended areas around the storm to be of importance, concentrate on the **areas northeast and east** of the storm.
- significant **model uncertainty** of the track forecast, in particular **whether it will recurve or not**.







First simultaneous observations of
TY-core, TY-environment and distant sensitive region



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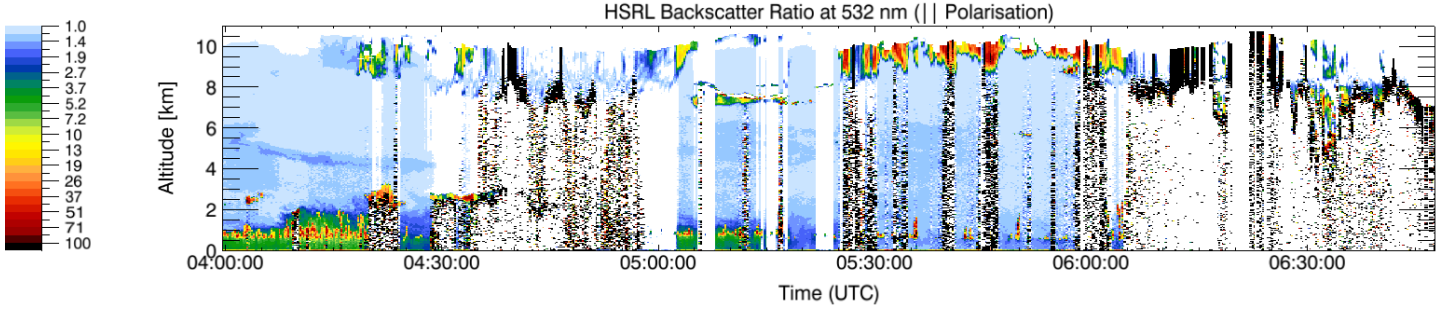
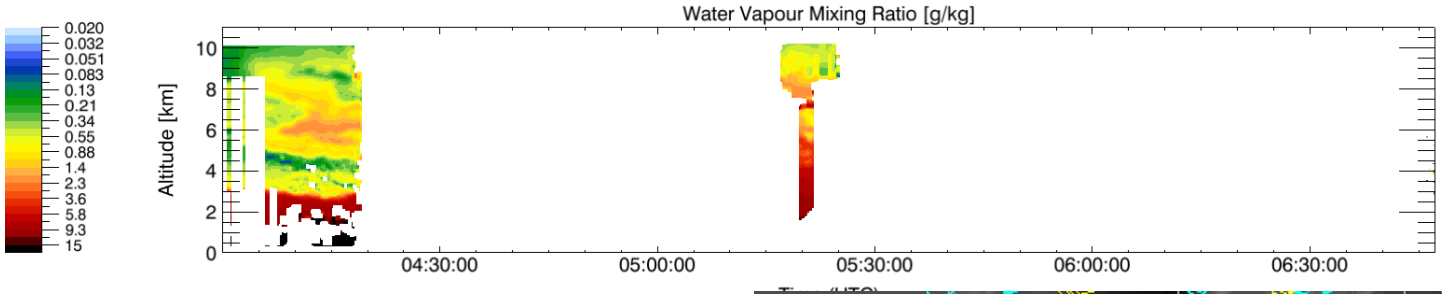
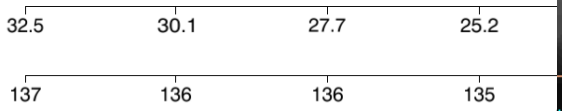
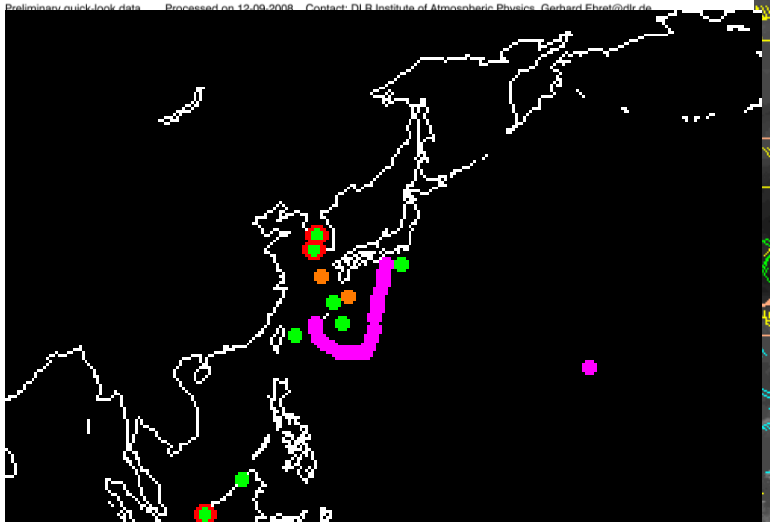
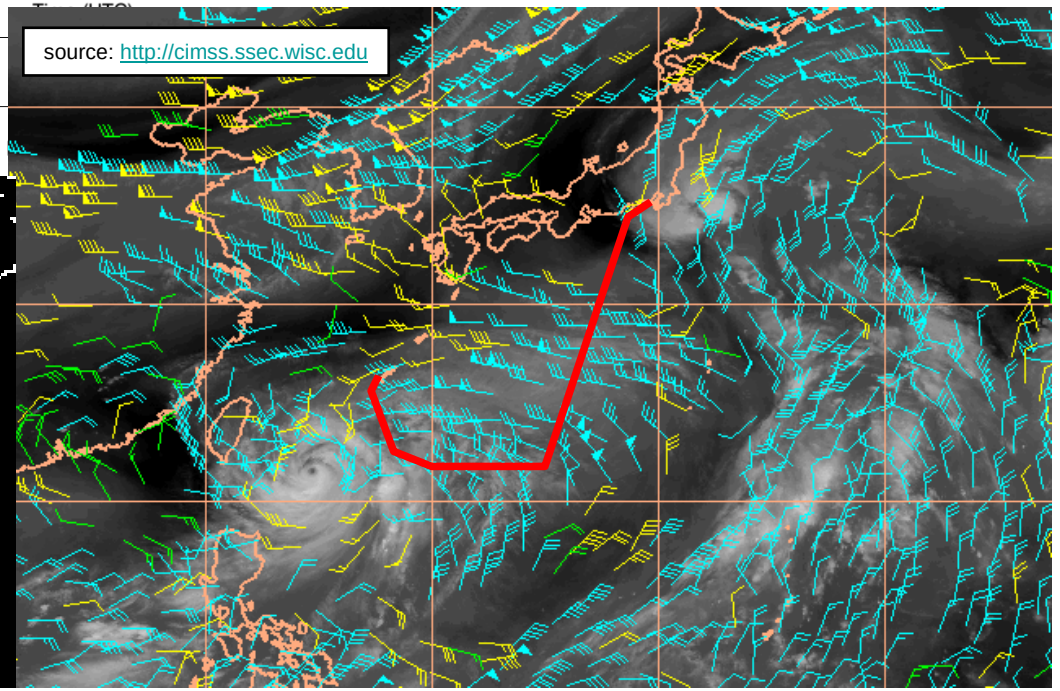
8. Flight / Atsugi-Okinawa





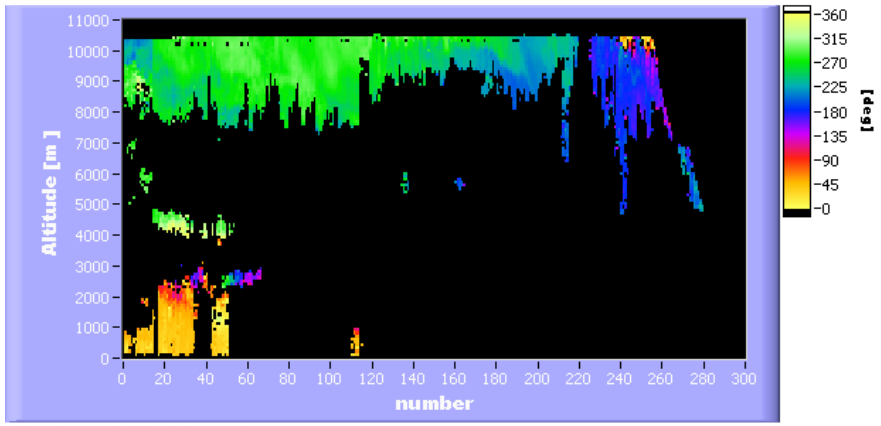


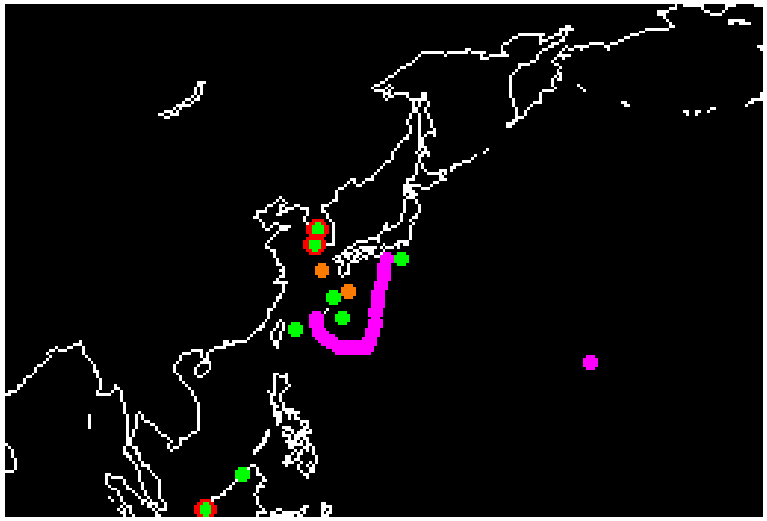




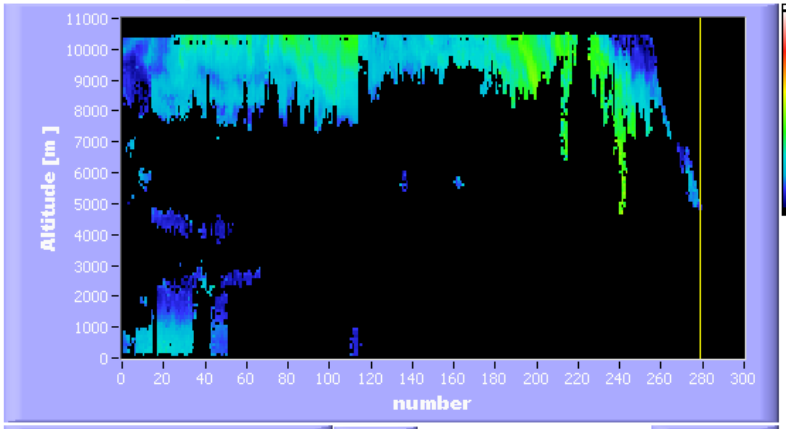
Observations:
- 19 dropsondes
- DIAL
- wind lidar

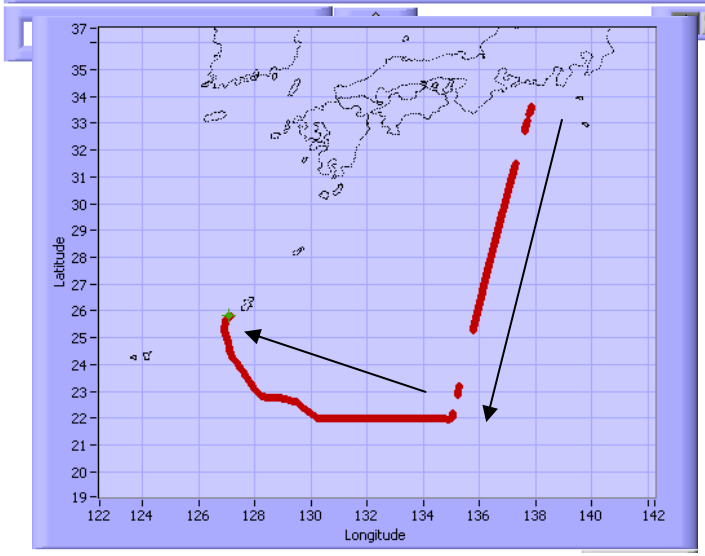
Wind Direction (blowing from)

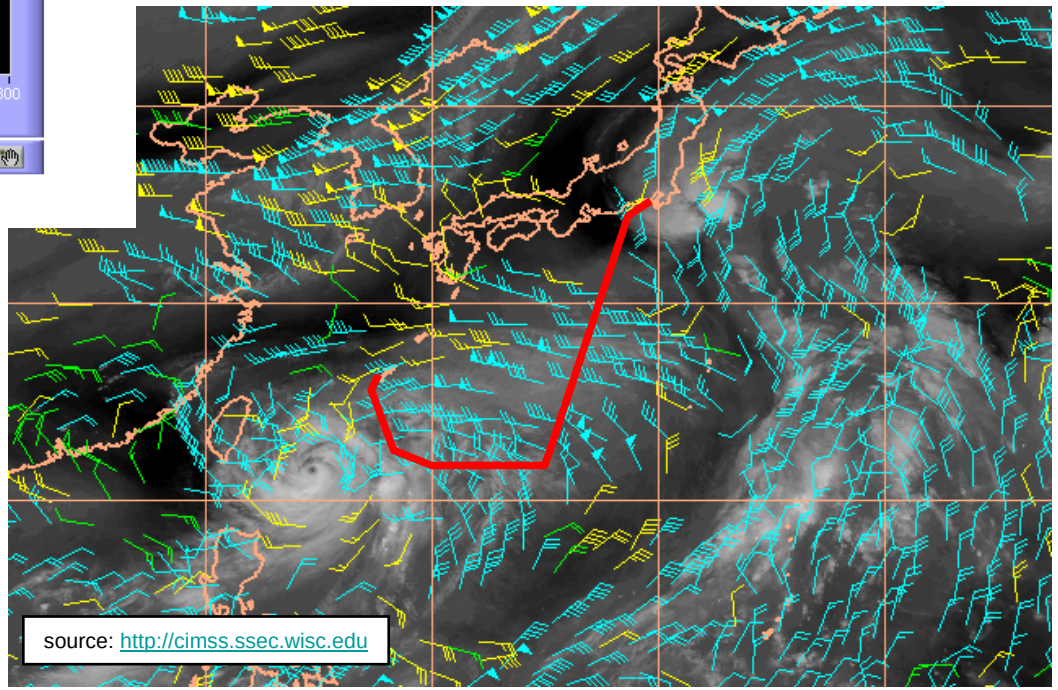




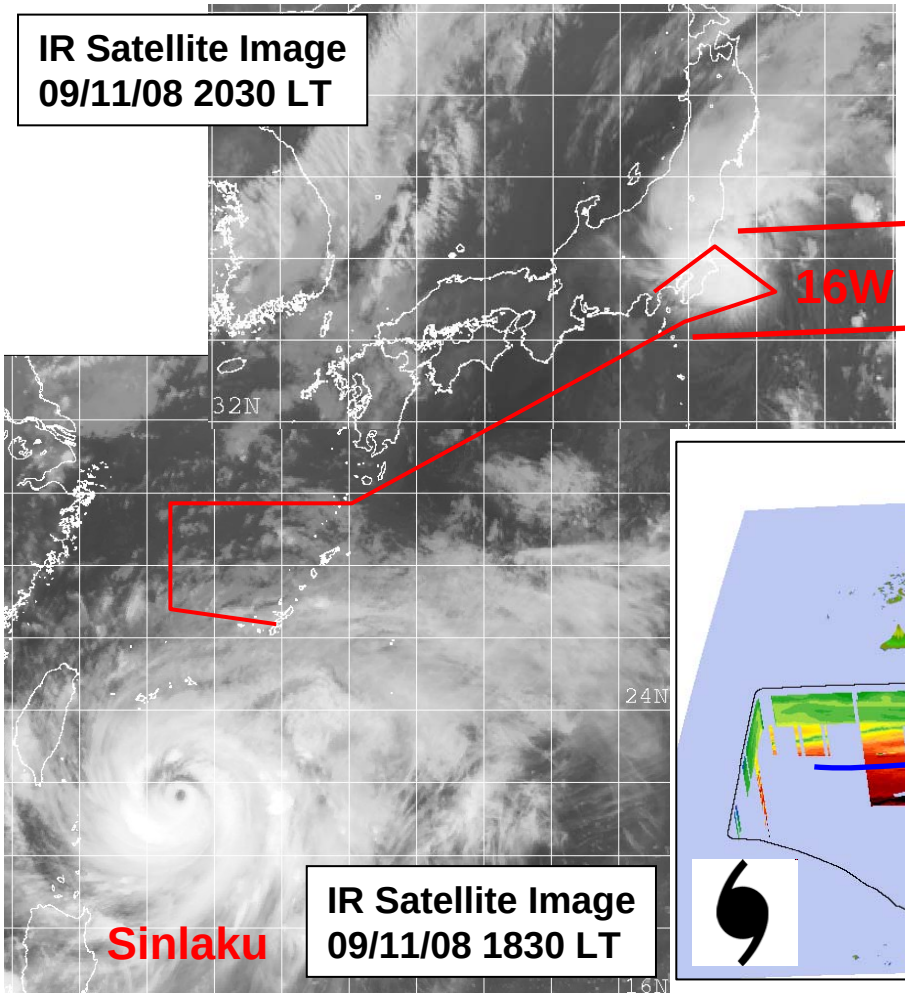
Horizontal Wind Speed

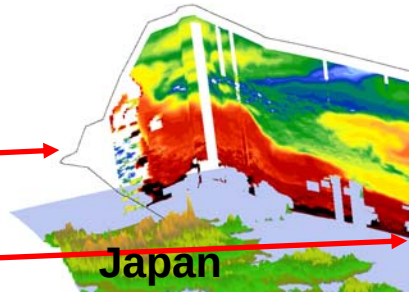




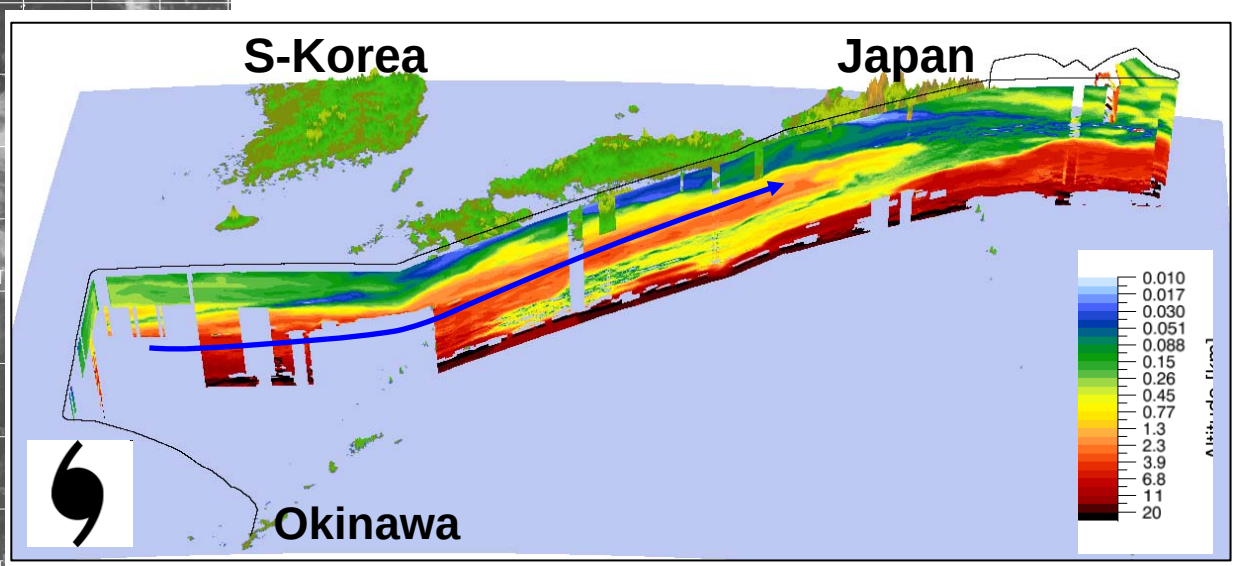


2nd flight on 11 Sept. 2008

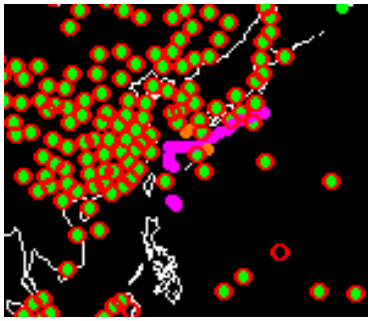




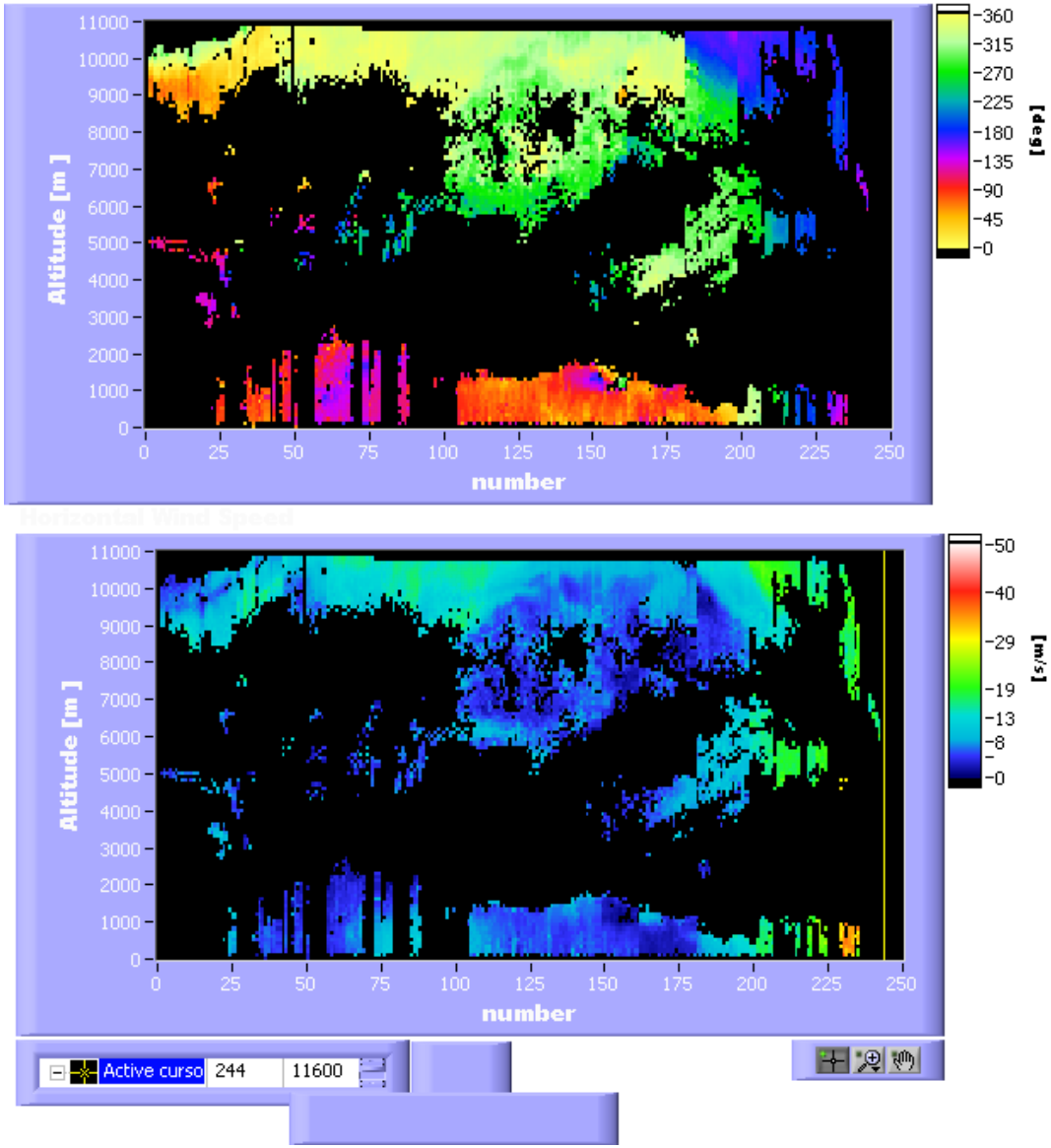
contentrations of
0.01-20 g/kg measured by
new worldwide unique
4-wavelength DIAL

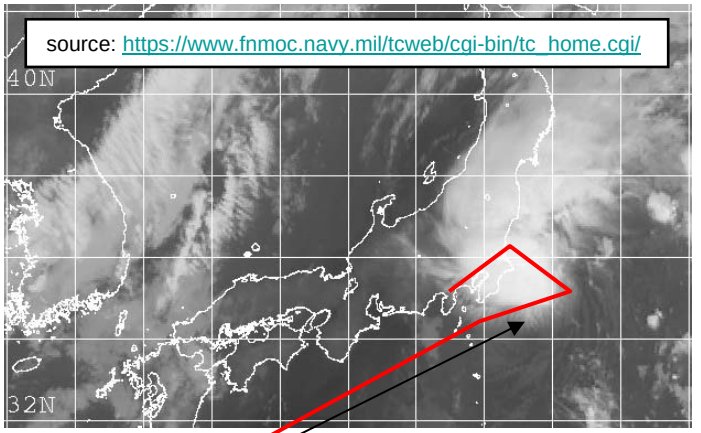


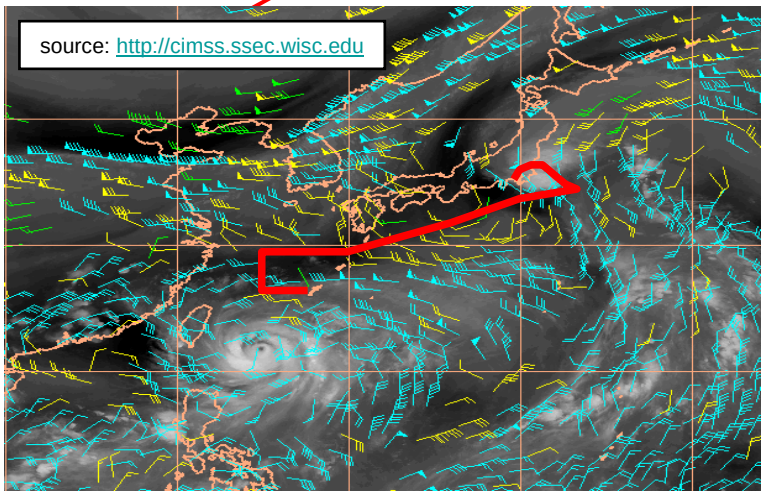
examine the environment of 16W (former **TCS37**),
which was undergoing ET and moving from the South
towards the coast of Japan and further to the North.



