



Data archive in DOTSTAR during T-PARC

Chun-Chieh Wu

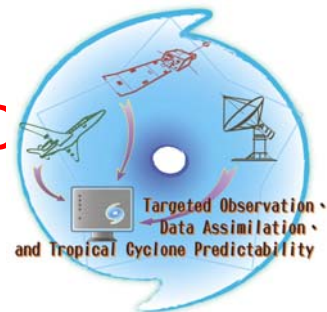
Department of Atmospheric Sciences
National Taiwan University

Targeted team:

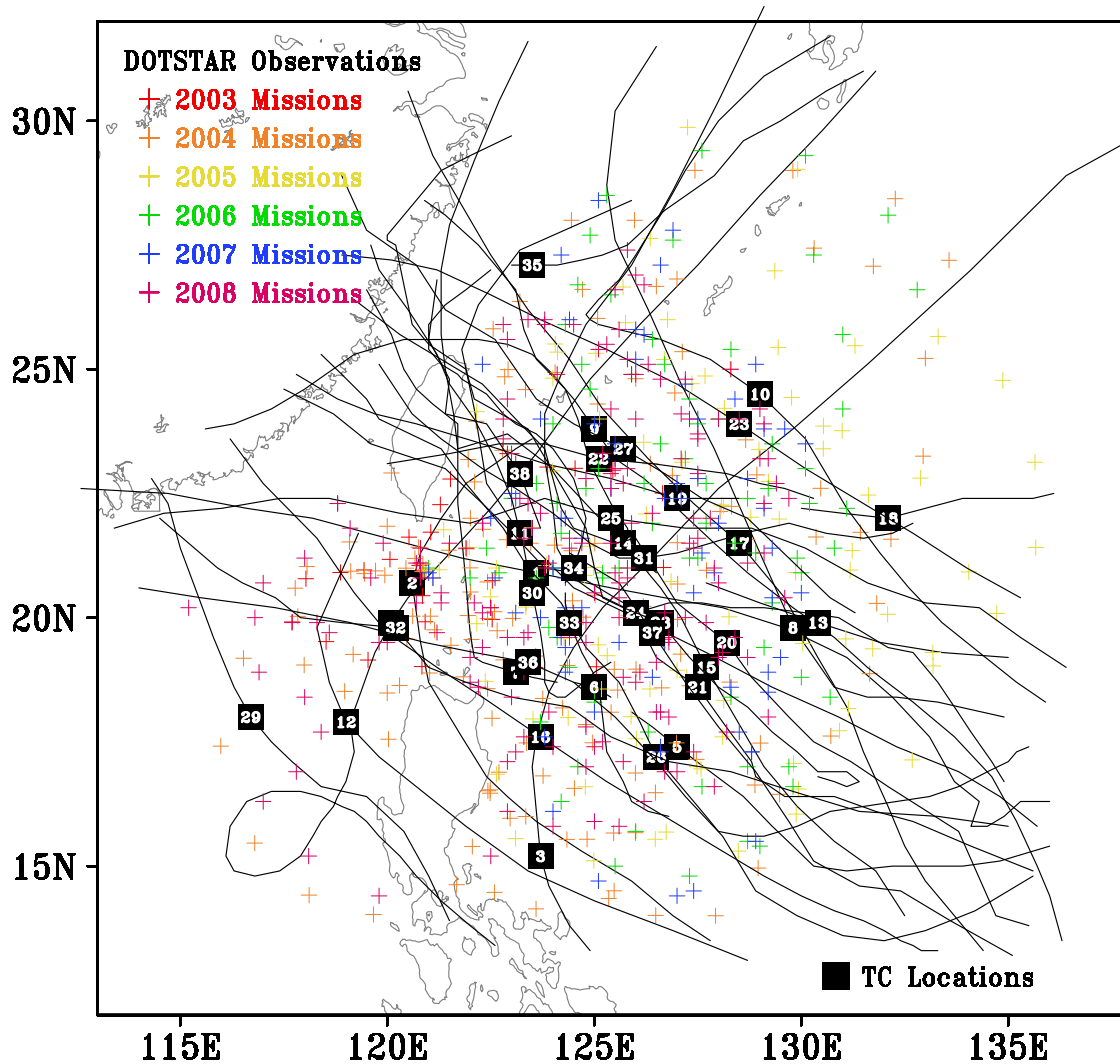
Chun-Chieh Wu, Po-Hsiung Lin, Jan-Huey Chen, Shin-Guan Chen (NTU), K.-H. Chou (CCU), Sim Aberson (HRD), T. Nakazawa, M. Yamaguchi (JMA/MRI), Sharan Majumdar (U. of Miami), Melinda Peng, C. Reynolds (NRL), R. Buizza (ECMWF), H. M. Kim (Yonsei Univ.), Martin Weissmann (DLR)

