

Simulation of significant convective weather processes using fine-resolution NWP model

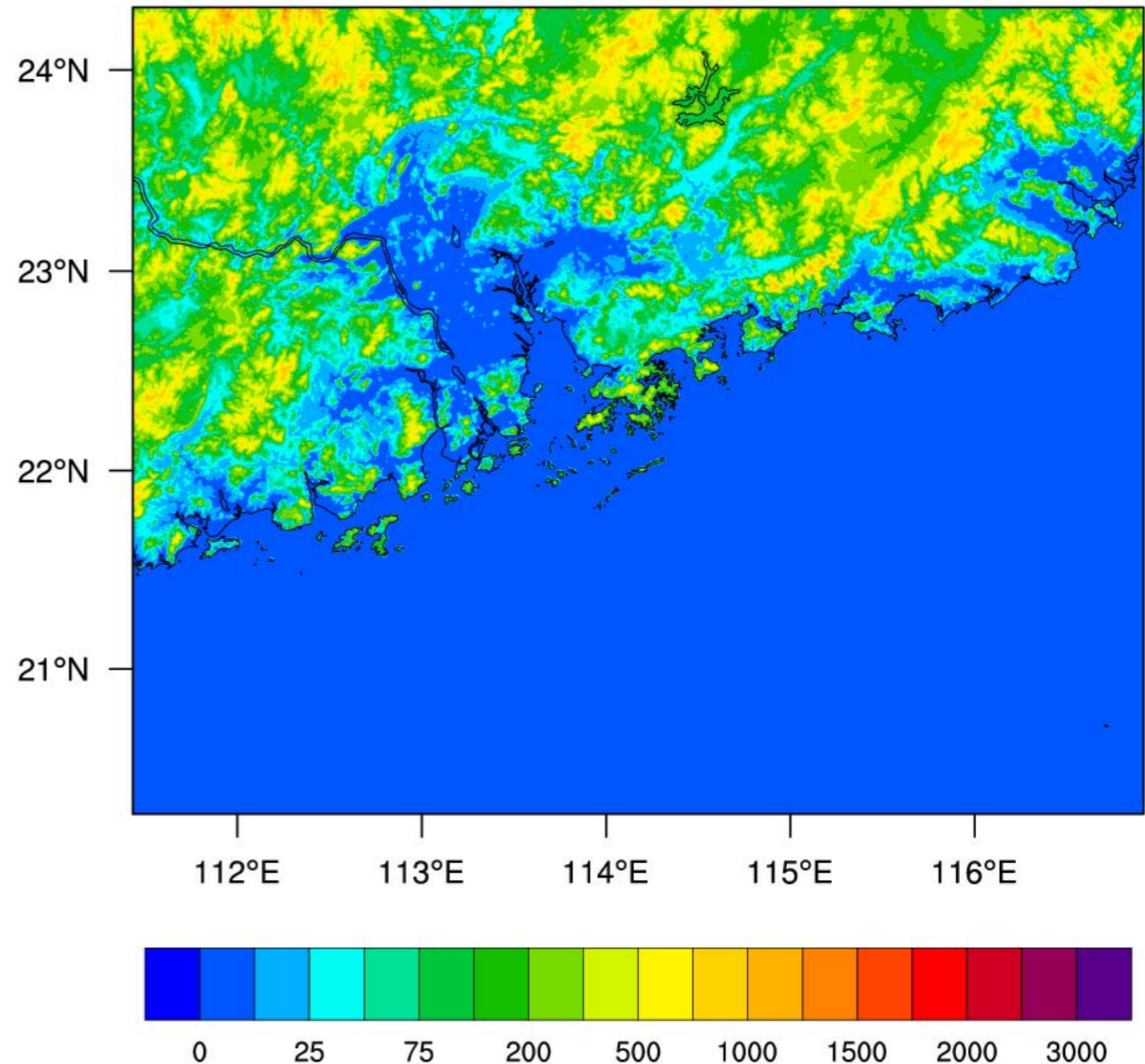
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WMO WWRP 4th International Symposium on Nowcasting and Very-short-range Forecast 2016 (WSN16)

Session H3A, 28 July 2016

AVM (Aviation Model) on NSZSCC (Nebulae)

- 600 m resolution
 - 942 x 752 x 70L
 - WRF-ARW version 3.5.1/
3.6.1
 - RAPIDS-NHM BC
 - 12 hour forecasts
 - HAPS_Ens Control as
IC/BC
 - 18-24 hour forecasts
- ~ 4 times computation
than PRD-AVM@HKO





National Supercomputing Center in Shenzhen
Shenzhen Cloud Computing Center

Nebulae

1271 TFLOPS - 2nd in Top500 (2010)



About us

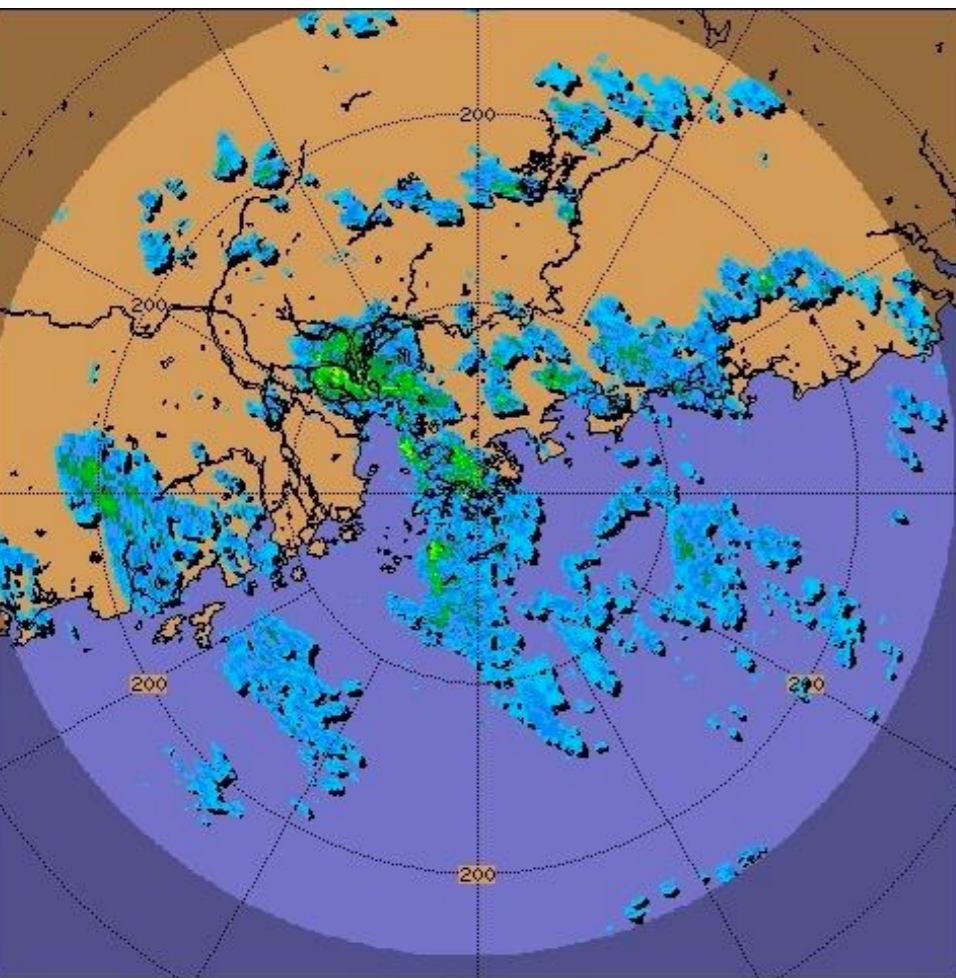
National Supercomputing Center in Shenzhen (Shenzhen Cloud Computing Center) is a major scientific and technological infrastructure project in Shenzhen, which belongs to the National 863 Program, and is also an important project both in Guangdong Province and Shenzhen.