Observations:
- 17 dropsondes
- DIAL
- wind lidar

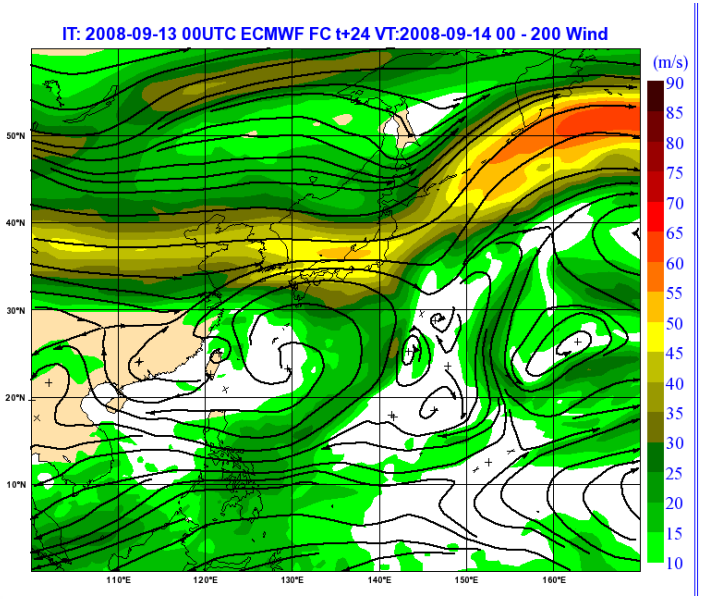

Wind Direction (blowing from)
Altitude [m]
number
[deg]
-360
-315
-270
-225
-180
-135
-90
-45
-0
Horizontal Wind Speed
Altitude [m]
number
[m/s]
-50
-40
-29
-19
-13
-8
-0
Active curso
244
11600

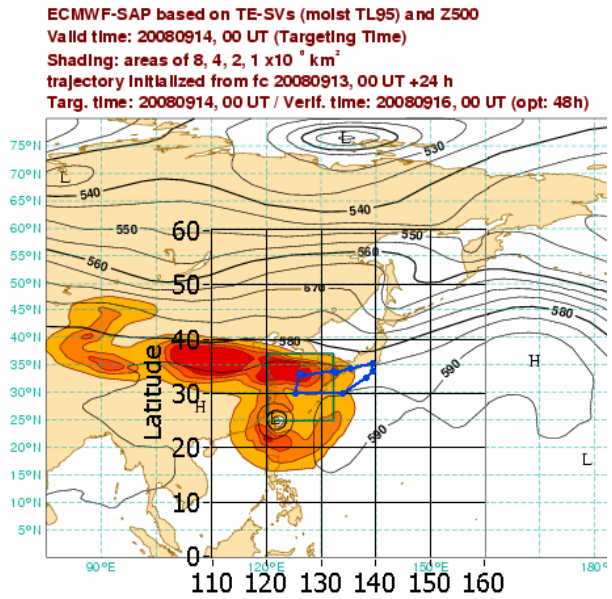

source: https://www.fnmoc.navy.mil/tcweb/cgi-bin/tc_home.cgi/
40N
32N

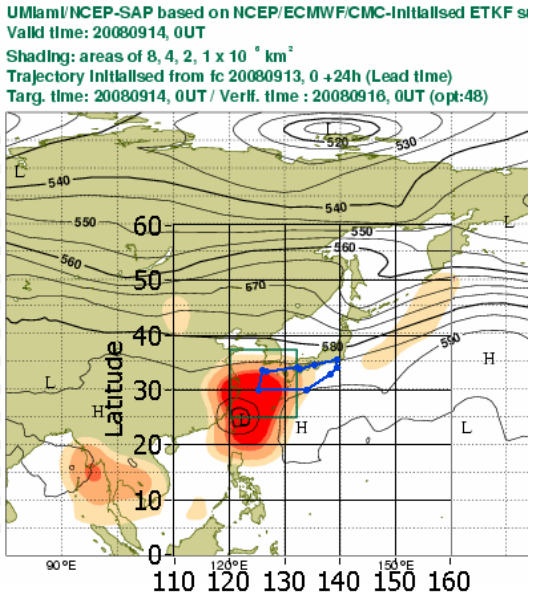

source: http://cimss.ssec.wisc.edu

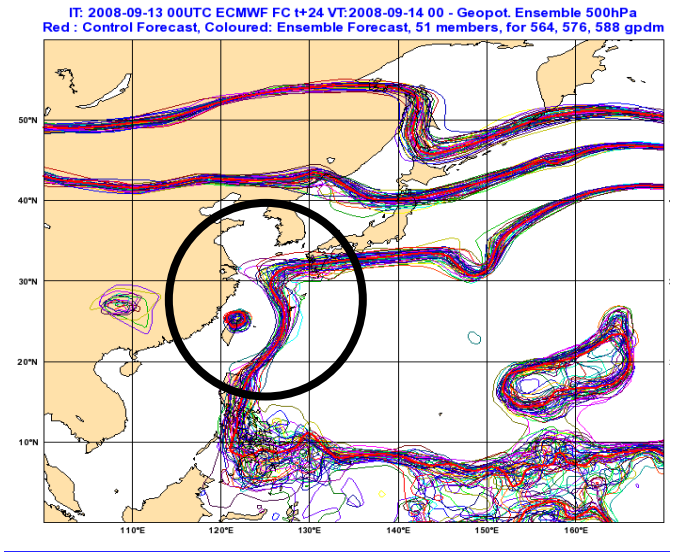
9.Mission: Ats - Iwa K (20080914 2330-0315Z)
10.Mission: Iwa K - Ats (20080914 0445-0555Z)

- measure in the ambience of typhoon Sinlaku,
- flight pattern in the northern part of the storm
- sample a sensitive area.
- **sensitivity guidance: storm itself and an area to the north** (baroclinic zone, strong zonal jet, SWT)
- uncertainty regarding the position of the subtropical ridge
- track uncertainty of Sinlaku has decreased









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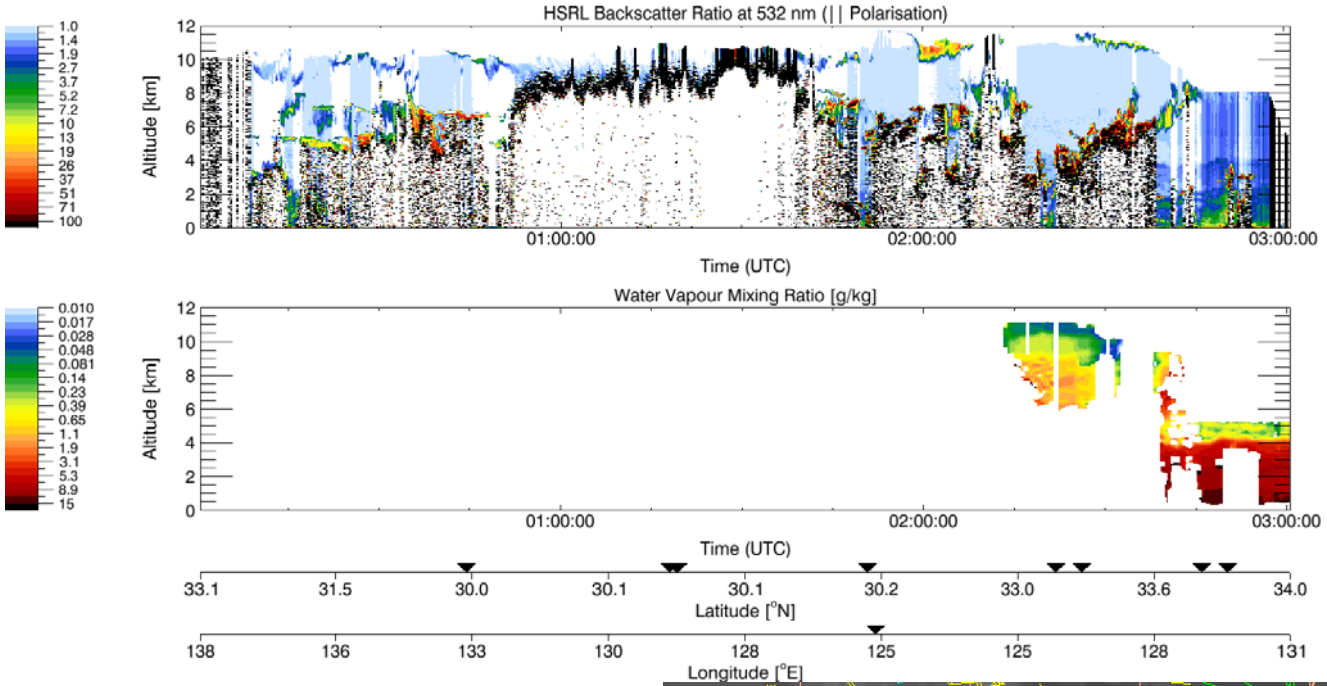
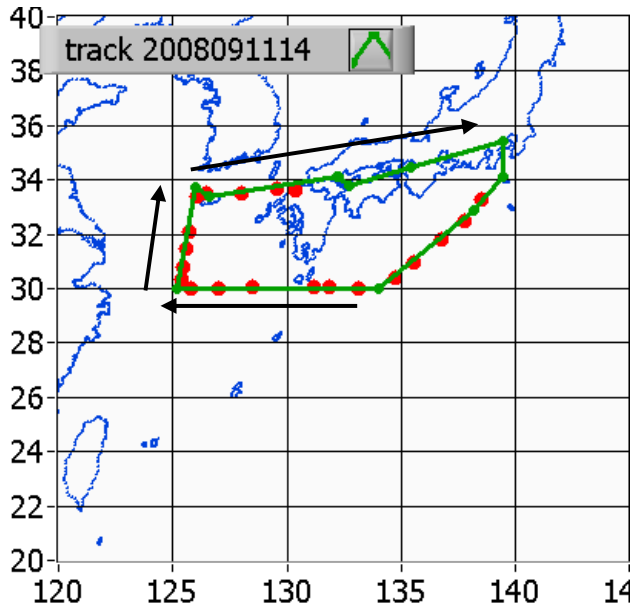
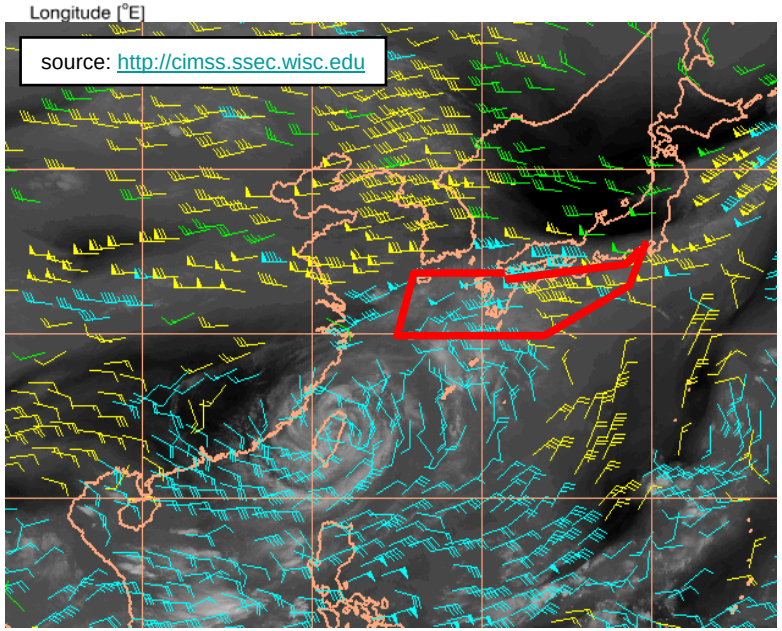
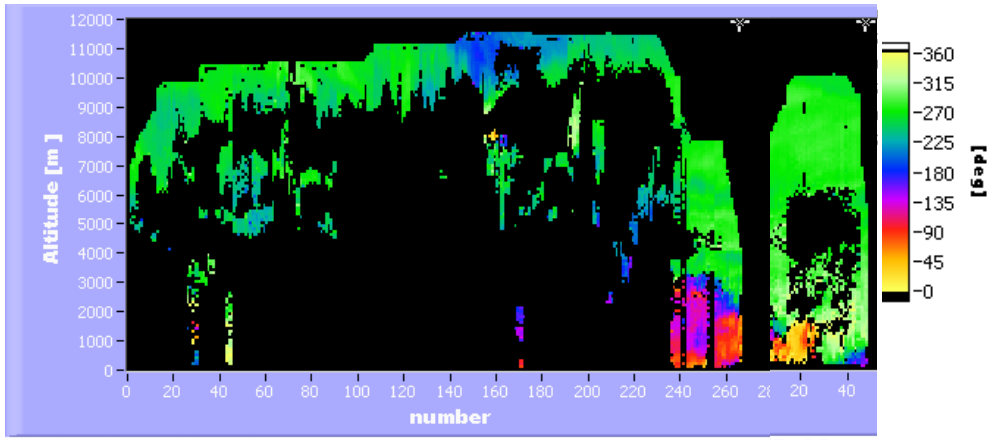
10. Flight / Atsugi-Iwakuni

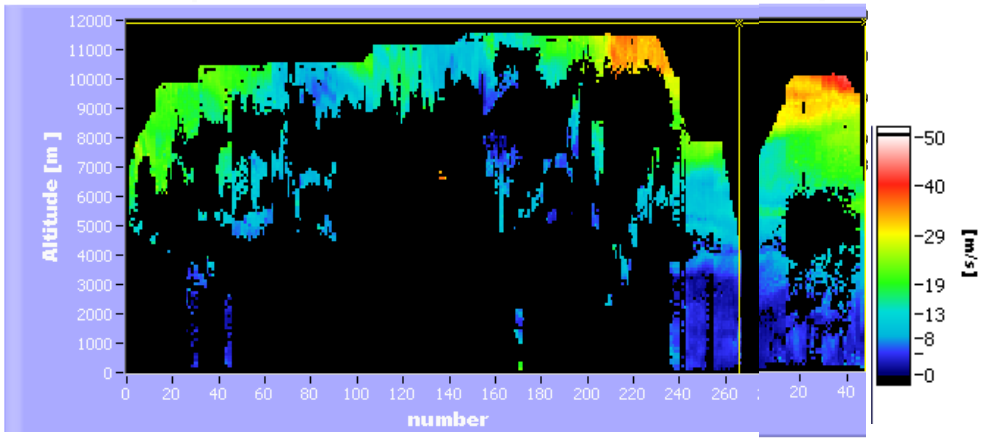


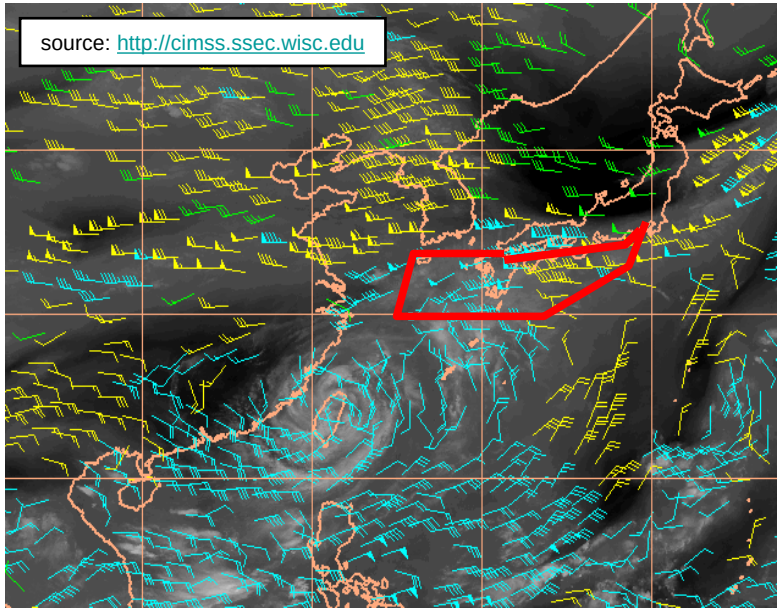


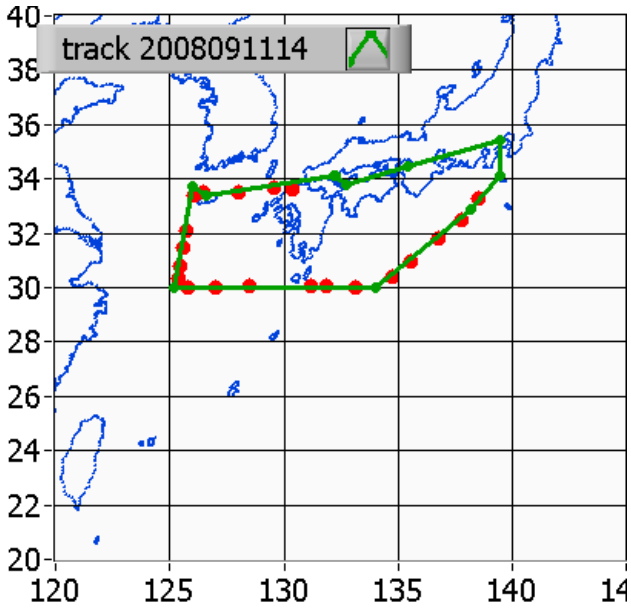


Observations:
- 22 dropsondes
- DIAL
- wind lidar


Altitude [m]
number
[deg]
-360
-315
-270
-225
-180
-135
-90
-45
-0

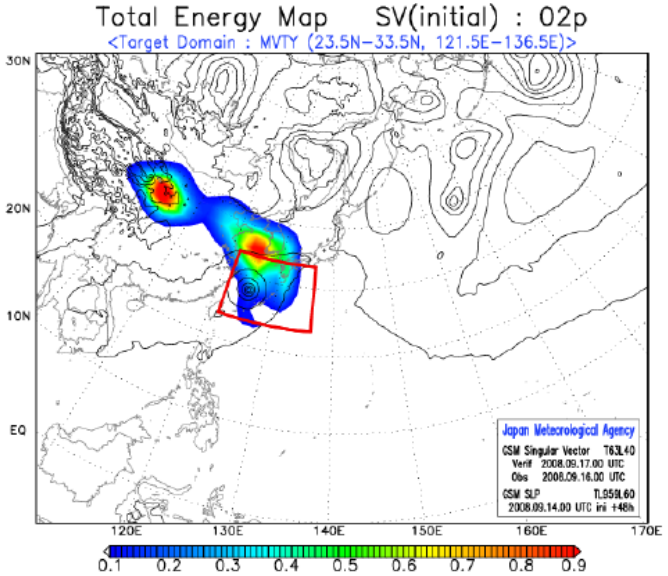

Altitude [m]
number
[m/s]
-50
-40
-29
-19
-13
-8
-0

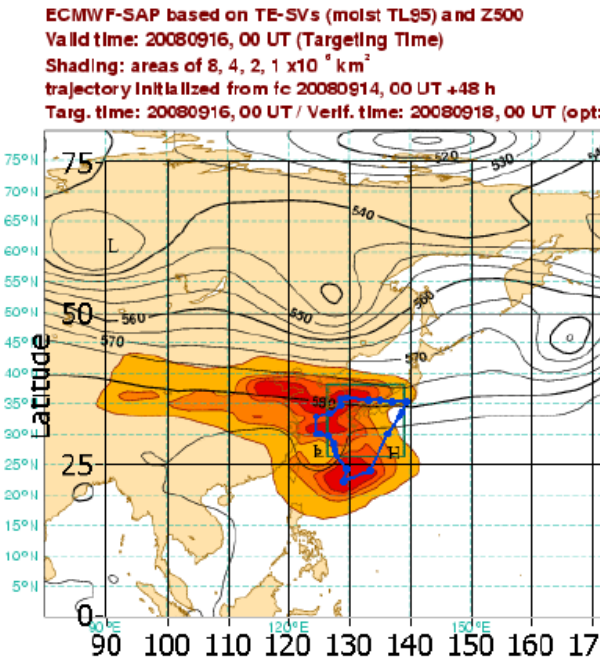

source: http://cimss.ssec.wisc.edu

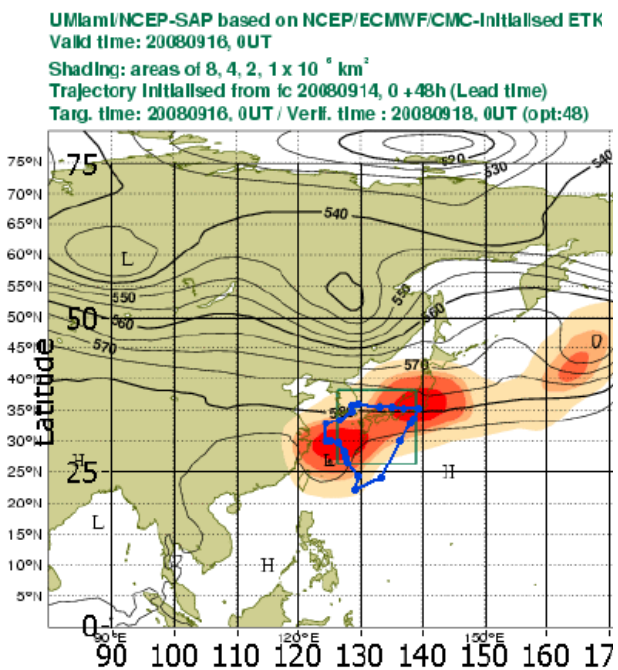

track 2008091114

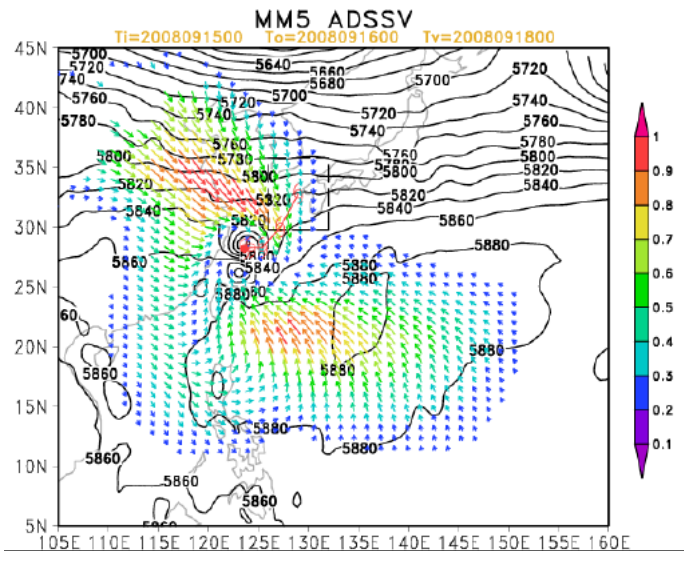
11.Mission: Ats - Oki (20080916 2135-0120Z)
12.Mission: Oki - Ats (20080916 0500-0800Z)

- combined **DOTSTAR** mission
- target **sensitive areas** of the typhoon Sinlaku.
- they are located around and especially southeast of Sinlaku and in the region between the midlatitudes and the NW portion of the subtropical high pressure system.
- due to the delivery of a box with **inappropriate dropsondes** only 3 working dropsondes were left on the 2nd flight.









DLR **WALES**

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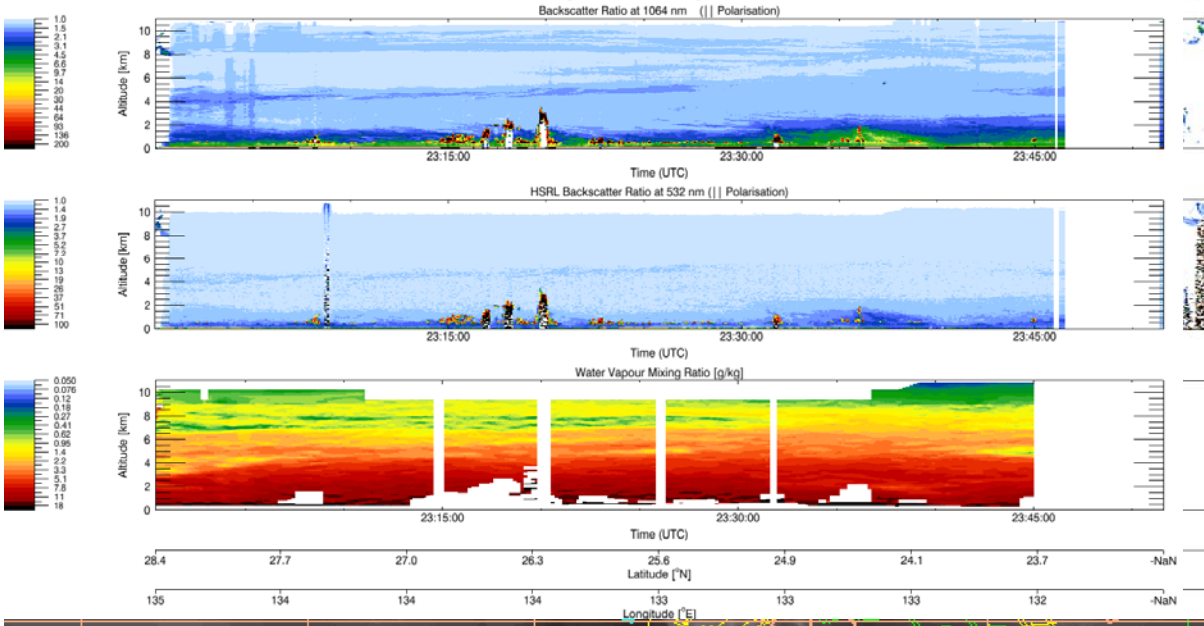
11. Flight / Atsugi-Okinawa, Part 1



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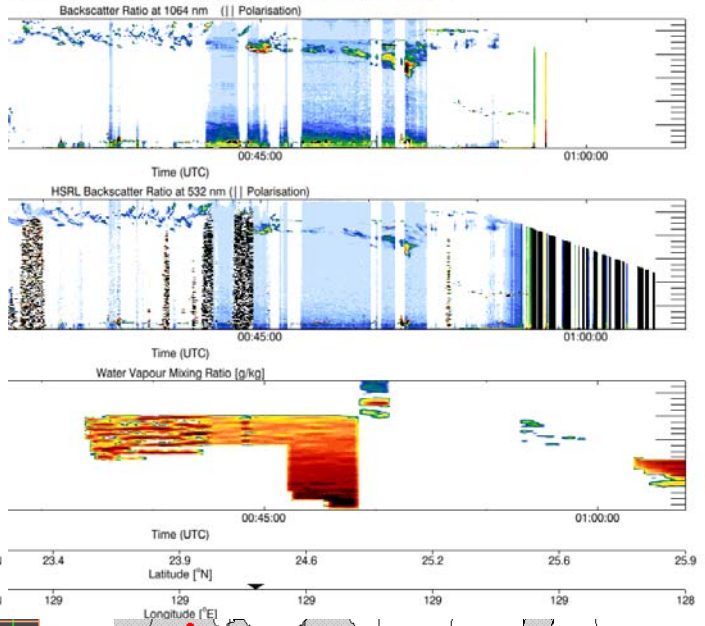
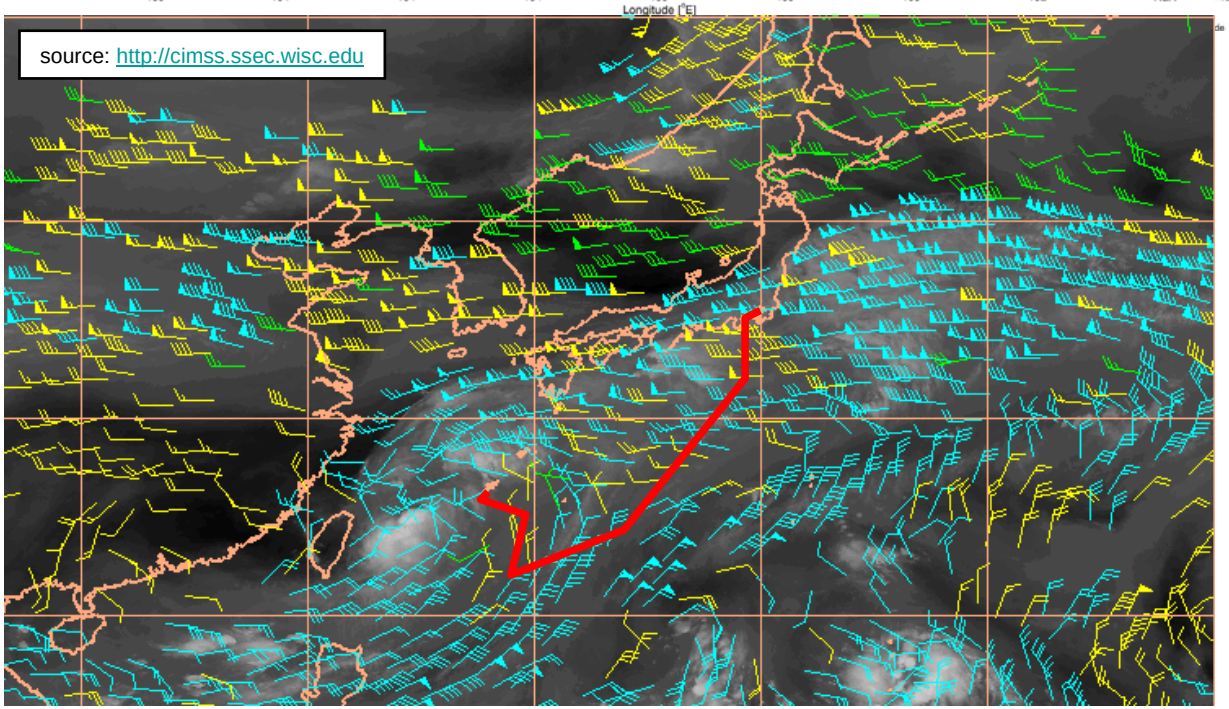
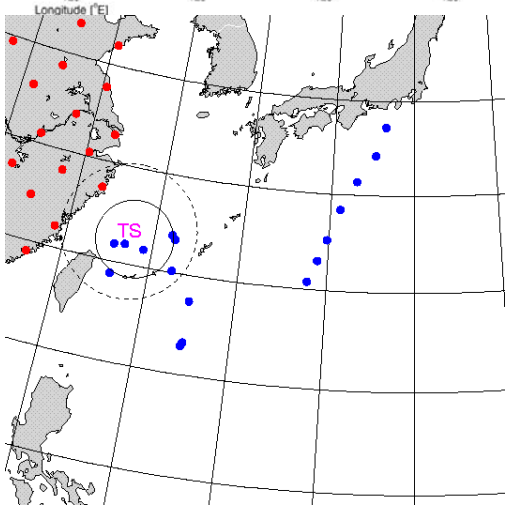
11. Flight / Atsugi-Okinawa, Part 2

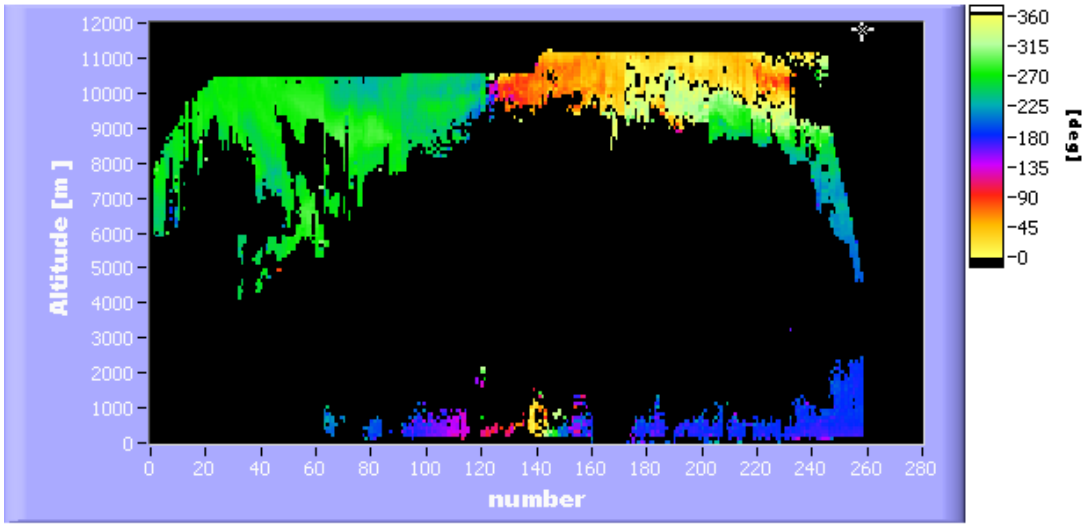




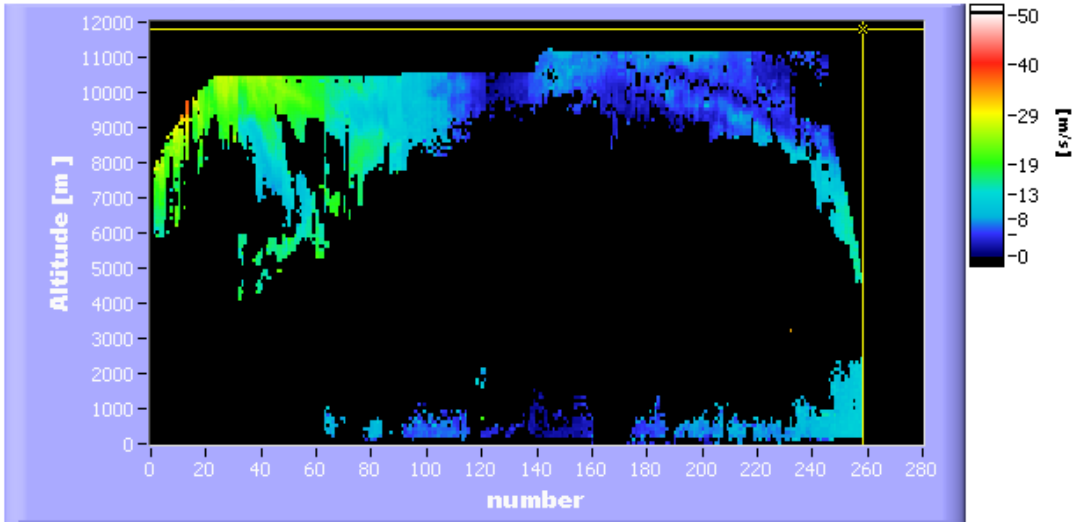


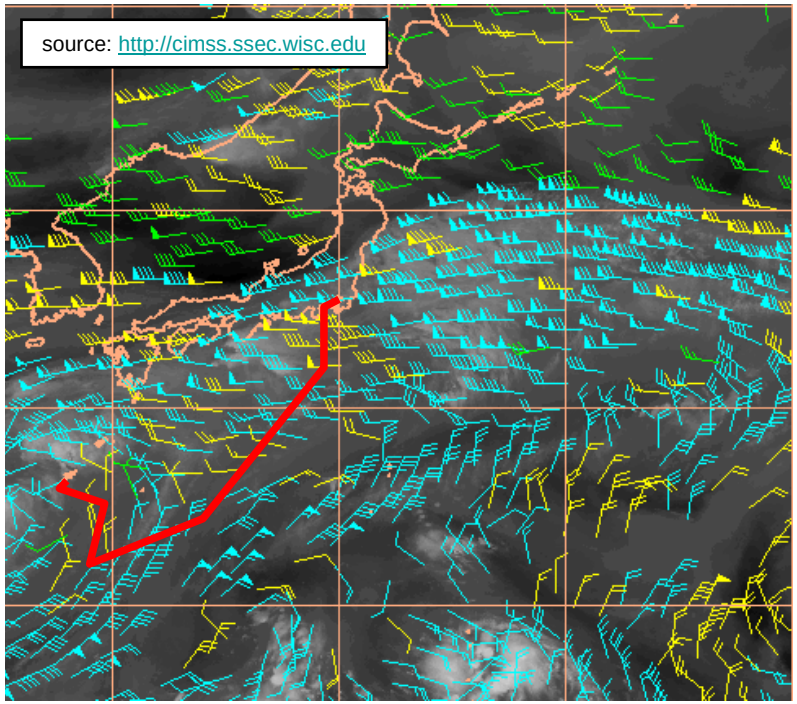
Observations:
- 17 dropsondes
- DIAL

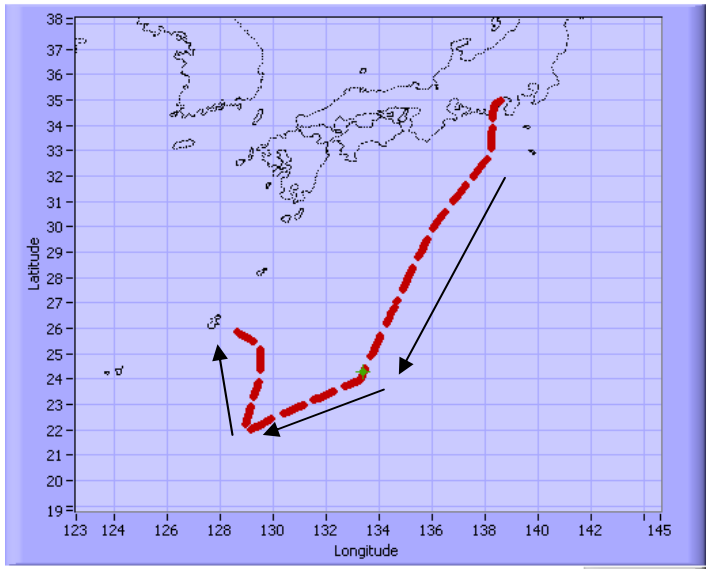
Wind Direction (blowing from)