Acknowledging collaborators in DOTSTAR and T-PARC

Grants: NSC, CWB, RCEC/Academia Sinica, ONR



Flight tracks and locations of deployed dropsondes



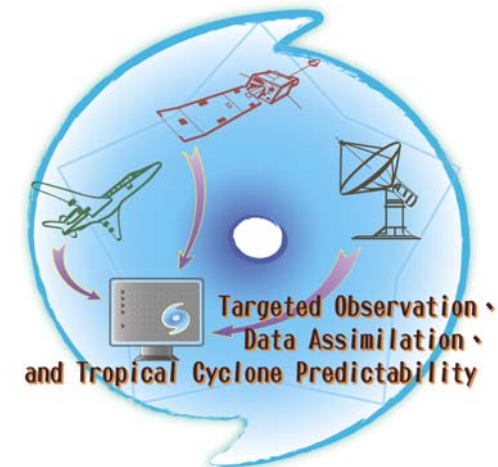
Up to 2008, DOTSTAR has successfully completed 38 missions for 31 typhoons with 200 flight hours and 630 dropwindsondes deployed.



DOTSTAR during T-PARC in 2008

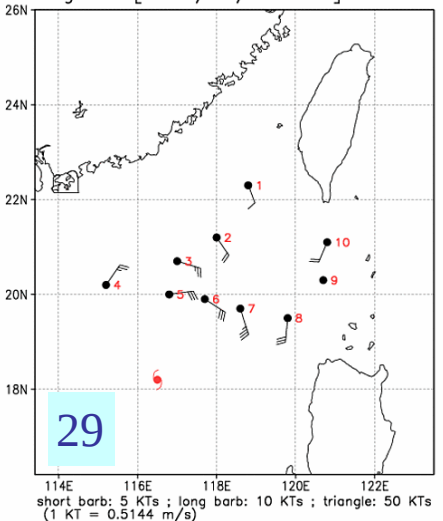
Targeted observation for the **environment** and the **outer-structure** of tropical cyclones in the NW Pacific

- High forecast uncertainty with large ensemble spreads
- Consistency of targeted guidance techniques
- Coordination with Falcon, C-130, and P-3

