Intensity and Wind Radius Identification of Typhoon Mujigae (2015) before landfall

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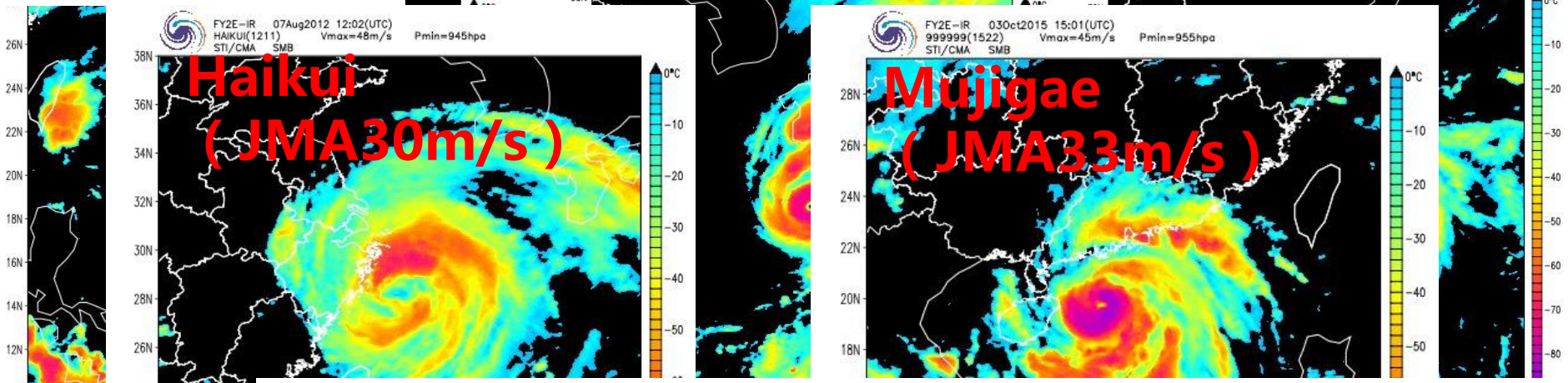
Offshore Typhoon Identification Dilemma(OTID)

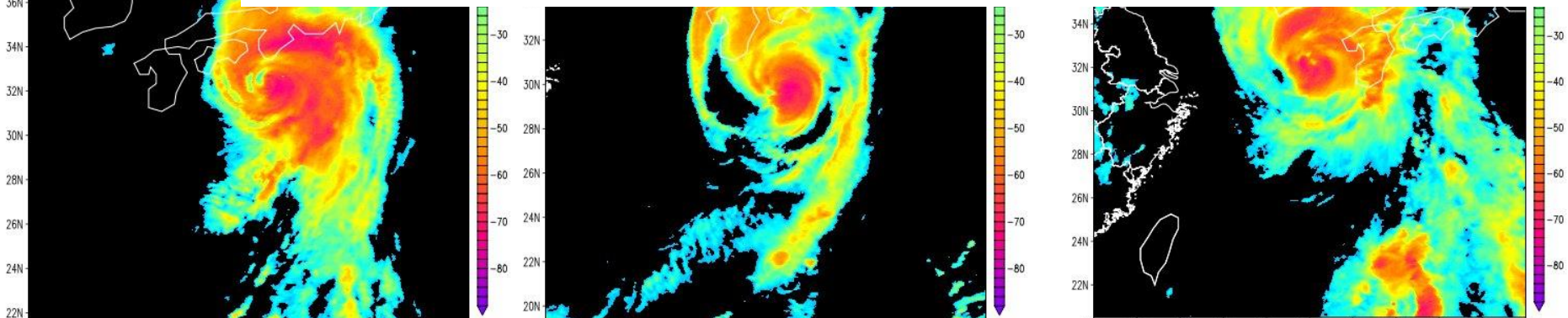
(>42m/s)



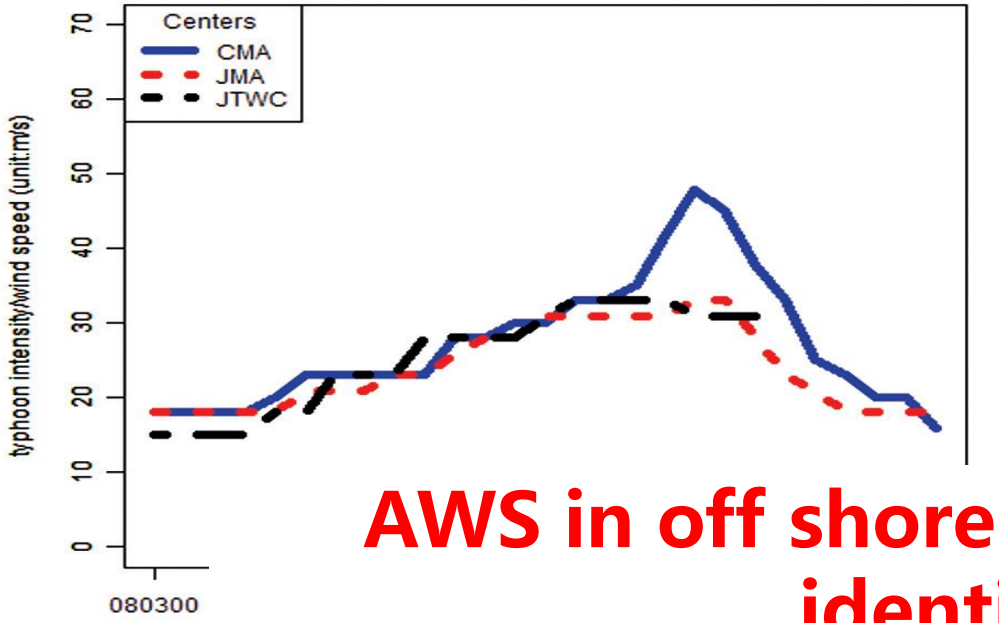
JMA ST

Typhoon Identification?

Satellite VS Offshore OBS ?



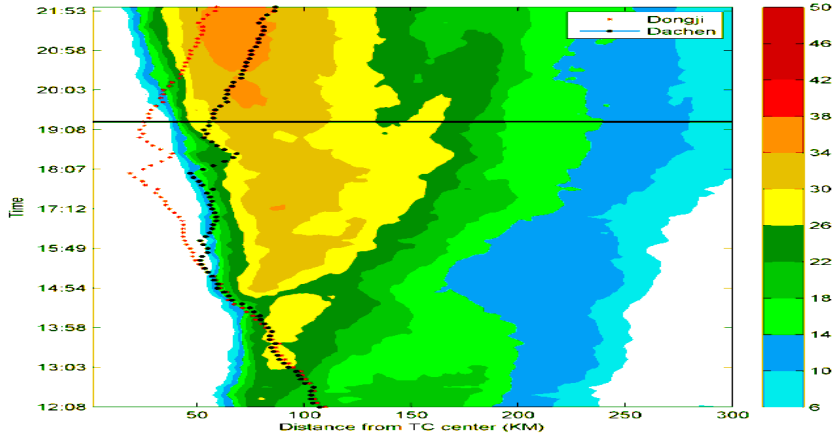
Offshore Typhoon Haikui(1211) Identification



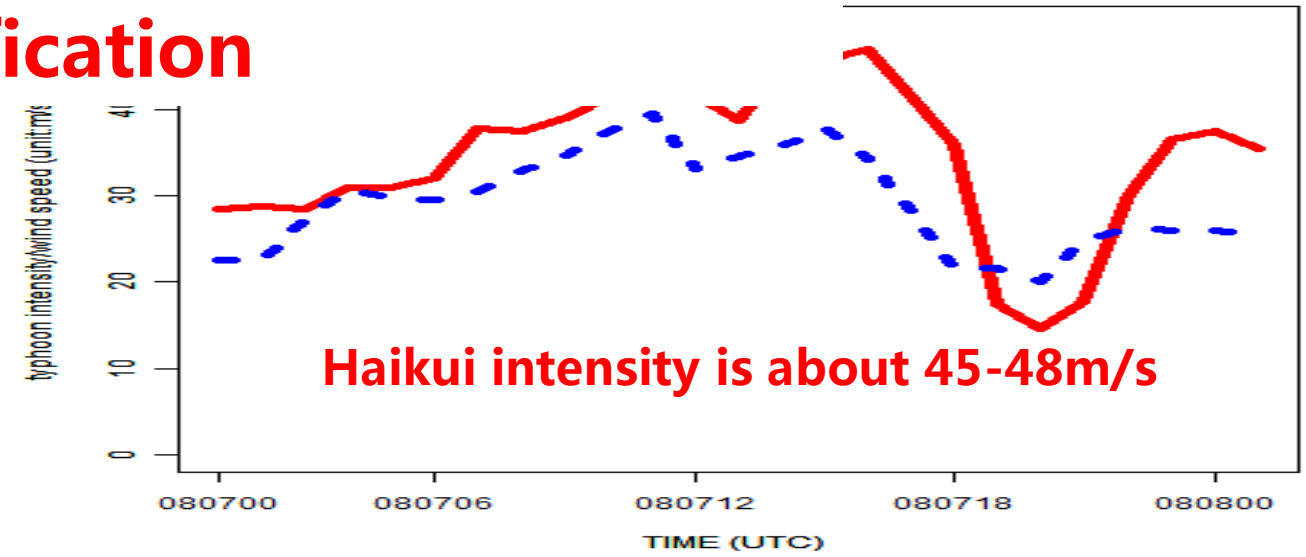
Ningbo 300 m Tower Transition Coefficient between different Height

低层 / 高层	32 M	89 M	212 M	298 M
32 M	1	/	/	/
89 M	0.955	1	/	/
212 M	0.885	0.982	1	/
298 M	0.870	0.970	0.976	1