Horizontal Wind Speed







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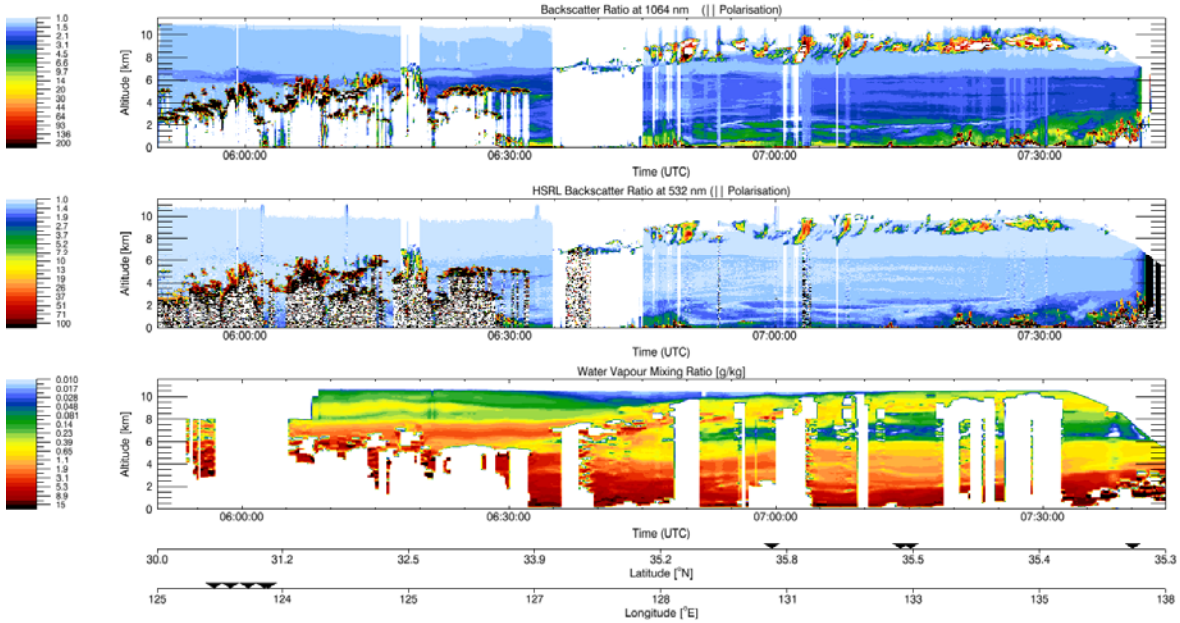
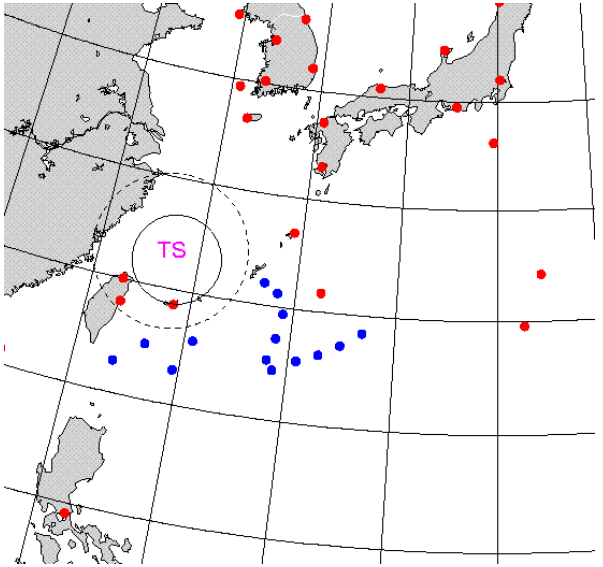
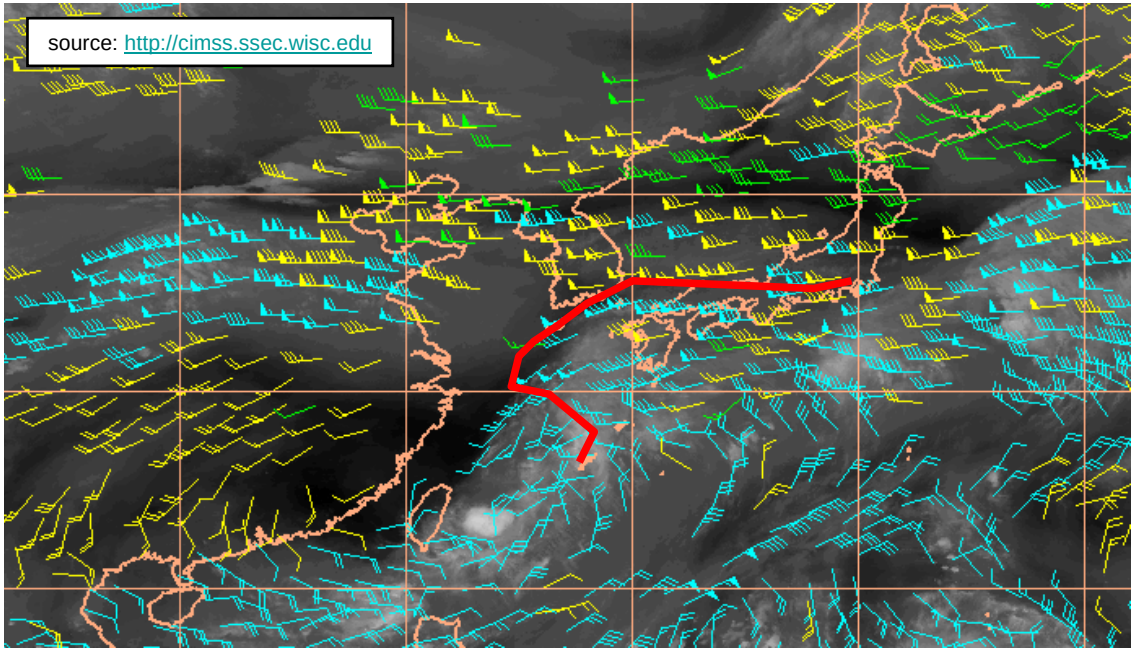
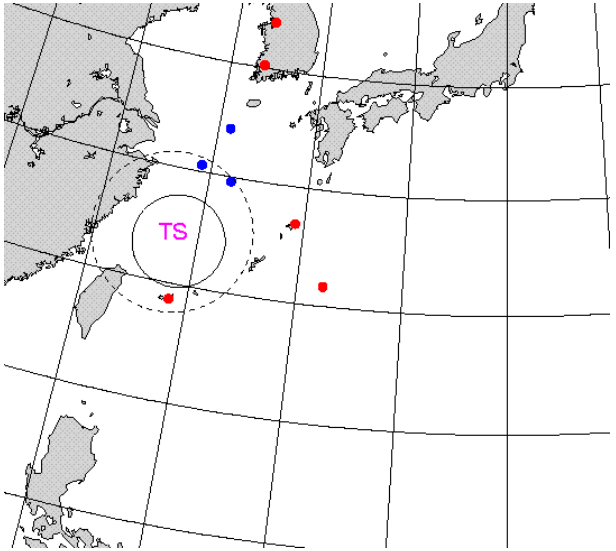
12. Flight / Okinawa-Atsugi

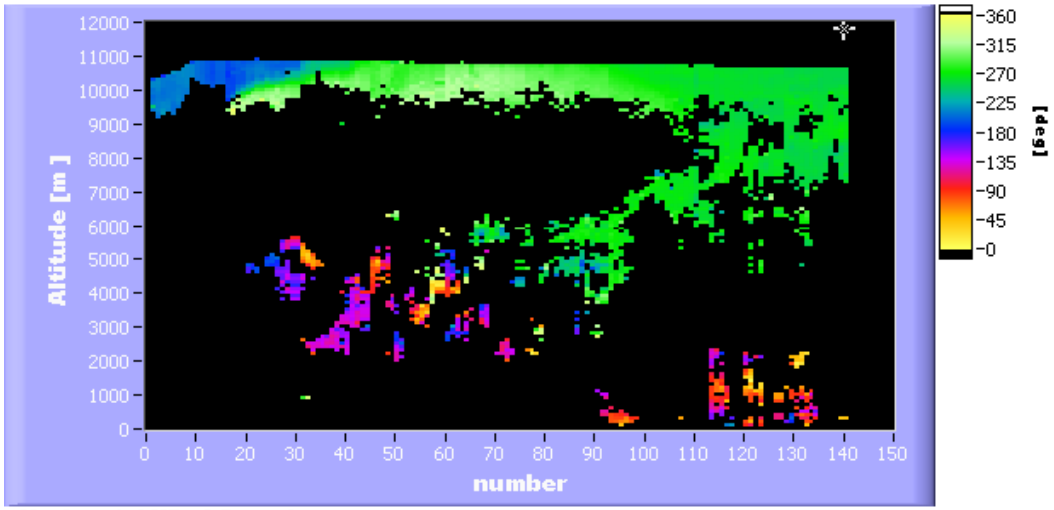


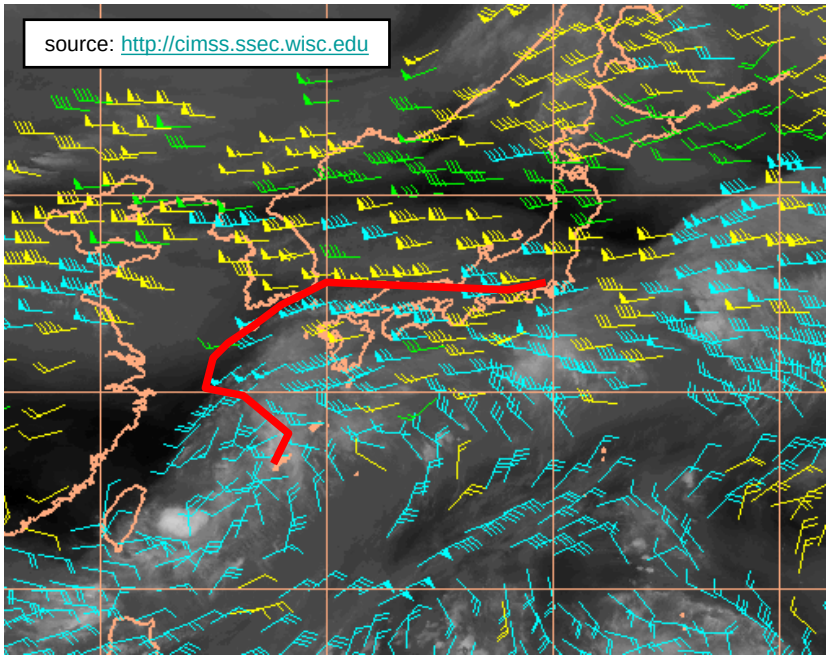


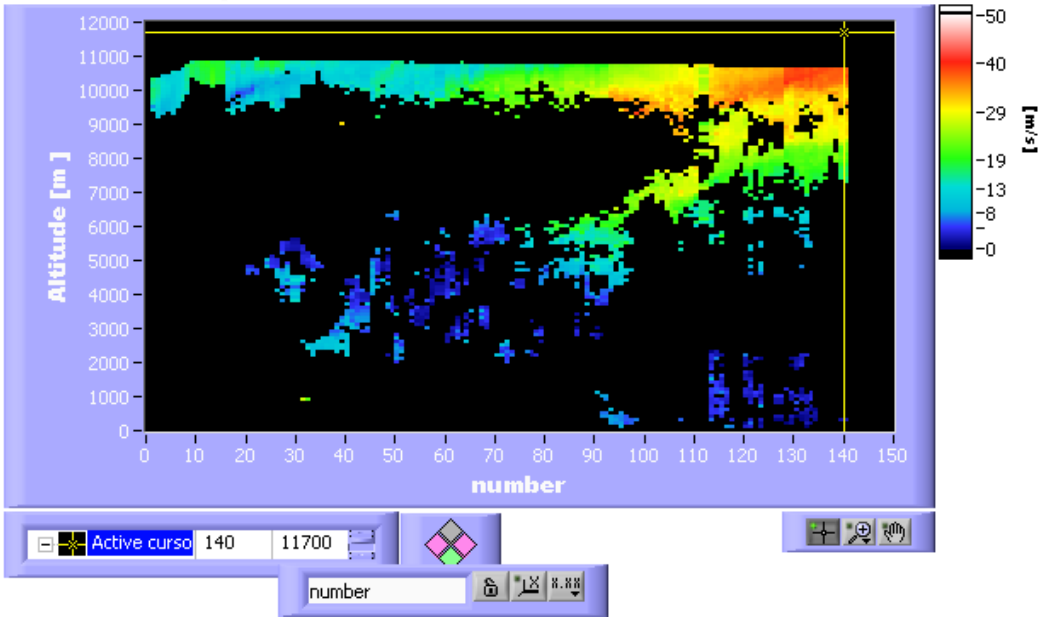
Observations:
- 3 dropsondes
- DIAL & wind lidar






Altitude [m]
number
[deg]
360
315
270
225
180
135
90
45
0


source: http://cimss.ssec.wisc.edu


Altitude [m]
number
[m/s]
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40
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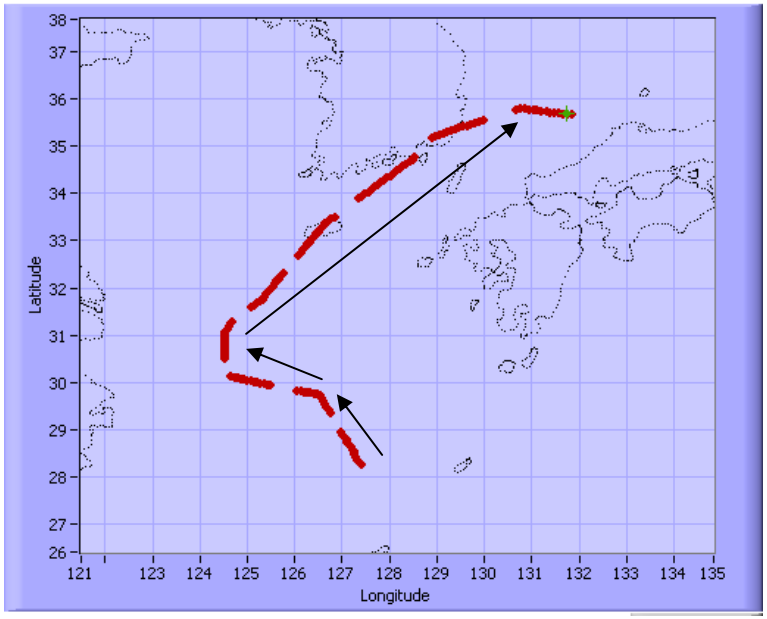
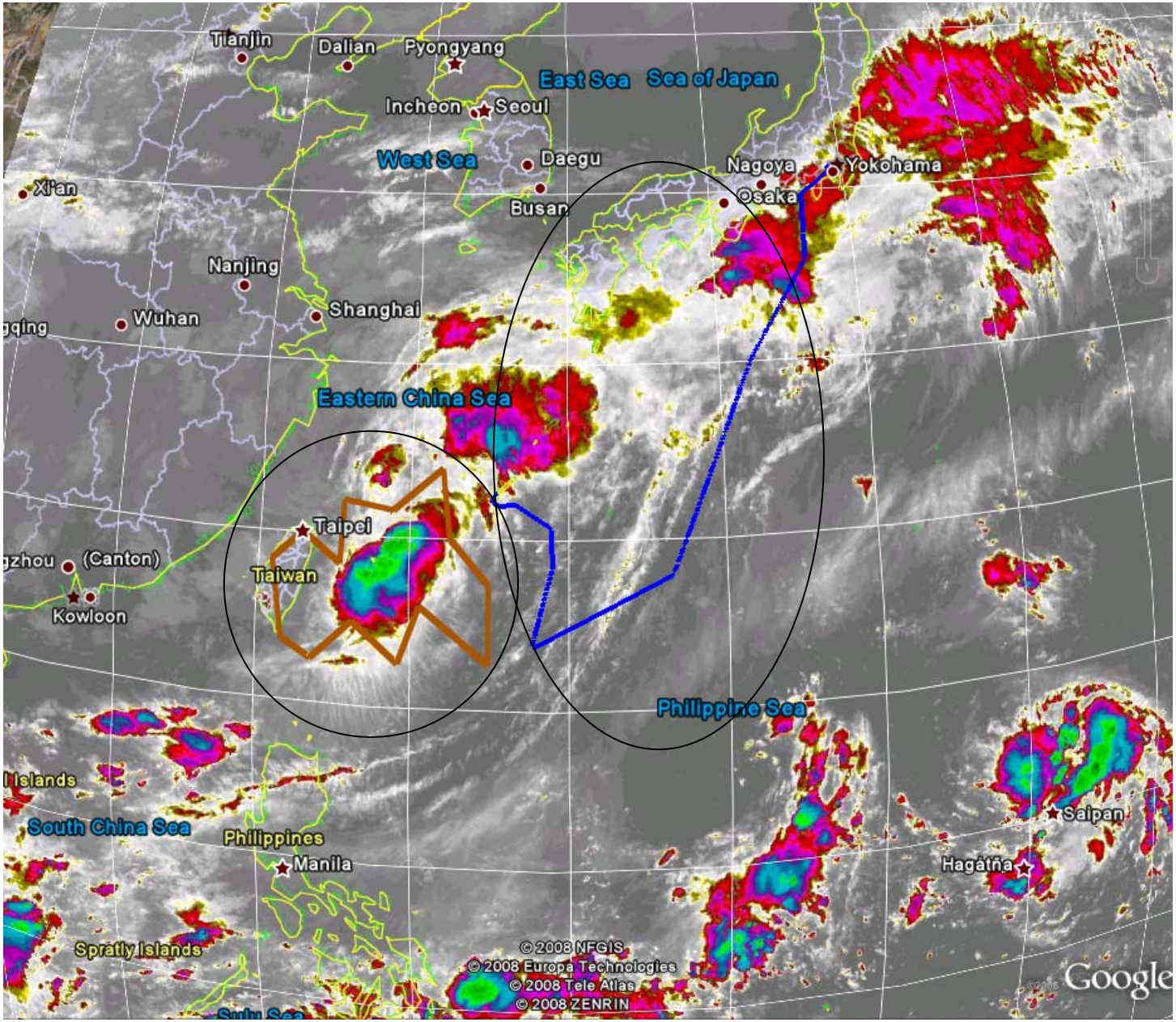
11700
number


Latitude
Longitude

20080915 2330 UTC

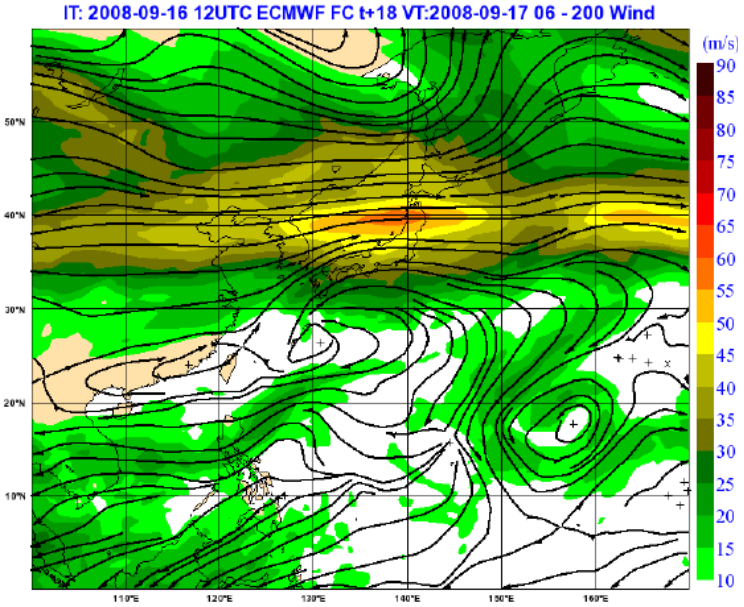
DOTSTAR (brown)
Falcon (blue)

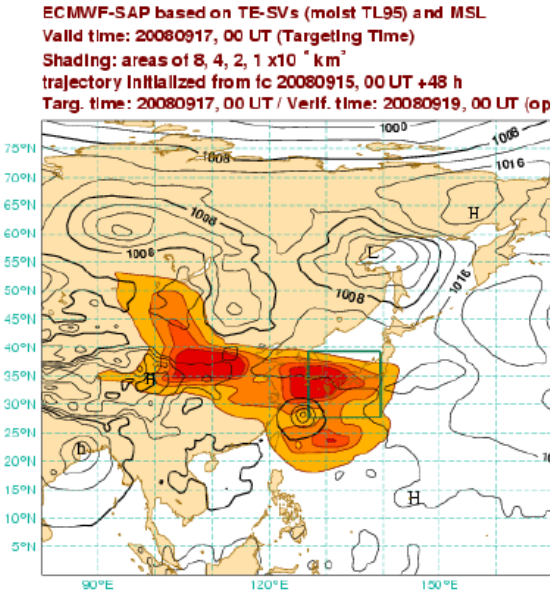
time-differnce
Falcon-DOTSTAR...

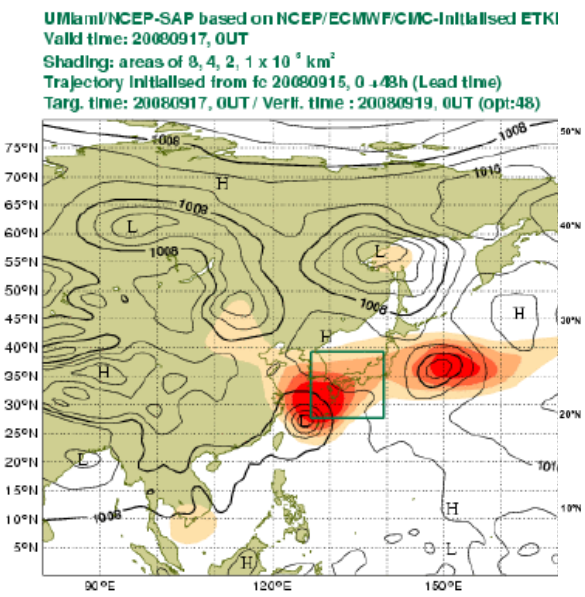


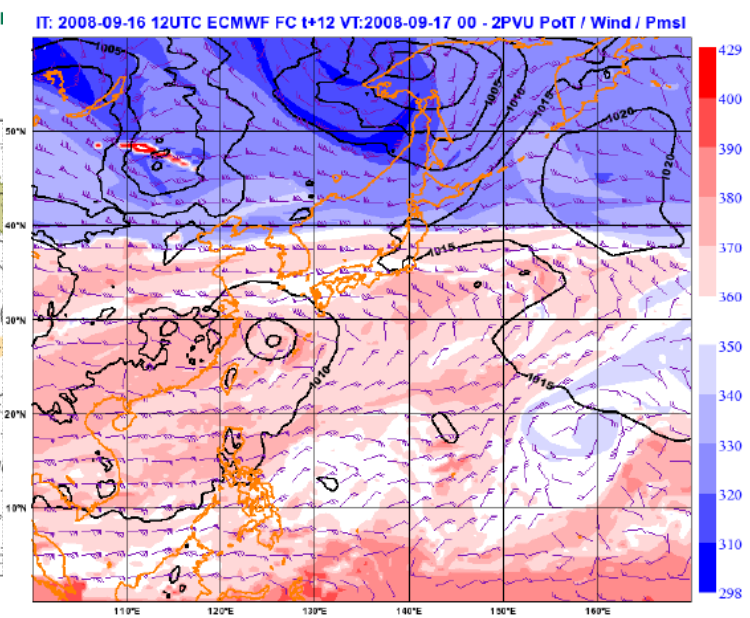
13.Mission: Ats - Iwa K (20080917 0320-0635Z)
14.Mission: Iwa K - Ats (20080917 0750-1115Z)

- combined P-3 and C-130 mission
- sample the **outflow** of Sinlaku SE and NW of Japan and the interaction of the outflow with the midlatitude jet.
- Further the circulation of Sinlaku itself was of interest - **beginning of ET**
- the core of the midlatitude jet to get a sample of the jetentrance region
- **sensitivity** products showed maxima N and NE of Sinlaku, S of Korea and over Kyushu