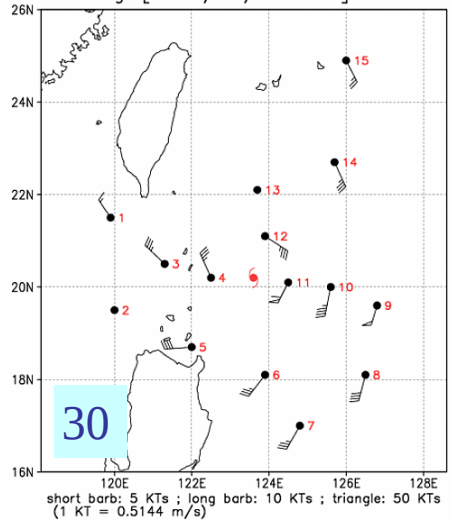


DOTSTAR in 2008 – 7 typhoons, 10 missions, 173 dropsondes

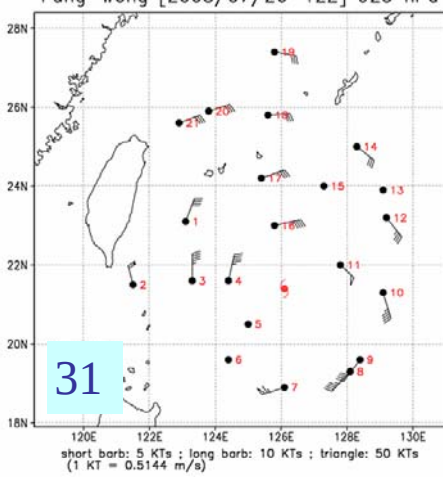
Fengshen [2008/06/23–12Z] 925 hPa



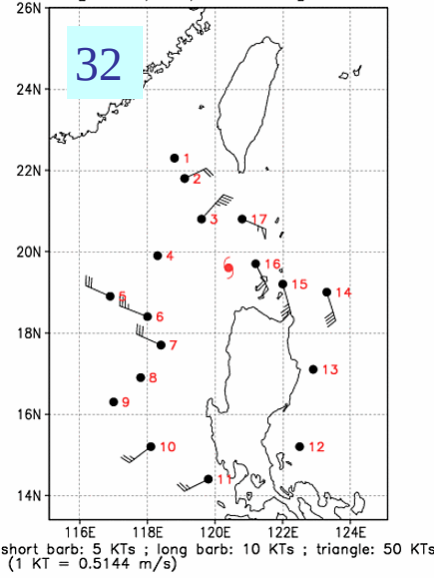
Kalmaegi [2008/07/16–12Z] 925 hPa



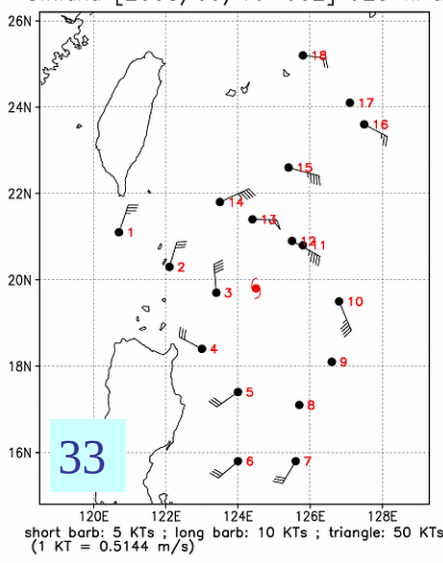
Fung-wong [2008/07/26–12Z] 925 hPa



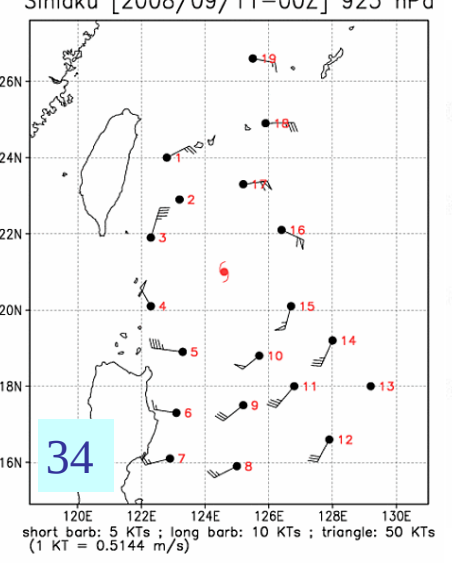