AWS in off shore island is valid in TY identification



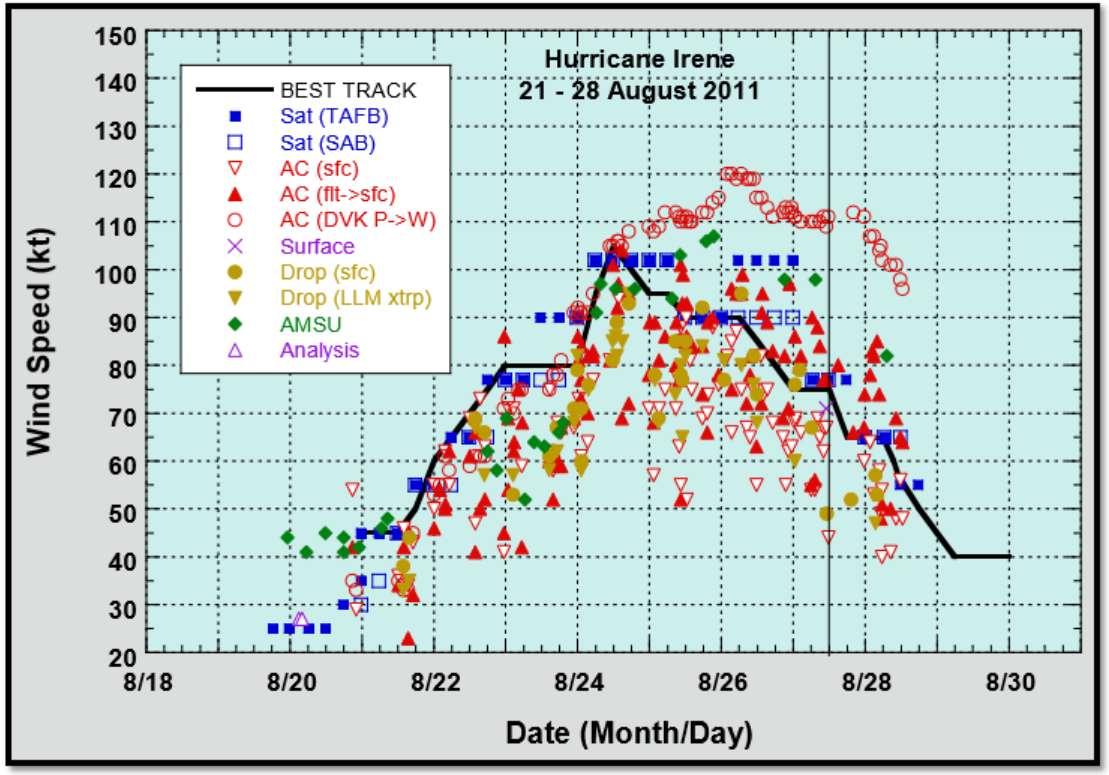
Radar OBS



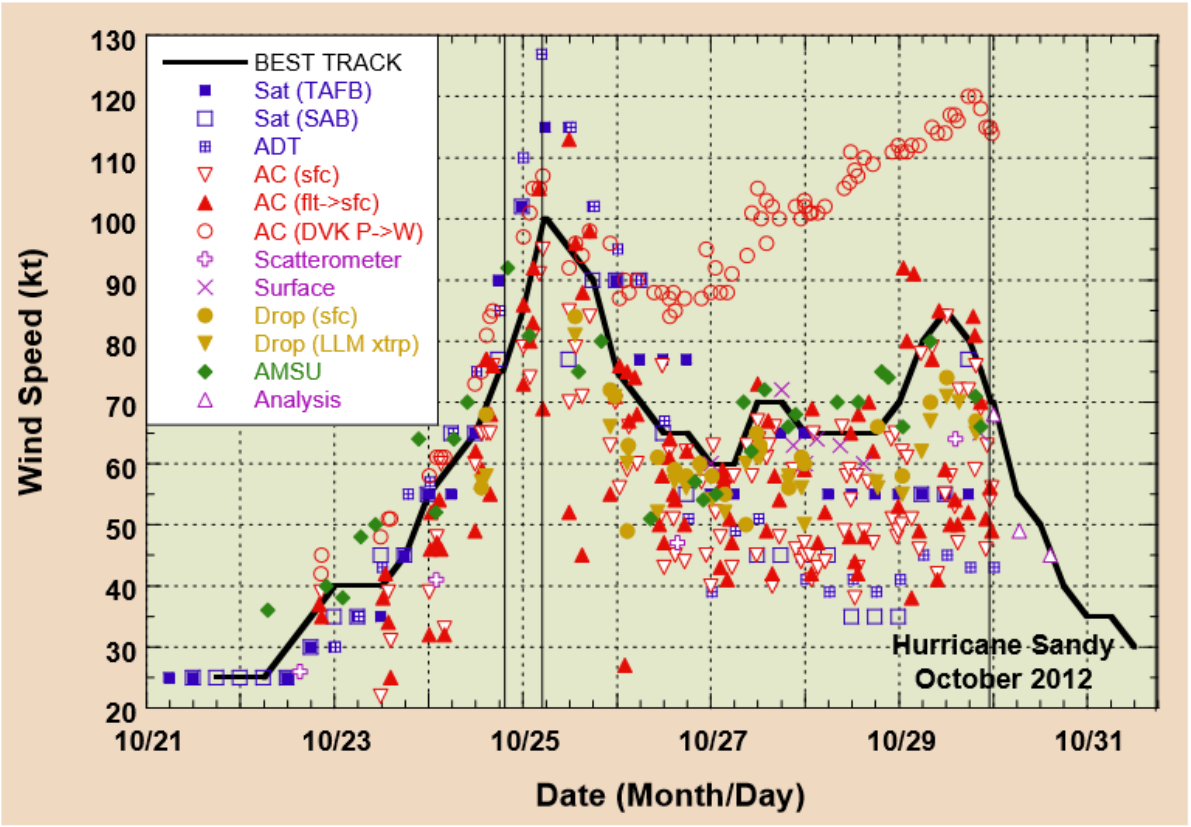
Haikui intensity is about 45-48m/s

Tang and Wu , 2013 , TCRR

Hurricane Intensity and Observation



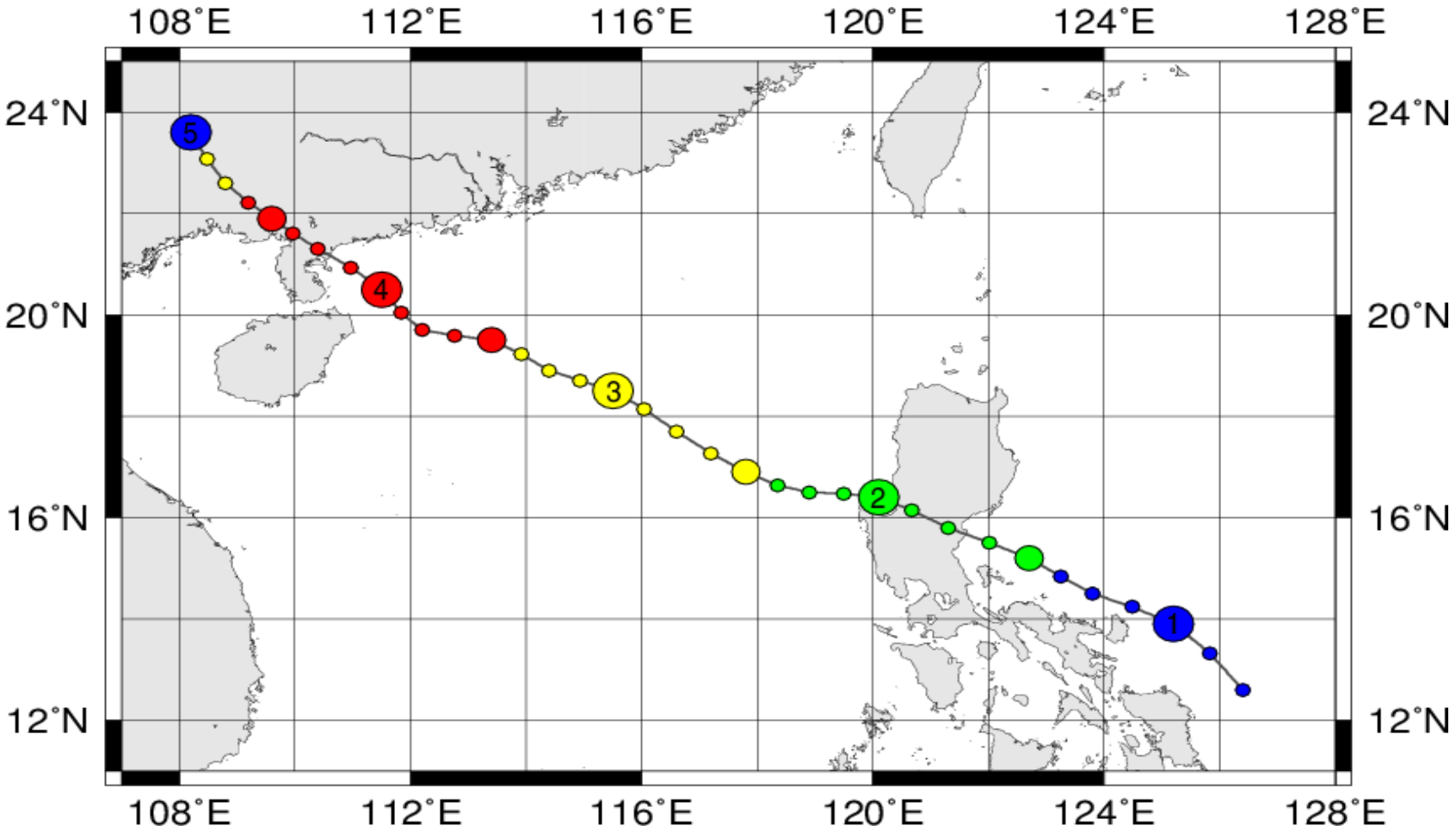
2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Irene, 2