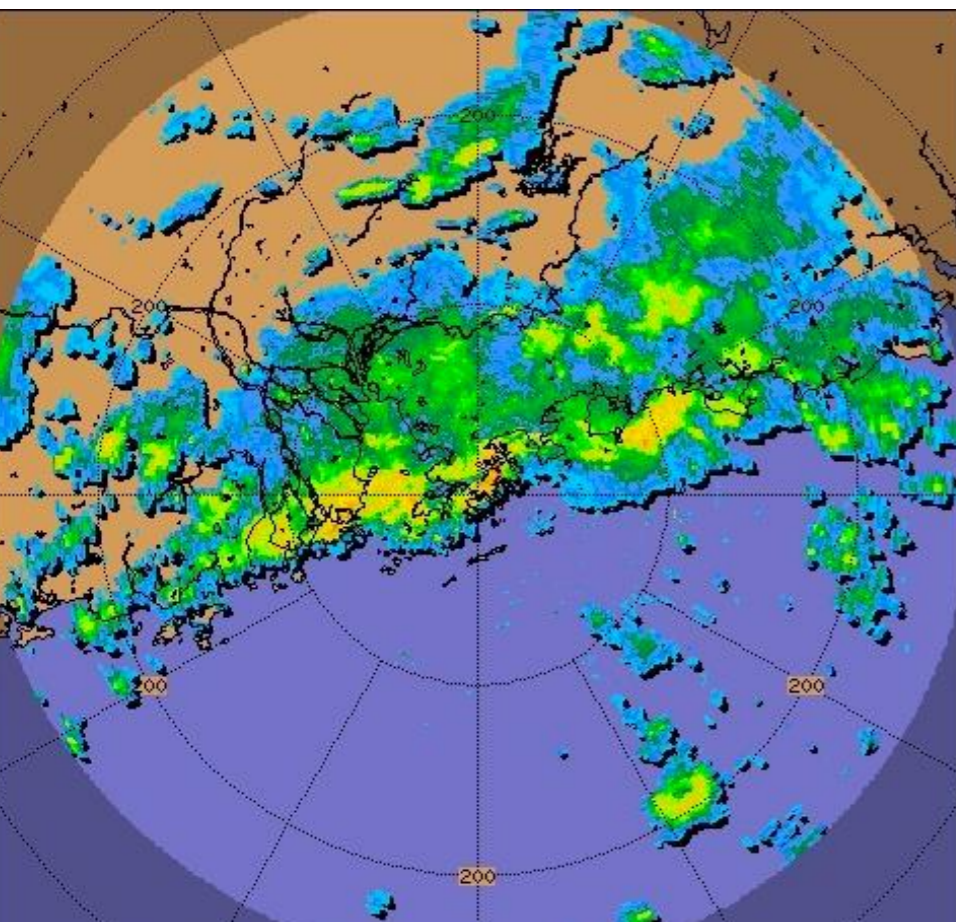
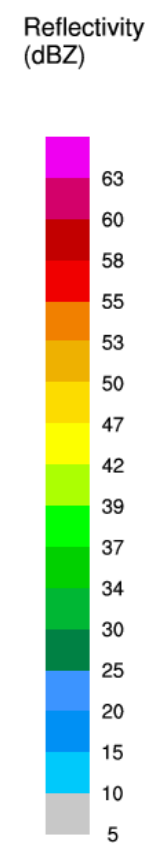
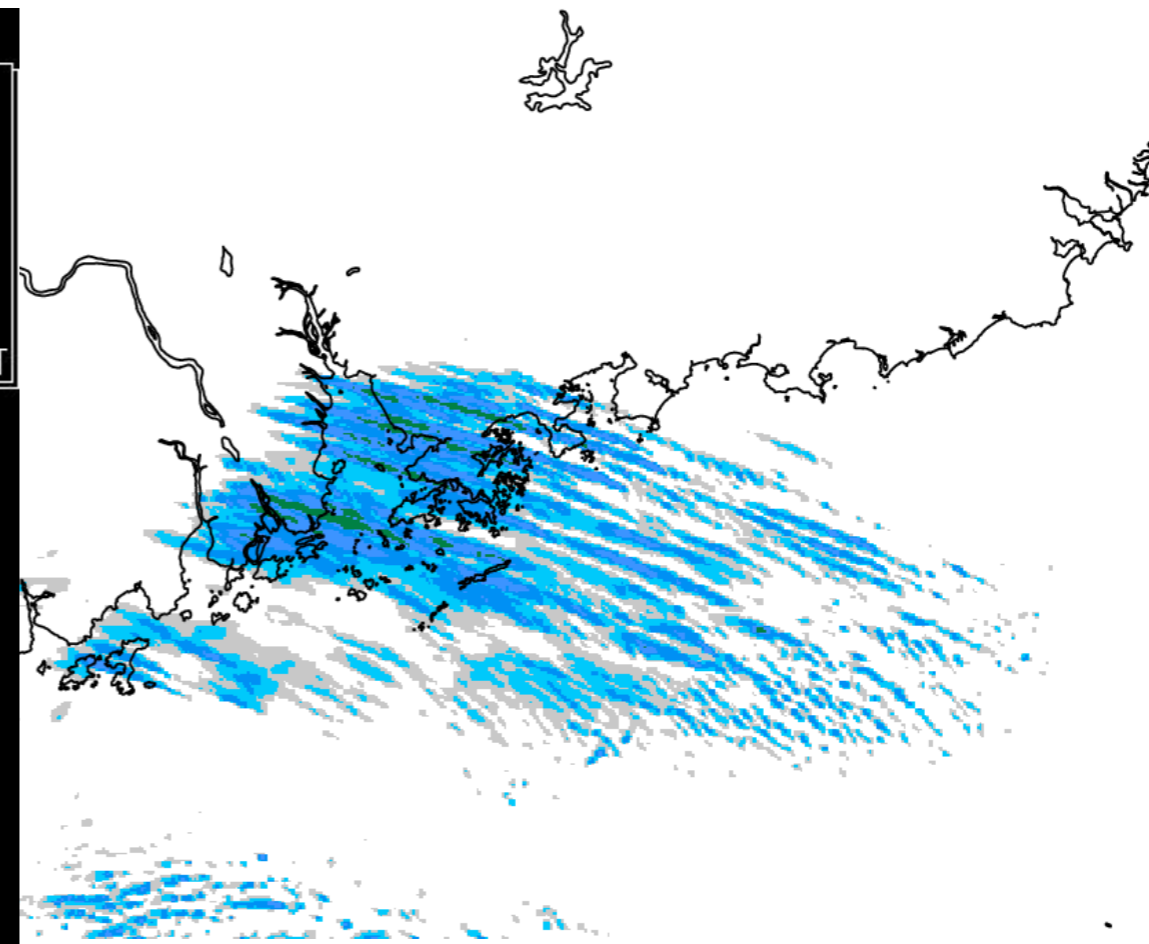
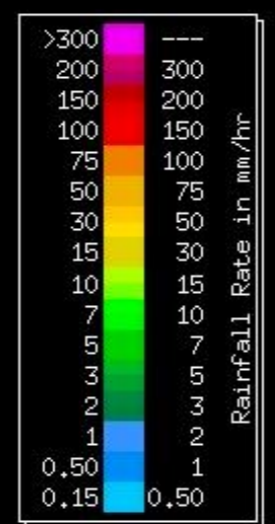
High Performance Computing Service

With the advantage of the powerful computing capability of the supercomputer "*Nebulae*" (up to 1.271 PFlop/s Linpacks Performance), we provide high performance computing services for enterprises, organizations and scientific research institutions.

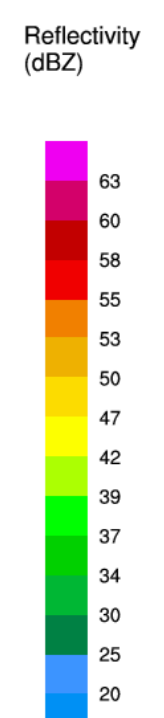
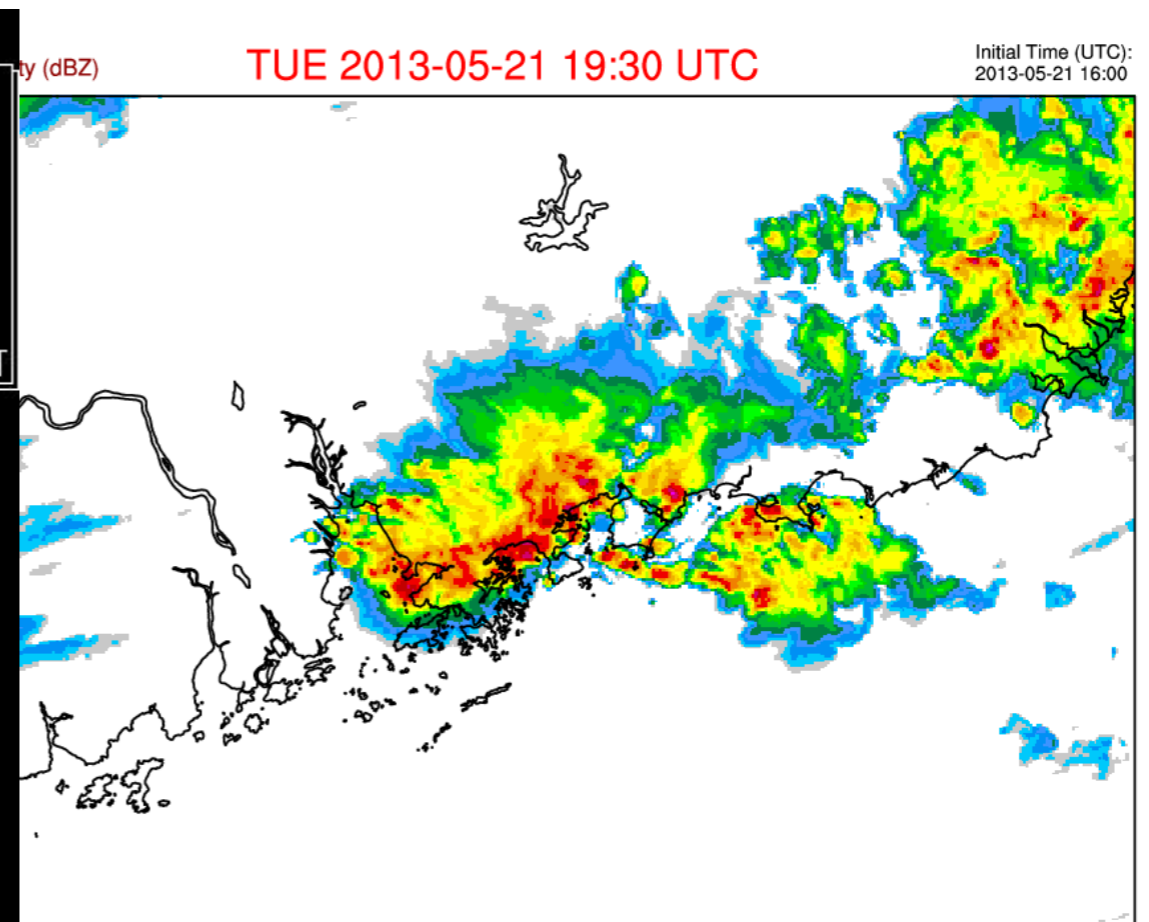
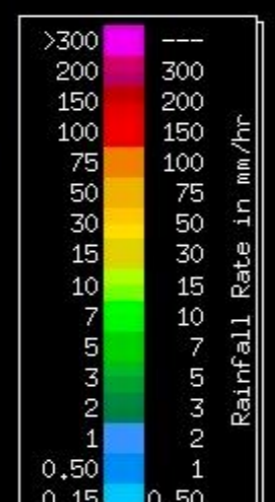