Nuri [2008/08/20–12Z] 925 hPa



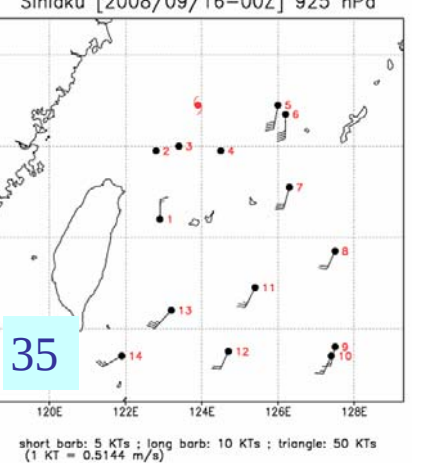
Sinlaku [2008/09/10–00Z] 925 hPa



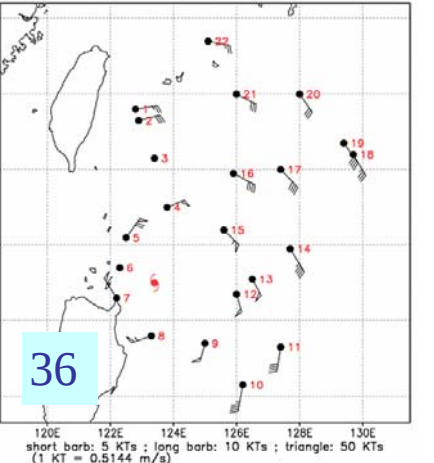
Sinlaku [2008/09/11–00Z] 925 hPa



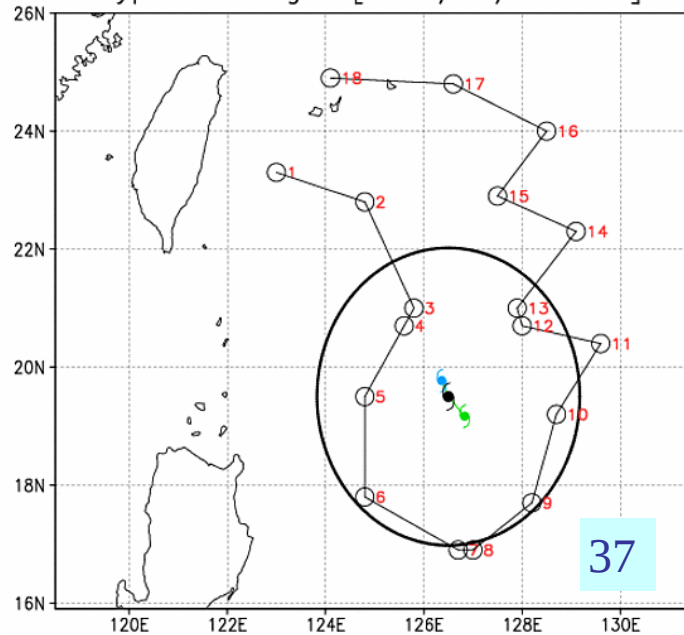
Sinlaku [2008/09/16–00Z] 925 hPa



Hagupit [2008/09/22–00Z] 925 hPa

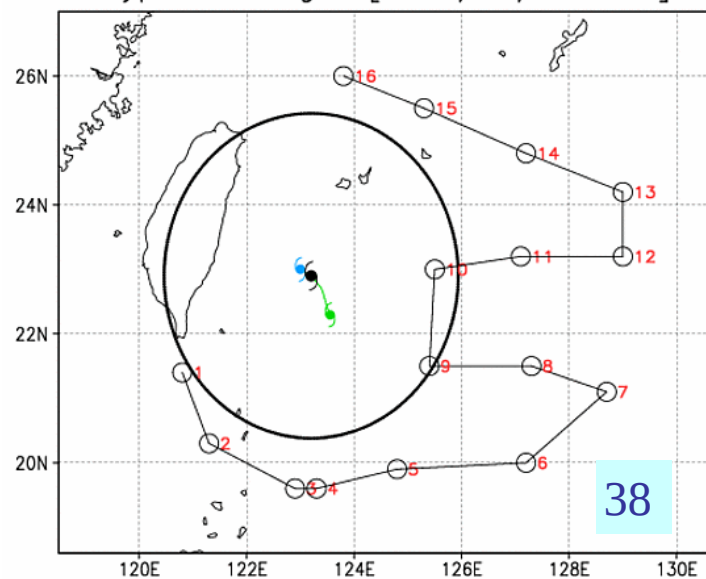


Typhoon Jangmi [2008/09/27-00Z]