WALES

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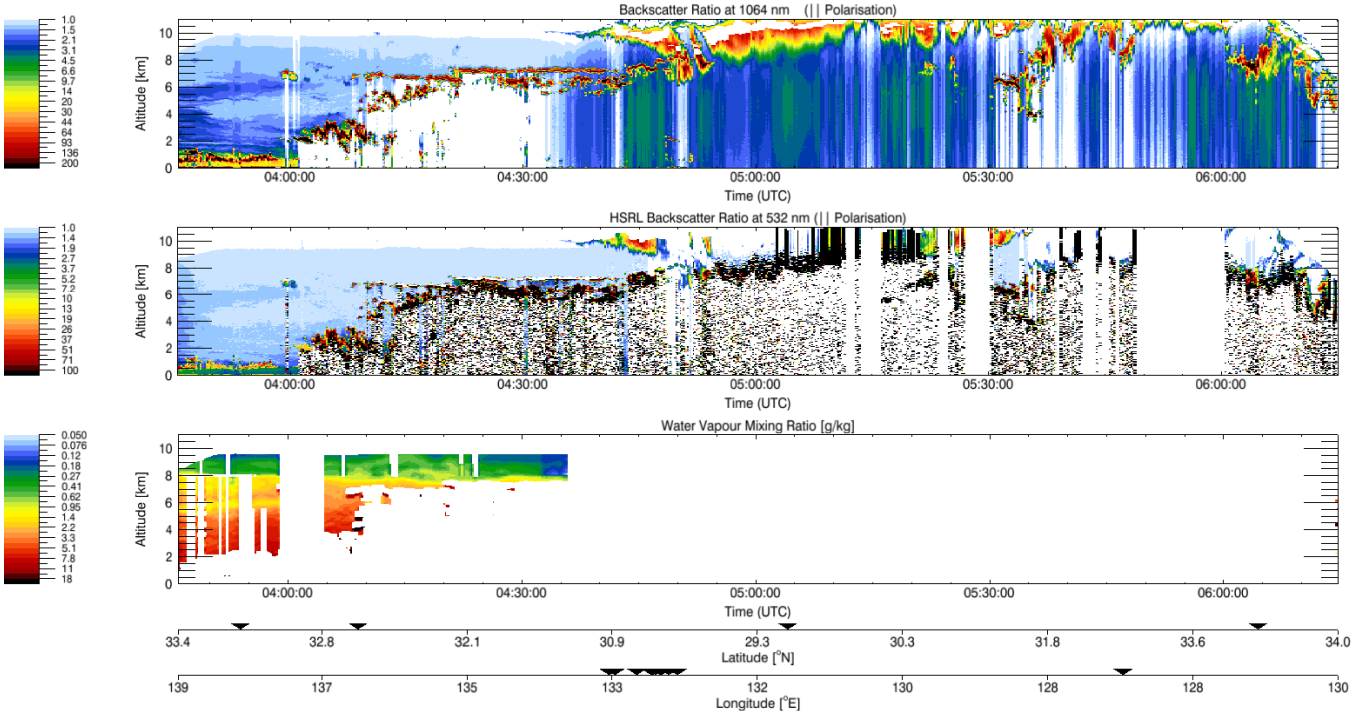
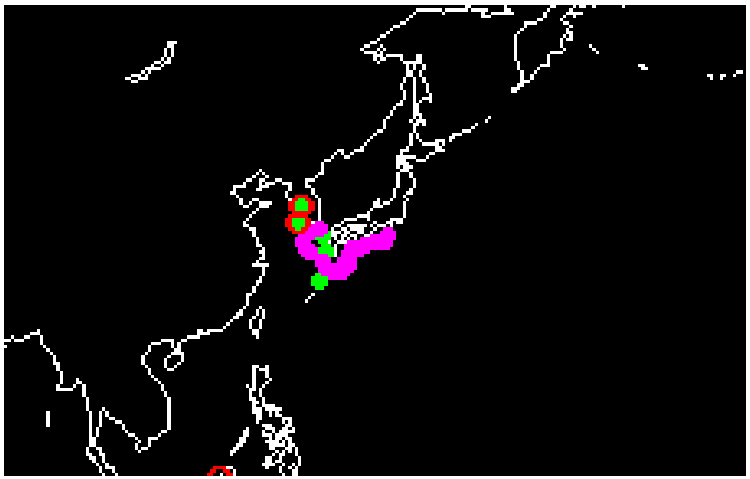
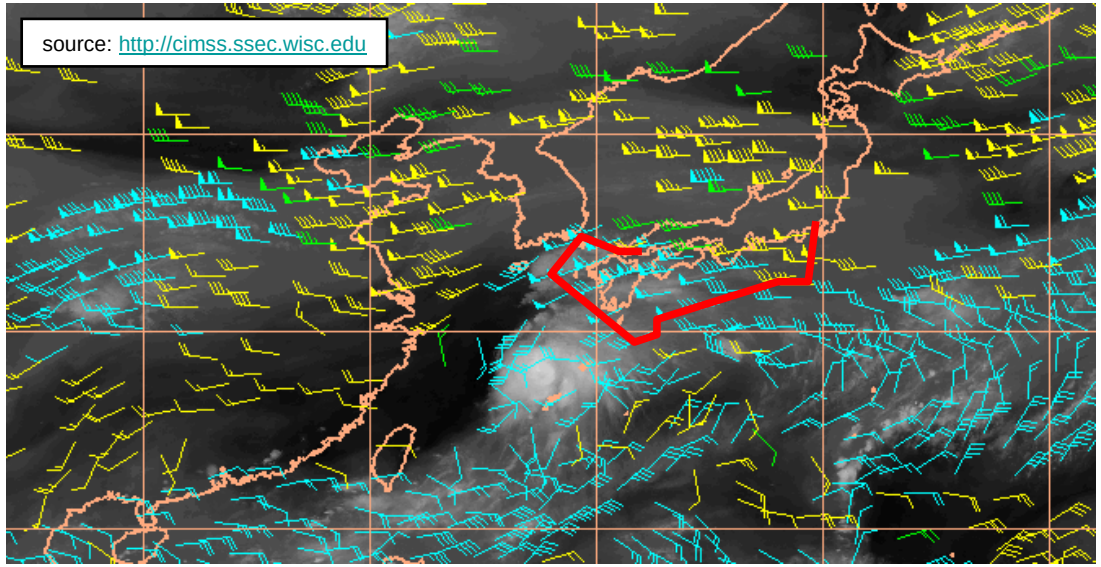
13. Flight / Atsugi-Iwakuni



Preliminary quick-look data. Processed on 18-09-2008 Contact: DLR Institute of Atmospheric Physics Gerhard.Ehret@dlr.de

Observations:
- 17 dropsondes
- DIAL & wind lidar





WALES

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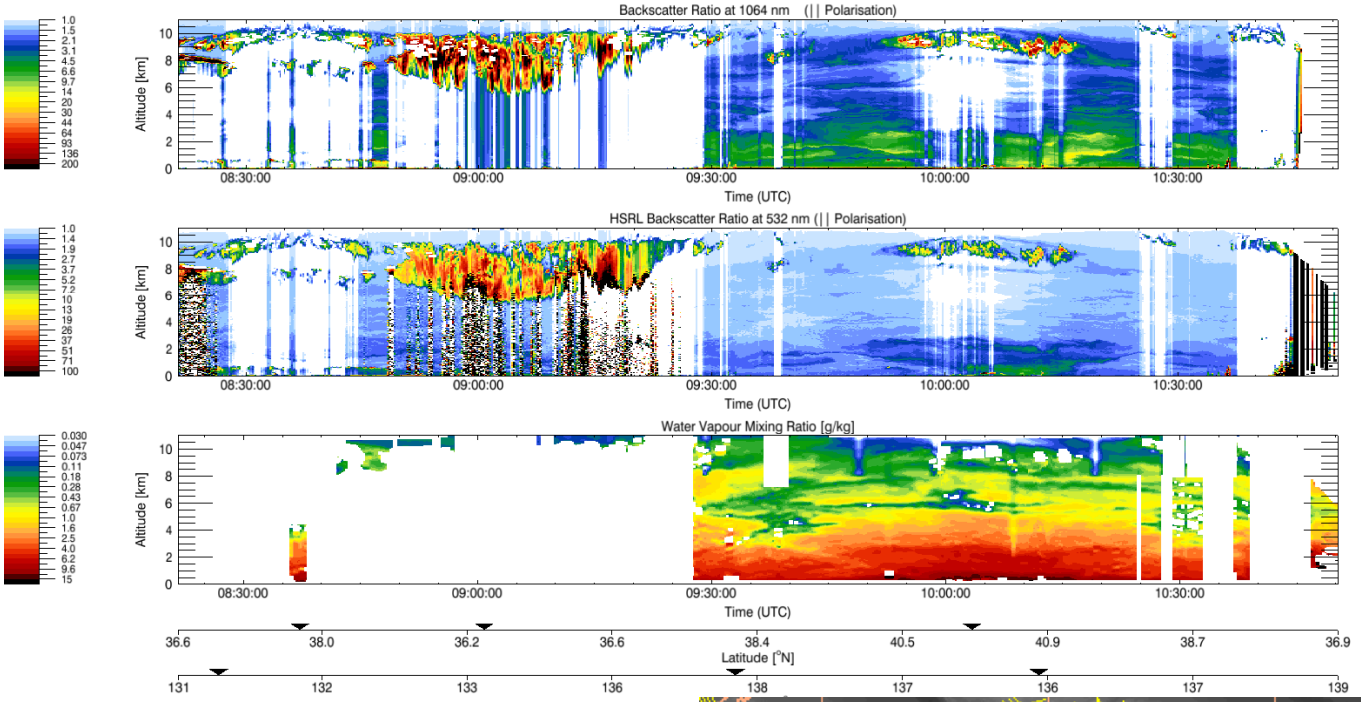
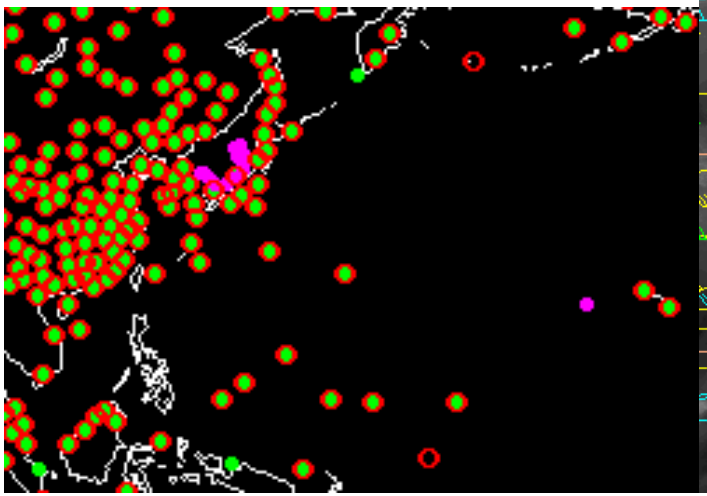
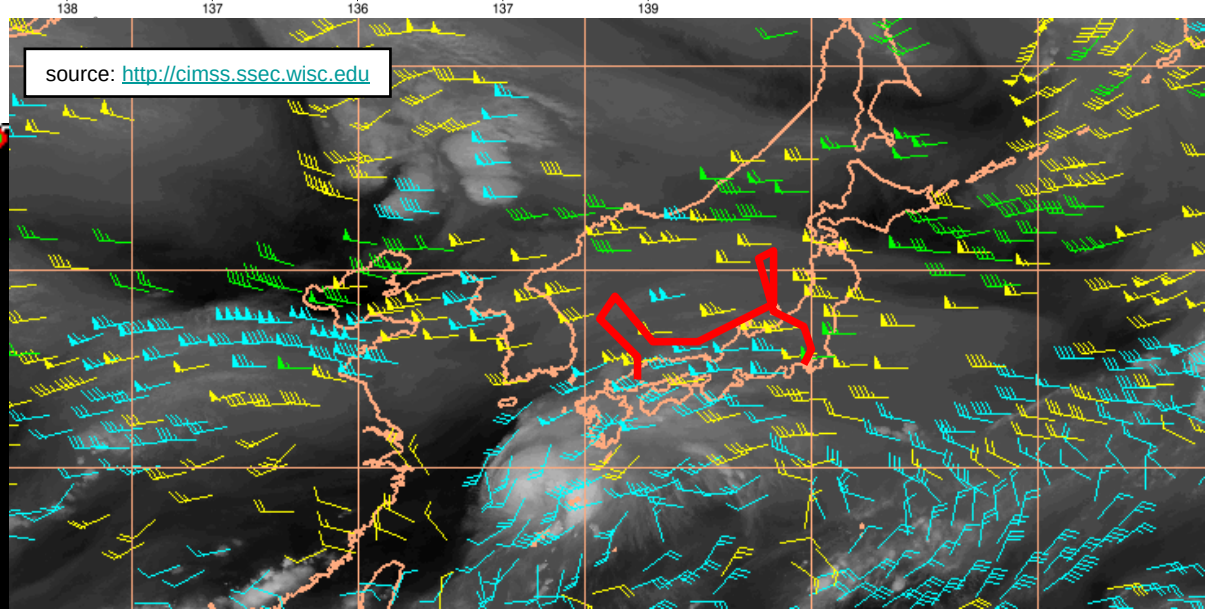
14. Flight / Iwakuni-Atsugi

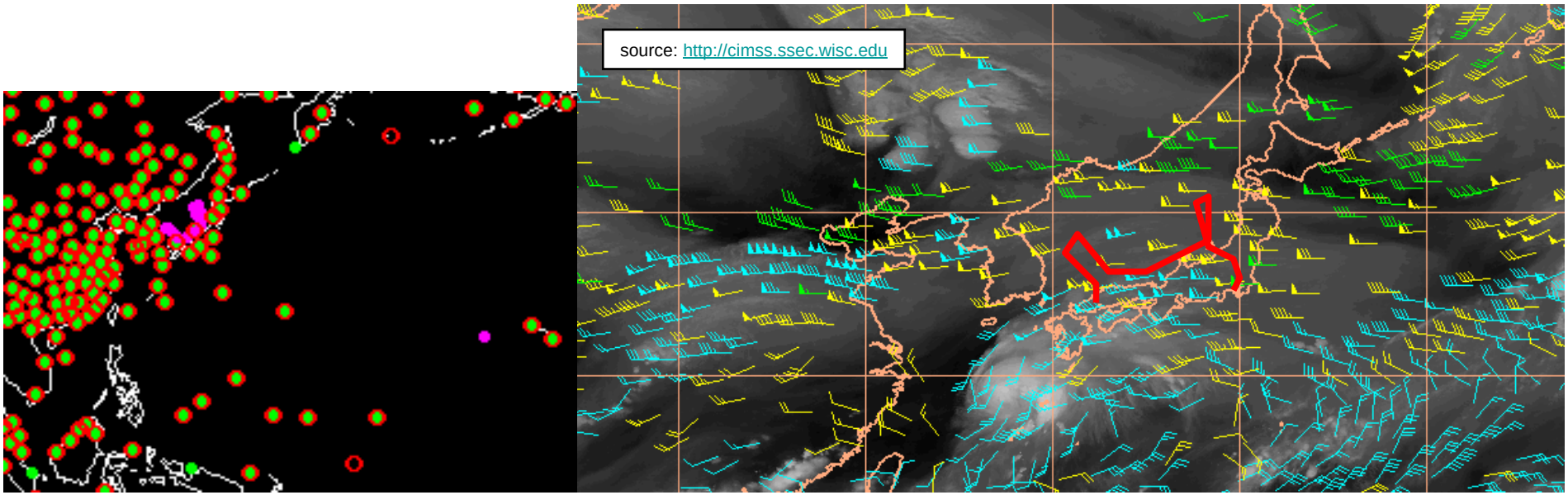


Observations:
- 15 dropsondes
- DIAL & wind lidar



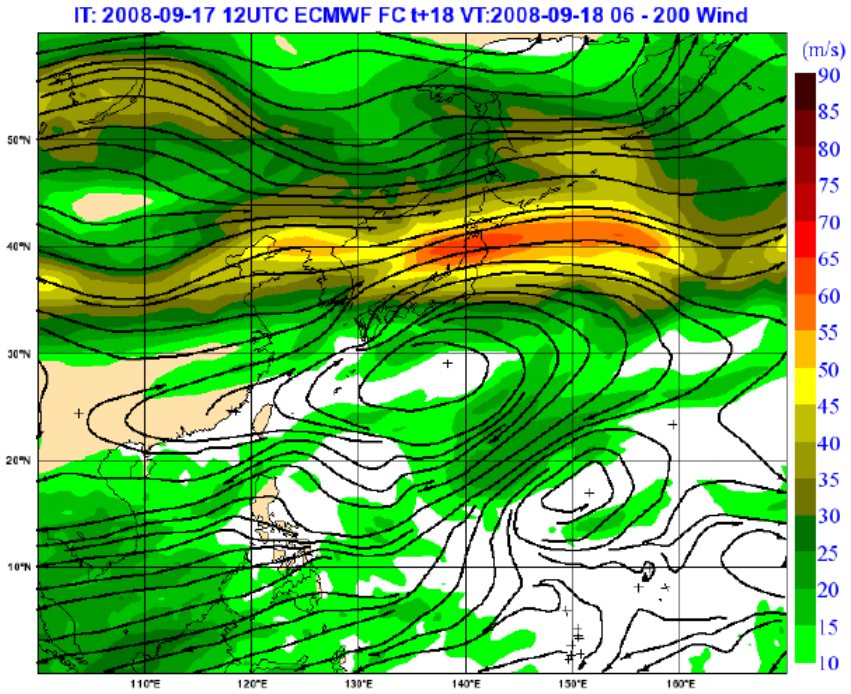


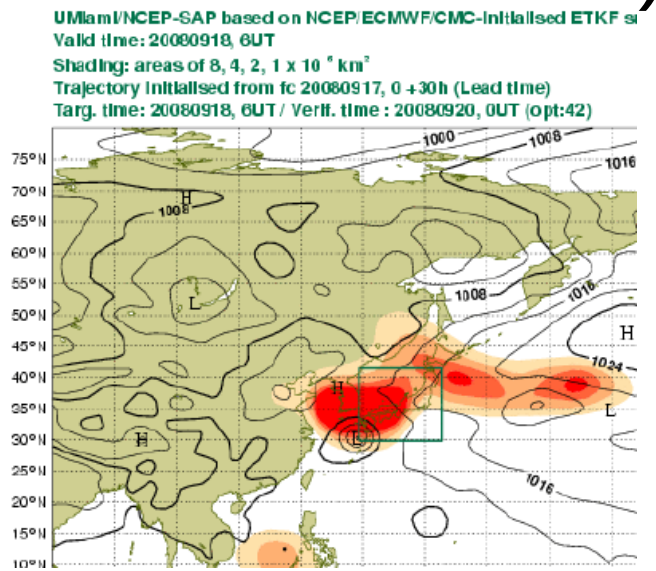
wind lidar not processed yet...

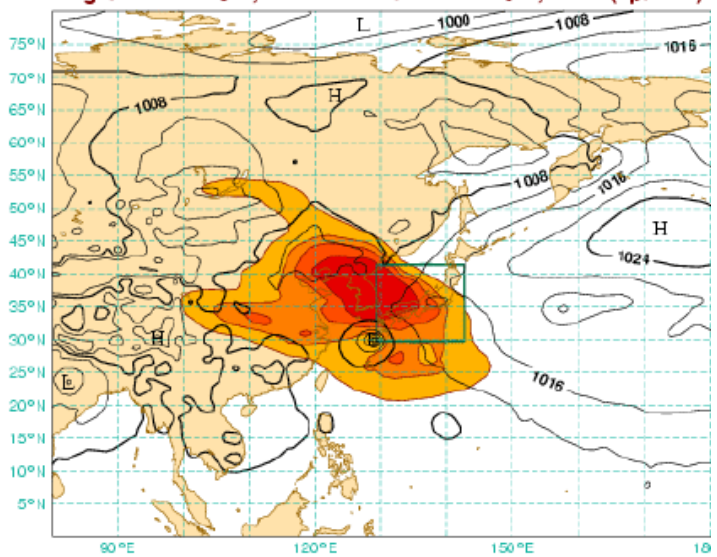


15.Mission: Ats - Ats (20080918 0325-0720Z)

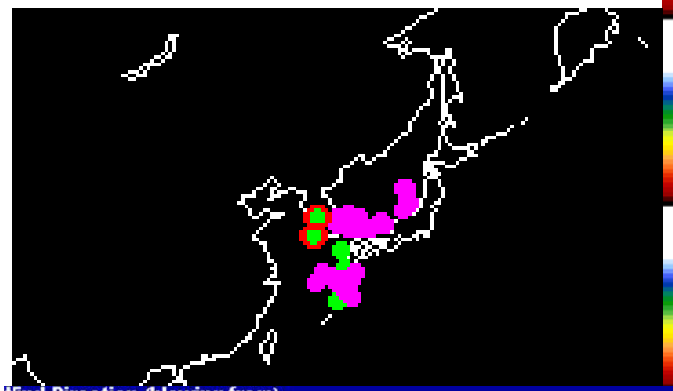
- measure the **outflow** of Sinlaku and its interaction with the mid-latitude jet
- It was supposed that the southern part of the jet which is seen directly west of South Korea is due to the outflow of Sinlaku. Further the gradient to the jet streak west of northern Honshu was covered by the flight.
- **sensitive regions** are located around and especially northeast of Sinlaku

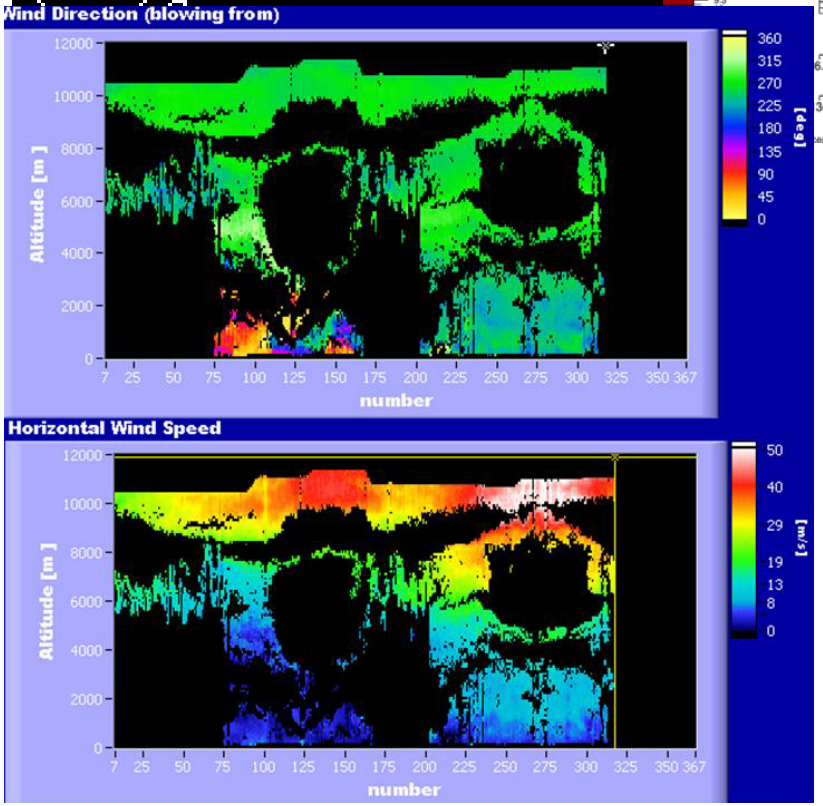






Observations:
- 14 dropsondes
-DIAL
-wind Lidar





WALES

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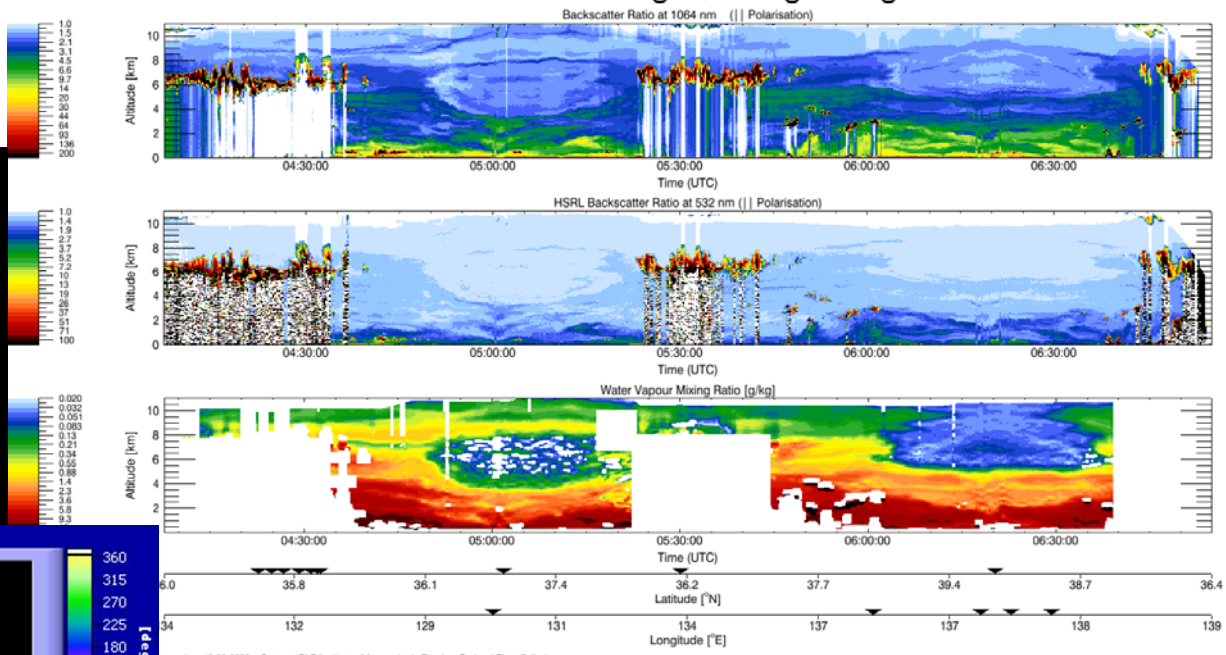
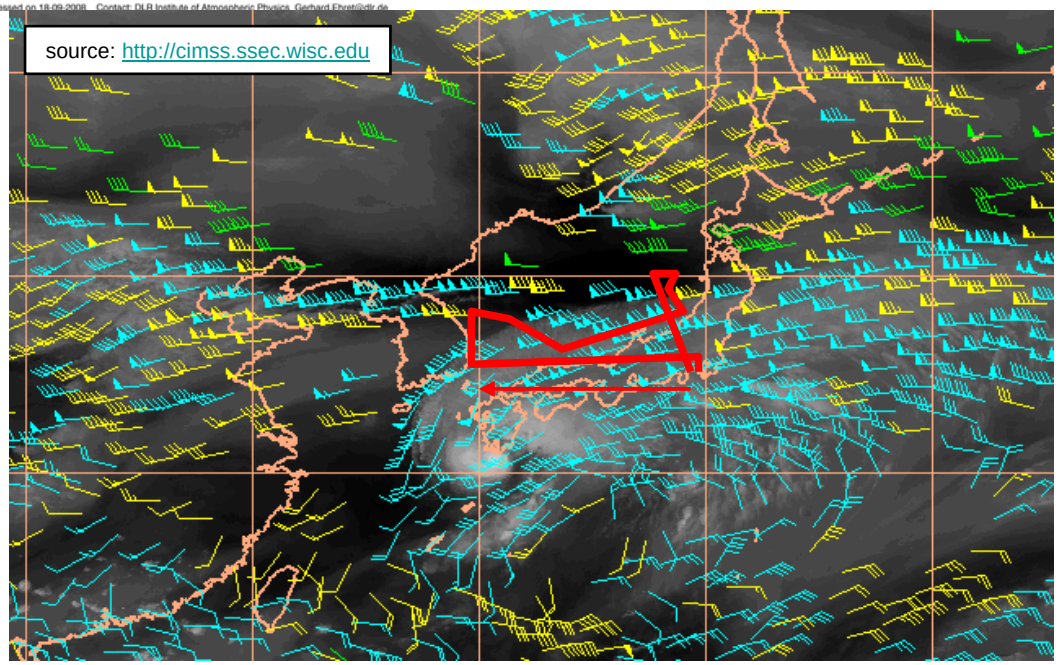
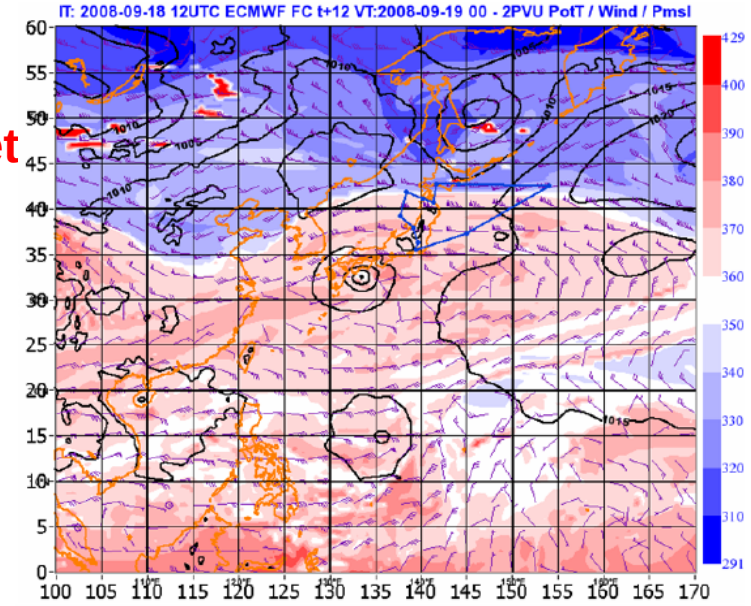
15. Flight / Atsugi-Atsugi

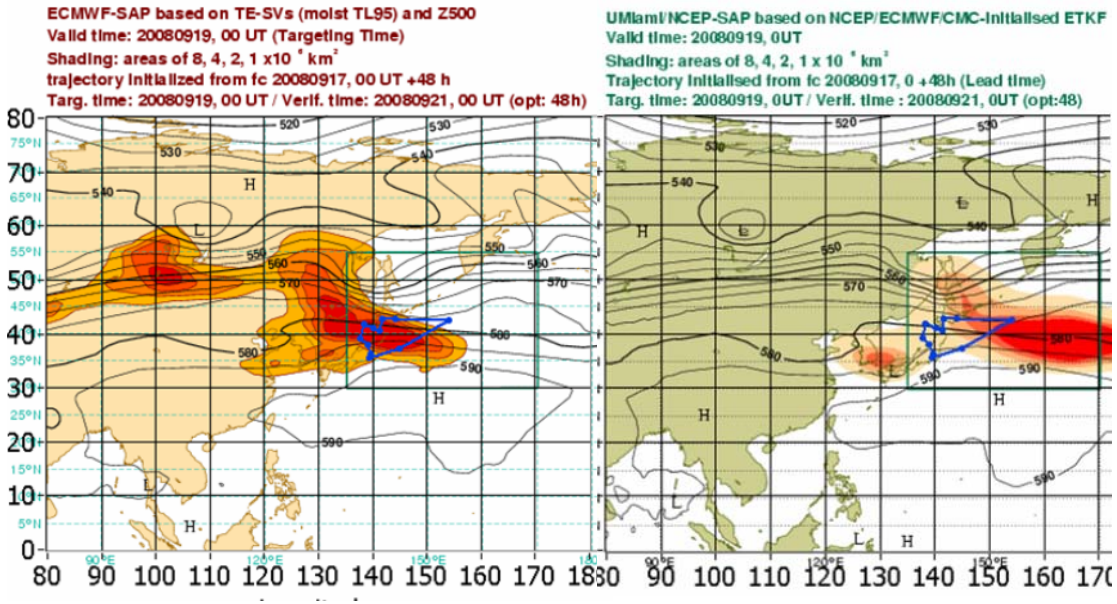


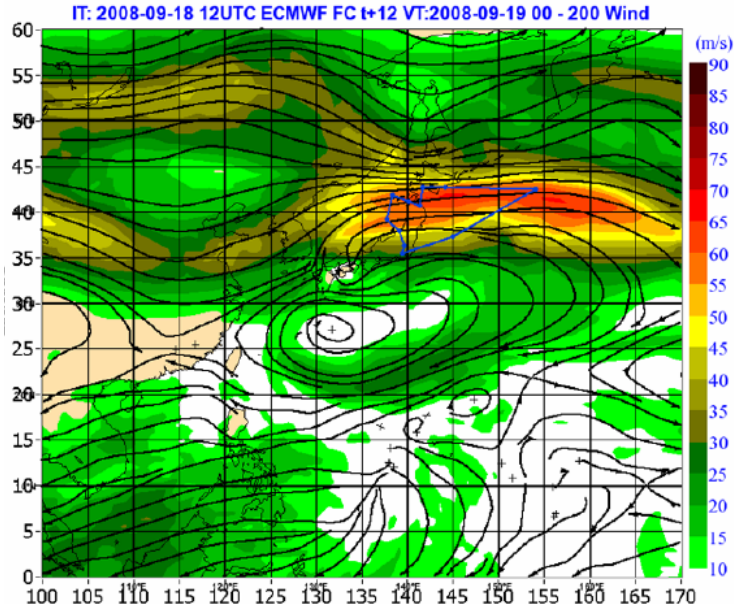


16.Mission: Ats - Mis (20080918 2235-2355Z)
17.Mission: Mis - Ats (20080919 0110-0510Z)