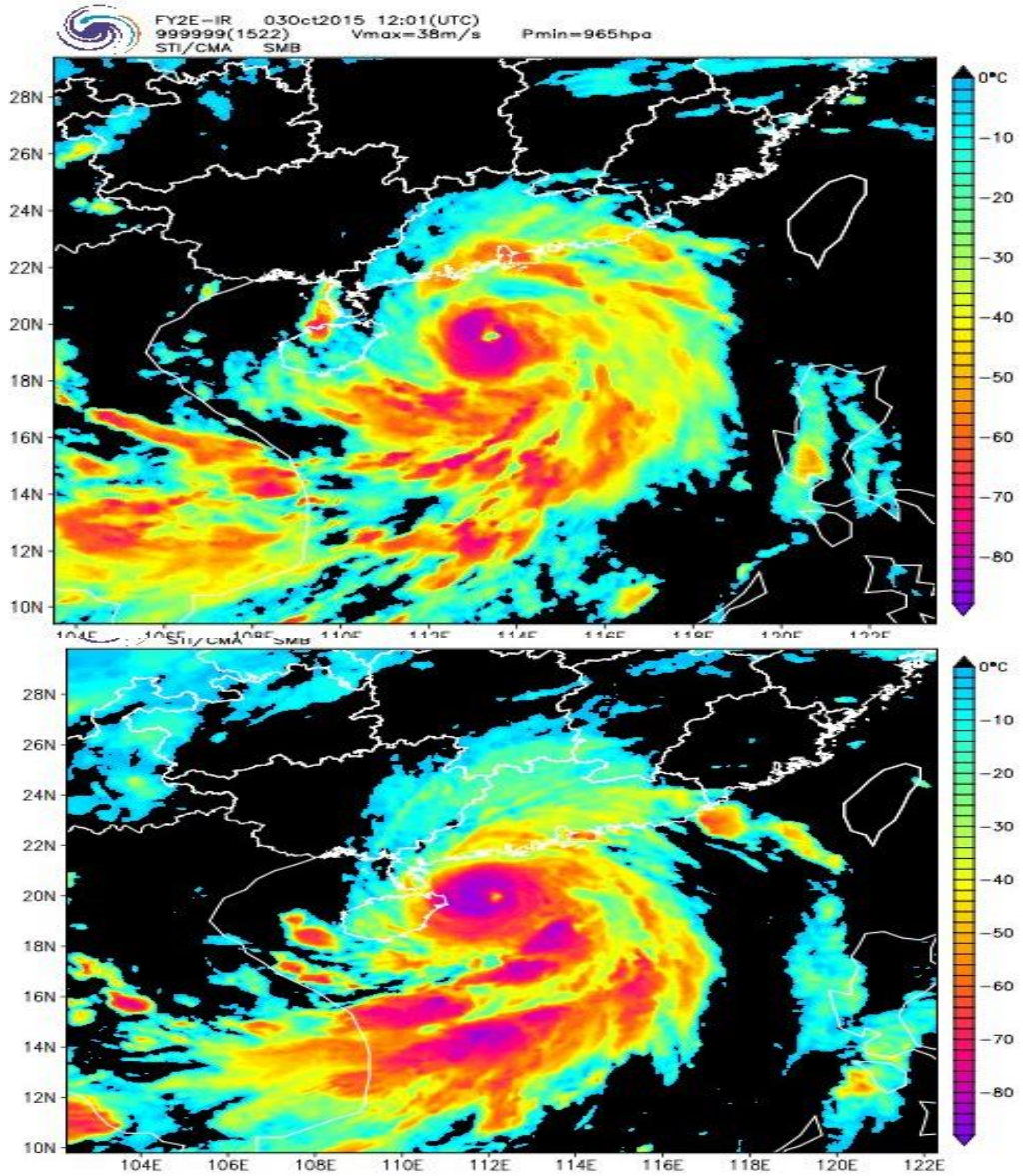
▲ FLIGHT DATA ---> Surface Observation

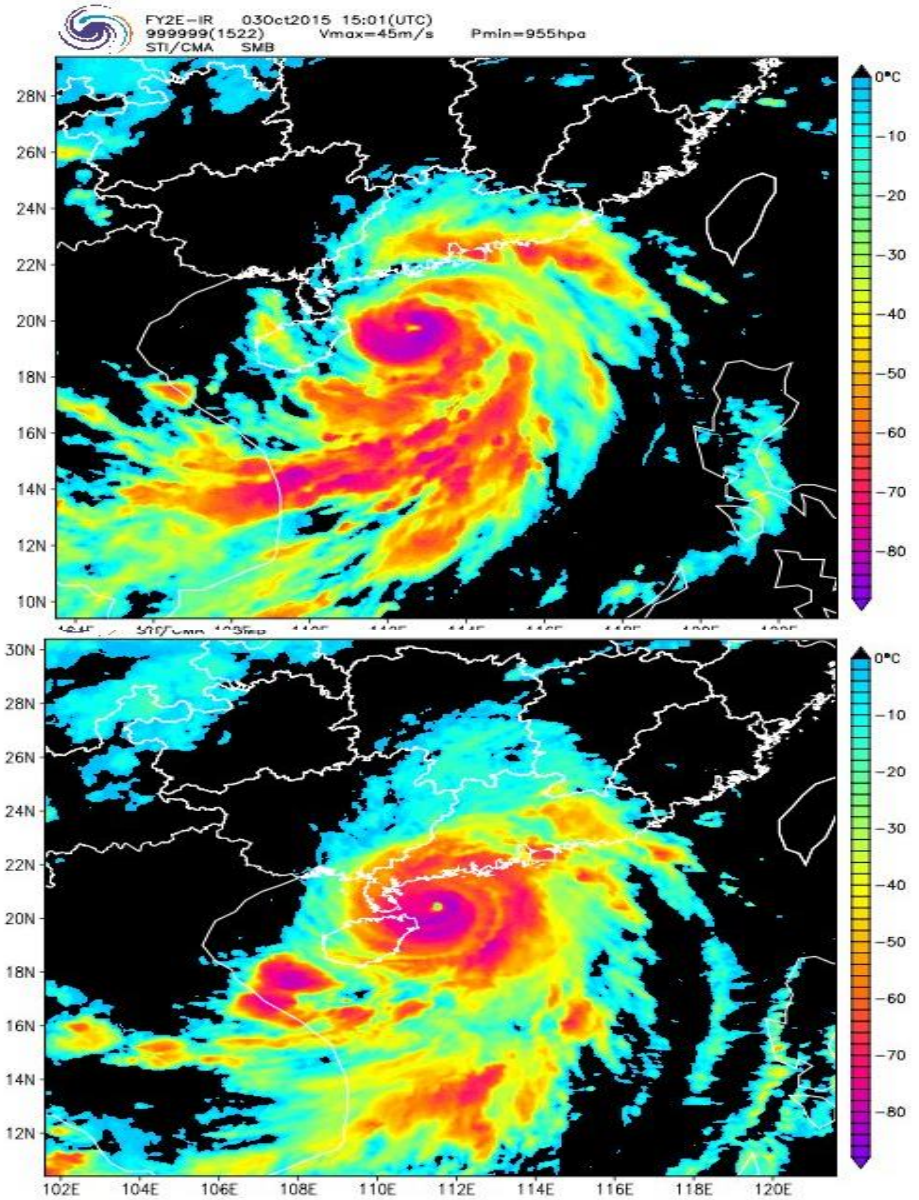
○ Dvorak --> Satellite Observation

Typhoon Mujigae(1522)

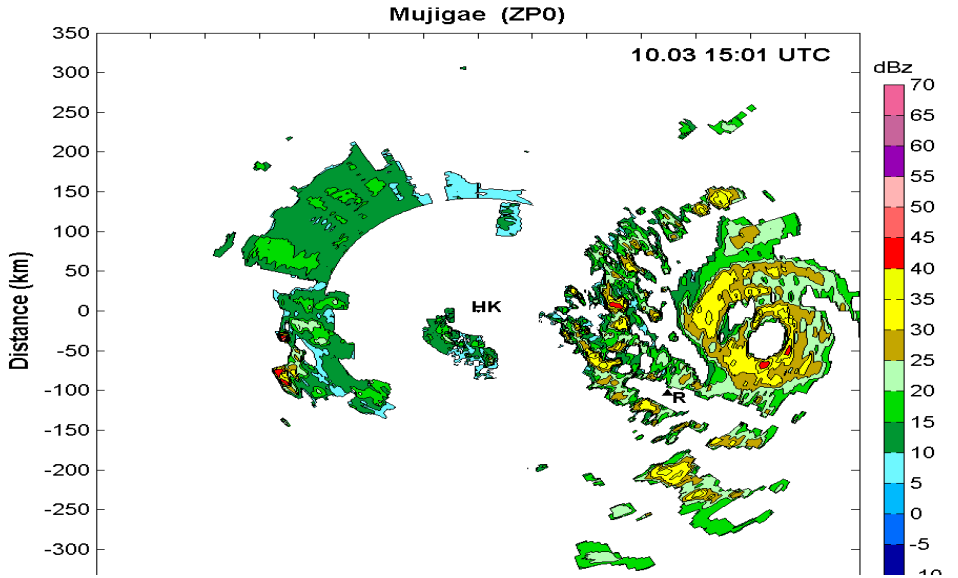


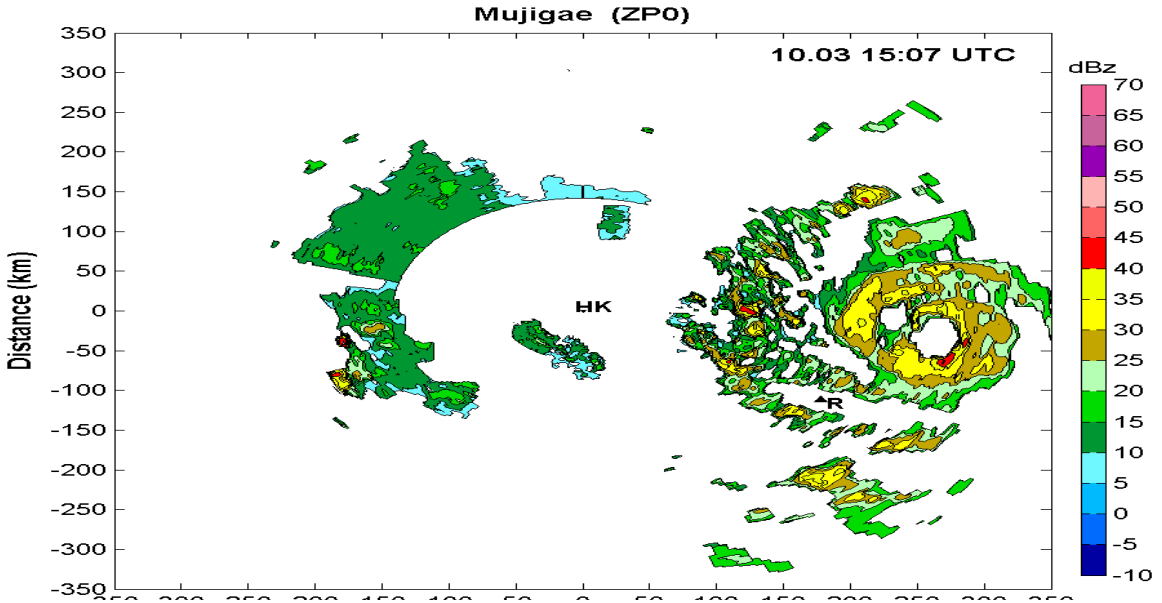
Landfalling Typhoon Mujigae(1522) by FY2