The storm center = (126.5 19.5)
The radius of 15m/s wind = 280 km (CWB)

Typhoon Jangmi [2008/09/28-00Z]



The storm center = (123.2 22.9)
The radius of 15m/s wind = 280 km (CWB)

DOTSTAR in 2008 – 7 typhoons, 10 missions, 173 dropsondes

DOTSTAR Data Description

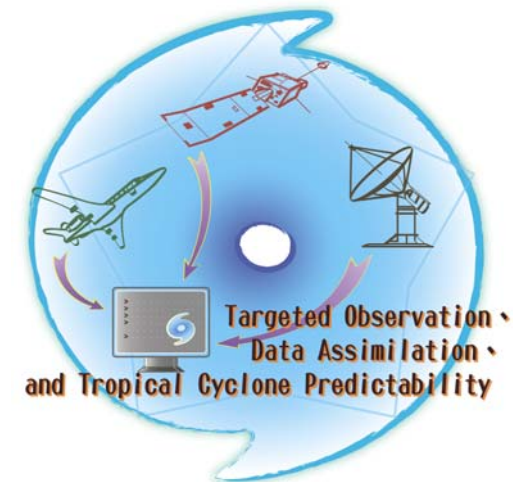
Observation Platform	Data type	Archive	Variables	Periods
DROPSONDE	TEMPDROP	GTS, CWB, NTU, major centers	p, h, u, v, T, Td, RH	2003-2008
	TEMPDROP-FGGE	CWB, NTU	p, h, u, v, T, Td, RH	2003-2008
	RAW	NTU, EOL	p, h, u, v, T, Td, RH	2003-2008
	RAW-QC	NTU	p, h, u, v, T, Td, RH	2003-2008
Flight Level Data	RAW-FGGE	CWB, NTU	h, u, v, T	2008
	RAW	NTU	h, u, v, T	2005-2008

Flight level Data Description

1. File format: text file.
2. Time interval: 1 minute
3. Data formate: Altitude(fts), True Air Speed (knots), Static Air Temperature (° C), Latitude(deg), Longitude(deg), Ground Speed (knots), Wind Speed (knots), Display Heading(deg), Wind Direction(deg), Time

DOTSTAR-related publications

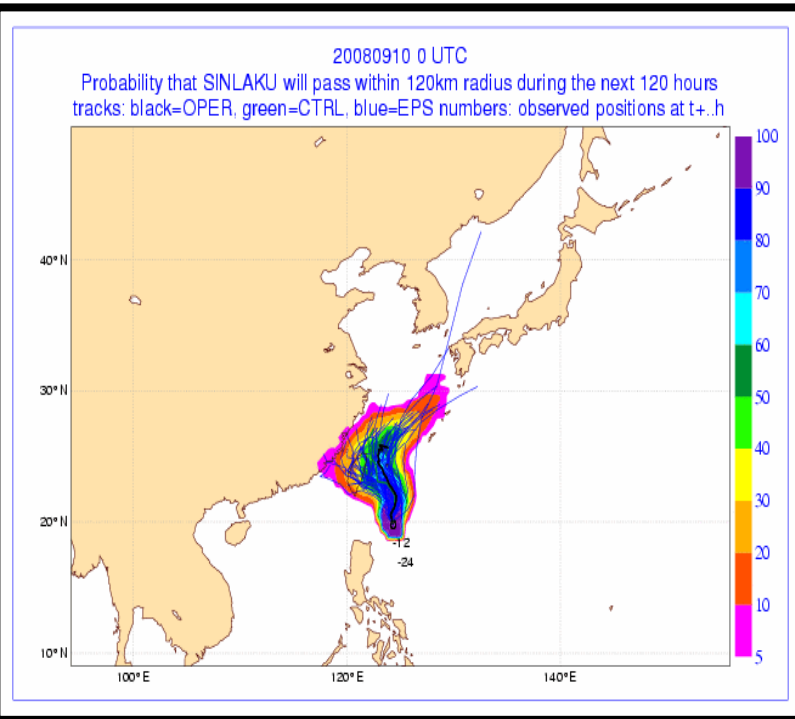
- Wu et al. (2005, BAMS): Overview
 - Wu et al. (2007a, JAS): ADSSV; targeted guidance
 - Wu et al. (2007b, WF): Impact evaluation
 - Chou and Wu (2008, MWR): Impact evaluation
 - Yamaguchi et al. (2009, MWR): Impact and SV
 - Wu et al. (2009a, MWR): ADSSV and dynamics
 - Wu et al. (2009b, MWR): Intercomparison of targeted methods
 - Chou et al. (2009, JGR): QSCAT-data validation
-
- More ongoing using multiple sources of data from T-PARC
(Sinlaku and Jangmi)