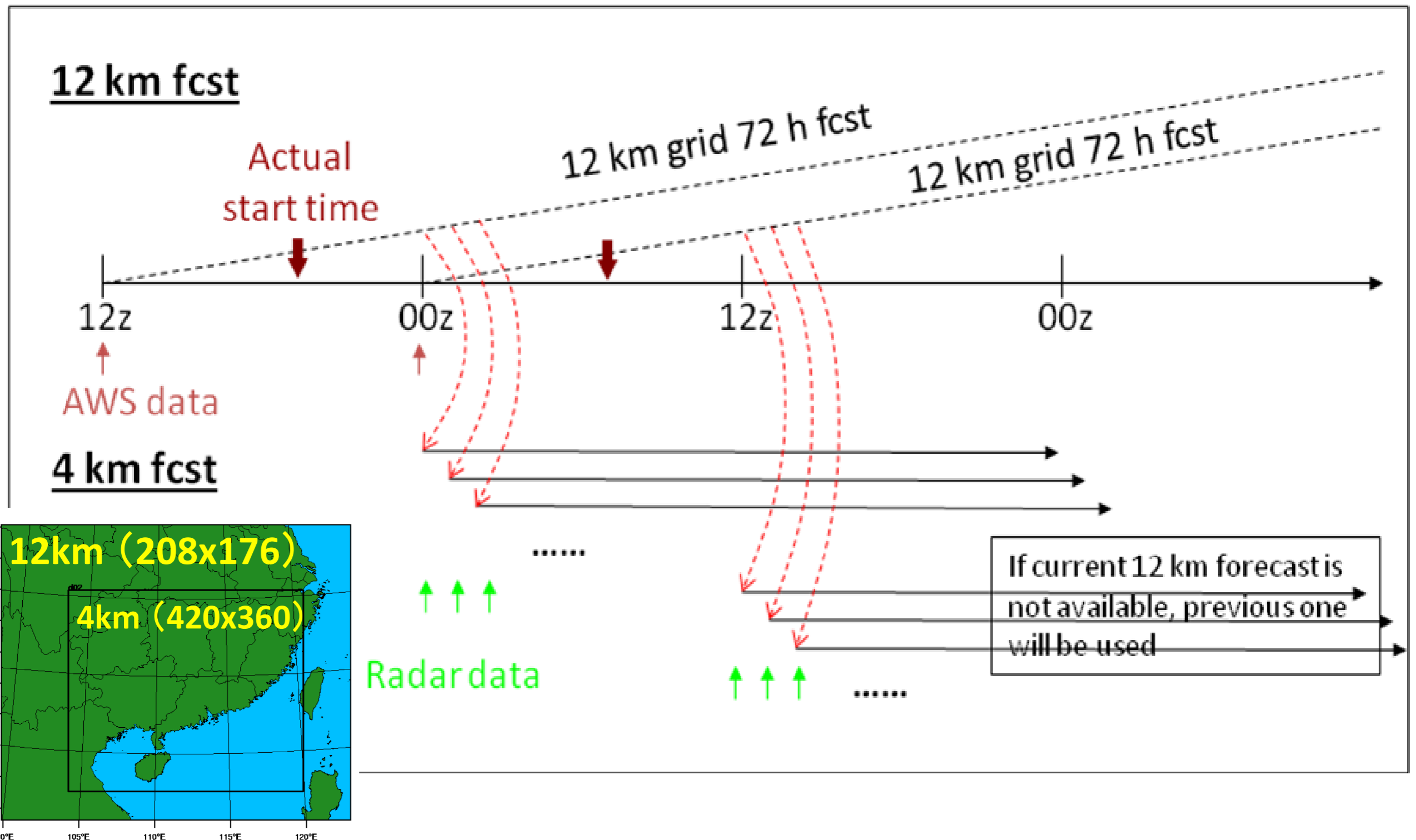
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CAPPI
R_C_030_256
Task: PPIVOL_*
PRF:576/432
Height:3.0 km
Max Range:256 km
06:30:16
13 FEB 2014 HKT



hk_comp
CAPPI
R_C_030_256
Task: PPIVOL_*
PRF:576/432
Height:3.0 km
Max Range:256 km
03:30:18
22 MAY 2013 HKT



Flow of HAPS_ENS (Hourly Analysis and Prediction System)



Selection of physics in HAPS_Ens storm-scale

member	Microphysics	Shortwave radiation	PBL	LSM
M00	Thompson	Goddard	MYJ	Noah
M01	Morrison	Goddard	YSU	RUC
M02	Morrison	Goddard	MYJ	Noah
M03	Thompson	Goddard	ACM2	Noah
M04	Morrison	New Goddard	ACM2	RUC
M05	WSM6	Goddard	MYNN	Noah
M06	WDM6	New Goddard	MYJ	RUC
M07	Thompson	New Goddard	YSU	Noah
M08	WSM6	New Goddard	QNSE	Noah
M09	Thompson	Dudhia	MYNN	Noah
M10	Morrison	Dudhia	MYNN	RUC

2015-07-21 06:00 UTC and 09:00 UTC runs

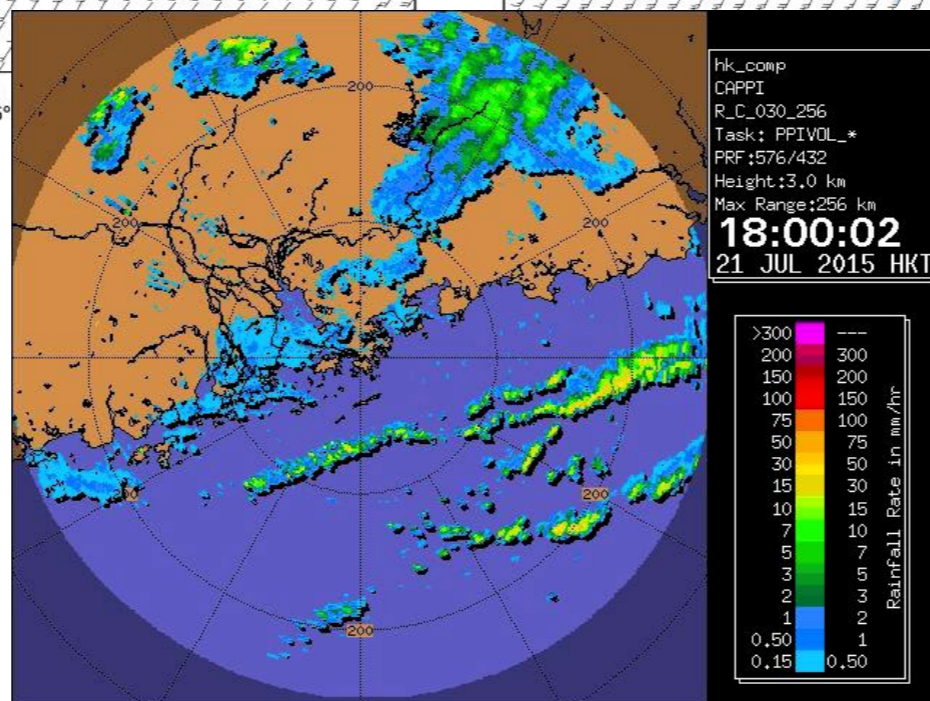
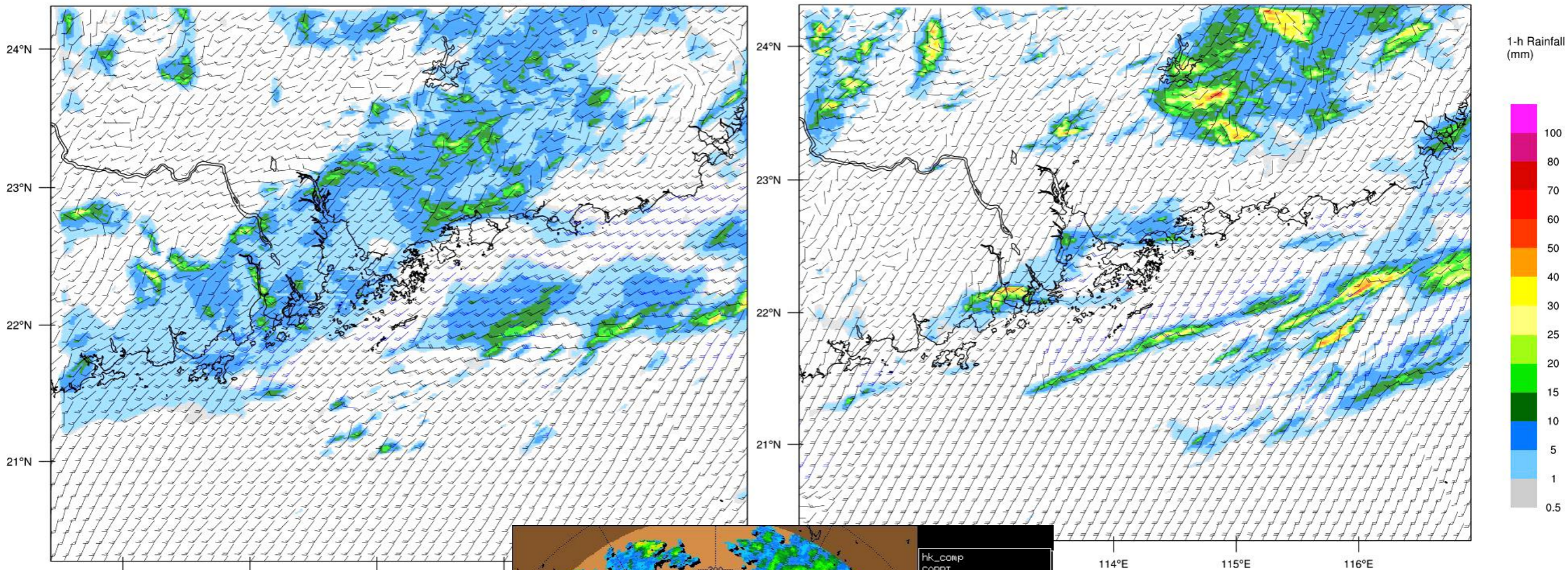
HKO Aviation Model
Surface Wind + Rainfall