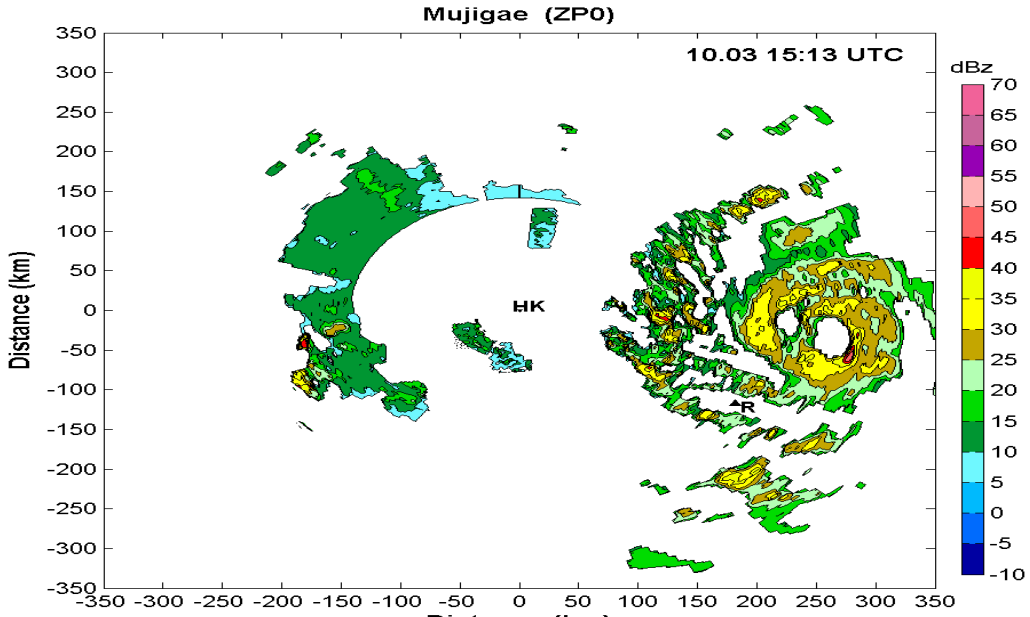


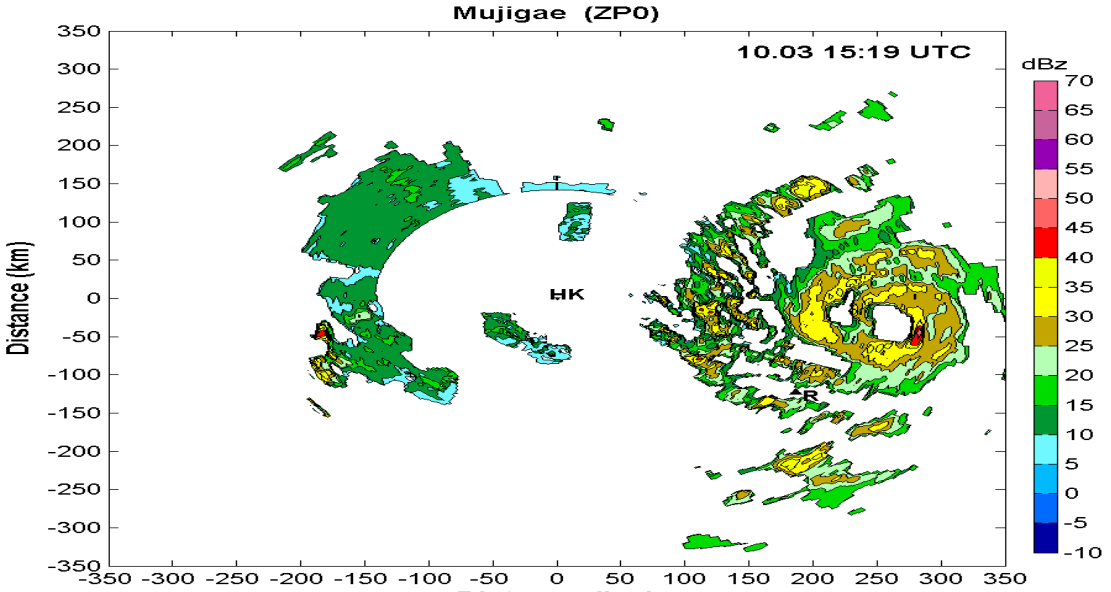


Haikou Radar Reflectivity for Mujiage

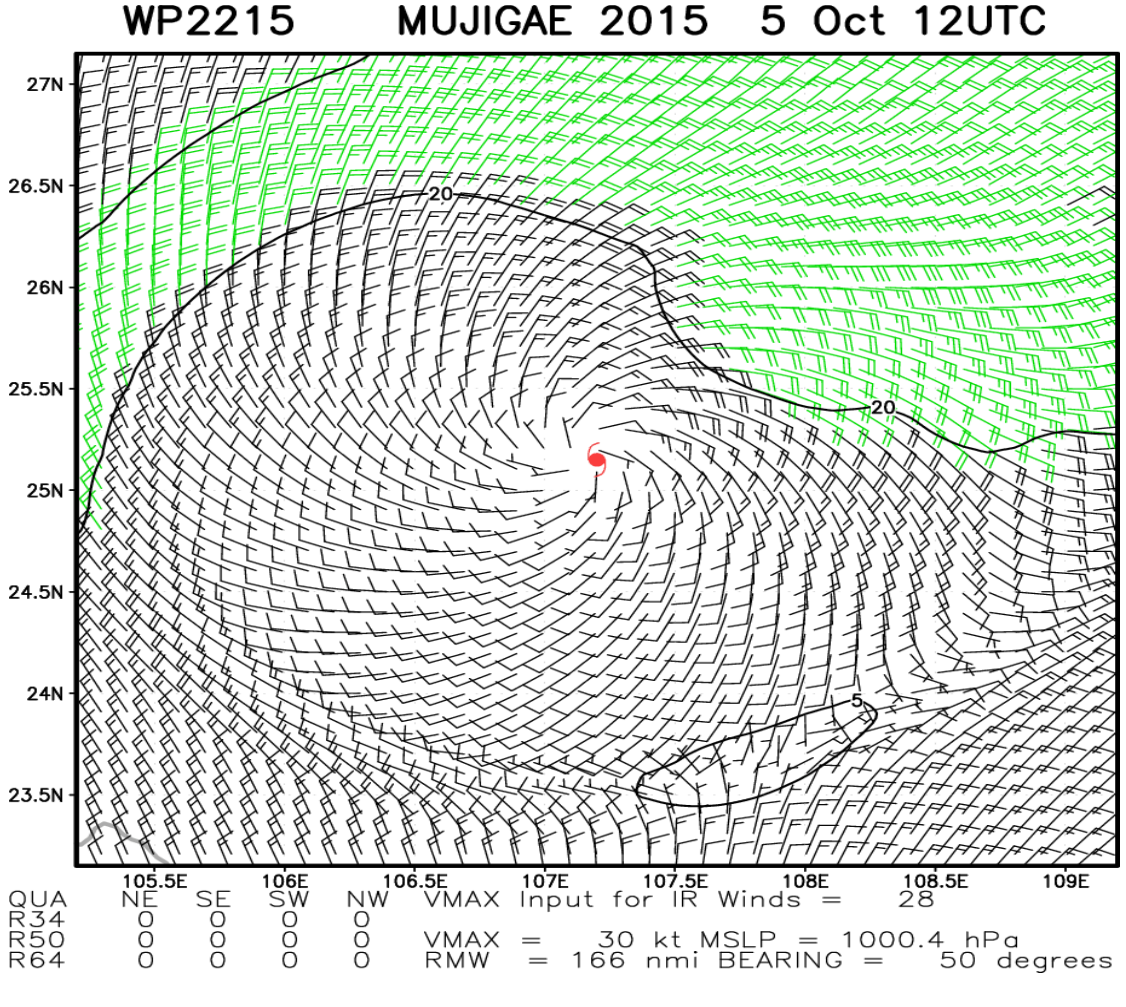


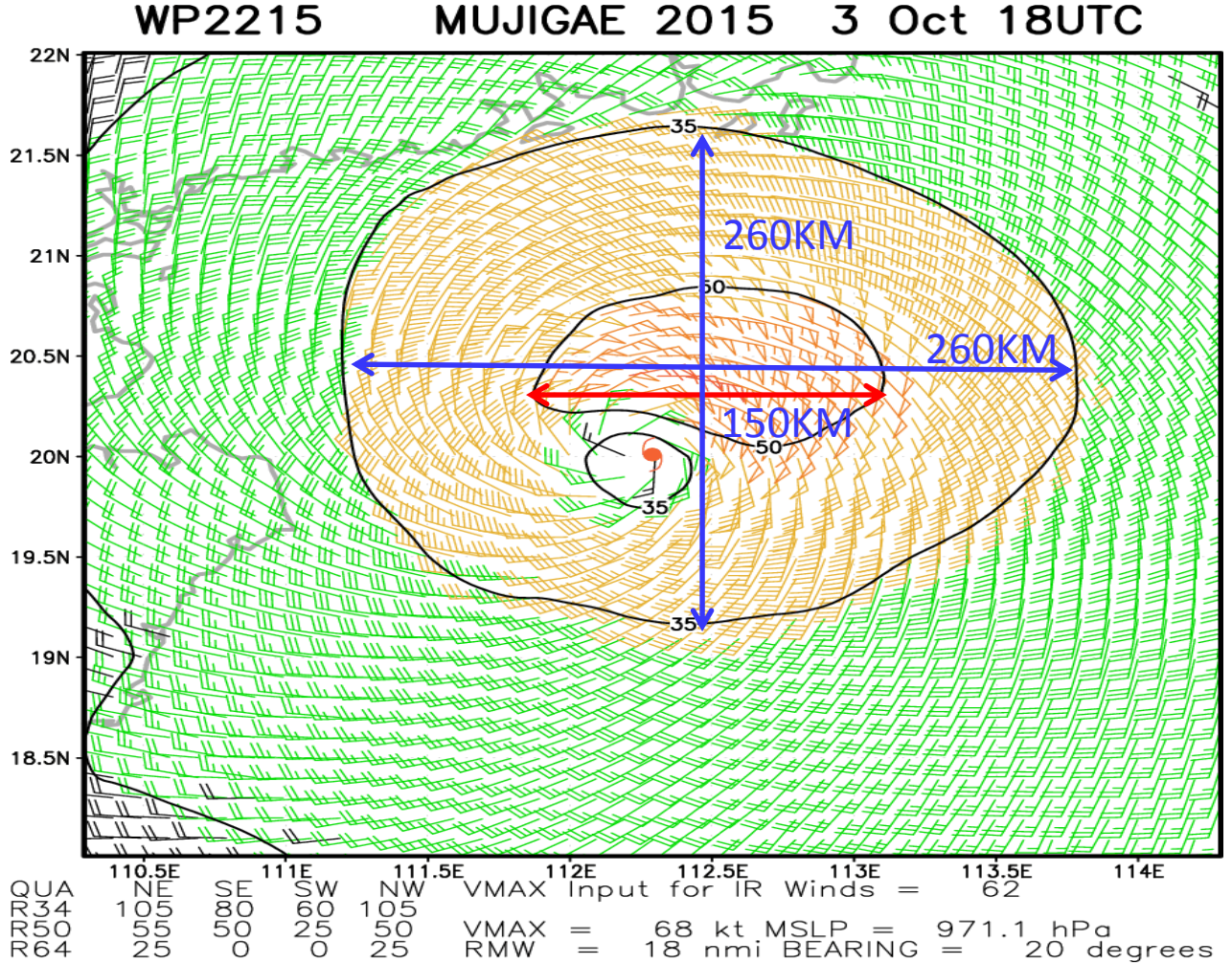






ASCAT WIND for Mujiage





Mujigae Intensity(wind) by different centers

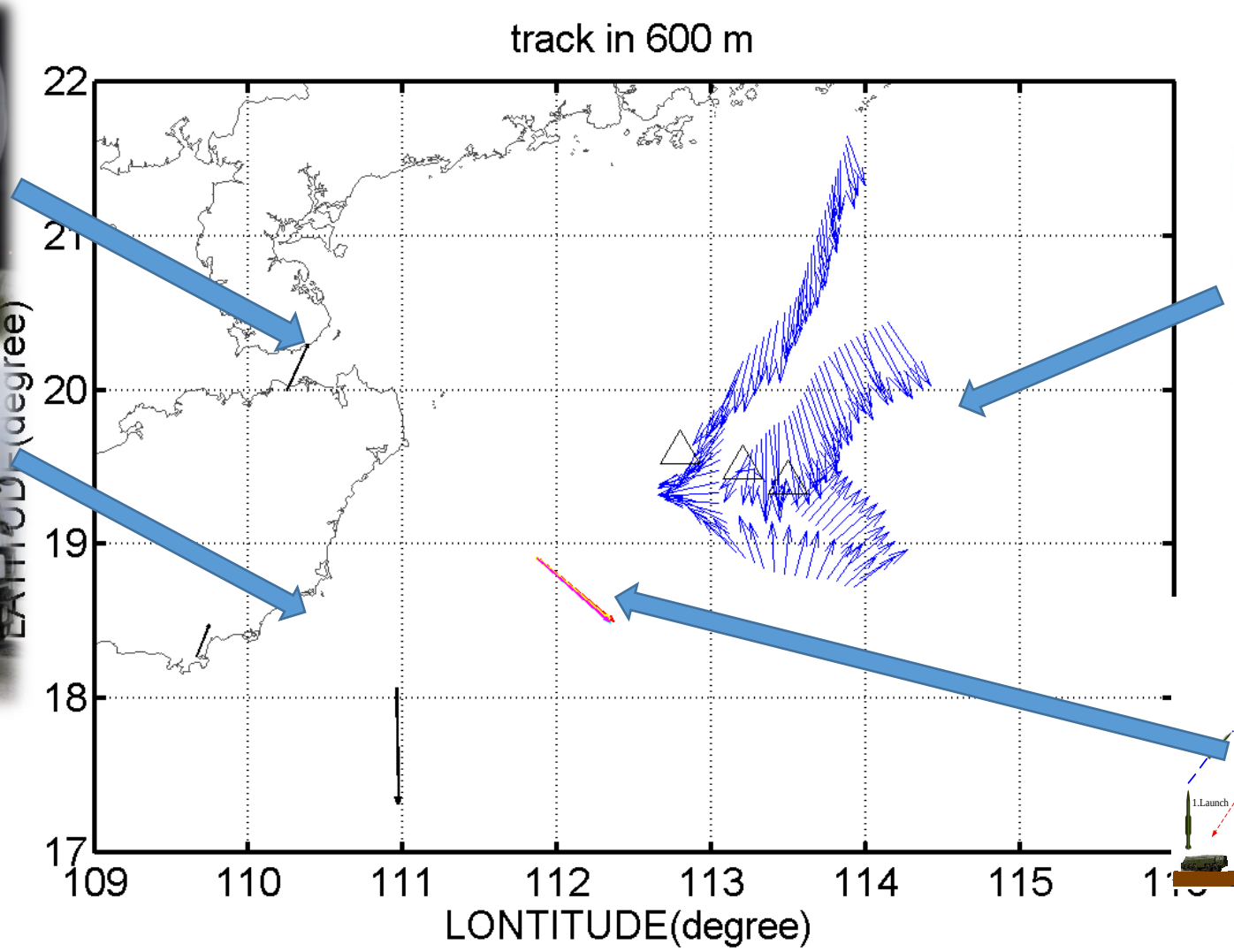
Centers / Time(UTC)	CMA	HKO	JMA	JTWC	KMA
031200Z	38	36	33	33	35
031500Z	45	41	33	/	/
031800Z	45	41	37	41	36