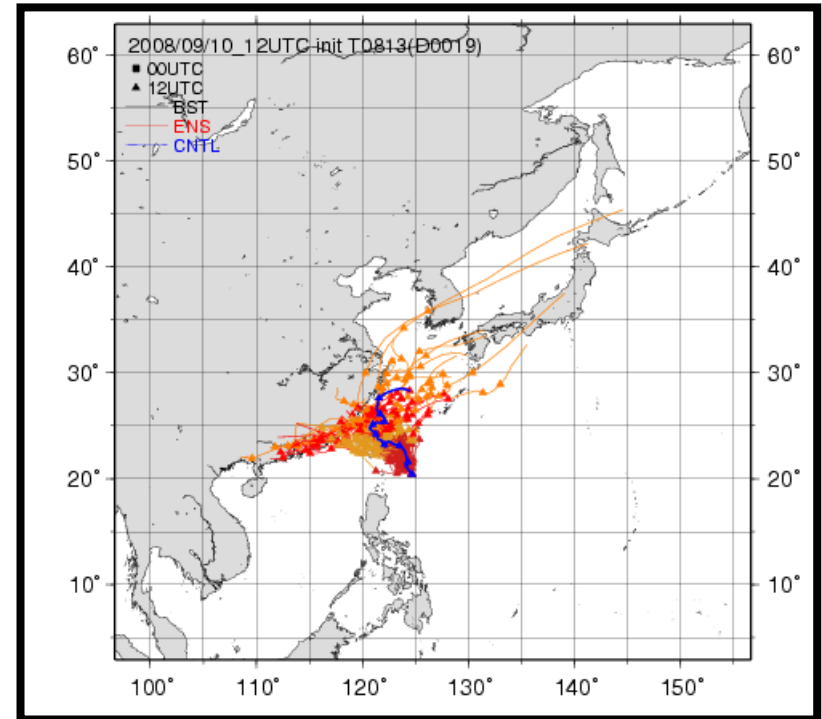
Year	Typhoons	Missions	Flight Hours	Good drposondes	Bad dropsondes
2003	2	2	7	25	0
2004	8	10	49	165	7
2005	5	7	40	111	14
2006	5	5	30	83	8
2007	4	4	22	73	5
2008	7	10	52	173	9
Total	31	38	200	630	43

Up to 2008, DOTSTAR has successfully completed 38 missions for 31 typhoons with 200 flight hours and 630 dropwindsondes deployed.

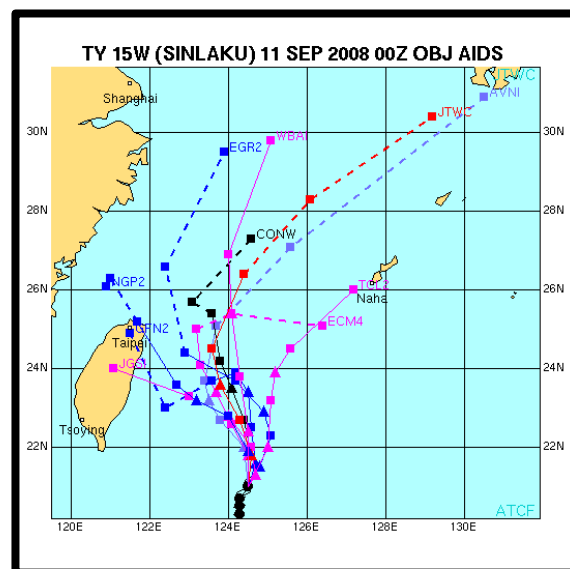
Targeting Motivation: Track Uncertainty 10 September