- combined P-3 and C-130 mission
- sample the **ridge building due to the outflow** of Sinlaku and its **interaction with the midlatitude jet**
- cover the gradient between Sinlaku and the ridge, from the jet entrance region towards the jet streak and back through the strong wind gradient of the jet
- **sensitive regions** for ET verfification box







WALES

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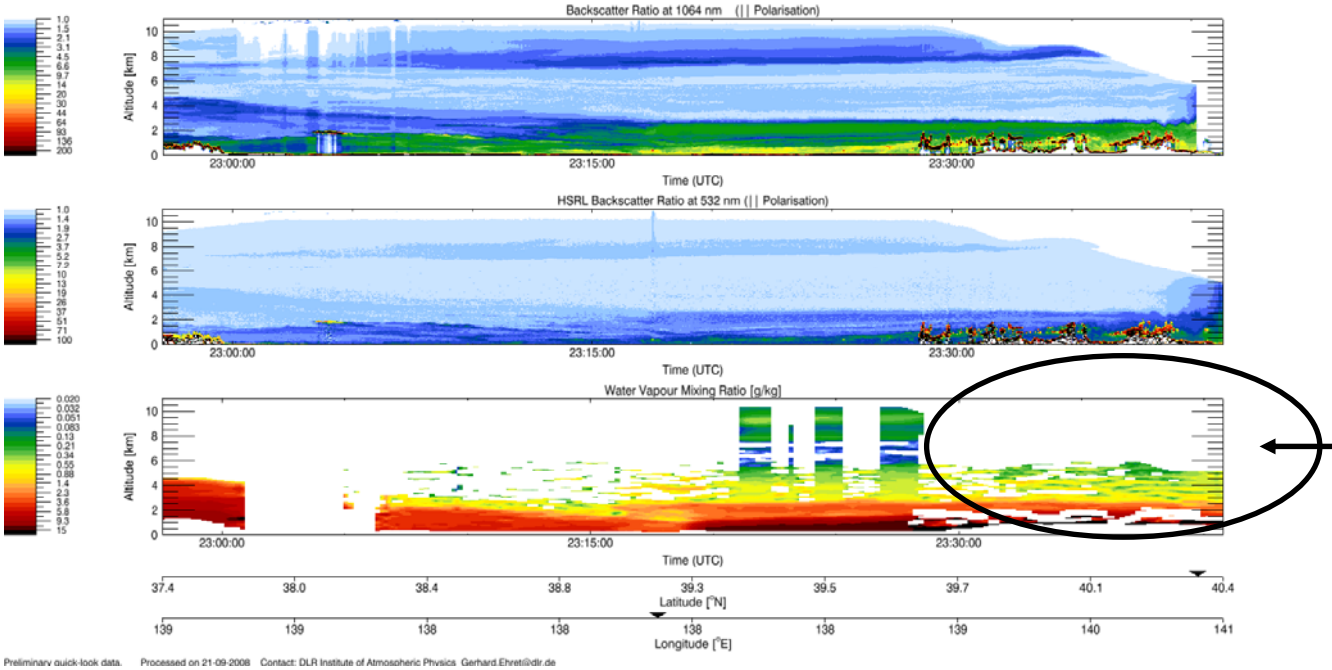
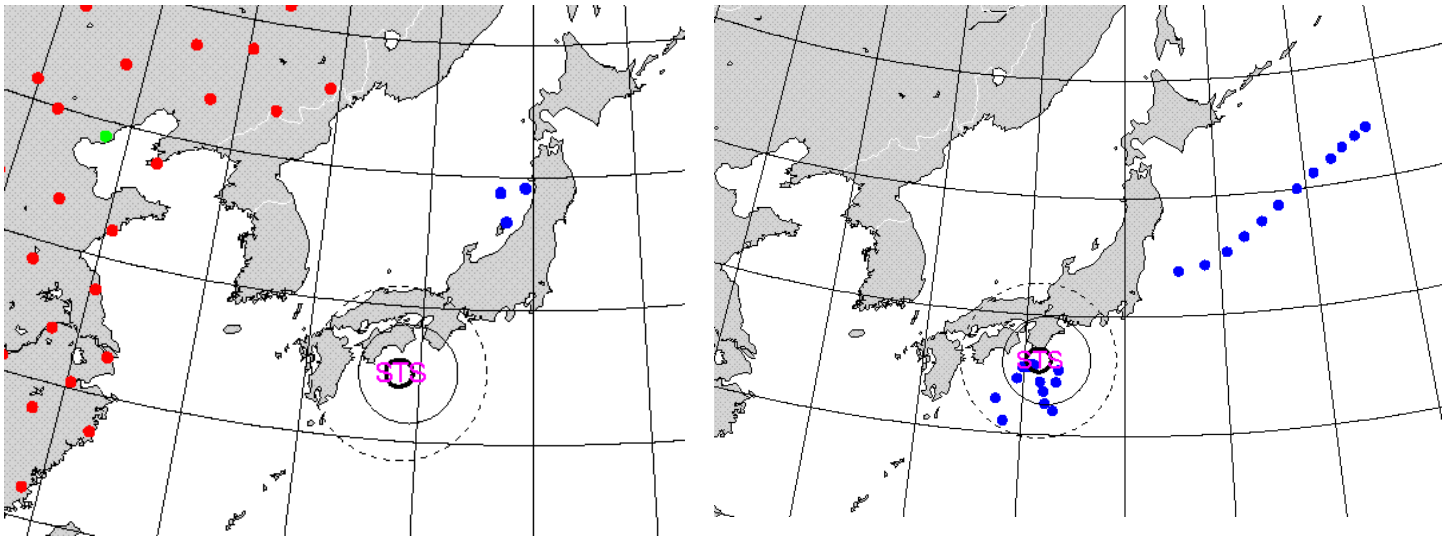
16. Flight / Atsugi-Misawa



Observations:
- 3+ 19 dropsondes
- DIAL
- wind Lidar

laser problem



DLR **WALES**

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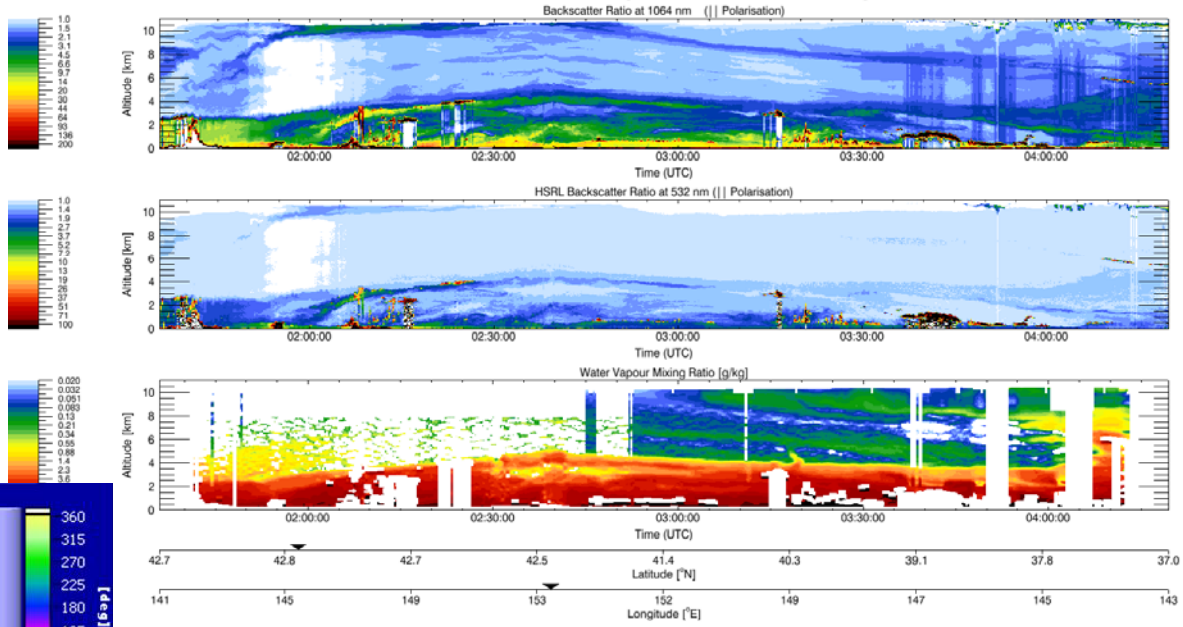
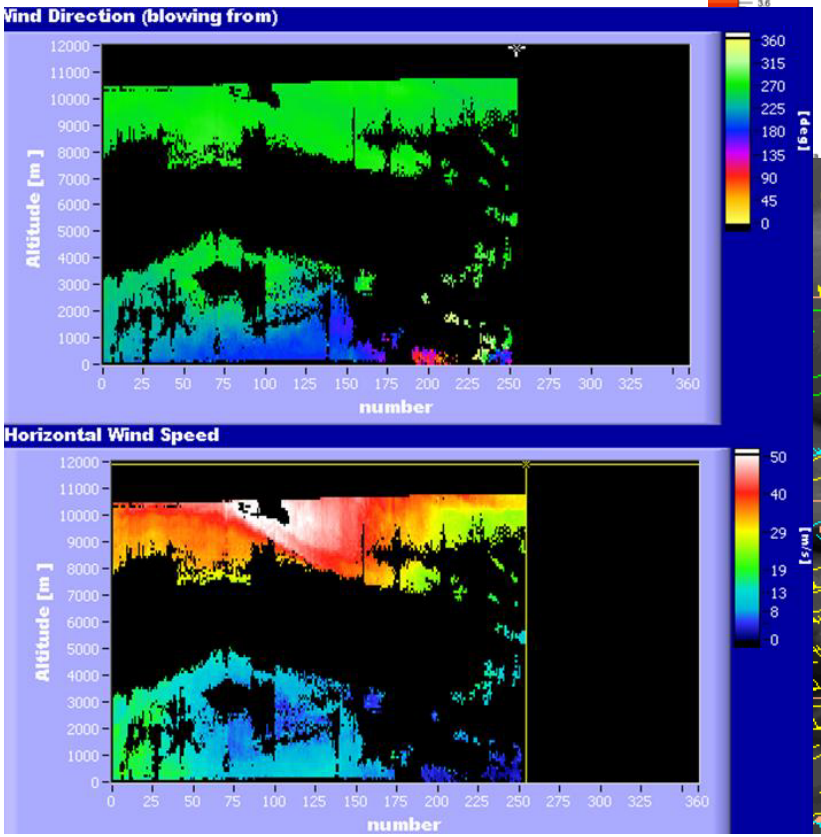
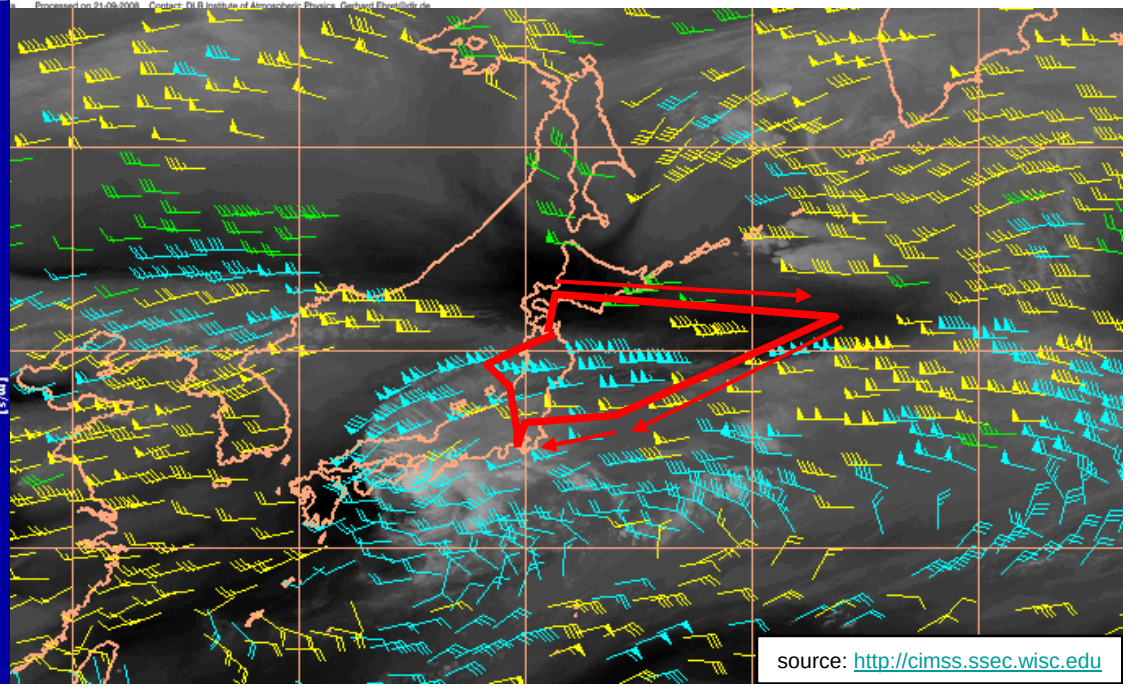
17. Flight / Misawa-Atsugi



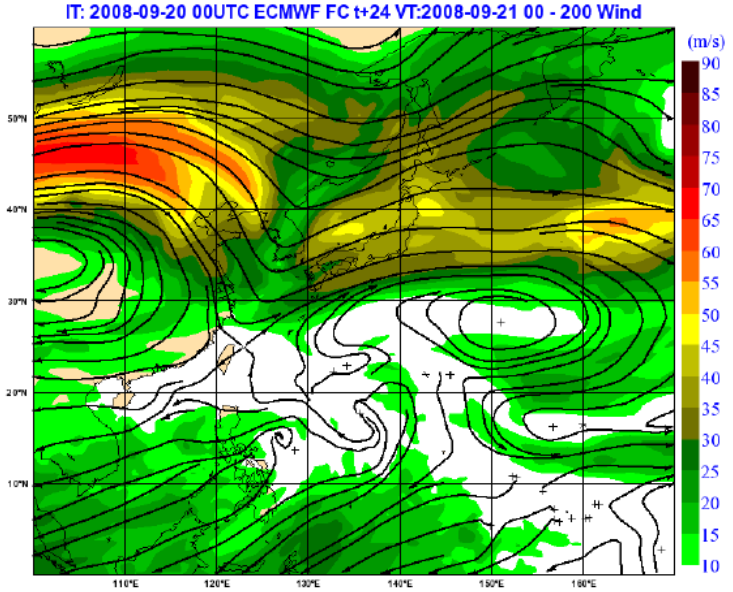


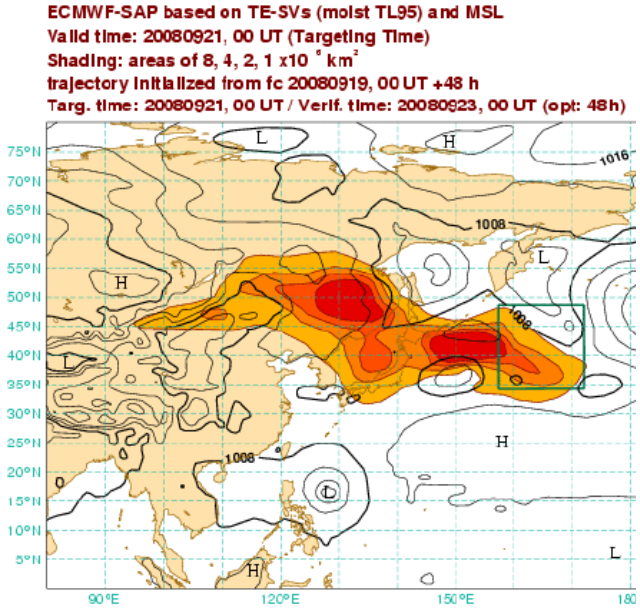


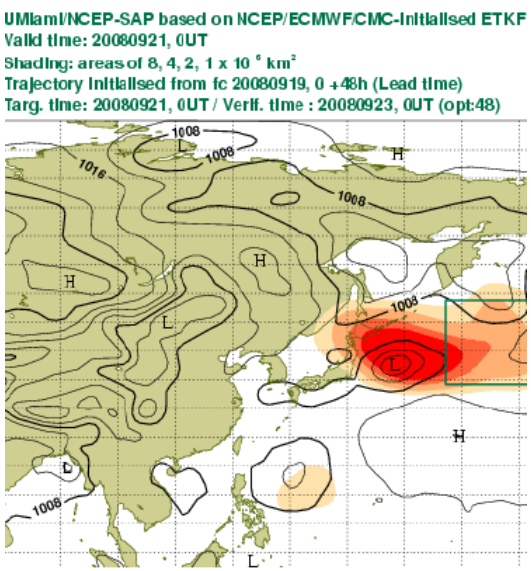
source: http://cimss.ssec.wisc.edu

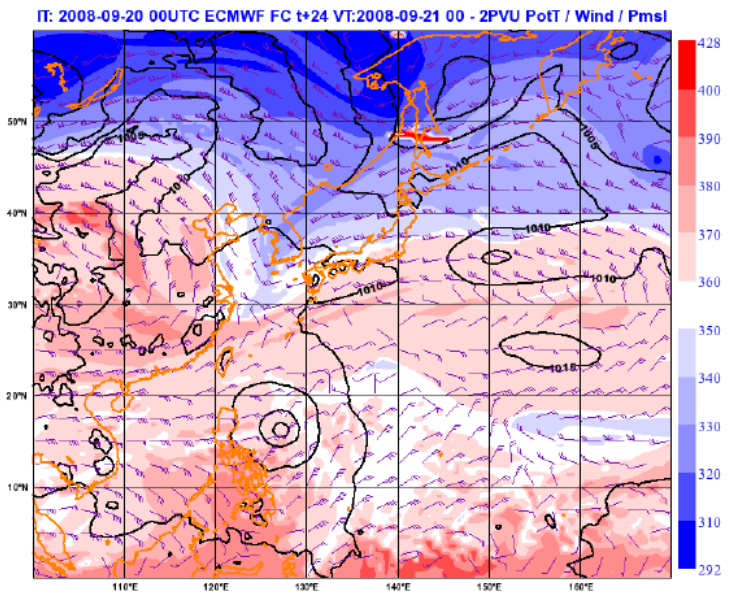
18.Mission: Ats - Ats (20080921 2205-0205Z)

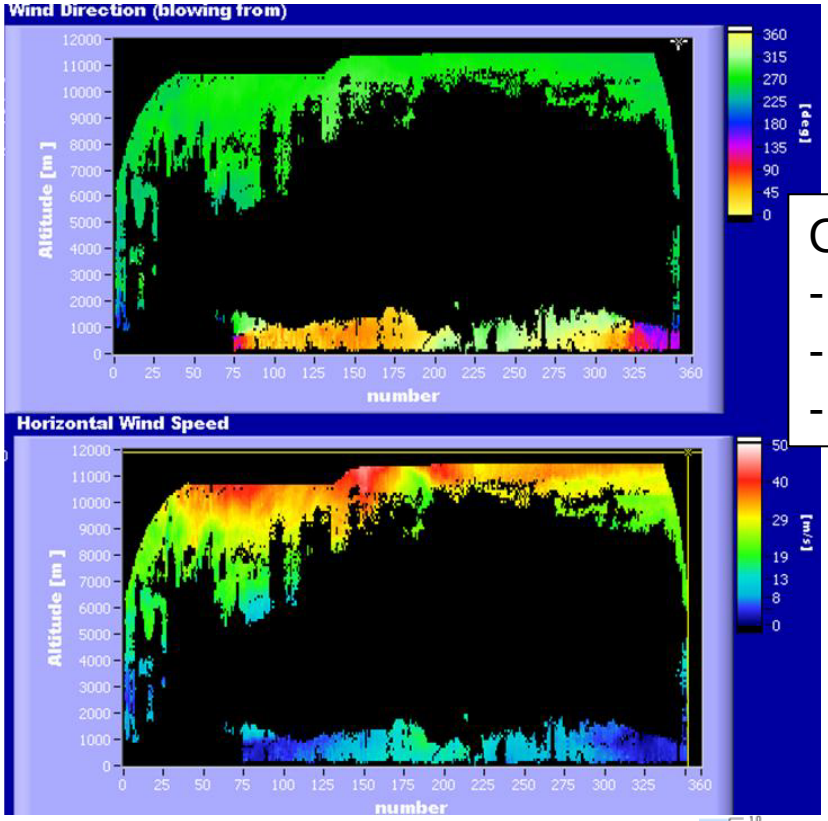
- sample the **remaining circulation of ex-Sinlaku** and the jet gradient. The system was still active which could be seen in the slightly strengthening of the convection to its east. As the system was propagating quickly the western part of the circulation rather than the center was measured
- sensitive regions were located to the NW of ex-Sinlaku in the jet



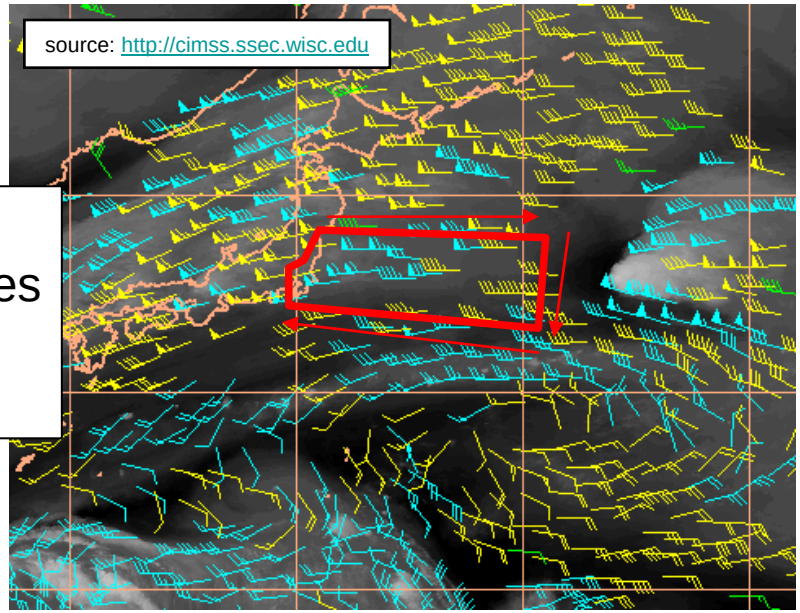


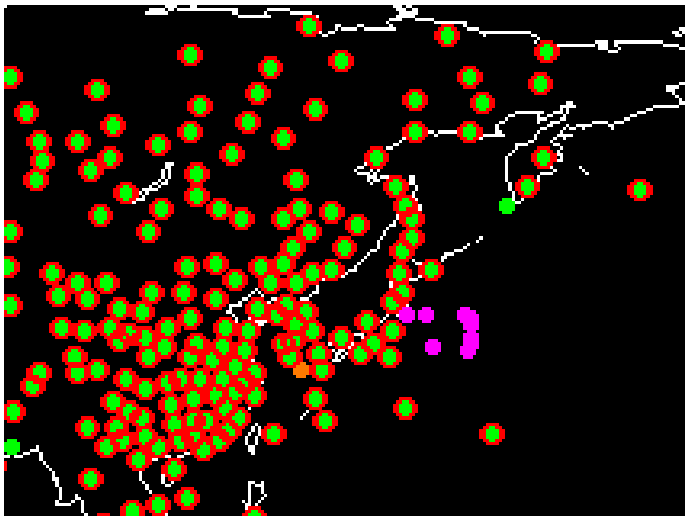






Observations:
- 12 dropsondes
- DIAL
- wind Lidar





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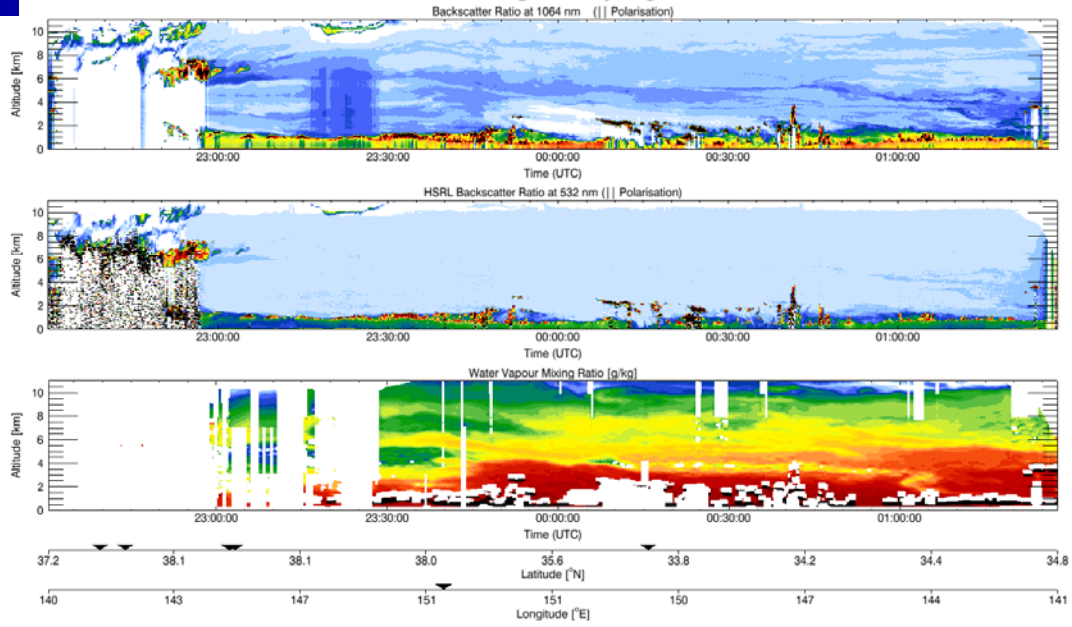
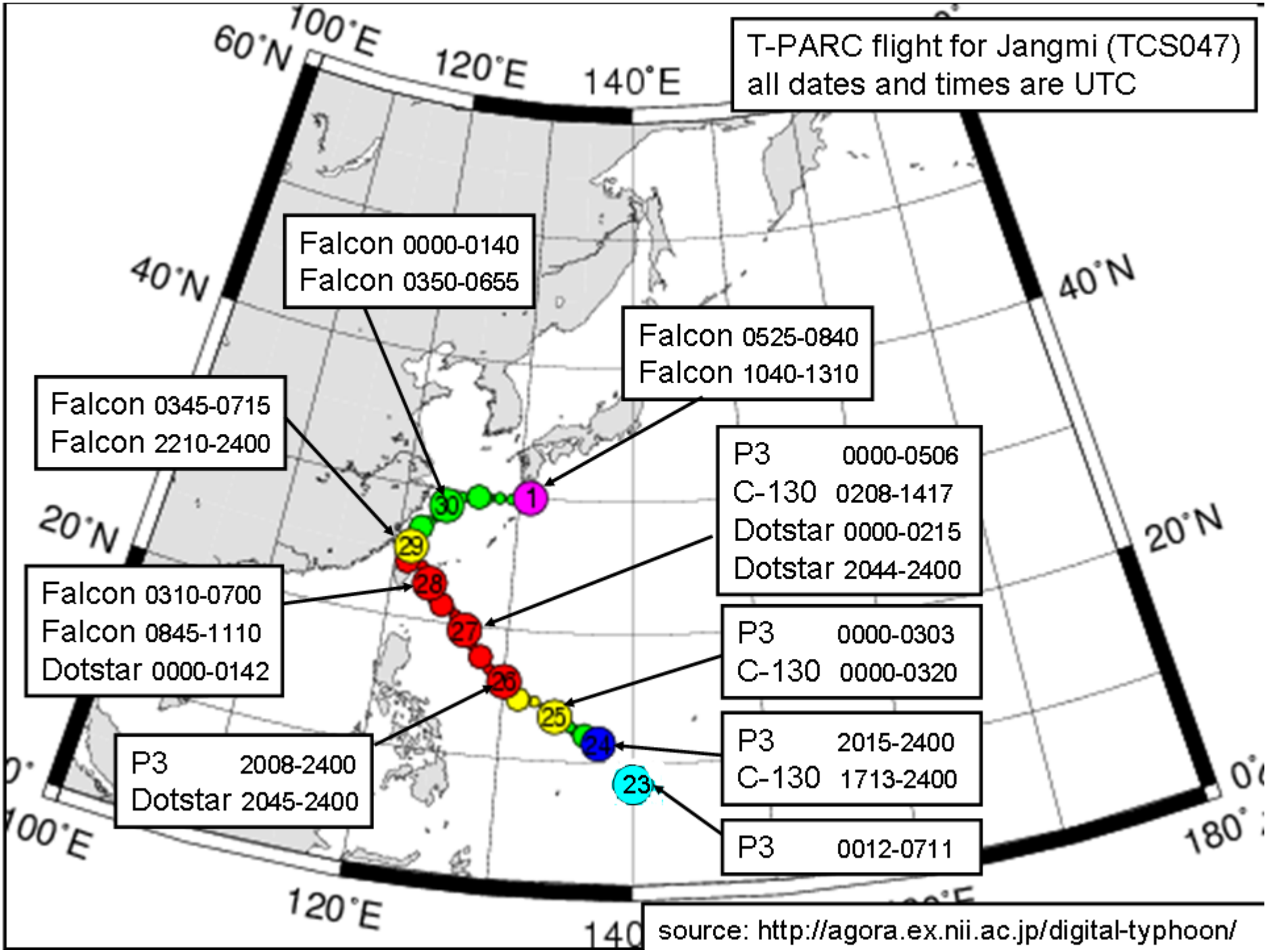
18. Flight / Dying Sinlaku