2015-07-21 06:30 UTC (TUE)

Initialized HKO Aviation Model
2015-07- Surface Wind + Rainfall

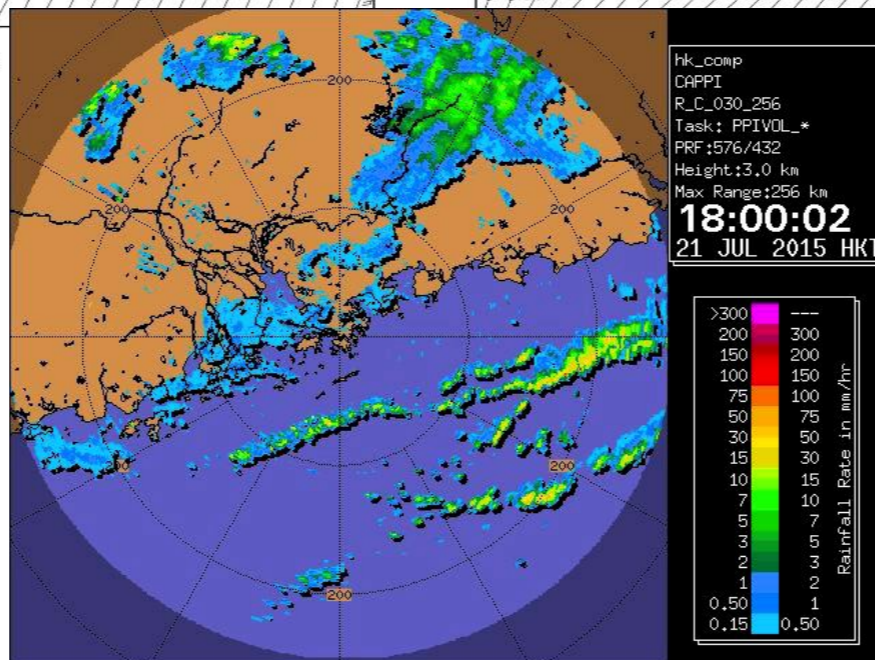
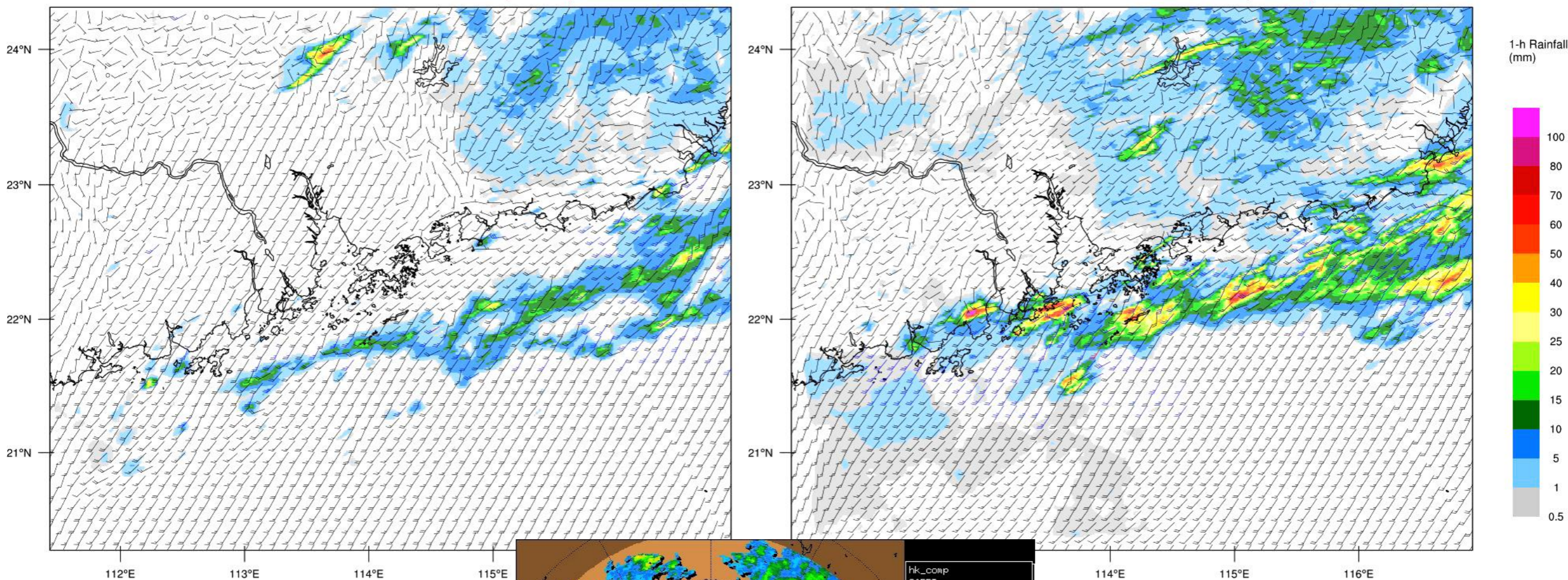
2015-07-21 10:00 UTC (TUE)

Initialized at:
2015-07-21 09:00 UTC



2015-07-21 15:00 & 18:00 UTC runs

HKO Aviation Model Surface Wind + Rainfall **2015-07-21 15:30 UTC (TUE)** Initialized : HKO Aviation Model 2015-07-2 Surface Wind + Rainfall **2015-07-21 19:00 UTC (TUE)** Initialized at: 2015-07-21 18:00 UTC