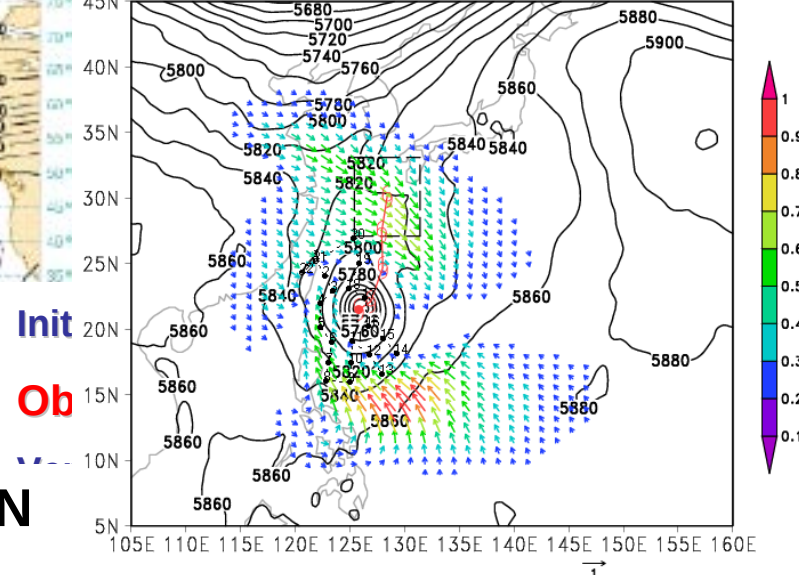
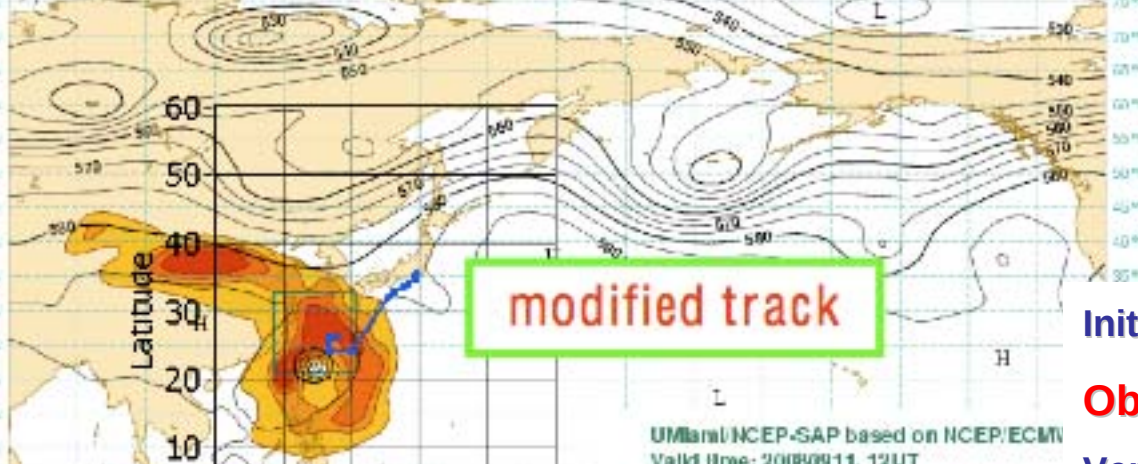
ECMWF Strike Probability



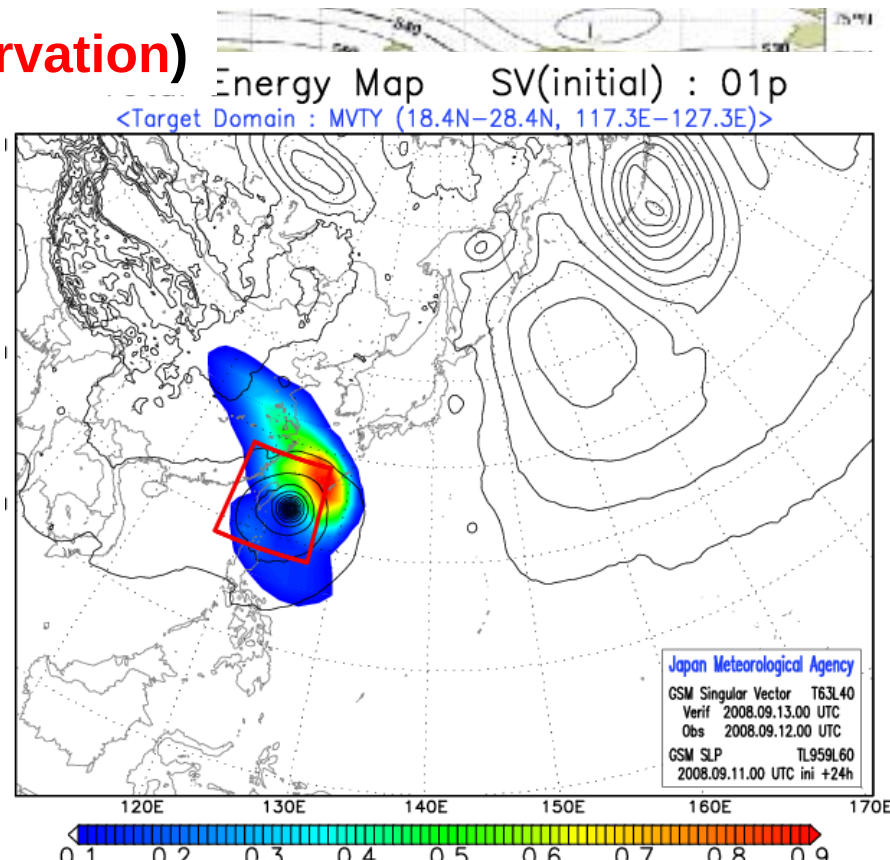
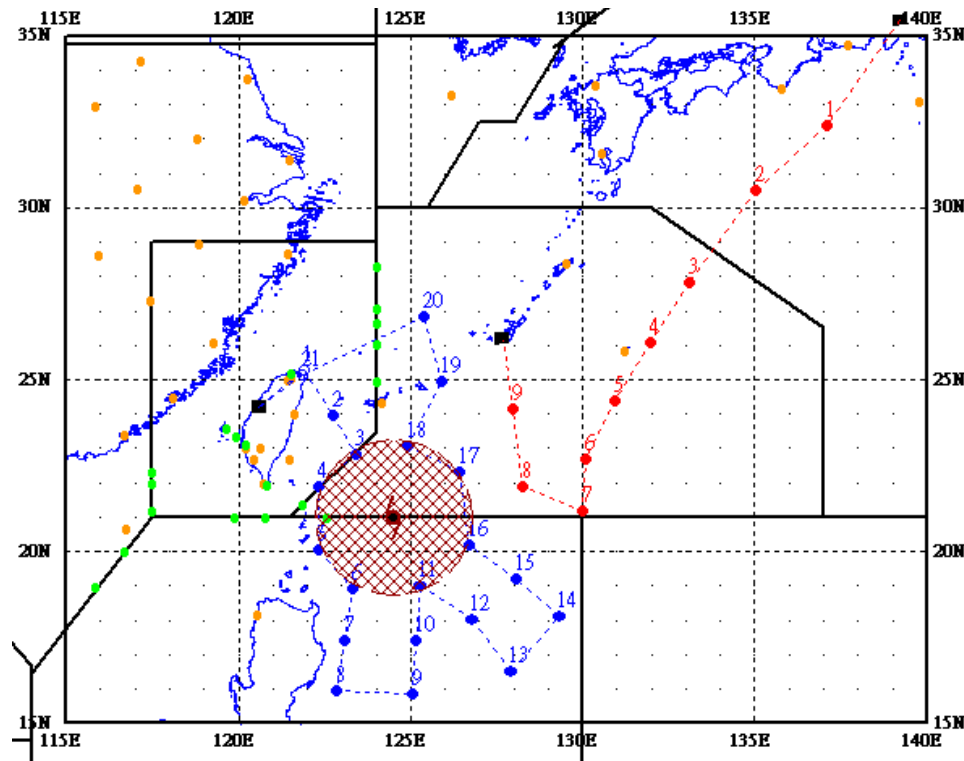
JMA Ensemble Members