032100Z	48	44	39	/	/
040000Z	48	44	33	49	40

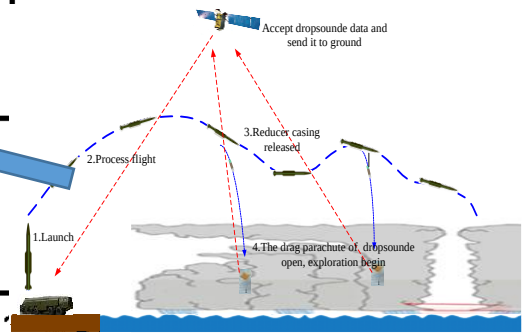
Mujigae Wind Structure by different centers

Centers / Time(UTC)	CMA	HKO	JMA	JTWC	KMA
031200Z	260/70	220/110	390/110	160/65	
031500Z	250/80	220/110	390/110		
0318[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0	
032100Z	200/80	220/110	390/110		
040000Z	250/60	280/110	390/110	250/160	

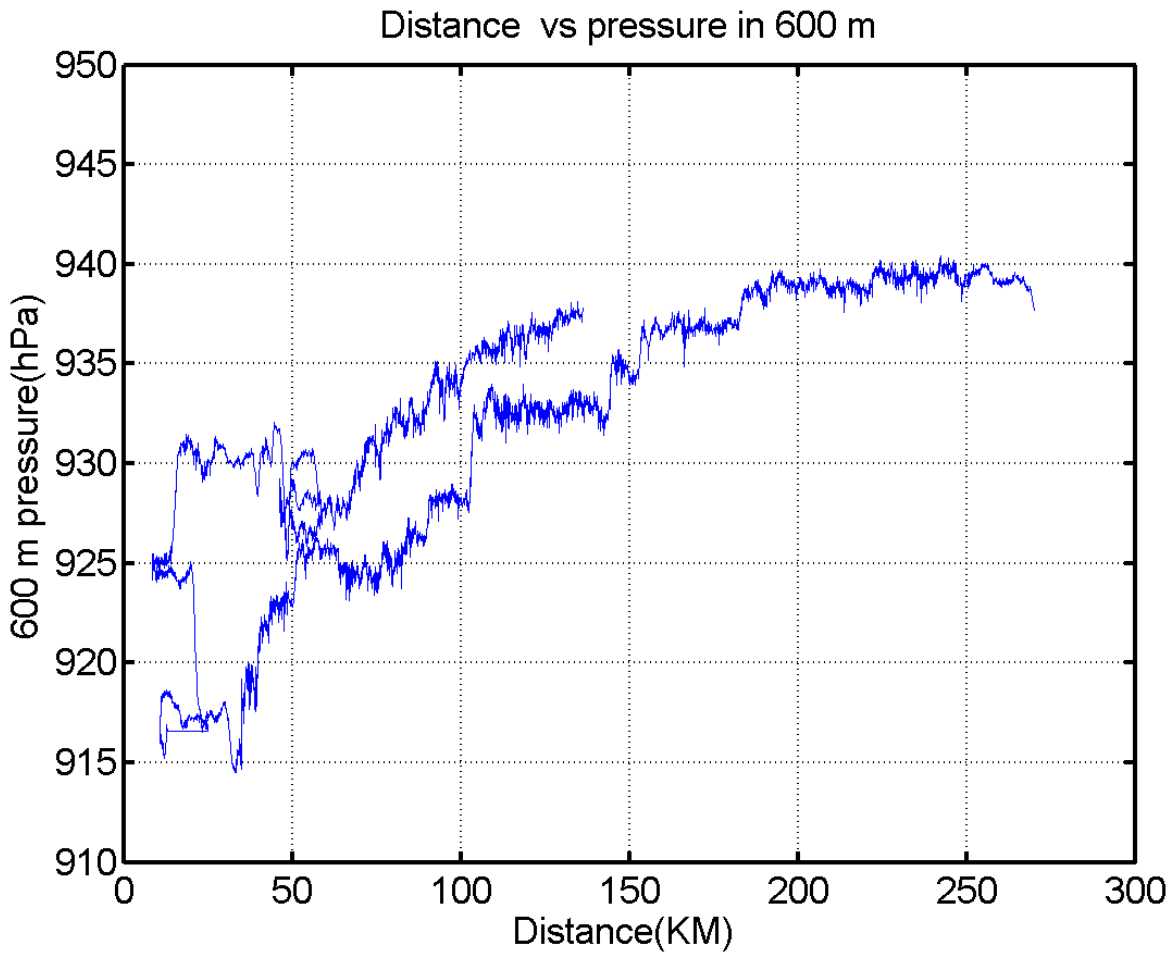
Which one is more reliable?