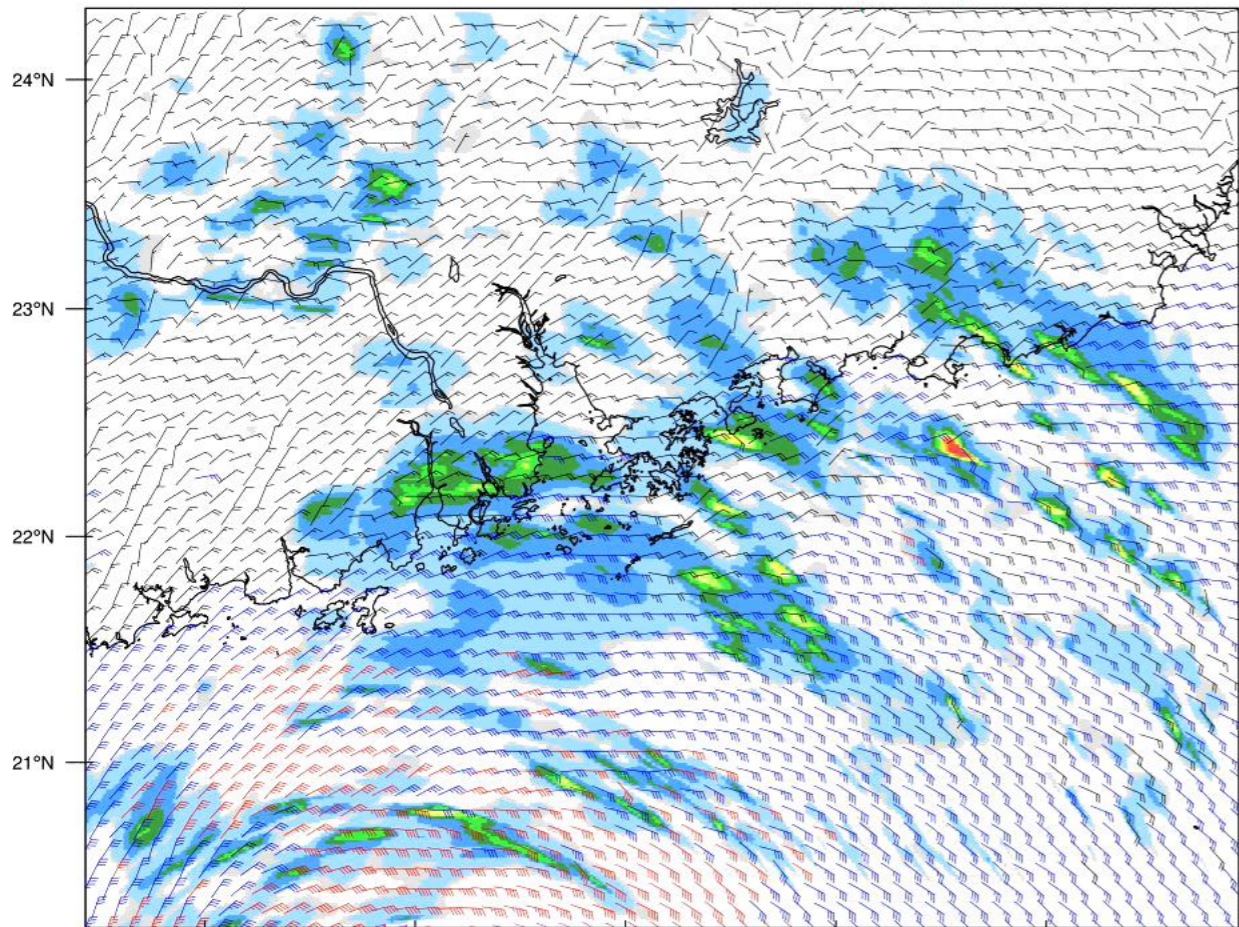


2015-10-03 12:00 UTC

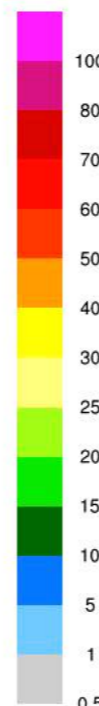
HKO Aviation Model
Surface Wind + Rainfall

2015-10-03 12:30 UTC (SAT)

Initialized at:
2015-10-03 12:00 UTC



1-h Rainfall
(mm)

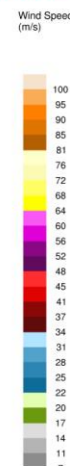
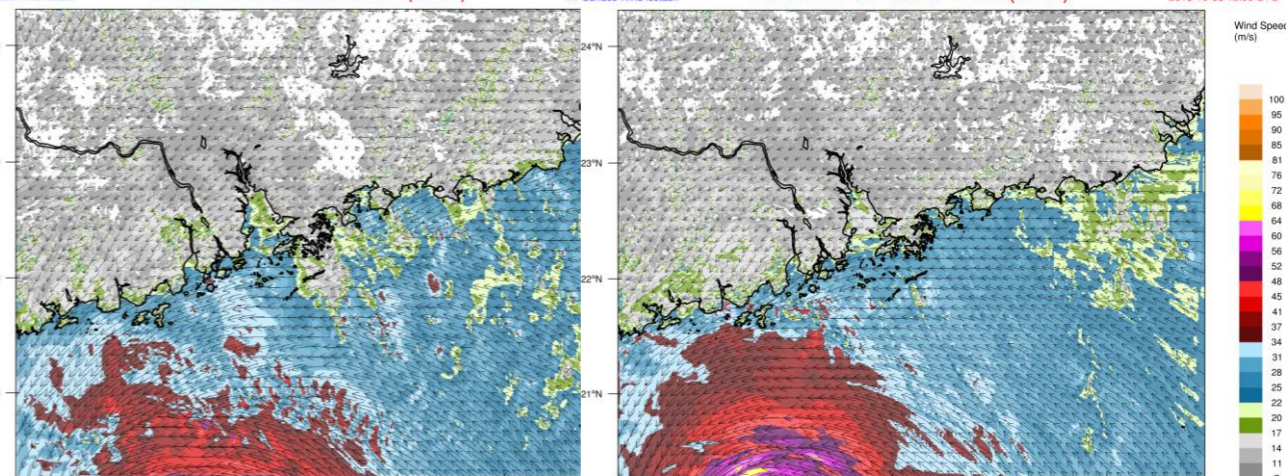


2015-10-03 12:30 UTC (SAT)

HKO Aviation Model
20 Surface Wind Isotach

2015-10-03 15:30 UTC (SAT)

Initialized at:
2015-10-03 12:00 UTC

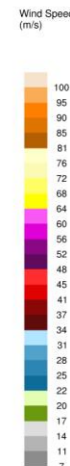
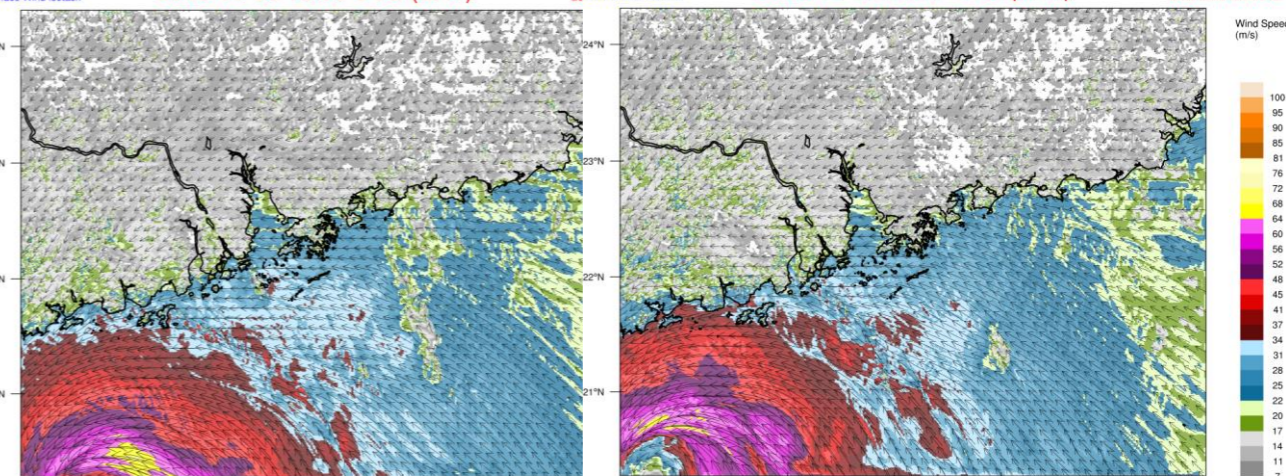


2015-10-03 18:30 UTC (SAT)

HKO Aviation Model
20 Surface Wind Isotach

2015-10-03 21:30 UTC (SAT)