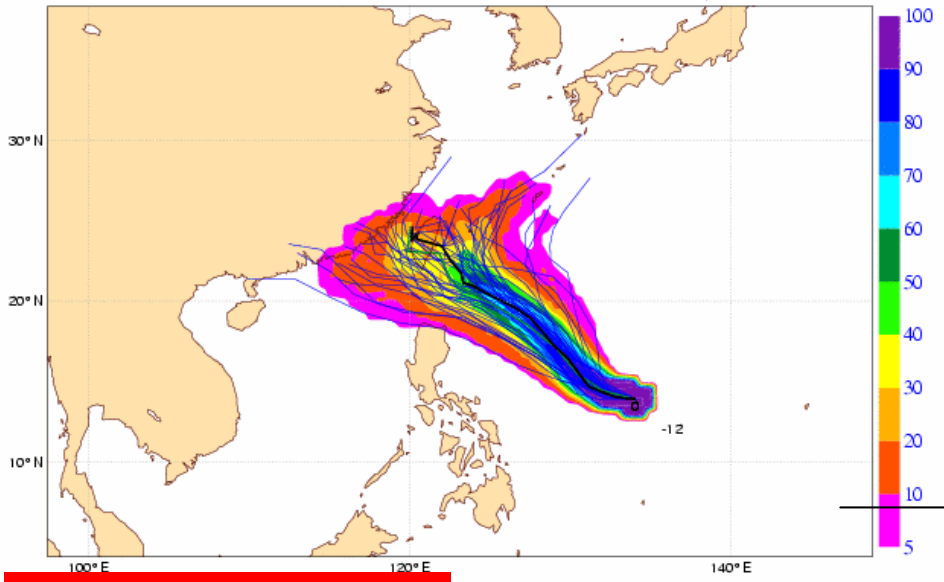



T-PARC flight for Jangmi (TCS047)
all dates and times are UTC
60°N
100°E
120°E
140°E
40°N
20°N
Falcon 0000-0140
Falcon 0350-0655
Falcon 0525-0840
Falcon 1040-1310
Falcon 0345-0715
Falcon 2210-2400
P3 0000-0506
C-130 0208-1417
Dotstar 0000-0215
Dotstar 2044-2400
Falcon 0310-0700
Falcon 0845-1110
Dotstar 0000-0142
P3 0000-0303
C-130 0000-0320
P3 2008-2400
Dotstar 2045-2400
P3 2015-2400
C-130 1713-2400
P3 0012-0711
30
1
29
28
27
26
25
24
23
source: http://agora.ex.nii.ac.jp/digital-typhoon/

20080925 0 UTC

Probability that JANGMI will pass within 120km radius during the next 120 hours

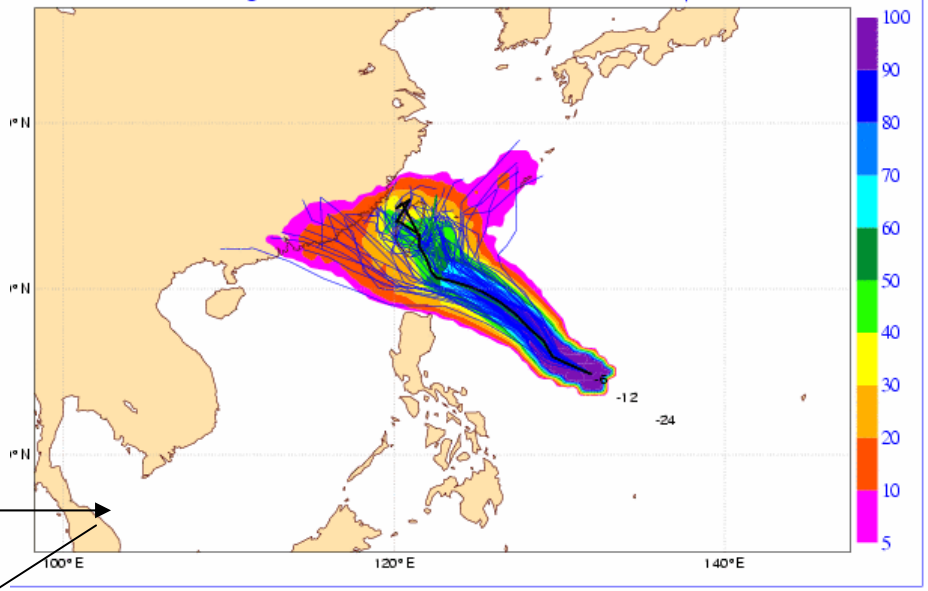
tracks: black=OPER, green=CTRL, blue=EPS numbers: observed positions at t+..h



20080925 12 UTC

Probability that JANGMI will pass within 120km radius during the next 120 hours

tracks: black=OPER, green=CTRL, blue=EPS numbers: observed positions at t+..h

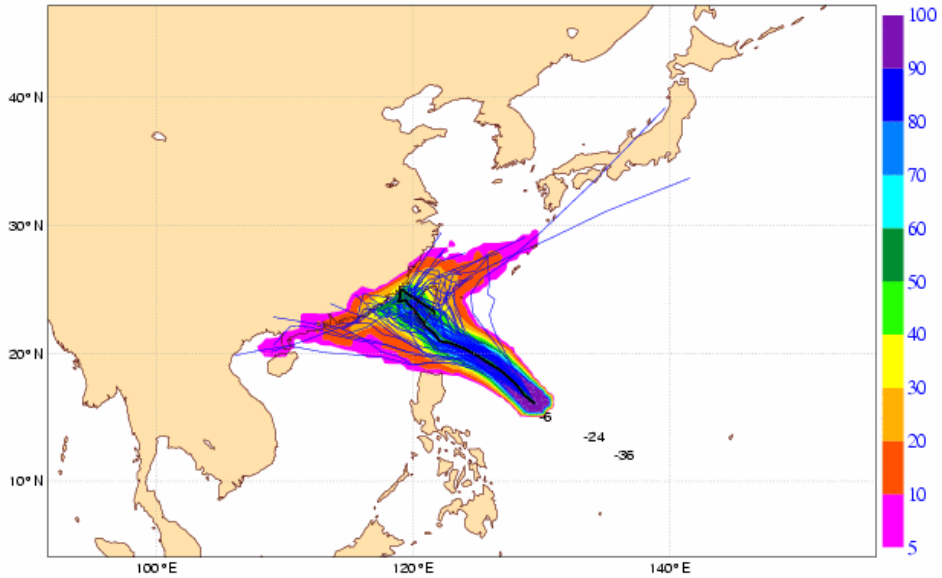


ECMWF Ensemble

20080926 0 UTC

Probability that JANGMI will pass within 120km radius during the next 120 hours

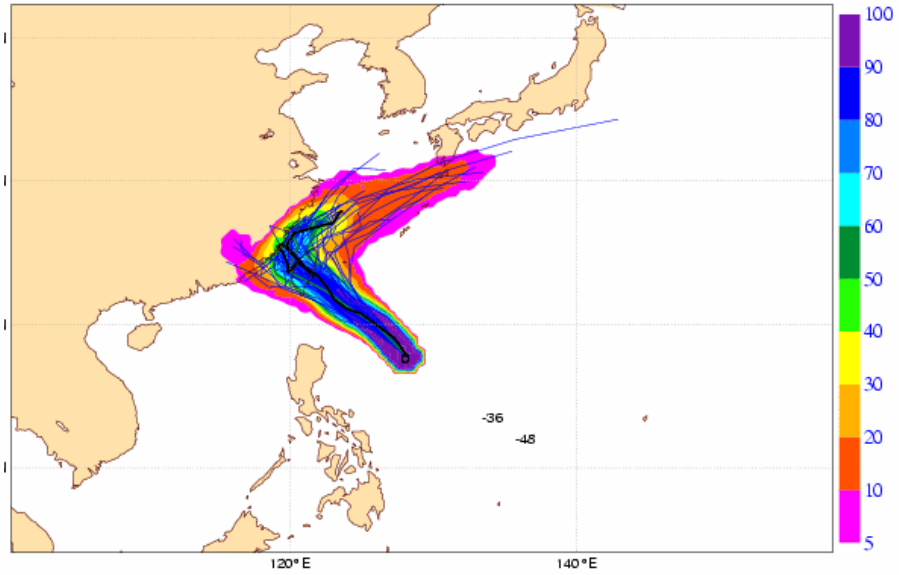
tracks: black=OPER, green=CTRL, blue=EPS numbers: observed positions at t+..h



20080926 12 UTC

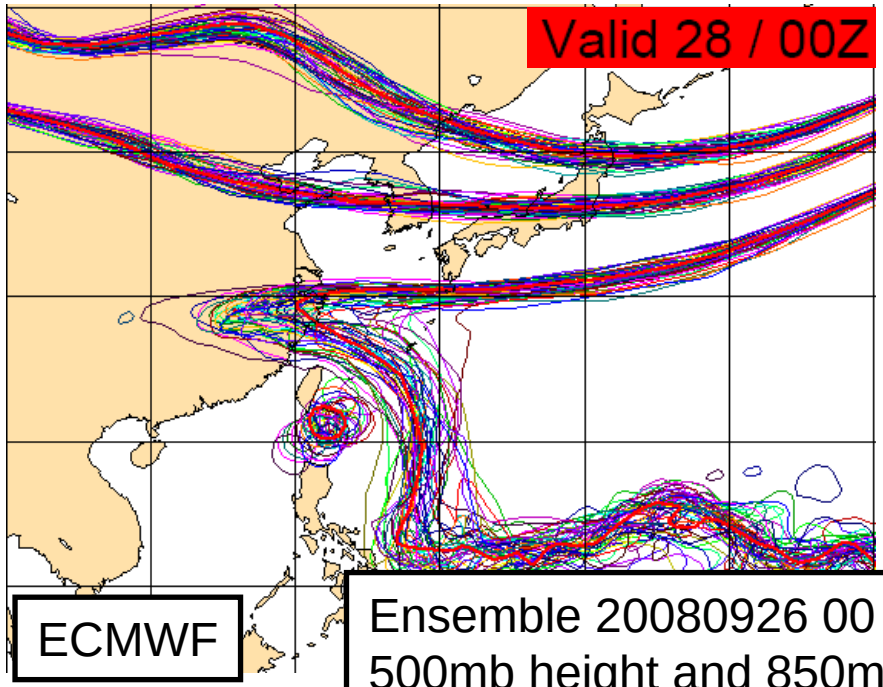
Probability that JANGMI will pass within 120km radius during the next 120 hours

tracks: black=OPER, green=CTRL, blue=EPS numbers: observed positions at t+..h

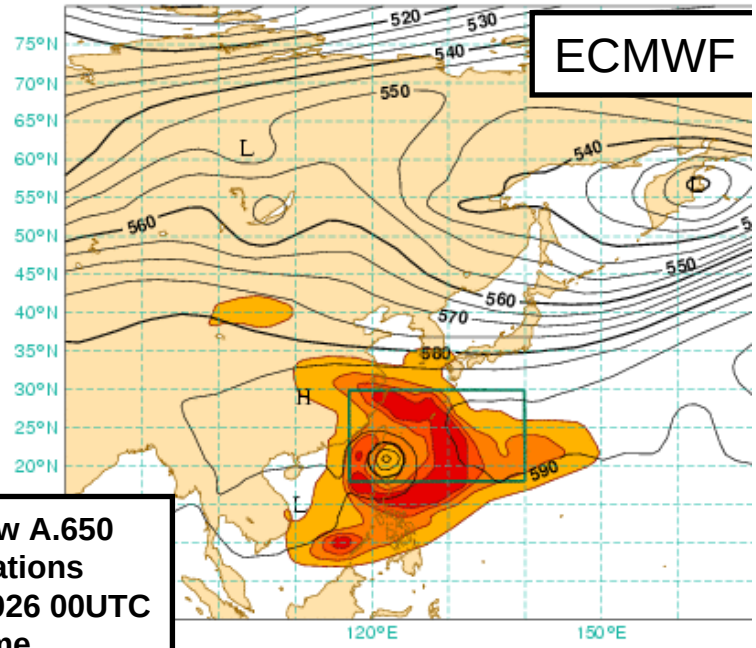


19.Mission: Ats - Oki (20080928 0310-0700Z)
20.Mission: Oki - Oki (20080928 0845-1110Z)

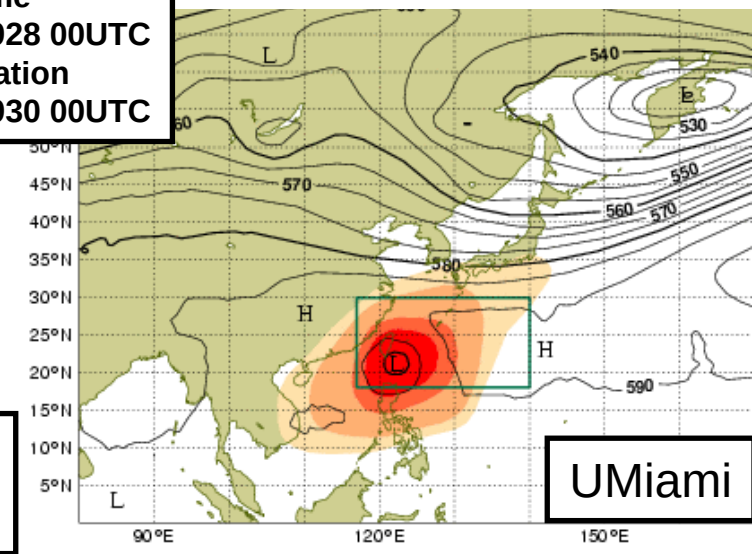
- new tropical cyclone called **Jangmi** was of interest during this mission
- sample **sensitive areas to the east and north** of the typhoon. The high sensitivity in these regions was caused by a **high uncertainty** in the position and intensity of the subtropical high which led to an increased spread in the ensemble track forecasts of Jangmi.



Ensemble 20080926 00 UTC +48h
500mb height and 850mbar vort>5



Preview A.650
calculations
20080926 00UTC
obs time
20080928 00UTC
verification
20080930 00UTC



DLR **WALES**

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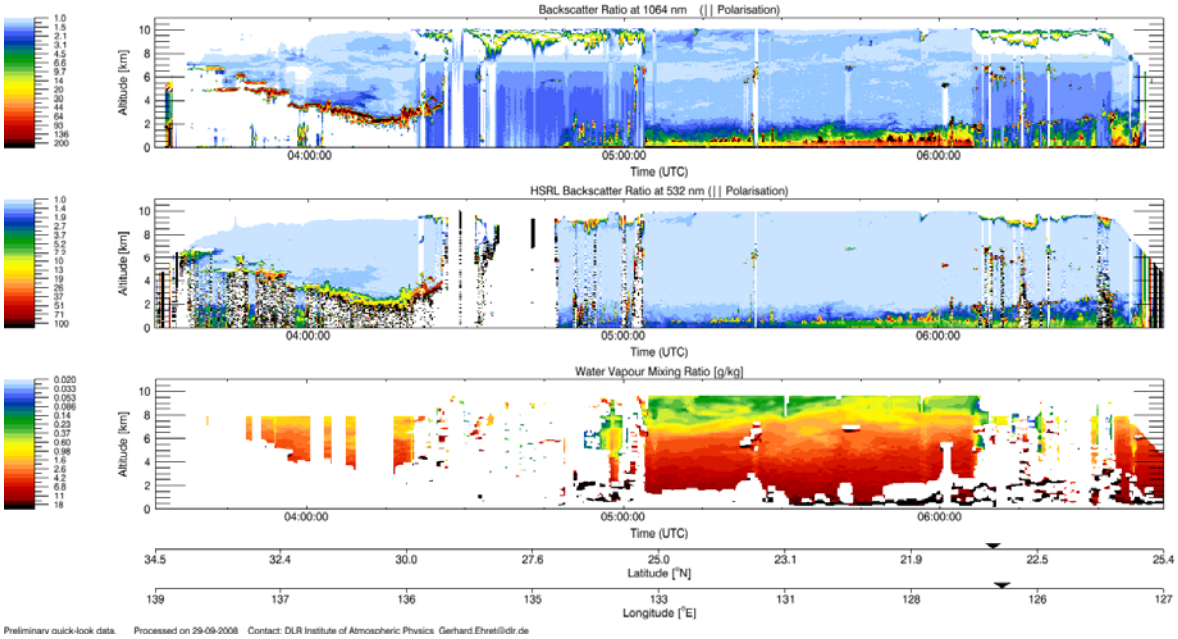
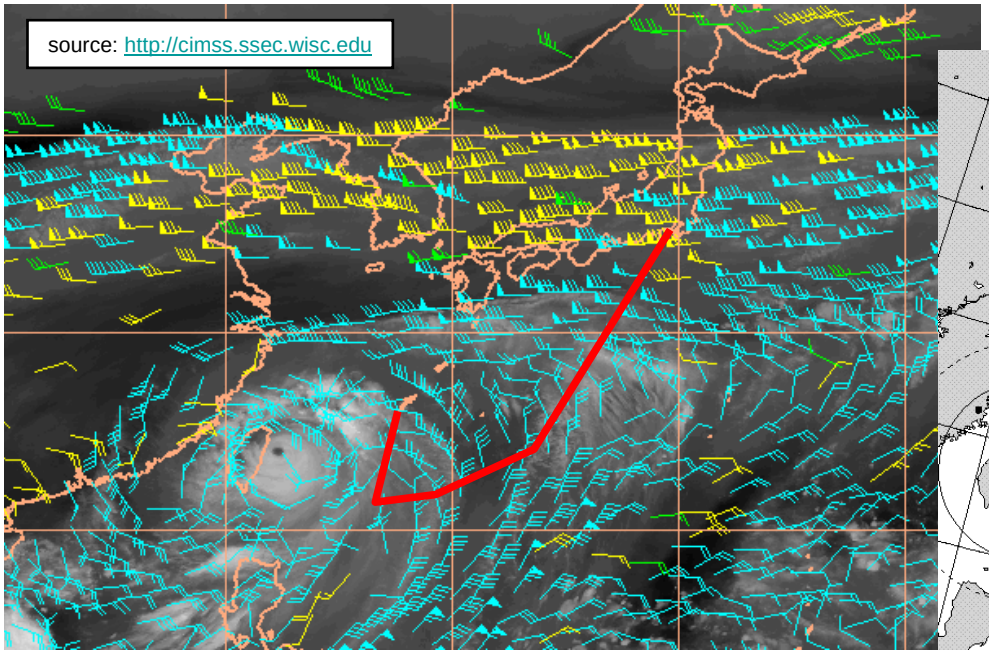
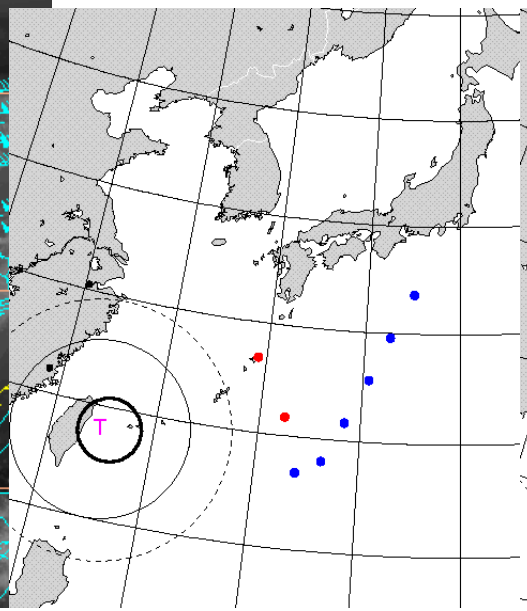
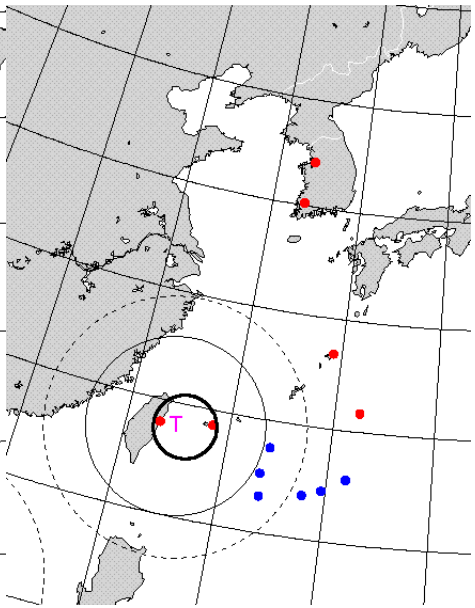
19. Flight / Atsugi - Kadena (Jangmi)

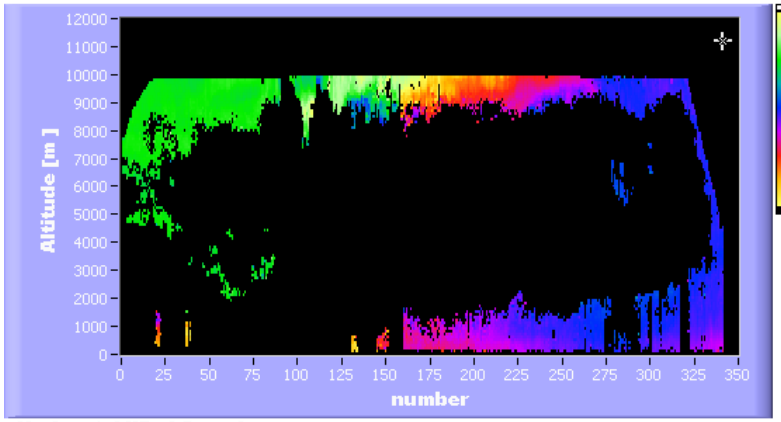


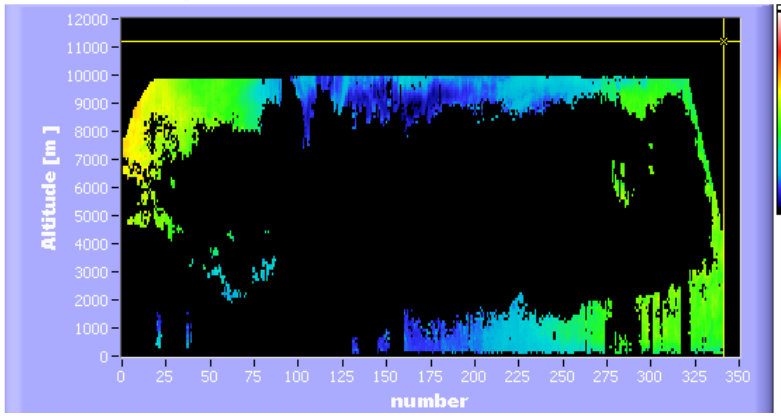
Observations:
- 12 dropsondes
- DIAL
- wind lidar

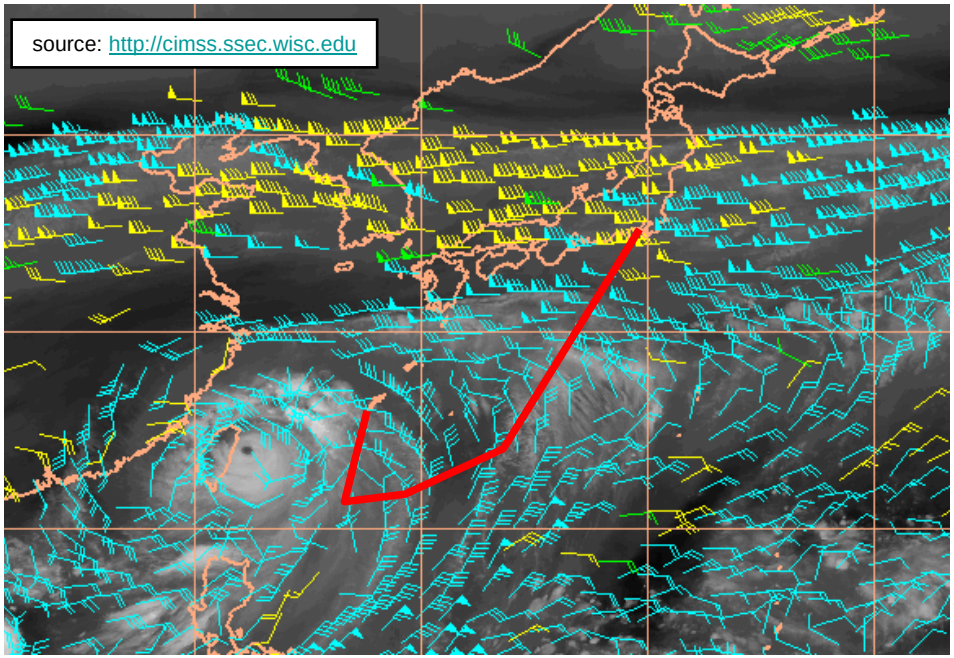


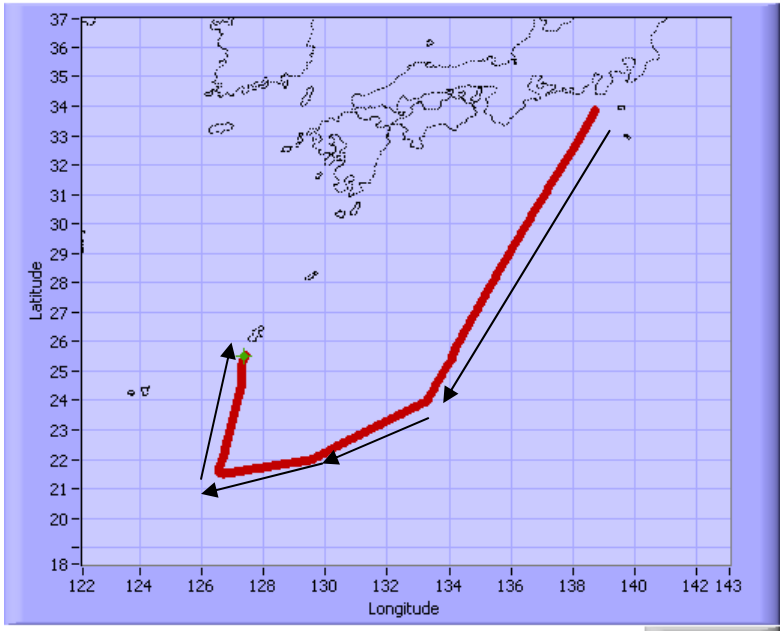





Wind Direction (blowing from)
Altitude [m]
number
[deg]


Horizontal Wind Speed
Altitude [m]
number
[m/s]


source: http://cimss.ssec.wisc.edu


Latitude
Longitude

DLR **WALES**

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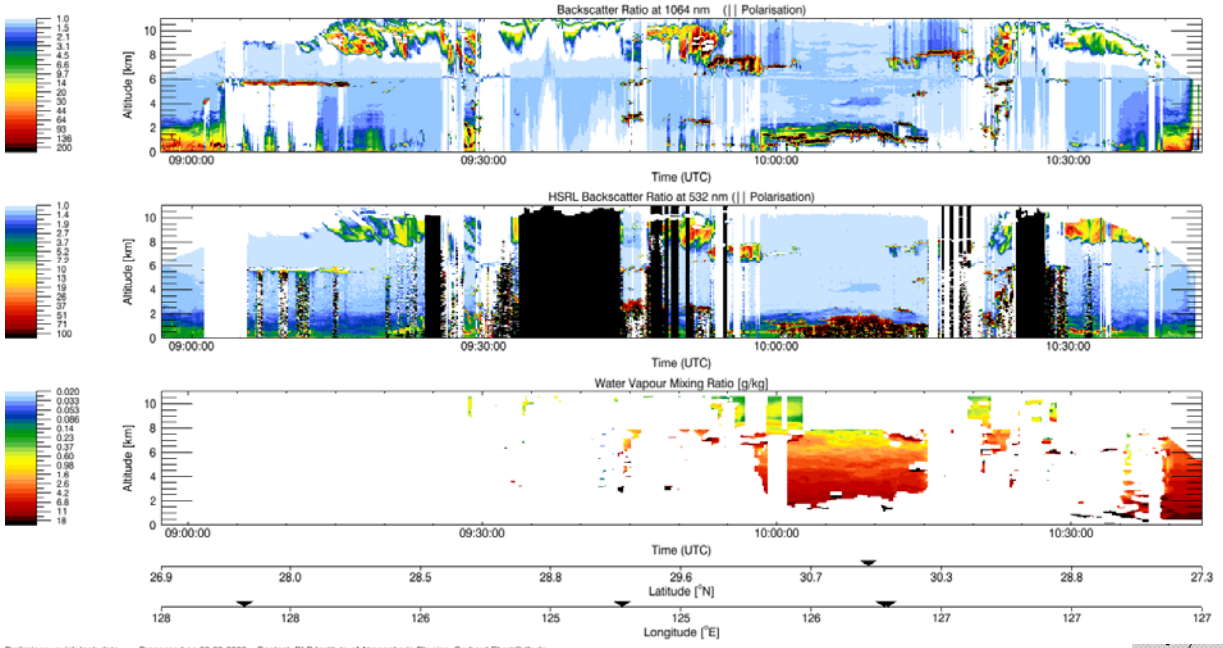
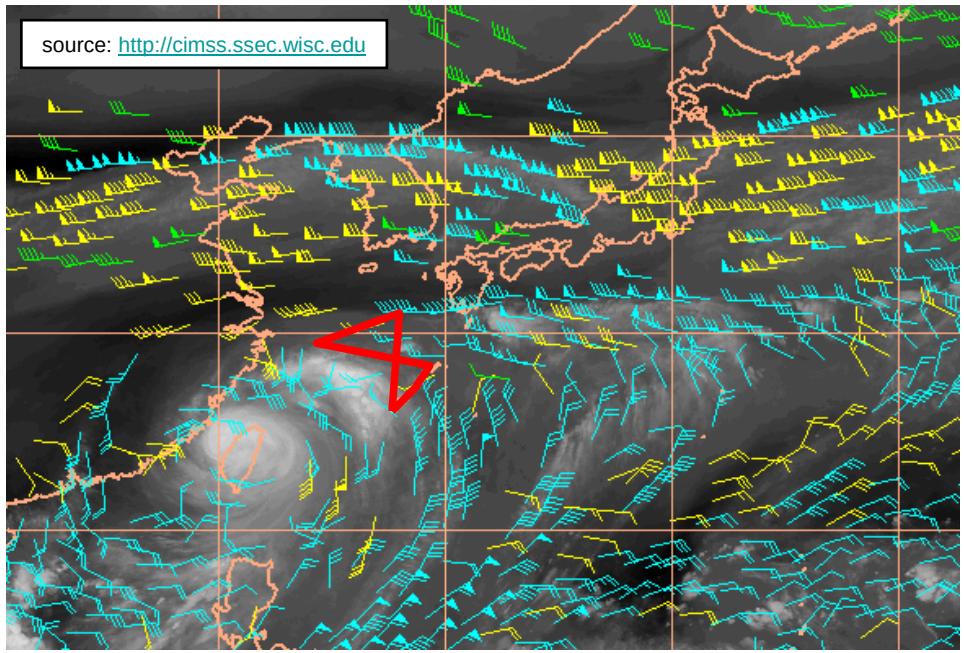
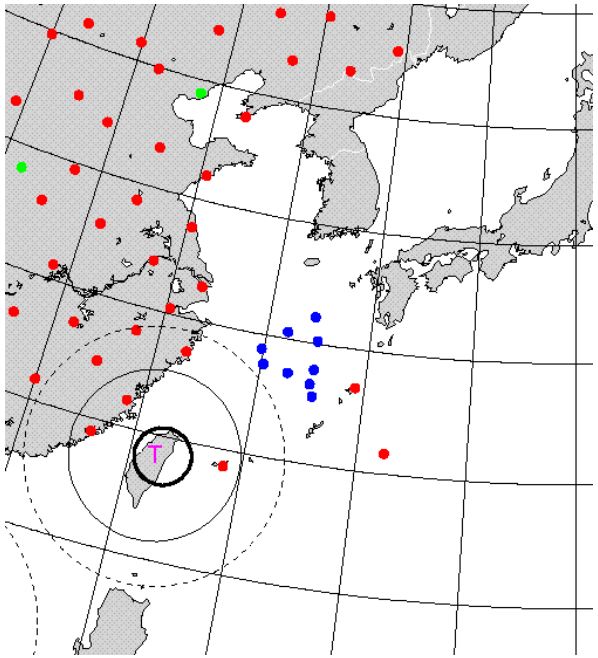
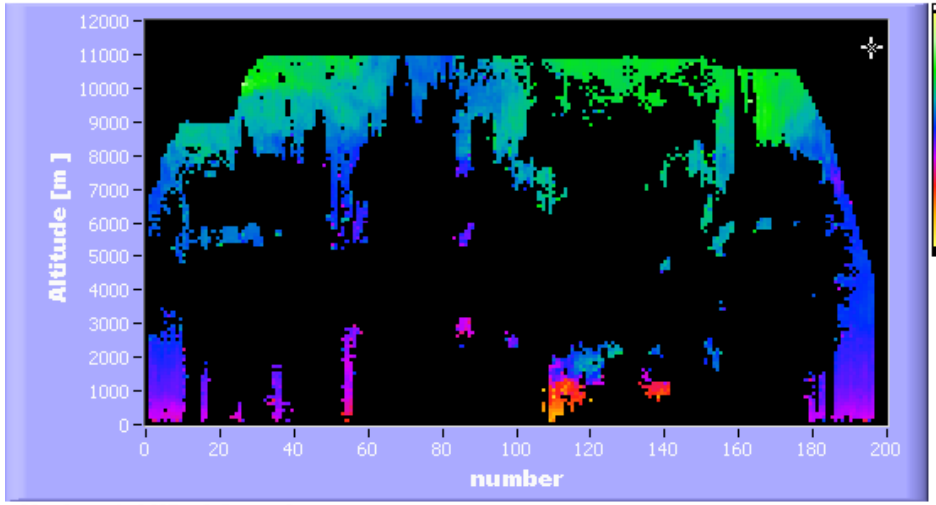
20. Flight / Kadena Local Jangmi-Mission 1