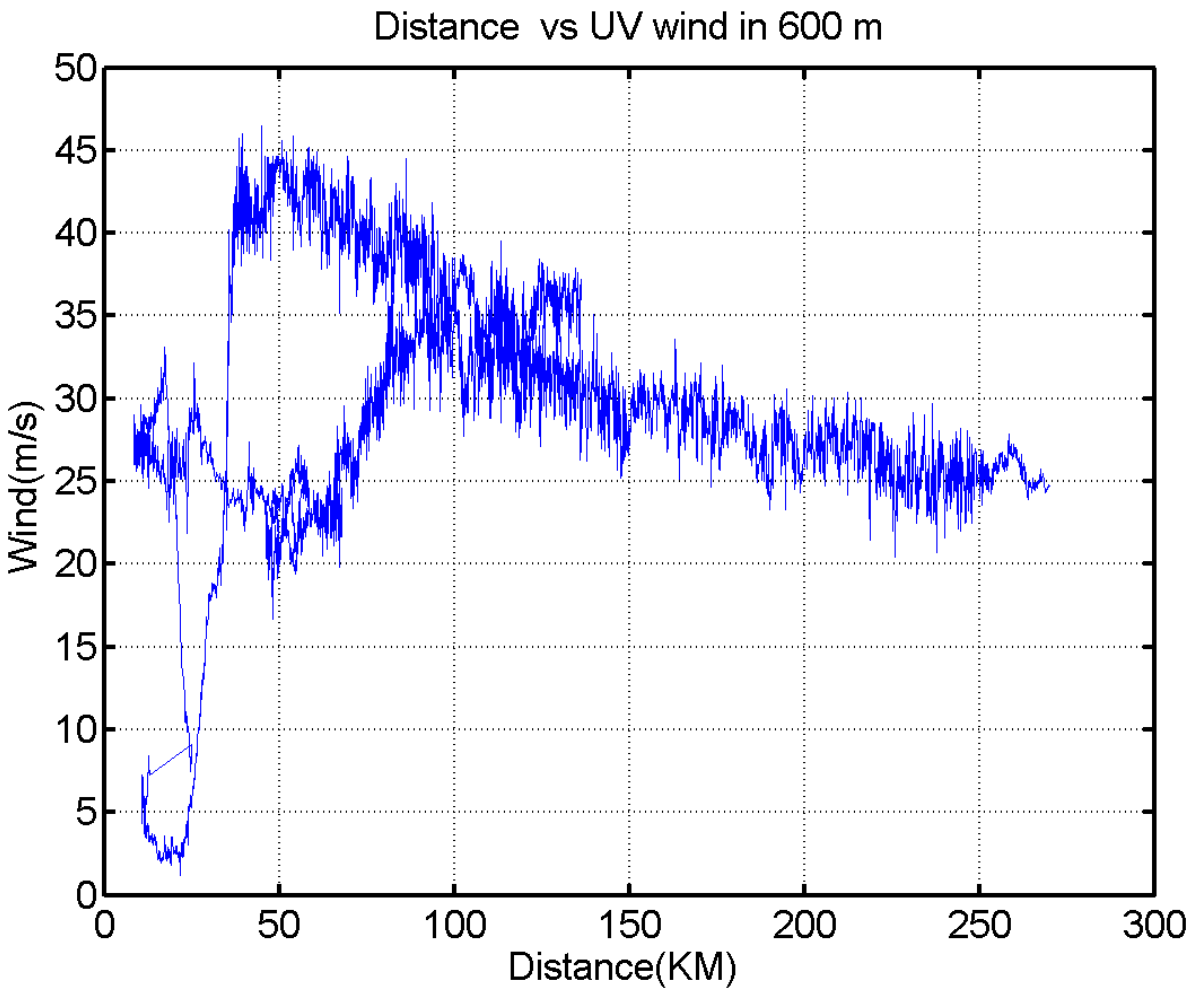
EXOTICCA(2015)-HKO/STI





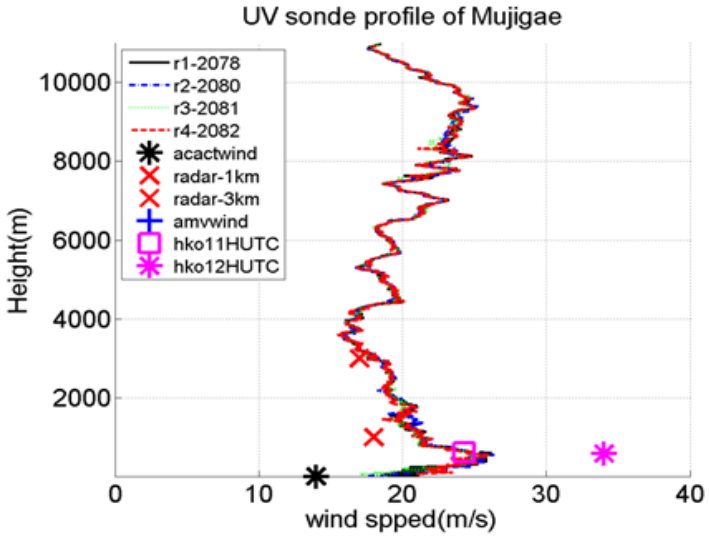
HKO Flight Wind Observation



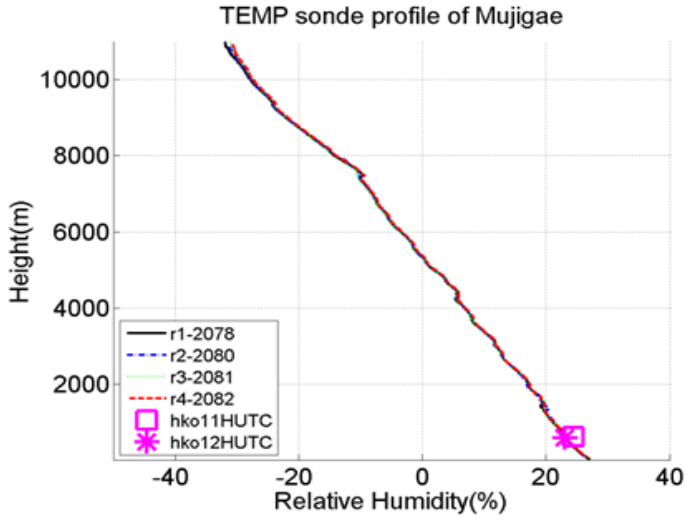


EXOTICCA(2015)-STI obs VS Satellite

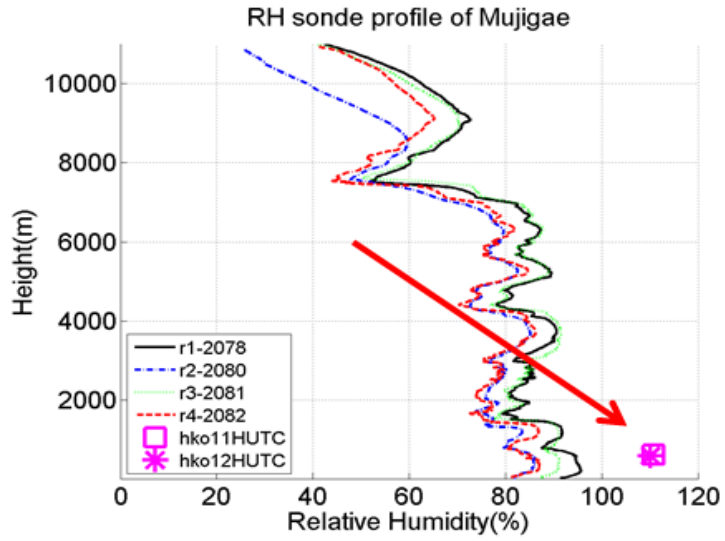
UV WIND



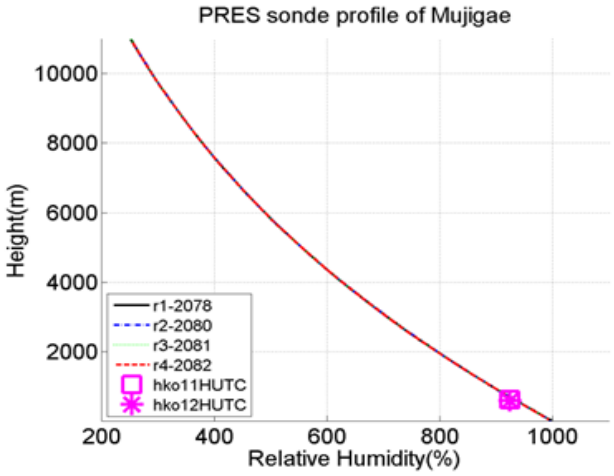
TEMP



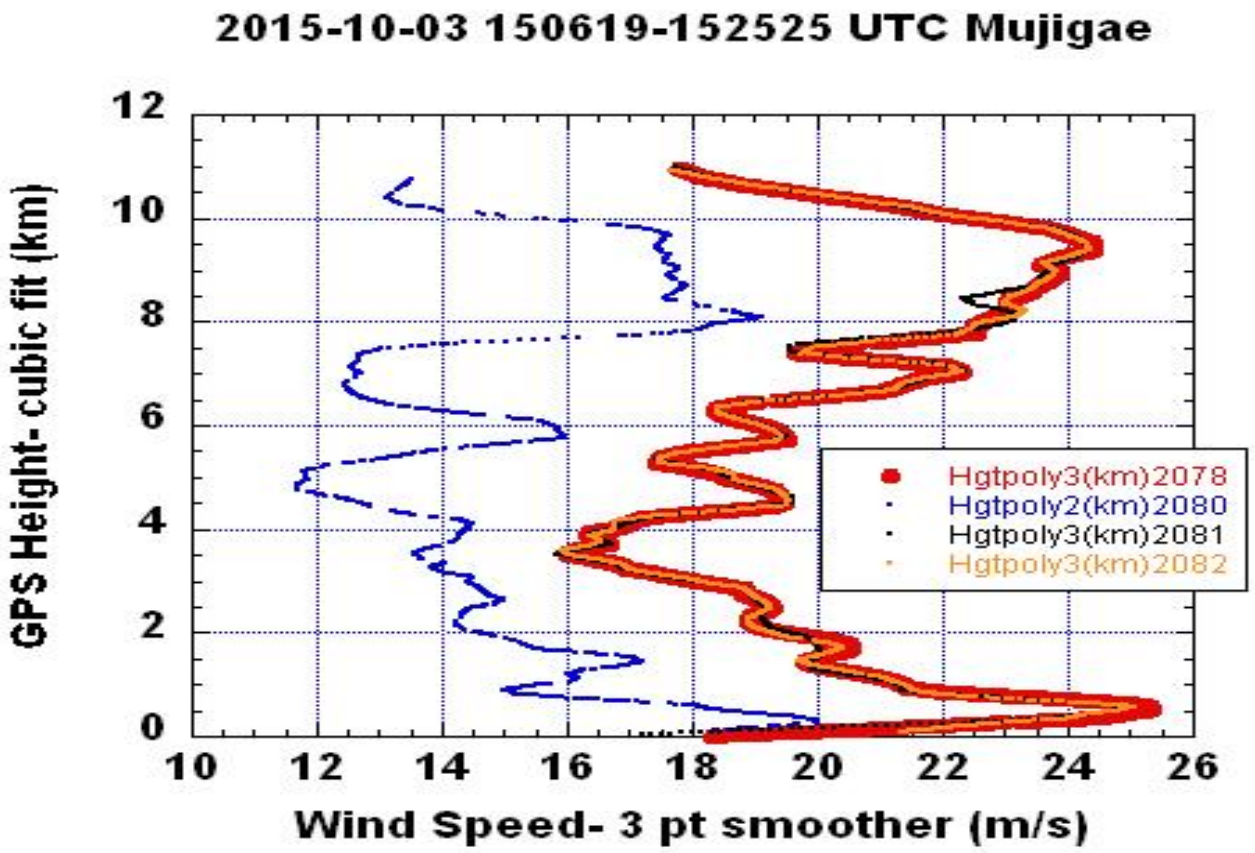
RH

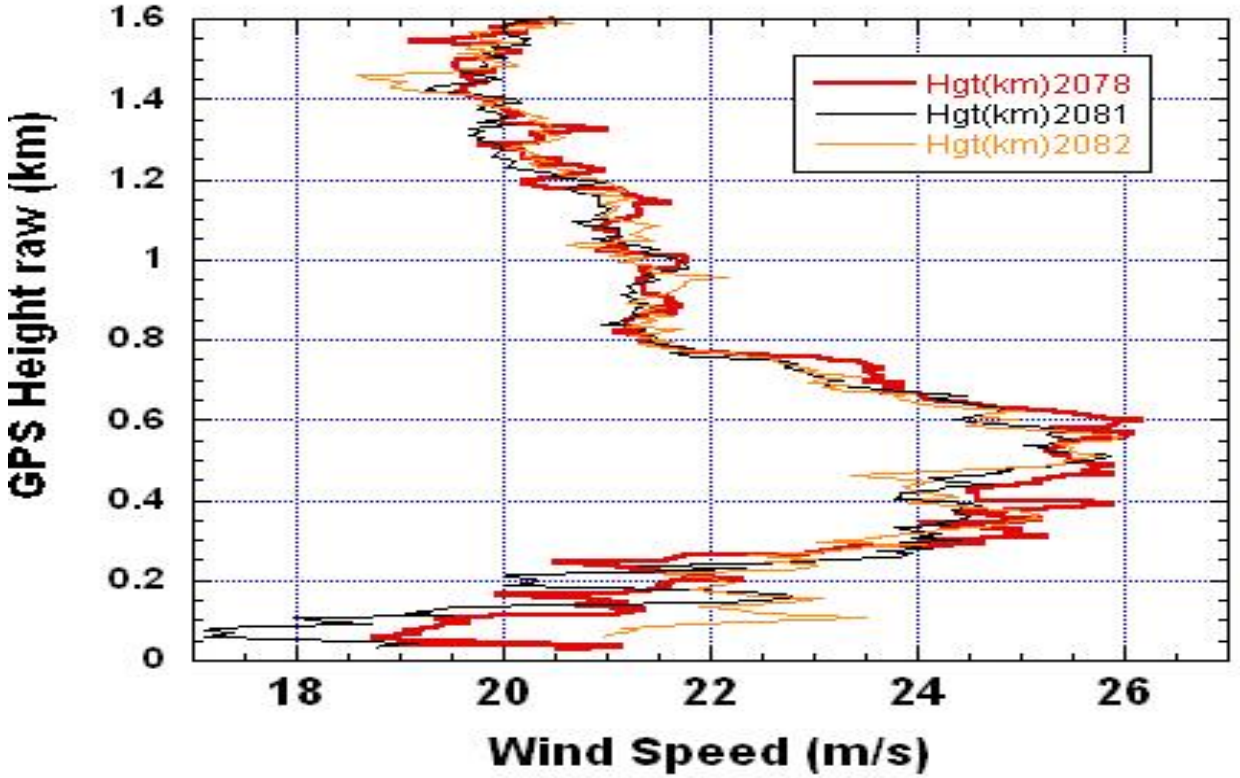