Initialized at:
2015-10-03 12:00 UTC

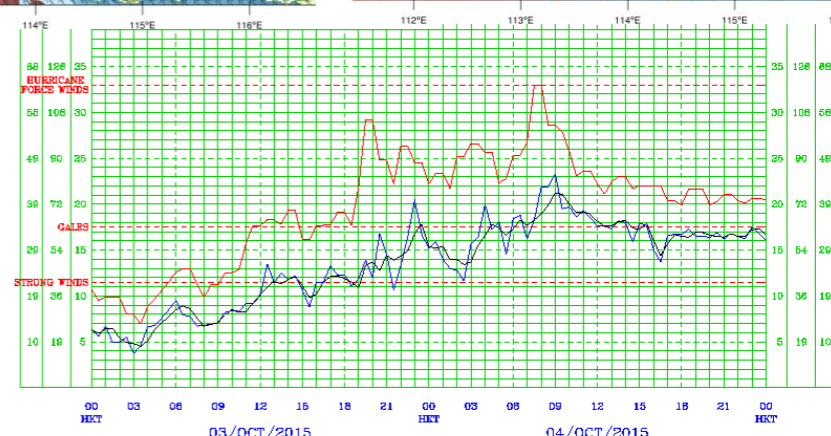
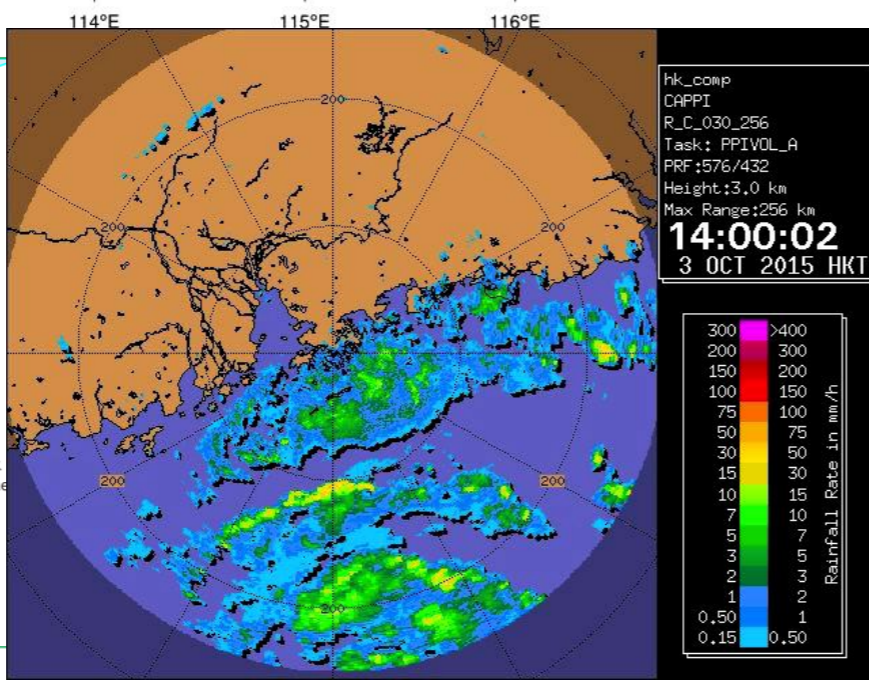
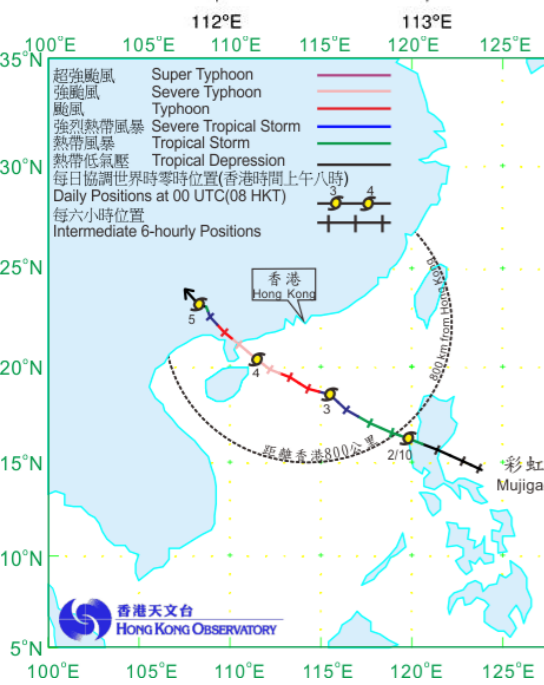
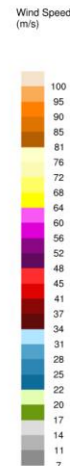
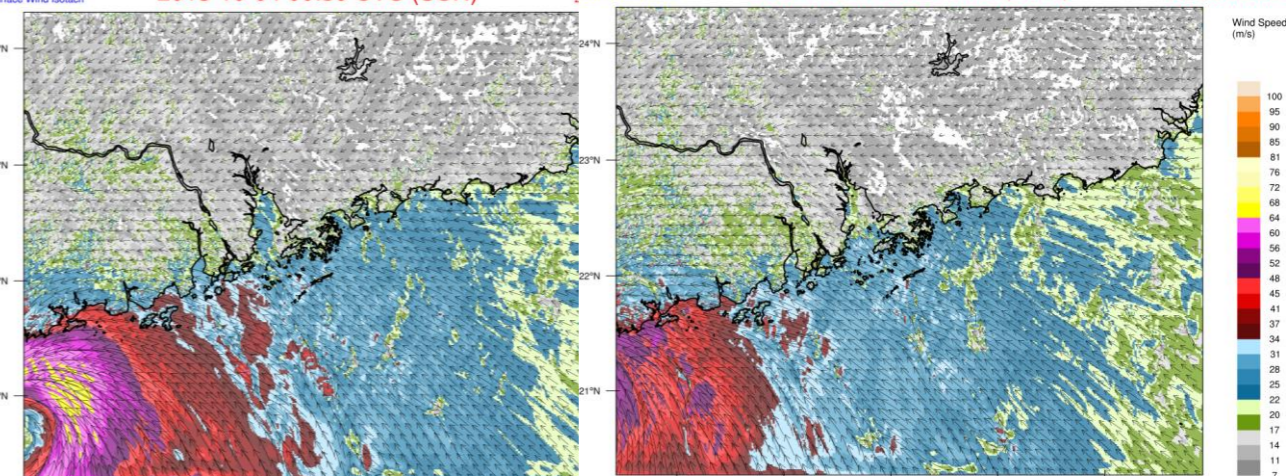


2015-10-04 00:30 UTC (SUN)

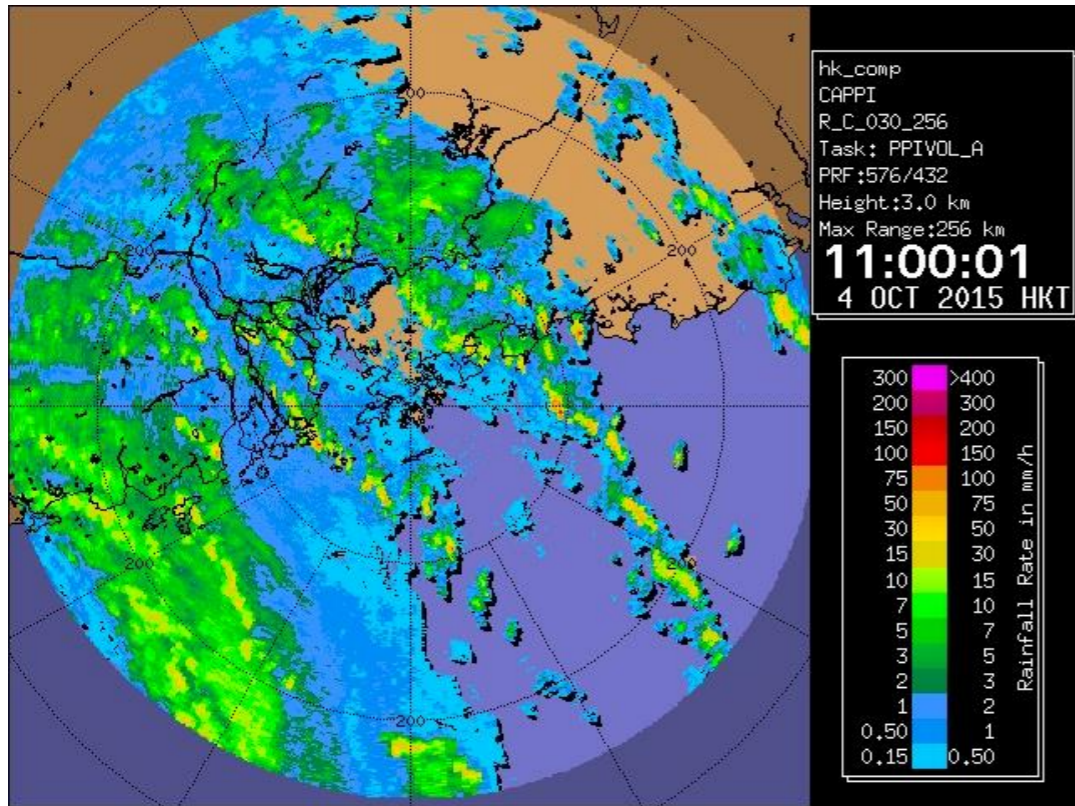
HKO Aviation Model
20 Surface Wind Isotach

2015-10-04 03:30 UTC (SUN)

Initialized at:
2015-10-03 12:00 UTC



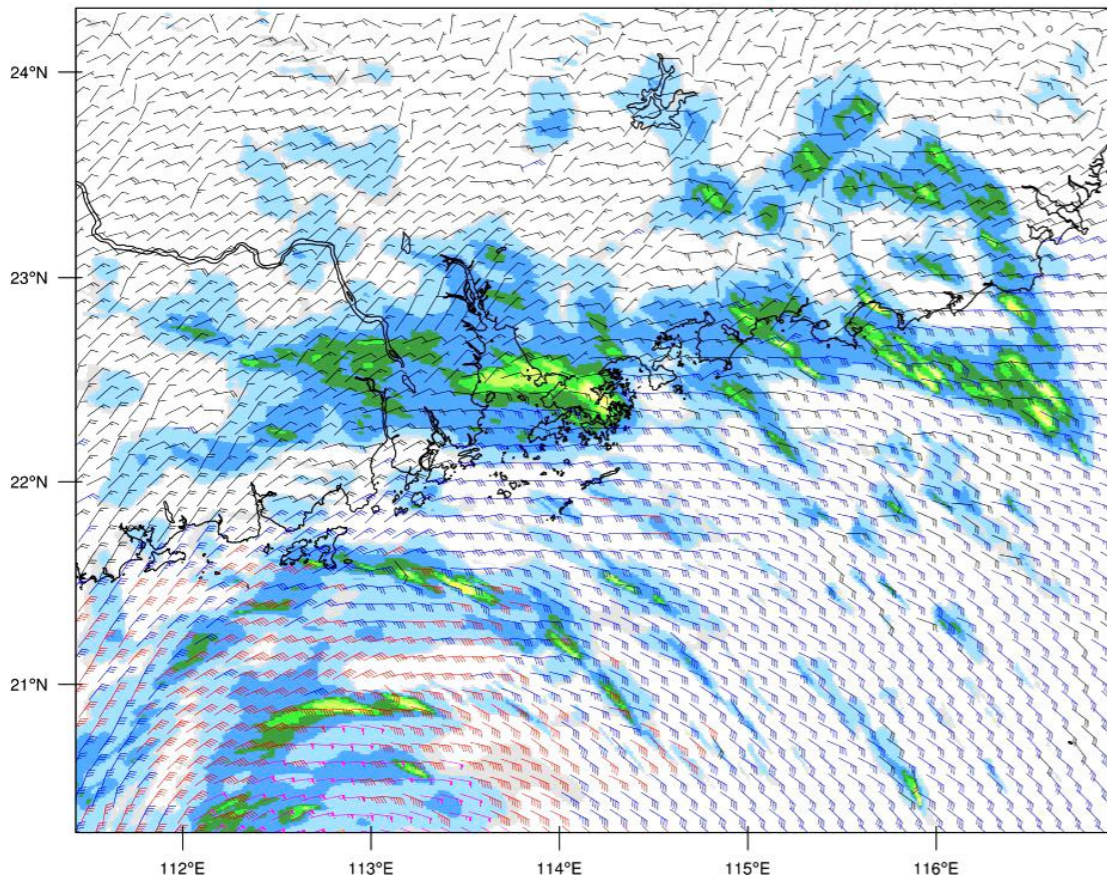
2015-10-03 15:00 UTC



HKO Aviation Model
Surface Wind + Rainfall

2015-10-03 15:30 UTC (SAT)