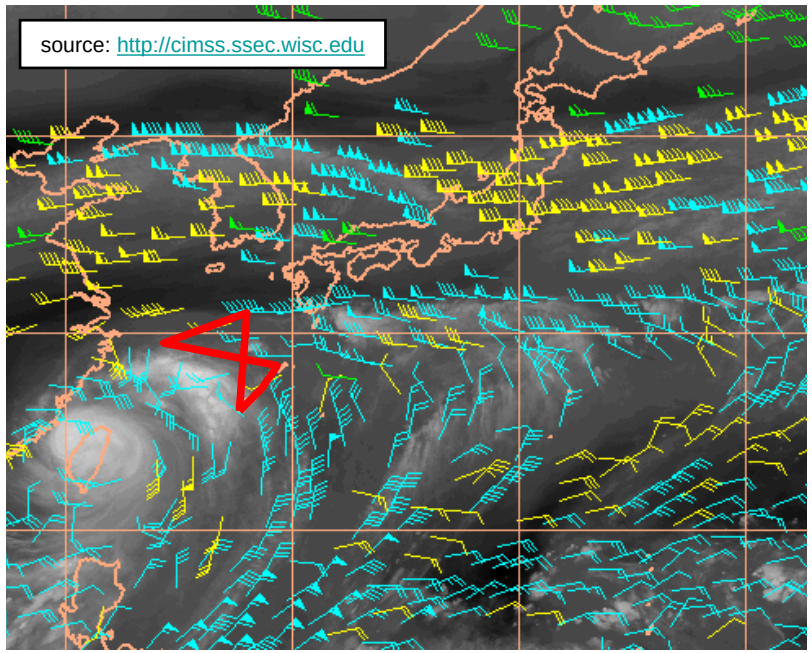


Observations:
- 8 (9?) dropsondes
- DIAL
- wind lidar

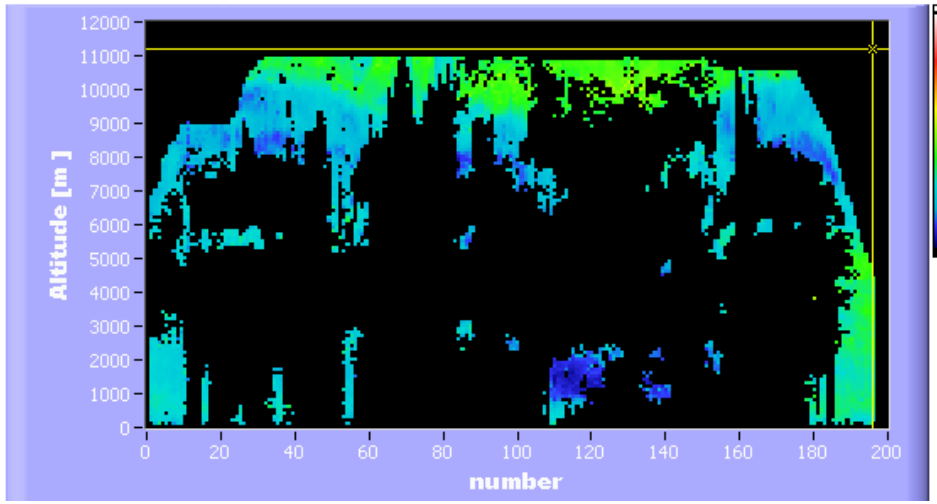


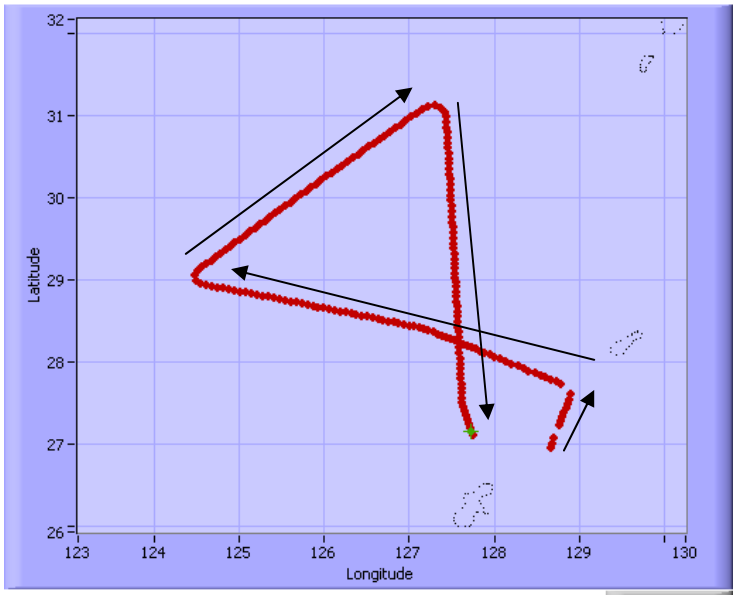






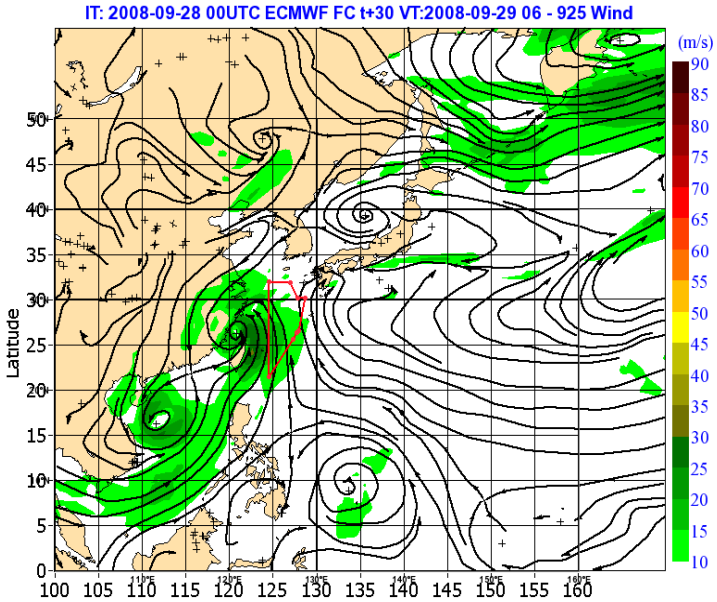
Horizontal Wind Speed

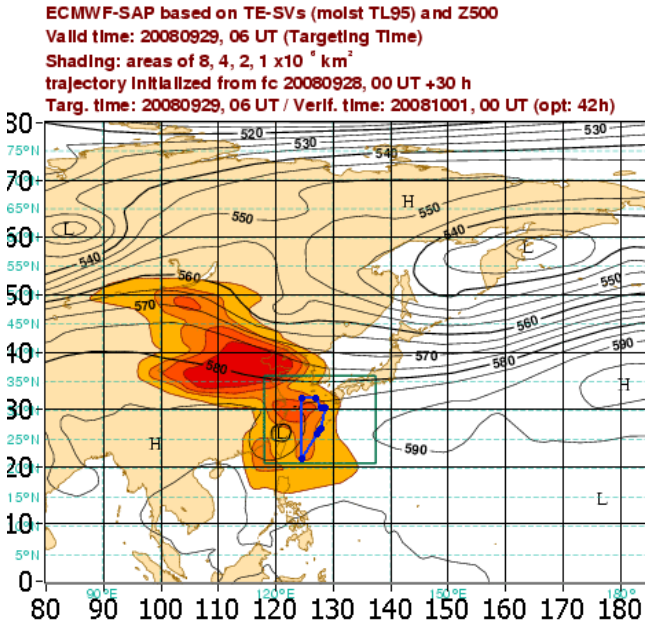


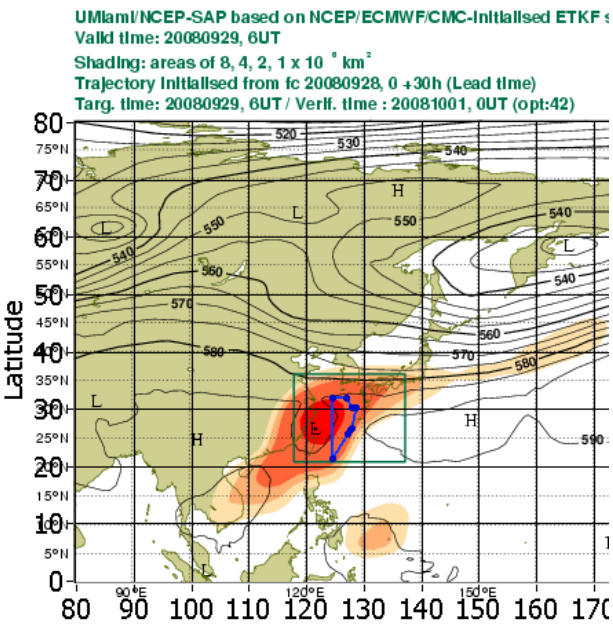


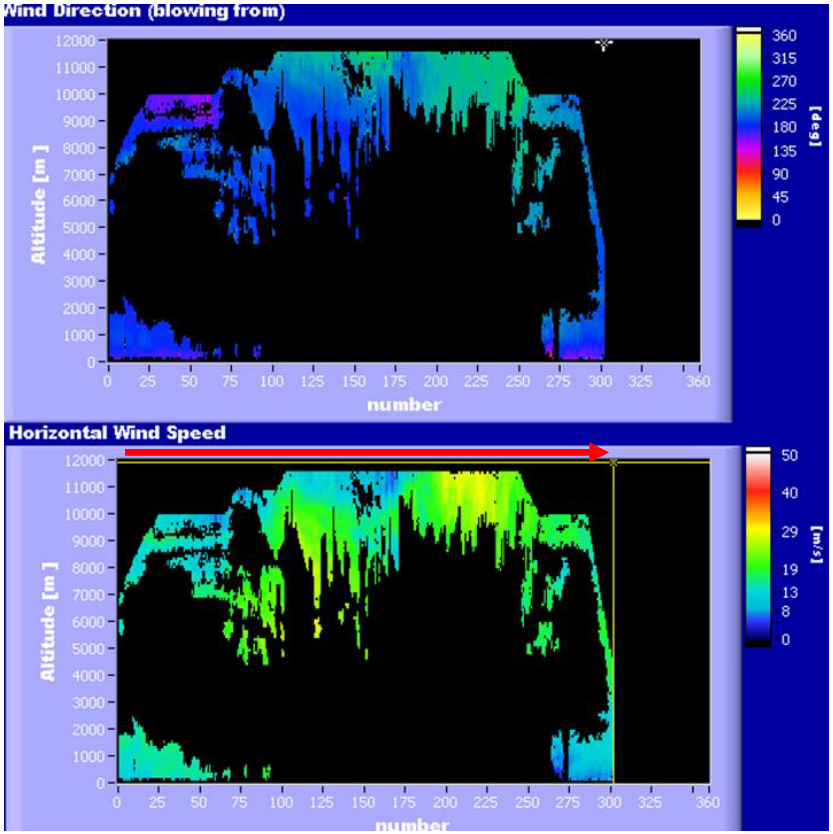
21.Mission: Oki - Oki (20080929 0350-0710Z)

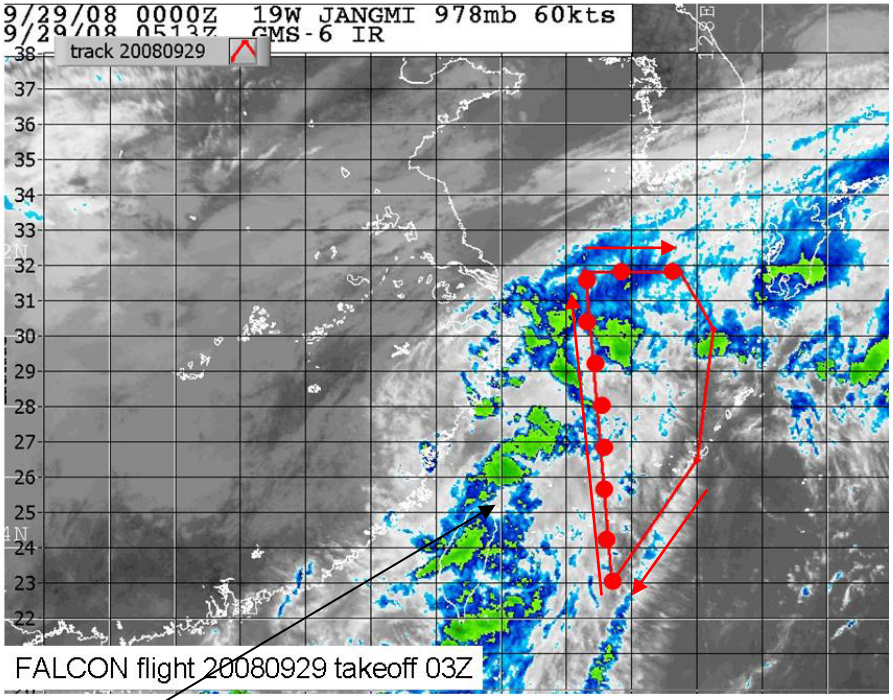
- sample as much as possible of the **sensitive areas**. Even if some differences were apparent between the different sensitivity products, again an area to the north of the storm is highlighted in most products, especially in the ones with a 24-h optimisation time.
- the northern part of the track cuts through the expected **outflow** of Jangmi and also examines **early stages of interaction of the system with the mid-latitudes**











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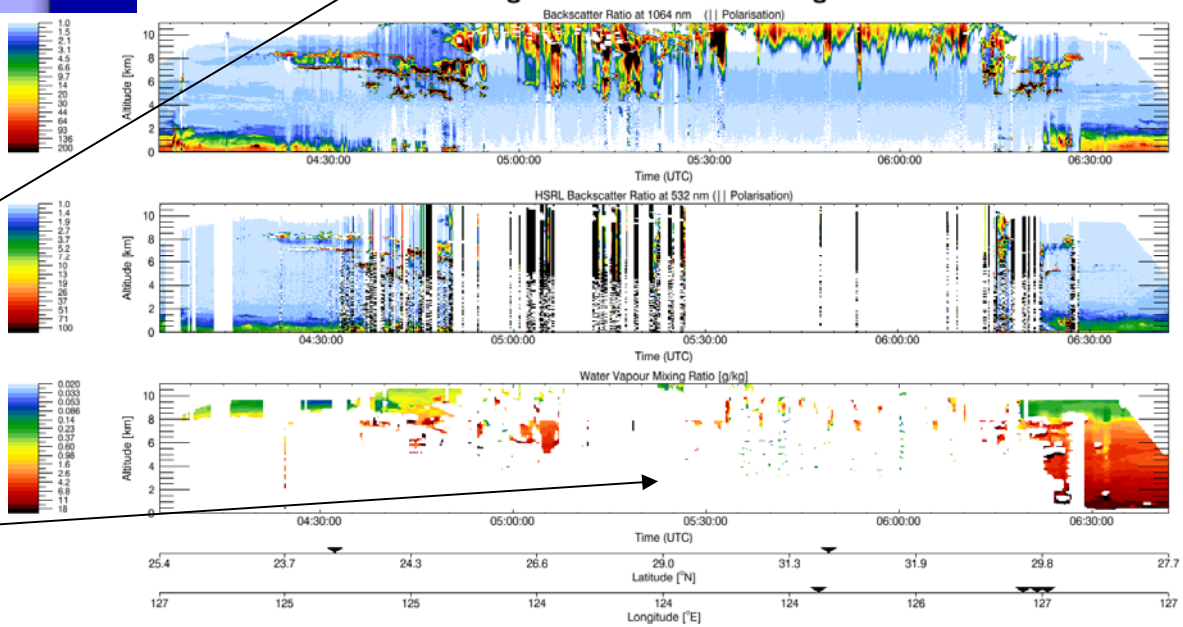
21. Flight / Kadena Local Jangmi-Mission 2



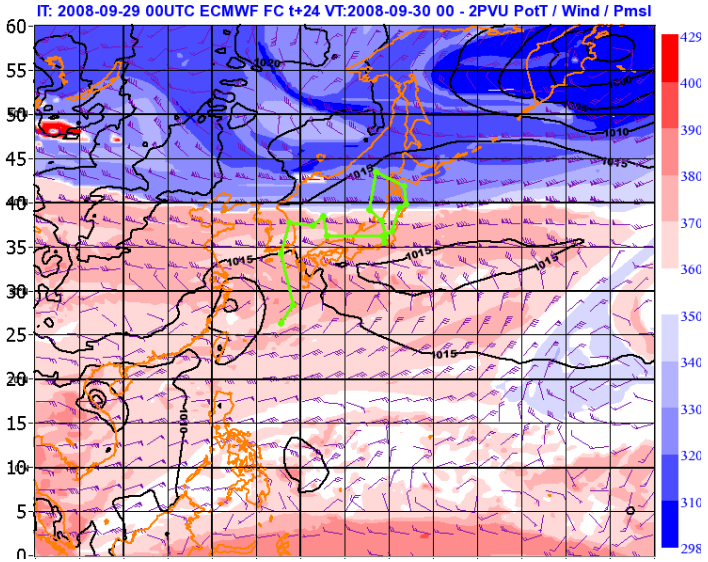
Observations:
- 10 dropsondes
- DIAL
- wind Lidar

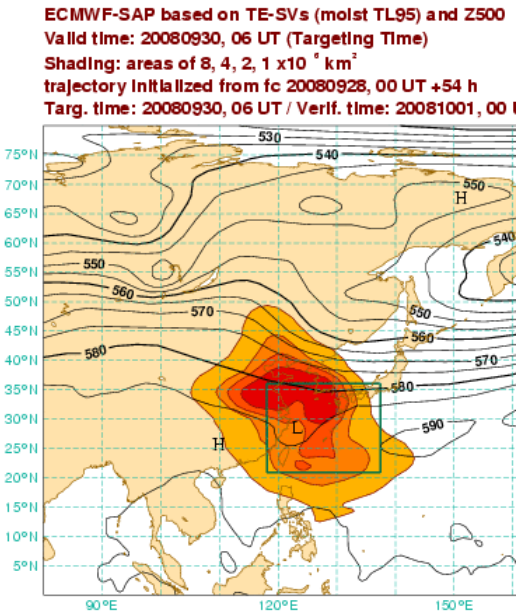
weakening of Jangmi

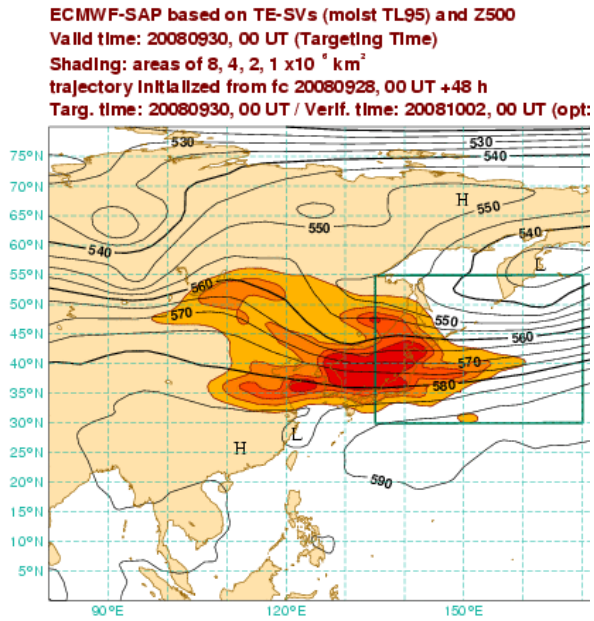
nearly no DIAL

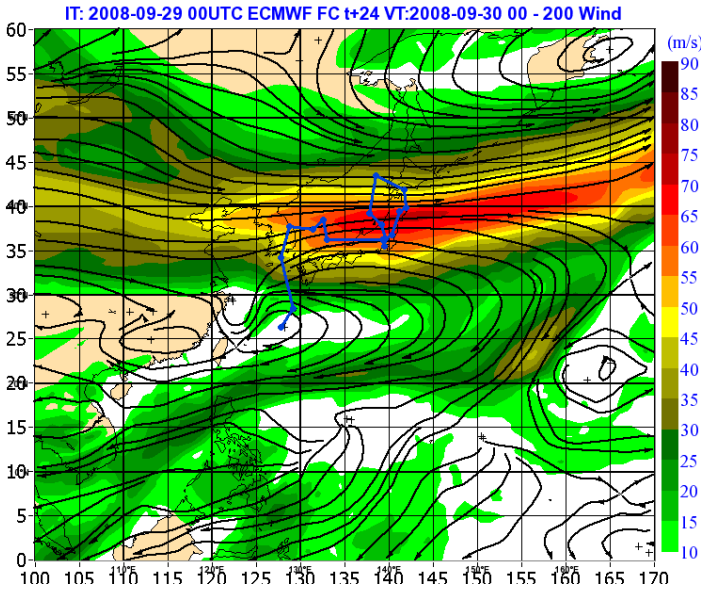
22.Mission: Oki - Ats (20080930 2220-0140Z)
23.Mission: Ats - Ats (20080930 0350-0655Z)

- **typhoon targeting and extra-tropical transition**
- **high sensitivity** in the SV calculations is indicated mostly north and northeast of the storm itself (interaction between the outflow and the zonal jet, upstream trough located over China). ETKF products again highlight the ambience of the system with an extension to the north and northeast.
- from an ET point of view the outflow, the region of interaction between the storm and the mid-latitudes and the jet stream are sampled.









WALES

DLR

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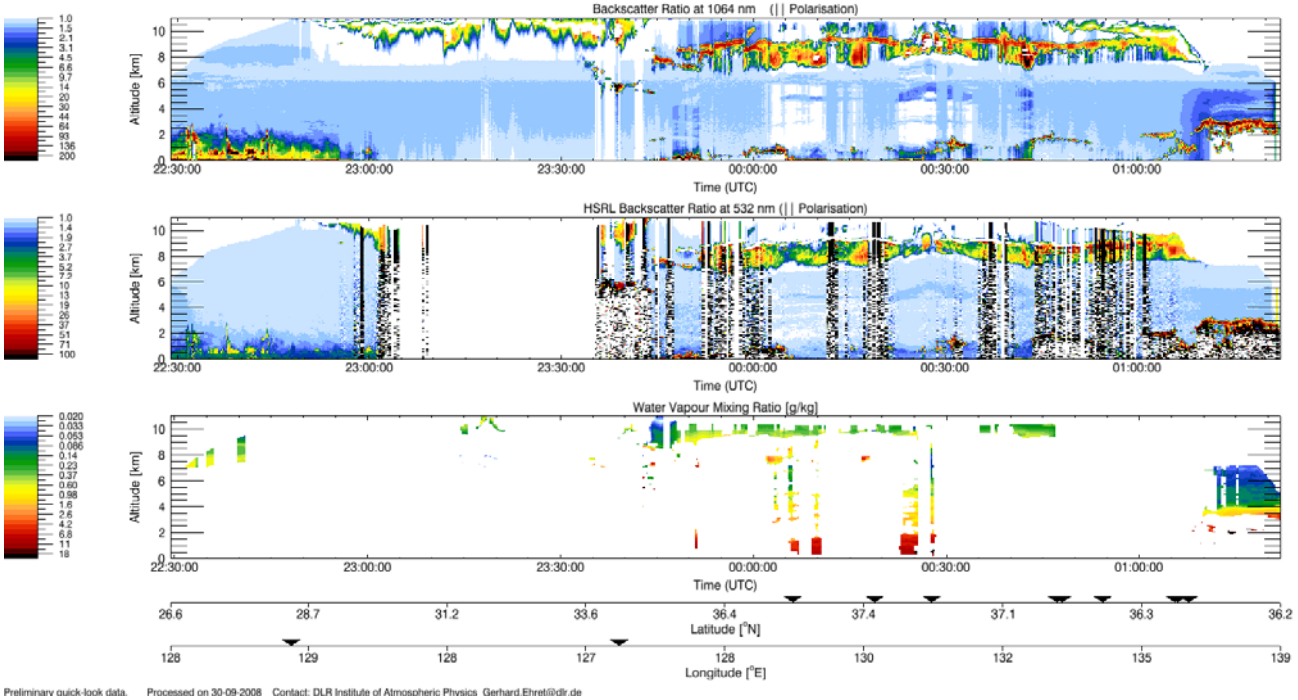
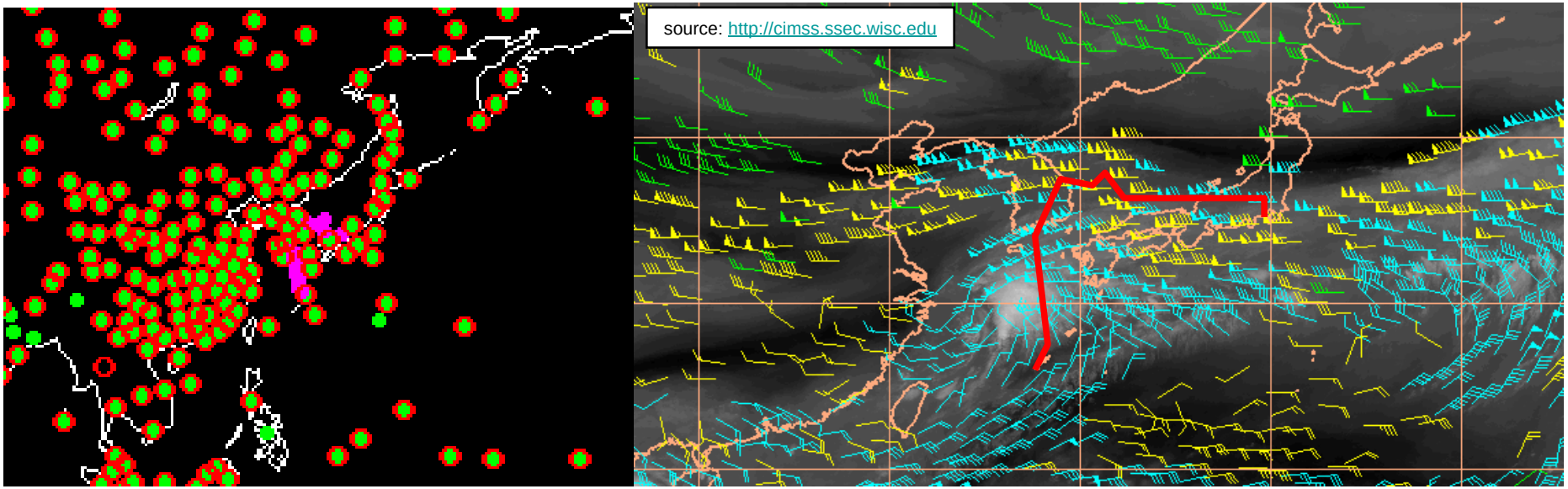
22. Flight / Kadena - Atsugi Jangmi-Mission 3



Observations:
- 12 dropsondes
- DIAL & wind lidar

nearly no DIAL obs,
but wind lidar not too bad...