PRES



Transition between different height in TCBL

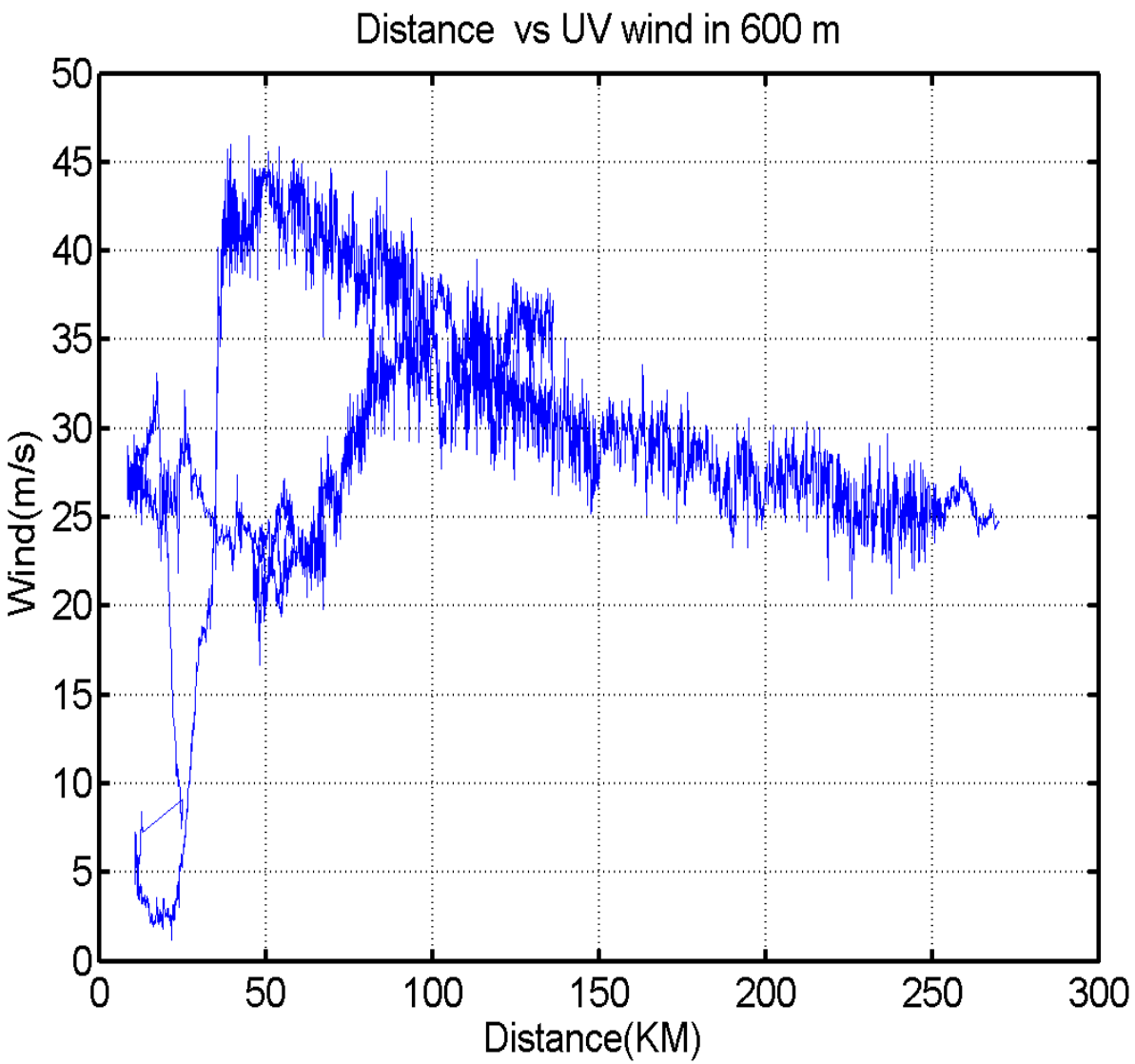


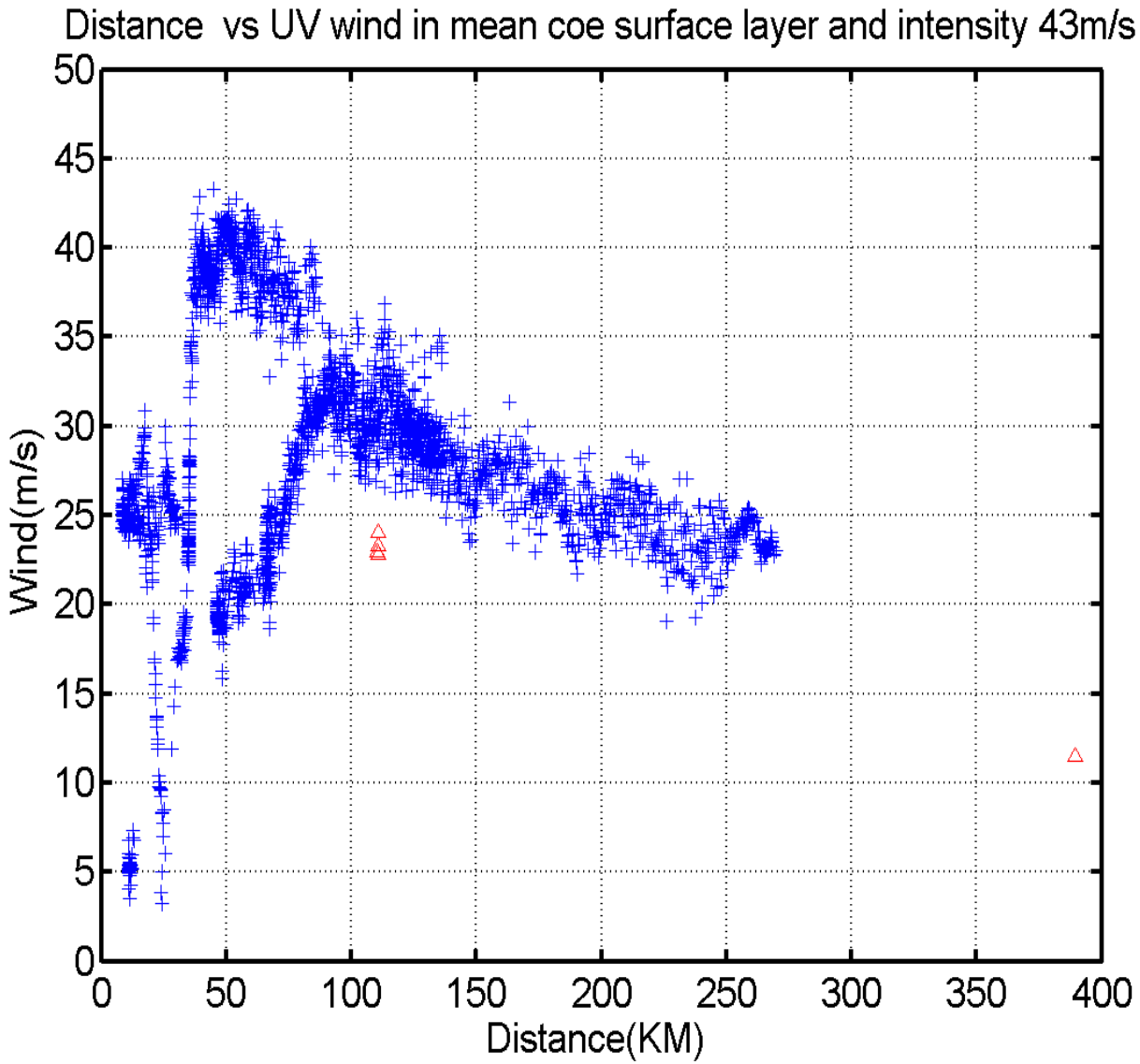


Coe= V_{suf}/V_{600}

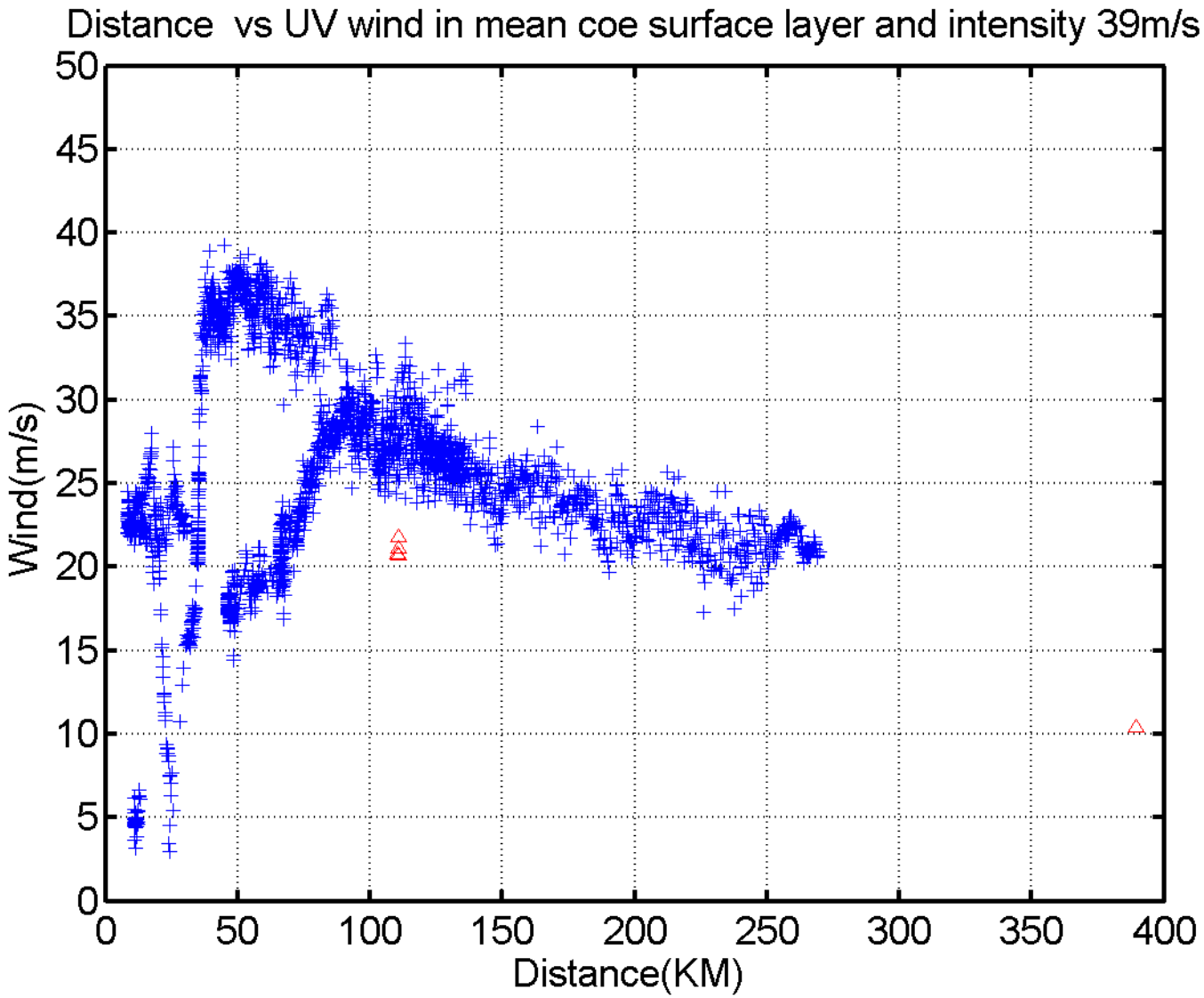
Dropsonde	R2078	R2080	R2081	R2082	mean
Coe	0.8186	0.8455	0.7828	0.9320	0.8447

Maximum Transition to Surface

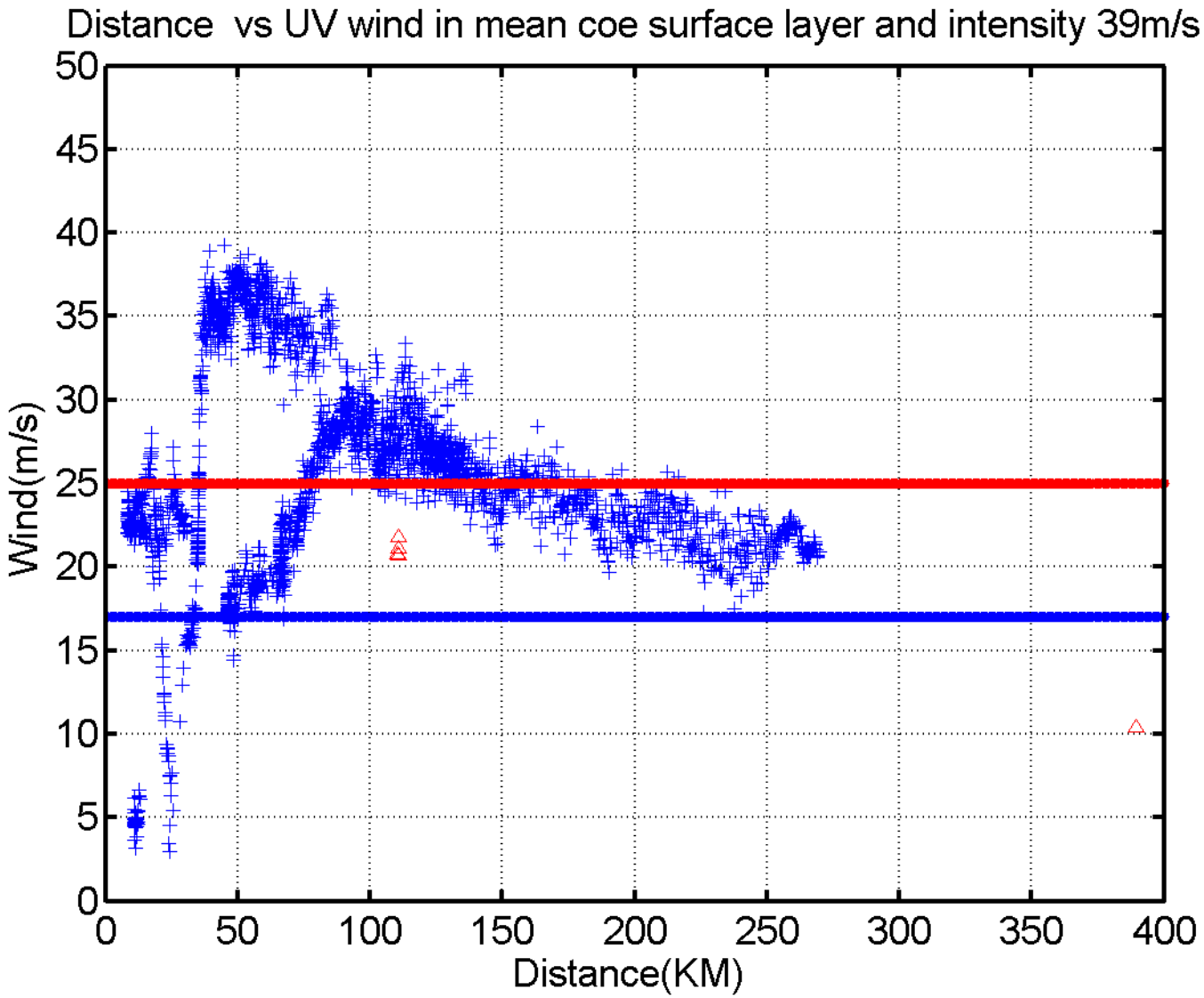




Mean Transition to Surface



Mean Transition to Surface



Modified Intensity in Our result

Centers / Variables	CMA	HKO	JMA	JTWC	KMA	WE
WIND	38-45	36-41	33-37	33-41	35-36	41
Pressure	965		970		970	
30kt	260	220	390	160		267
50kt	70	110	110	65	/	155

Summary

How and what can we do from very limited data in Typhoon Research and Operation?

Offshore Typhoon Identification based on different datasets ➔OTID

Offshore Typhoon Boundary Layer Turbulence Transition


谢 谢!