Initialized at:
2015-10-03 15:00 UTC



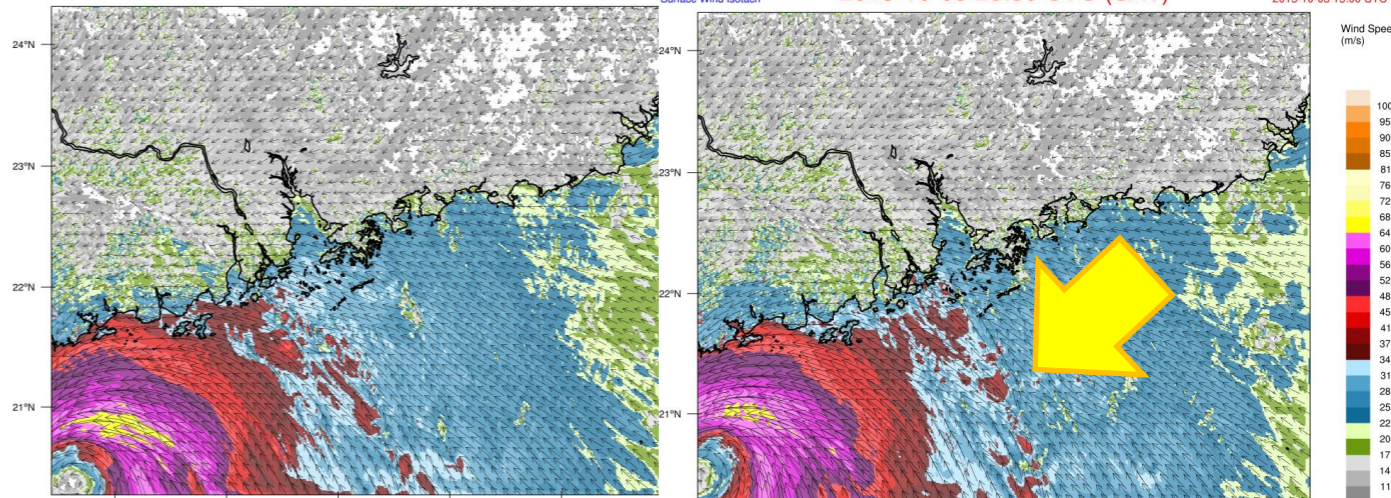
HKO Aviation Model
Surface Wind Isotach

2015-10-03 22:30 UTC (SAT)

Initialized at:
2015-10-03 15:00 UTC

2015-10-03 23:30 UTC (SAT)

Initialized at:
2015-10-03 15:00 UTC



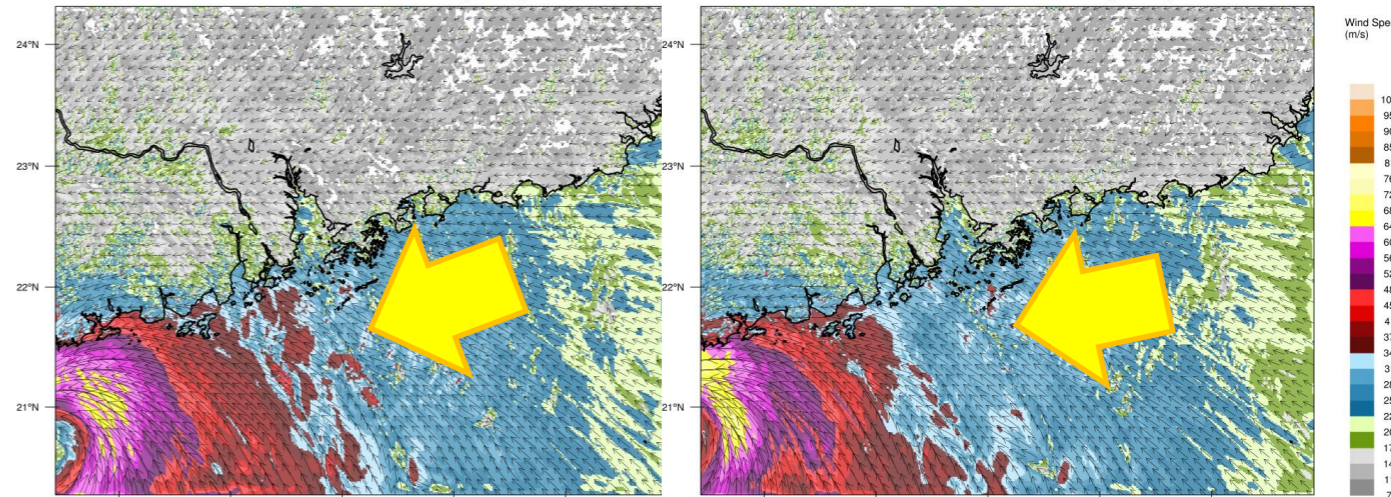
HKO Aviation Model
Surface Wind Isotach

2015-10-04 00:30 UTC (SUN)

Initialized at:
2015-10-03 15:00 UTC

2015-10-04 01:30 UTC (SUN)

Initialized at:
2015-10-03 15:00 UTC



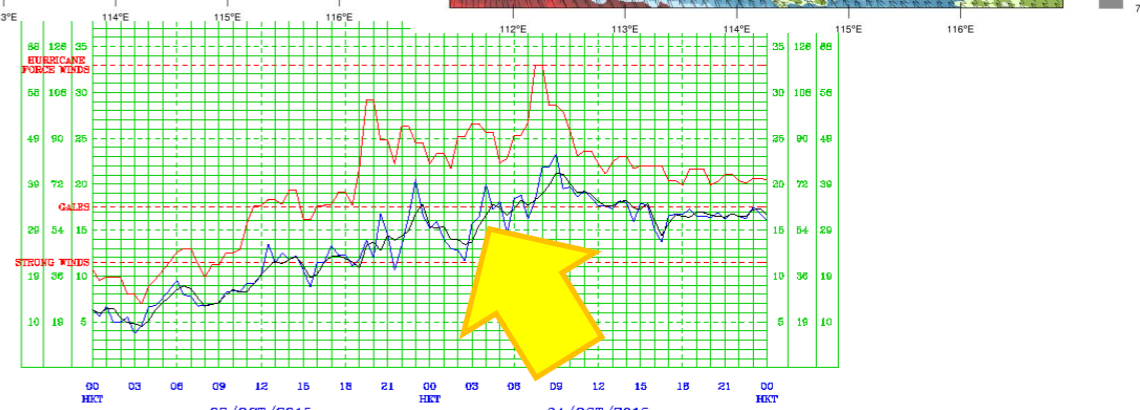
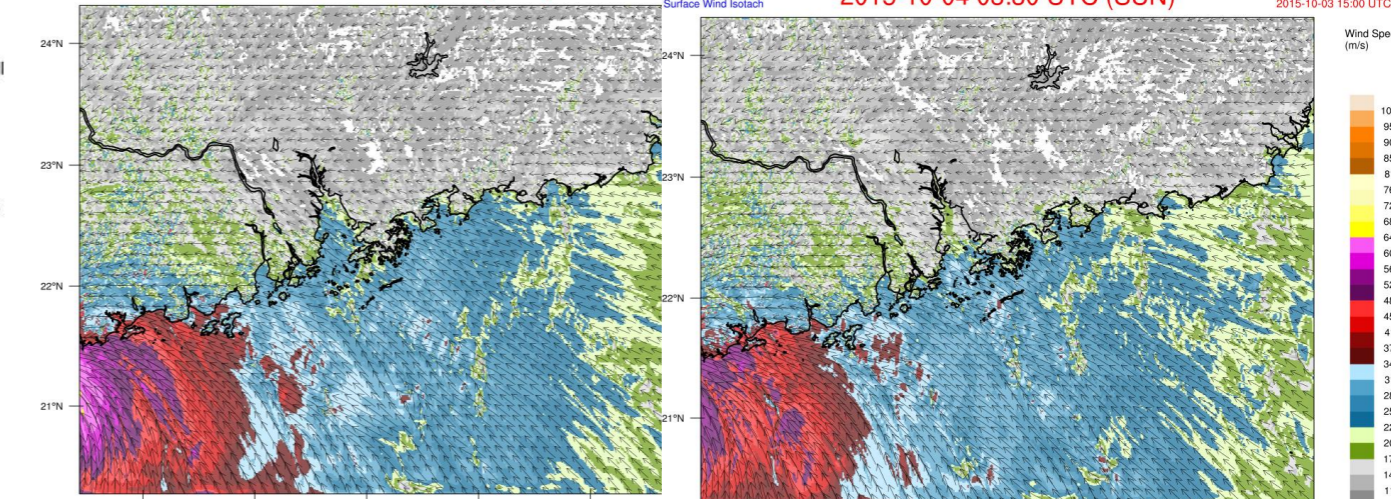
HKO Aviation Model
Surface Wind Isotach

2015-10-04 02:30 UTC (SUN)

Initialized at:
2015-10-03 15:00 UTC

2015-10-04 03:30 UTC (SUN)