DLR **WALES**

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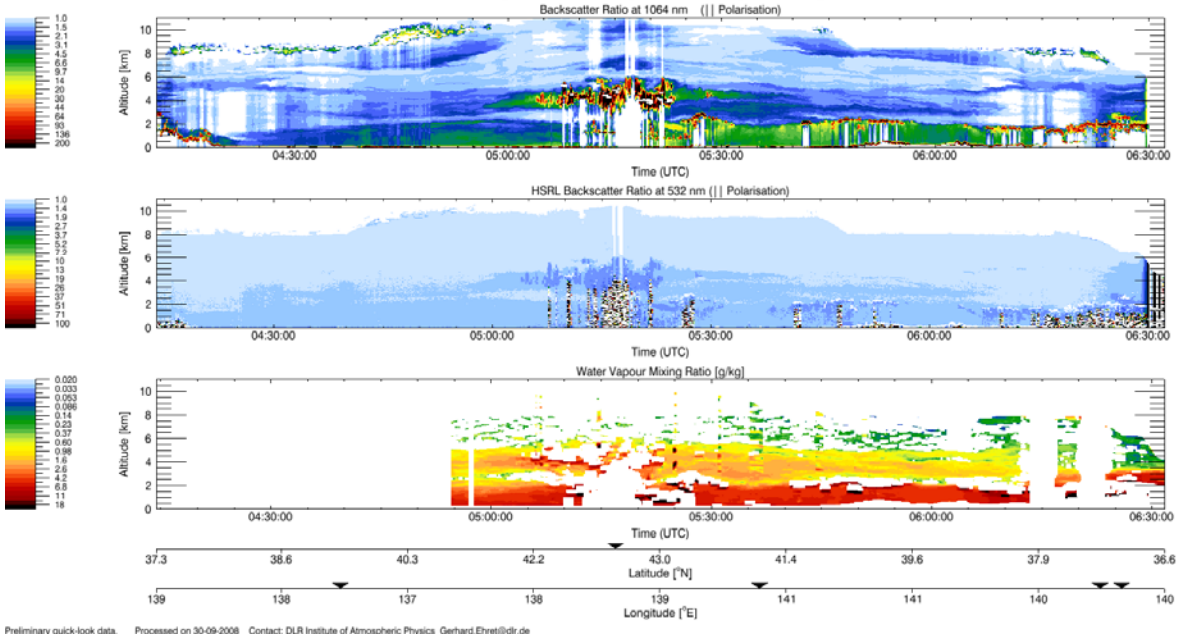
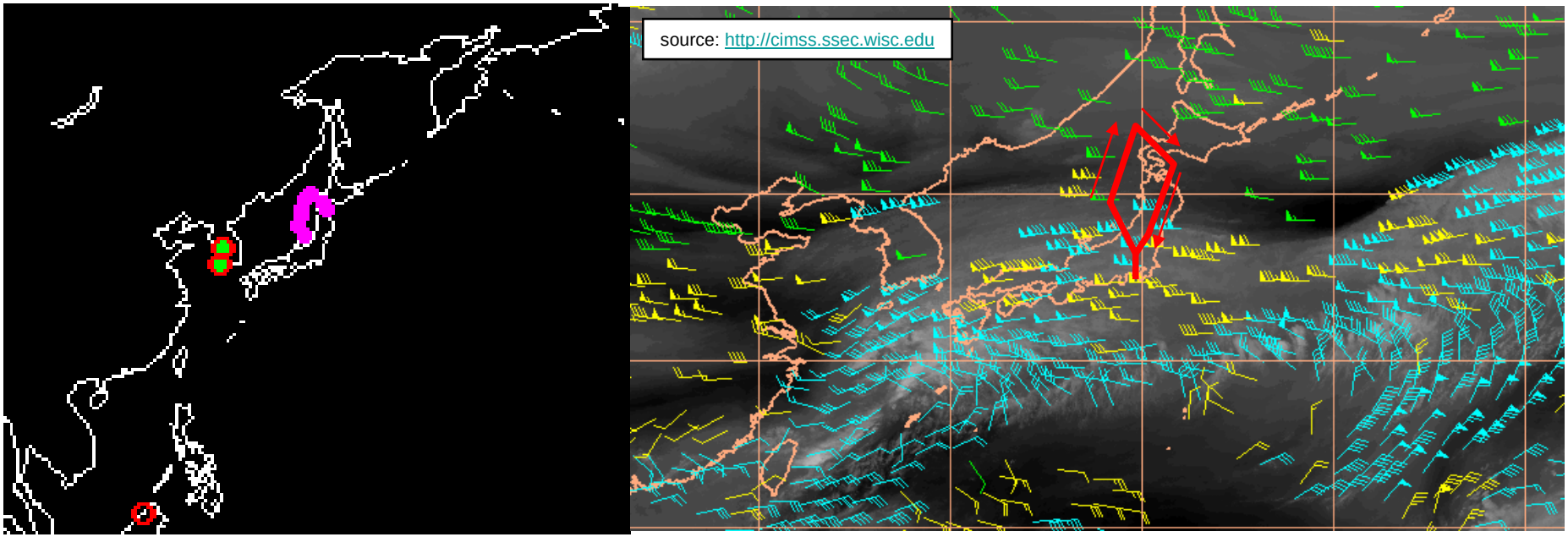
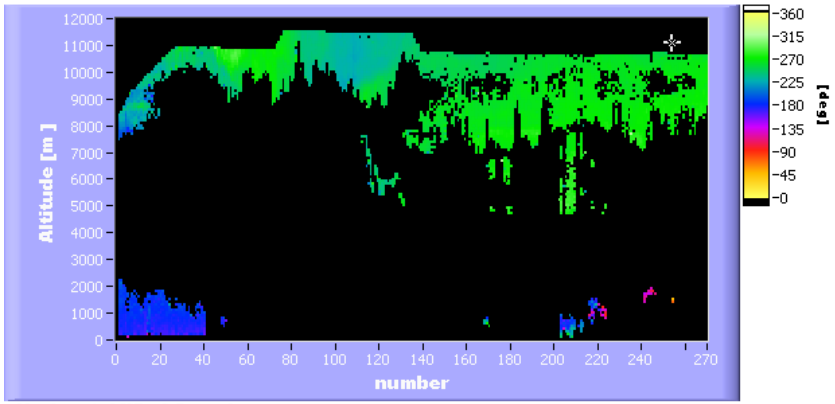
23. Flight / Atsugi - Atsugi Jangmi-Mission 4

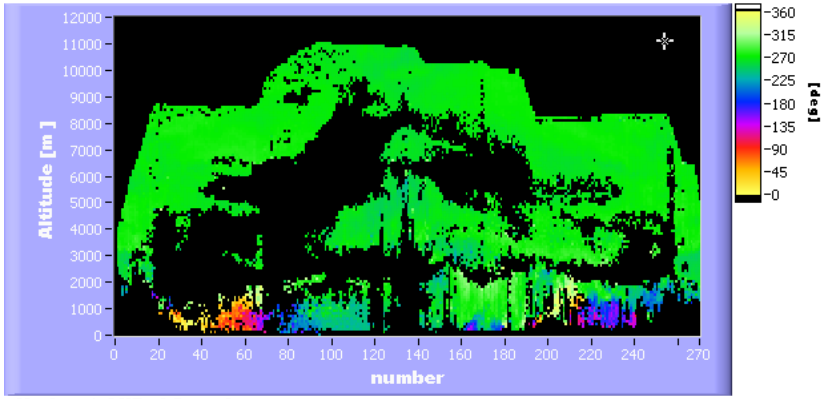


Observations:
- 8 dropsondes
- DIAL & wind lidar

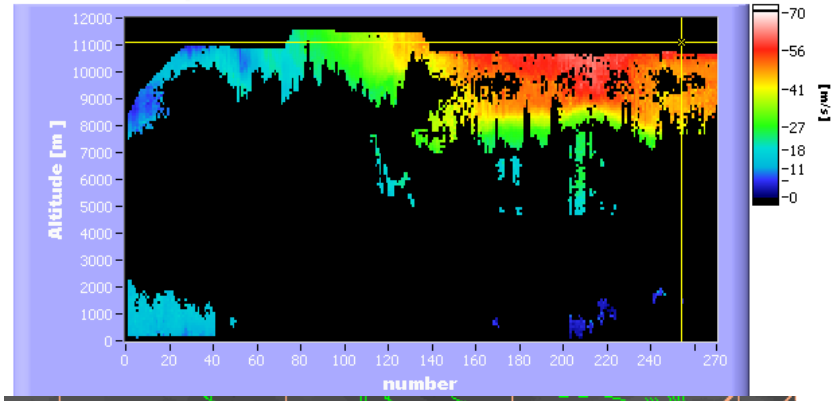


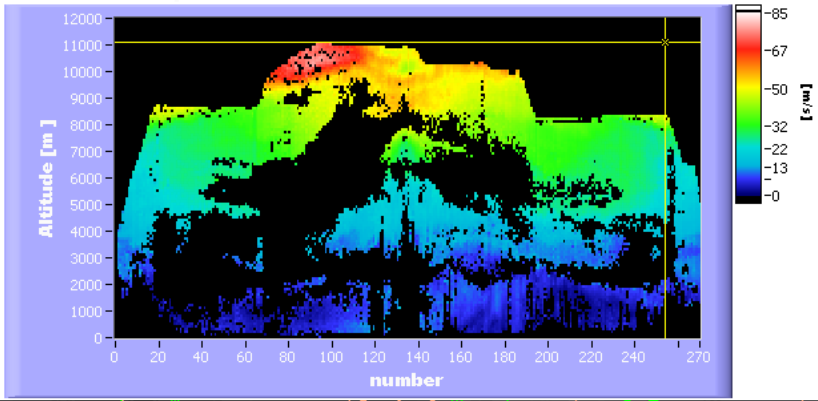
Wind Direction

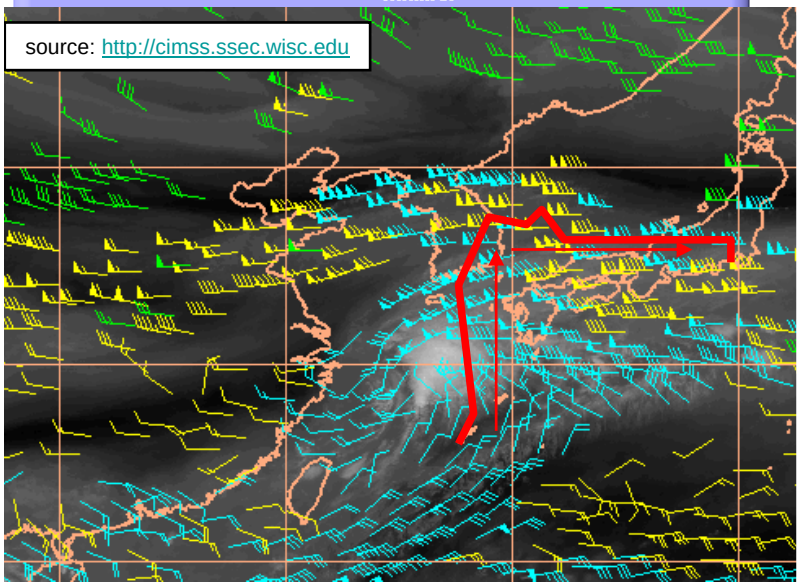


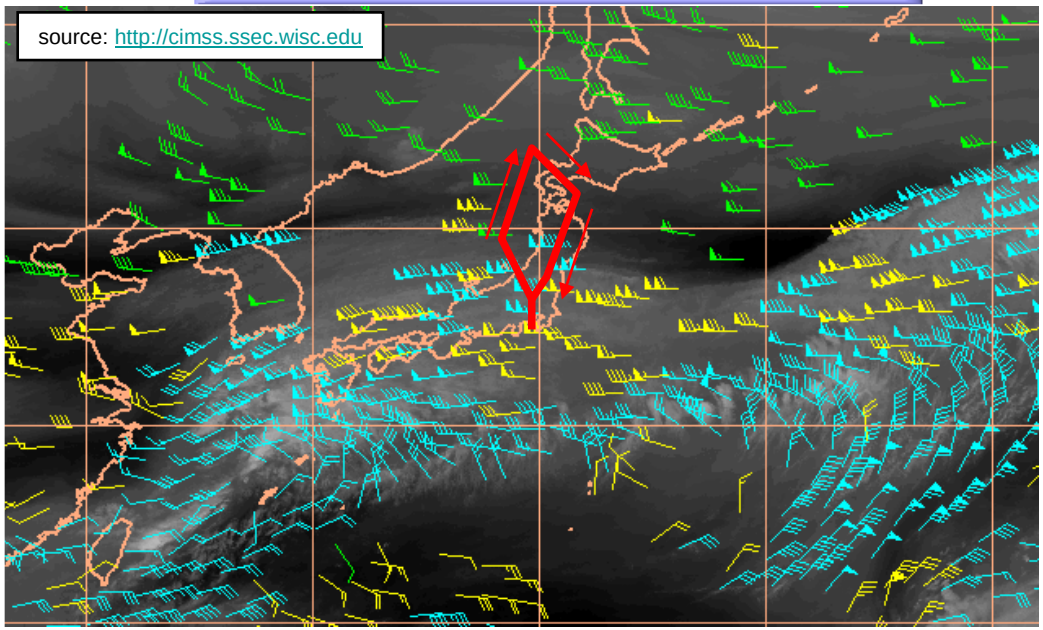


Horizontal Wind Speed



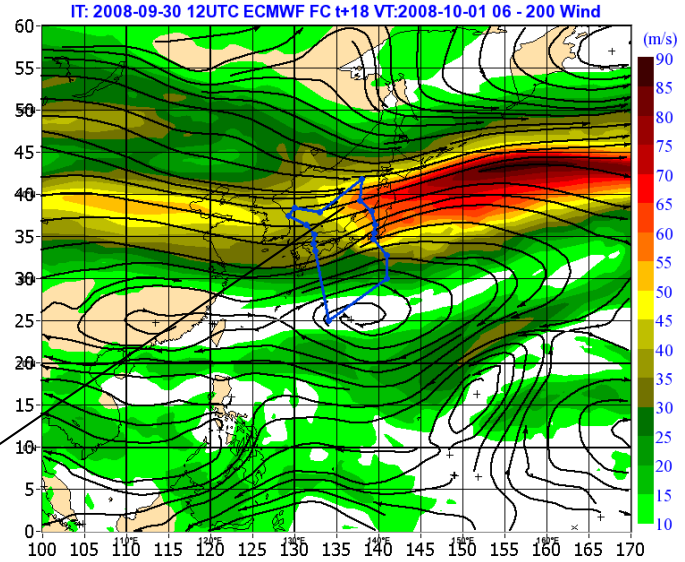




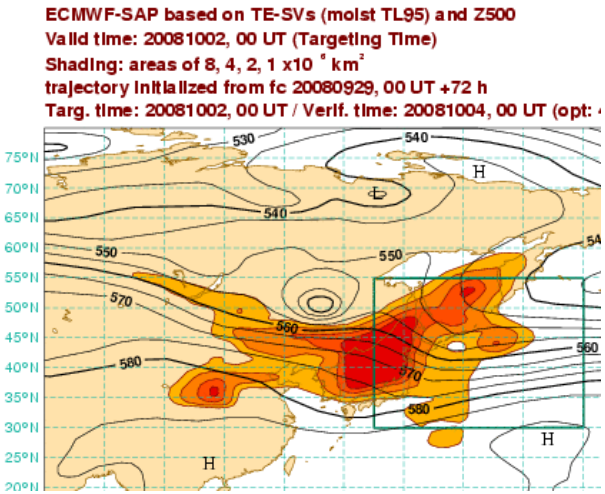


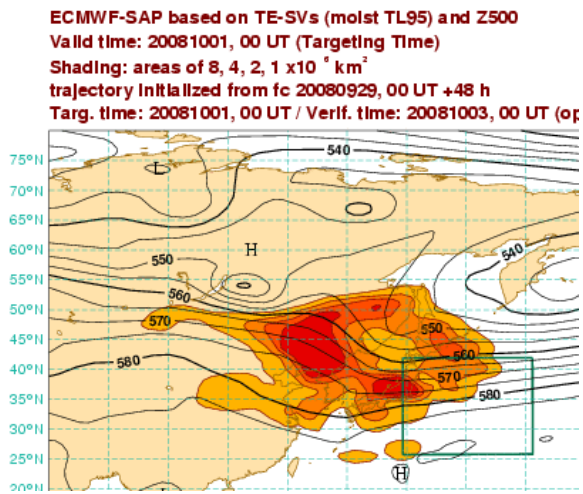
24.Mission: Ats - Iwa K (20081001 0525-0840Z)
25.Mission: Iwa K - Ats (20081001 1040-1310Z)

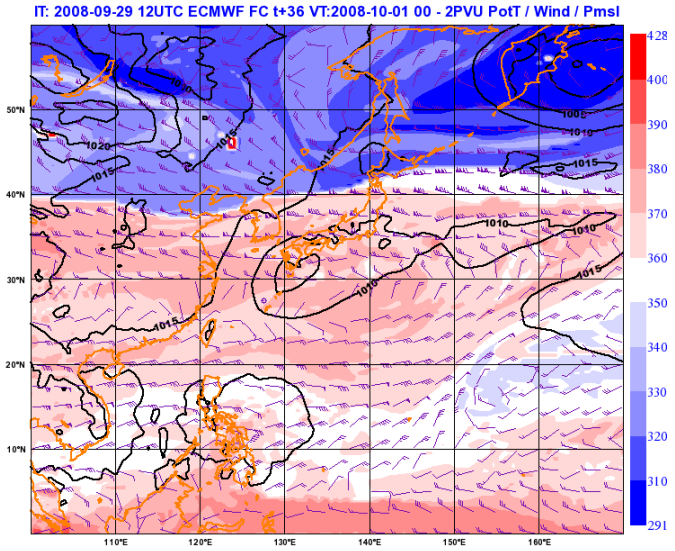
- **ET and targeting**
- on the first flight a cross section of the decaying low-level circulation center of Jangmi was performed. These measurements should give information about the structure of the dying system
- the second flight had the purposed to sample the targeting areas over the Japanese Sea and the mid-latitude jet stream

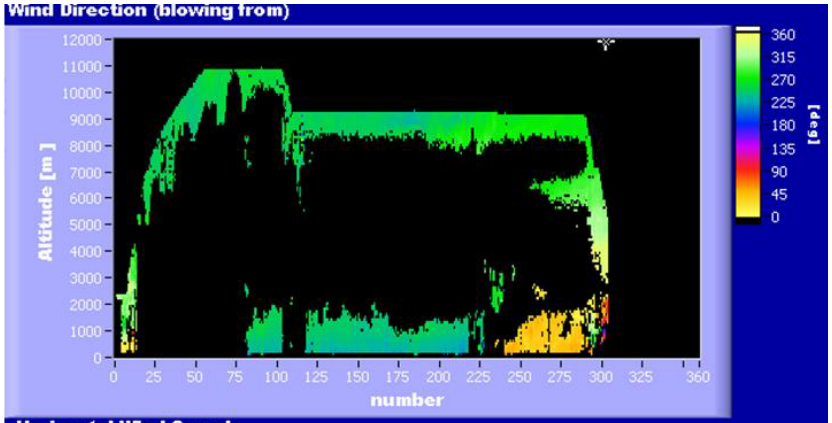


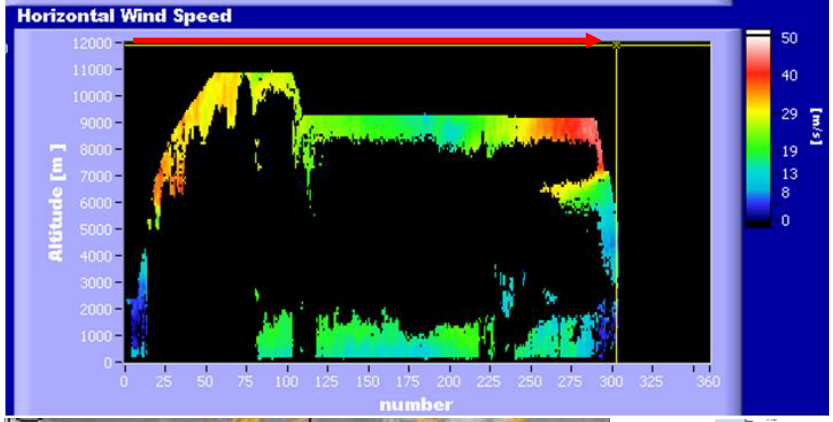
2nd leg has changed!

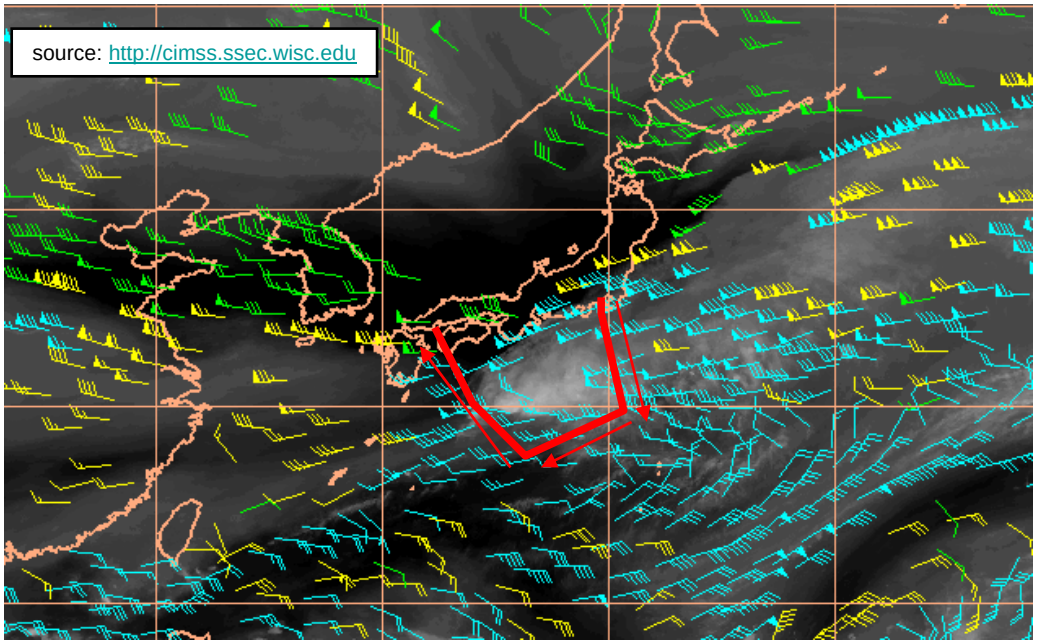


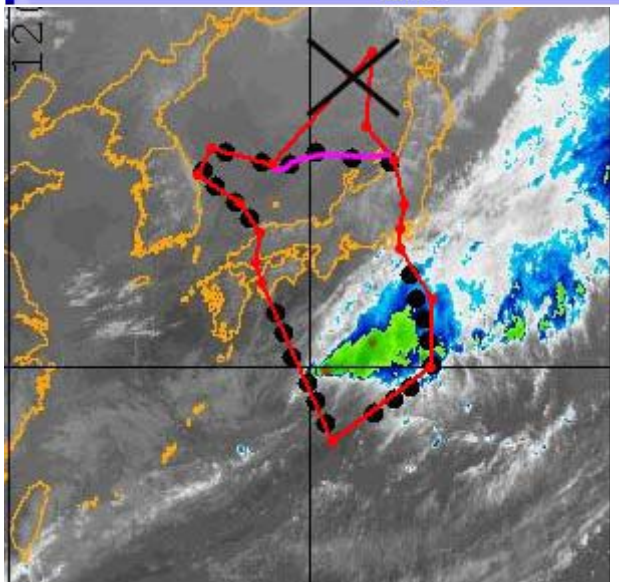


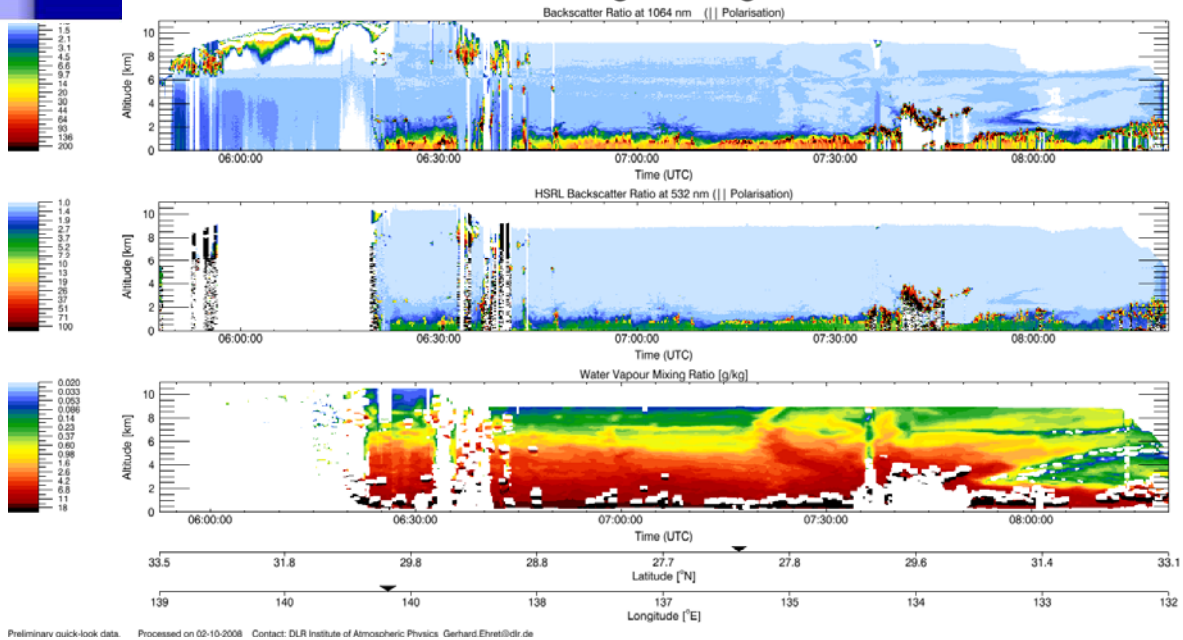


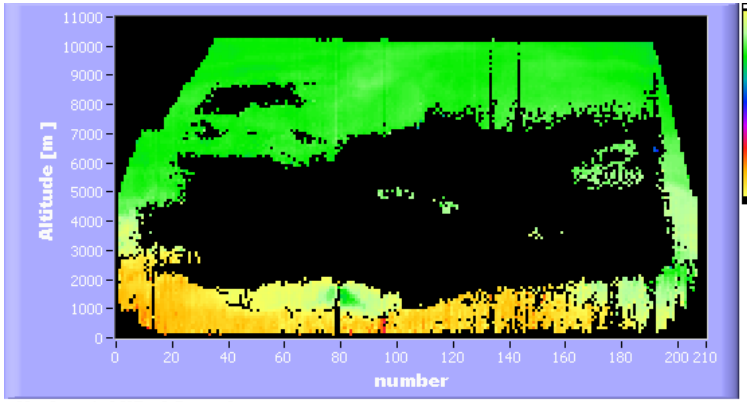

Wind Direction (blowing from)
Altitude [m]
number
[deg]

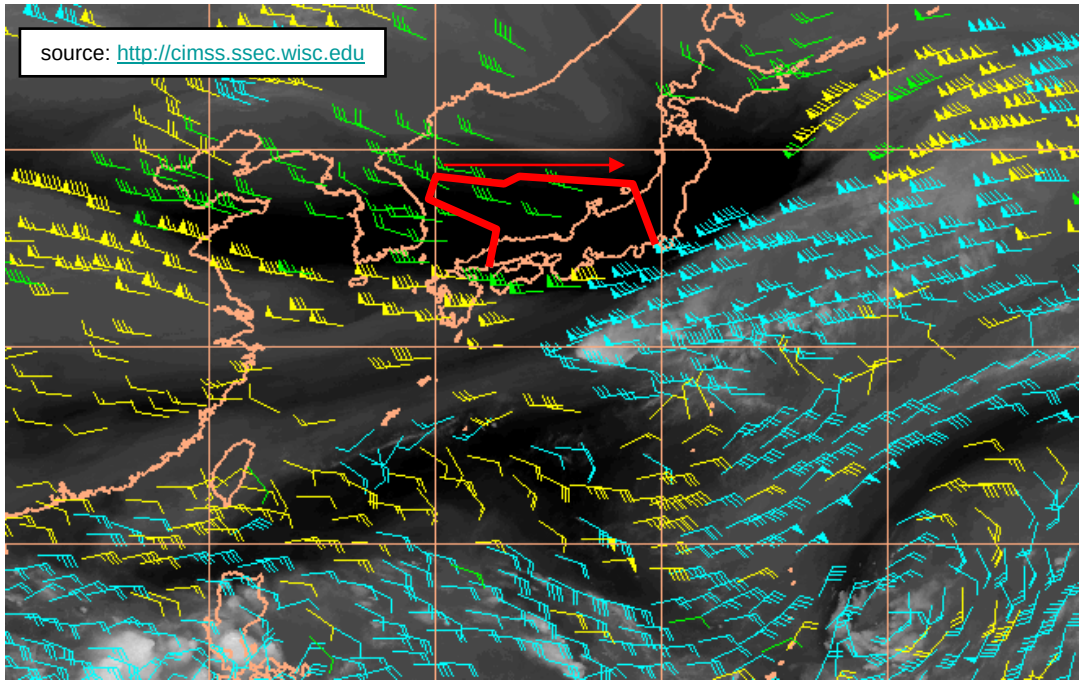

Horizontal Wind Speed
Altitude [m]
number
[m/s]

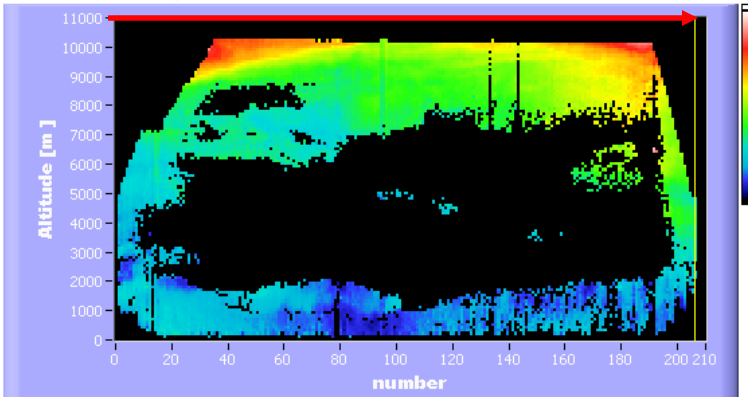

source: http://cimss.ssec.wisc.edu




WALES
T-PARC 01-10-2008
23. Flight / Atsugi - Iwakuni
Backscatter Ratio at 1064 nm (|| Polarisation)
HSRL Backscatter Ratio at 532 nm (|| Polarisation)
Water Vapour Mixing Ratio [g/kg]
Altitude [km]
Time (UTC)
Latitude [°N]
Longitude [°E]







Observations:
- 16+10 dropsondes
- DIAL
- wind Lidar