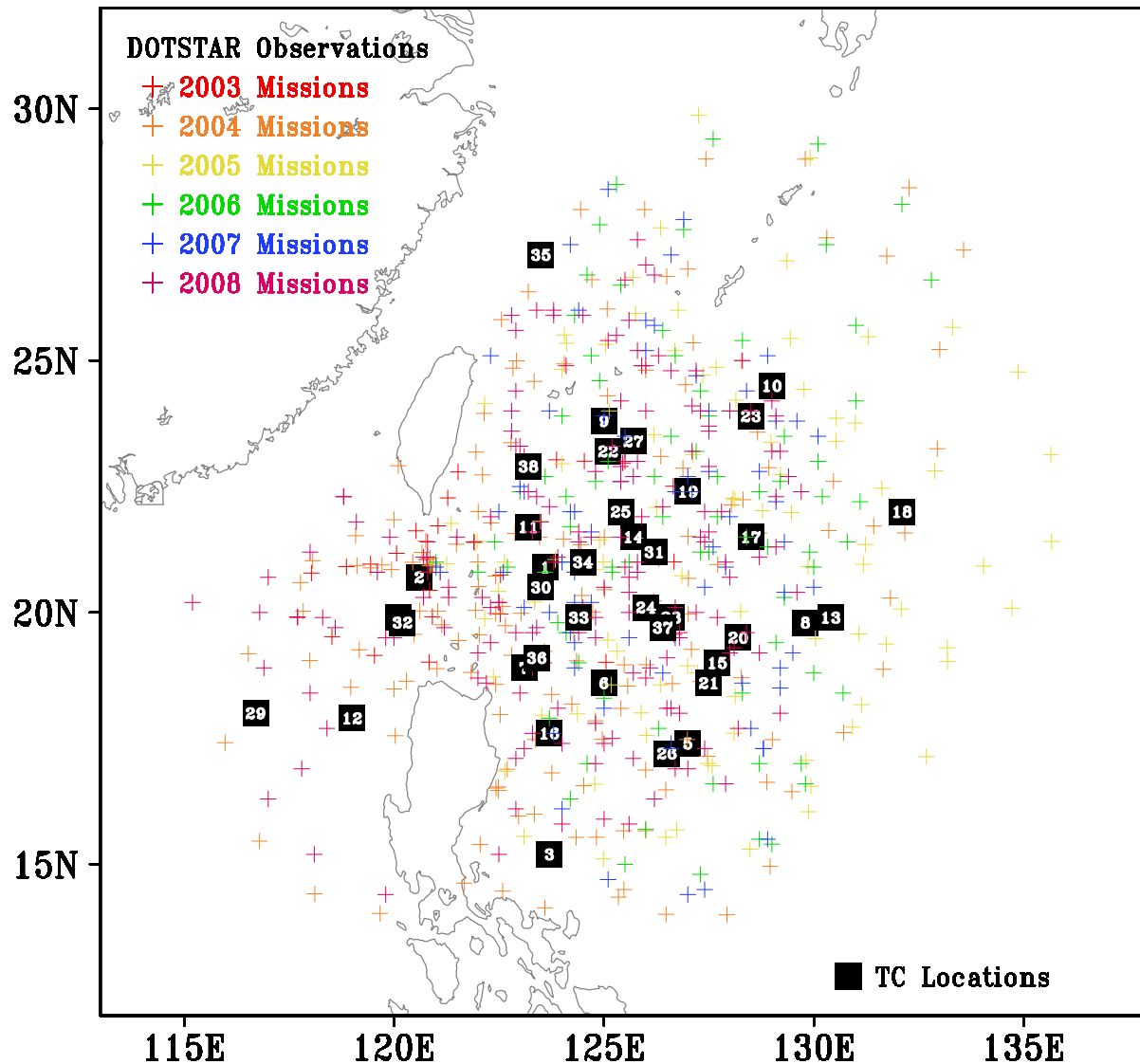
Numerical model aids



DOTSTAR Flight Plan (BLUE) and FALCON Flight Plan (1) (Red)
10-11 September 2008 (Targeted observation)

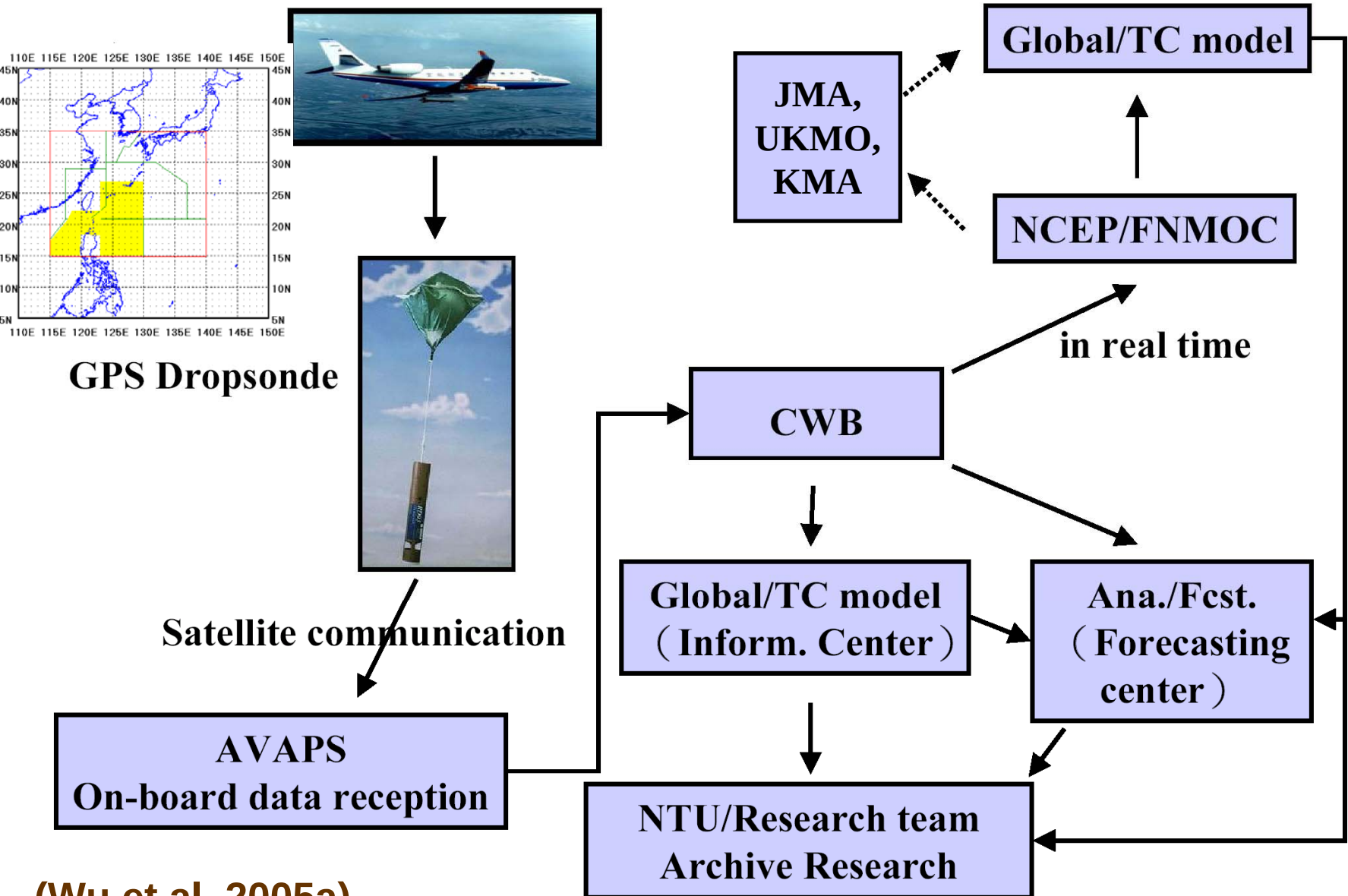


Locations of deployed dropwindsondes



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Flow chart of DOTSTAR



(Wu et al. 2005a)