Initialized at:
2015-10-03 15:00 UTC



2015-07-09 15:00 UTC & 21:00 UTC

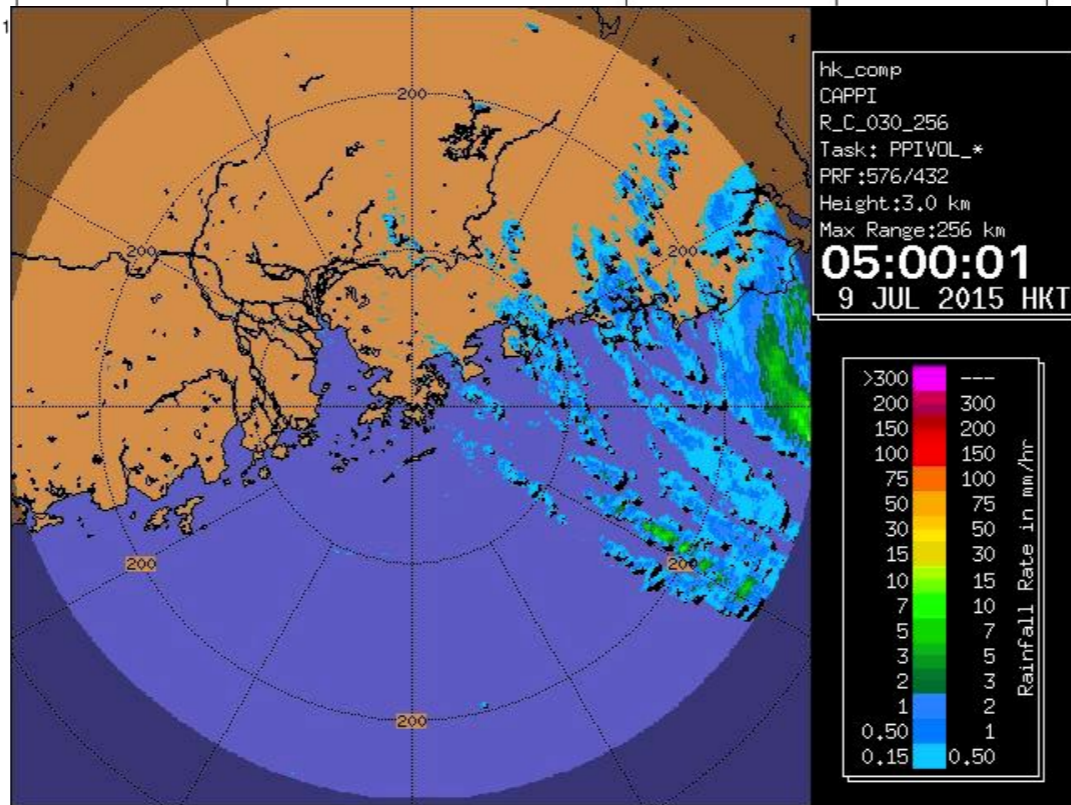
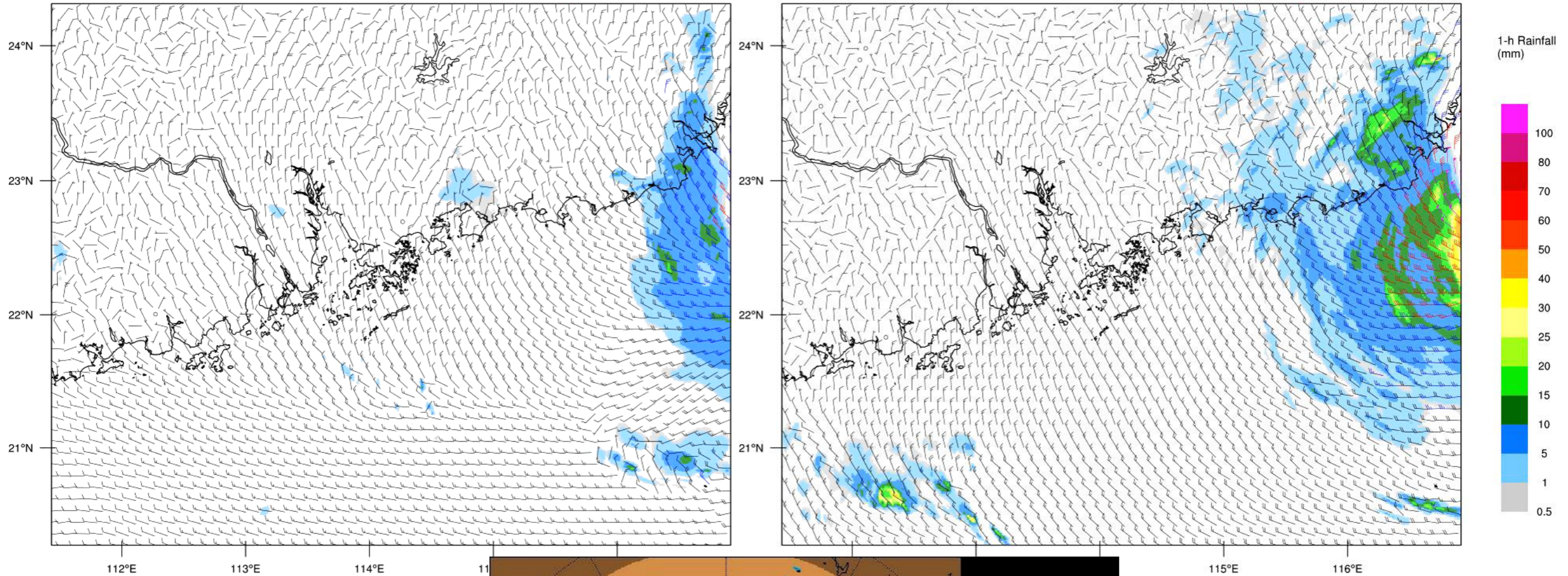
HKO Aviation Model
Surface Wind + Rainfall

2015-07-08 15:30 UTC (WED)

Initialized HKO Aviation Model
2015-07- Surface Wind + Rainfall

2015-07-08 22:00 UTC (WED)

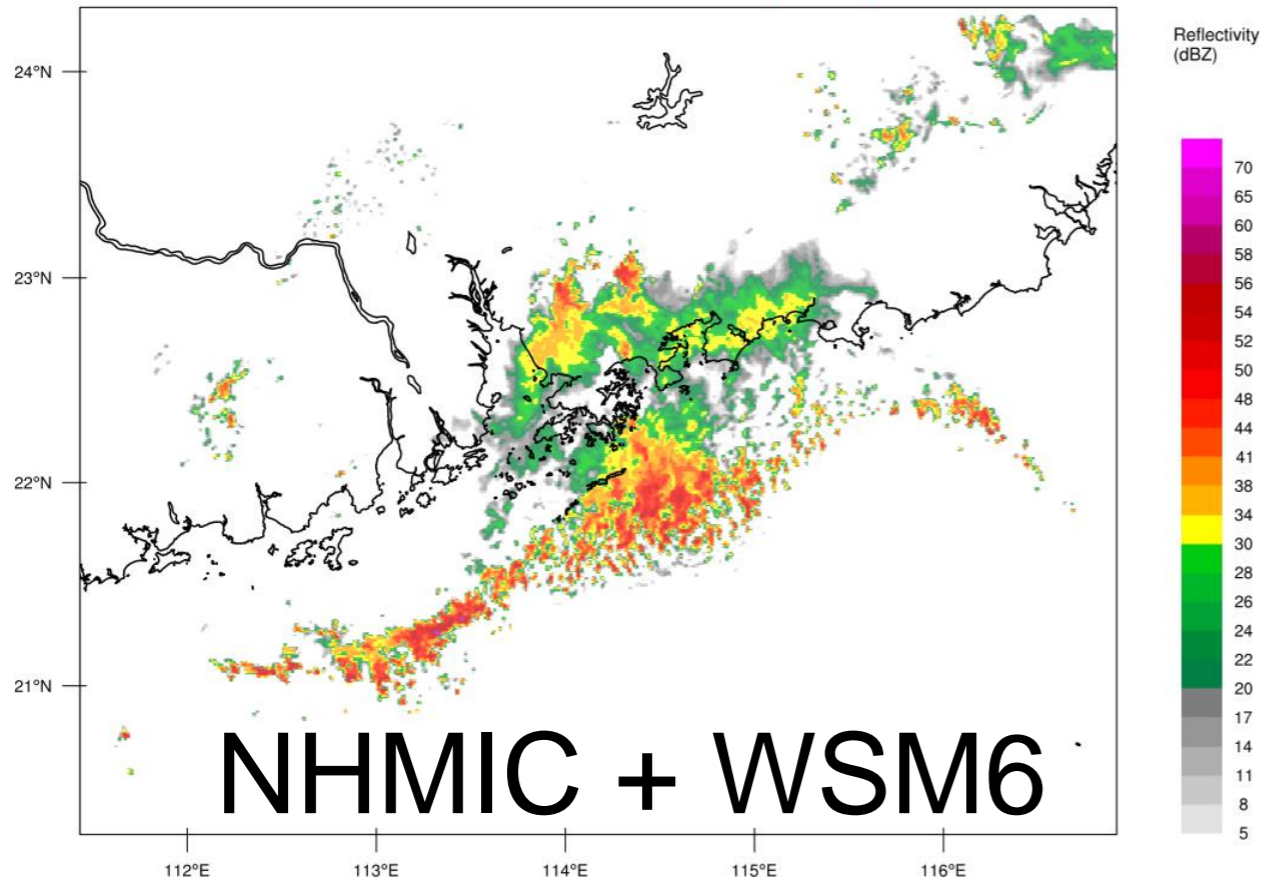
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HKO Aviation Model
Simulated Reflectivity at 3 km

2014-09-30 16:00 UTC (TUE)

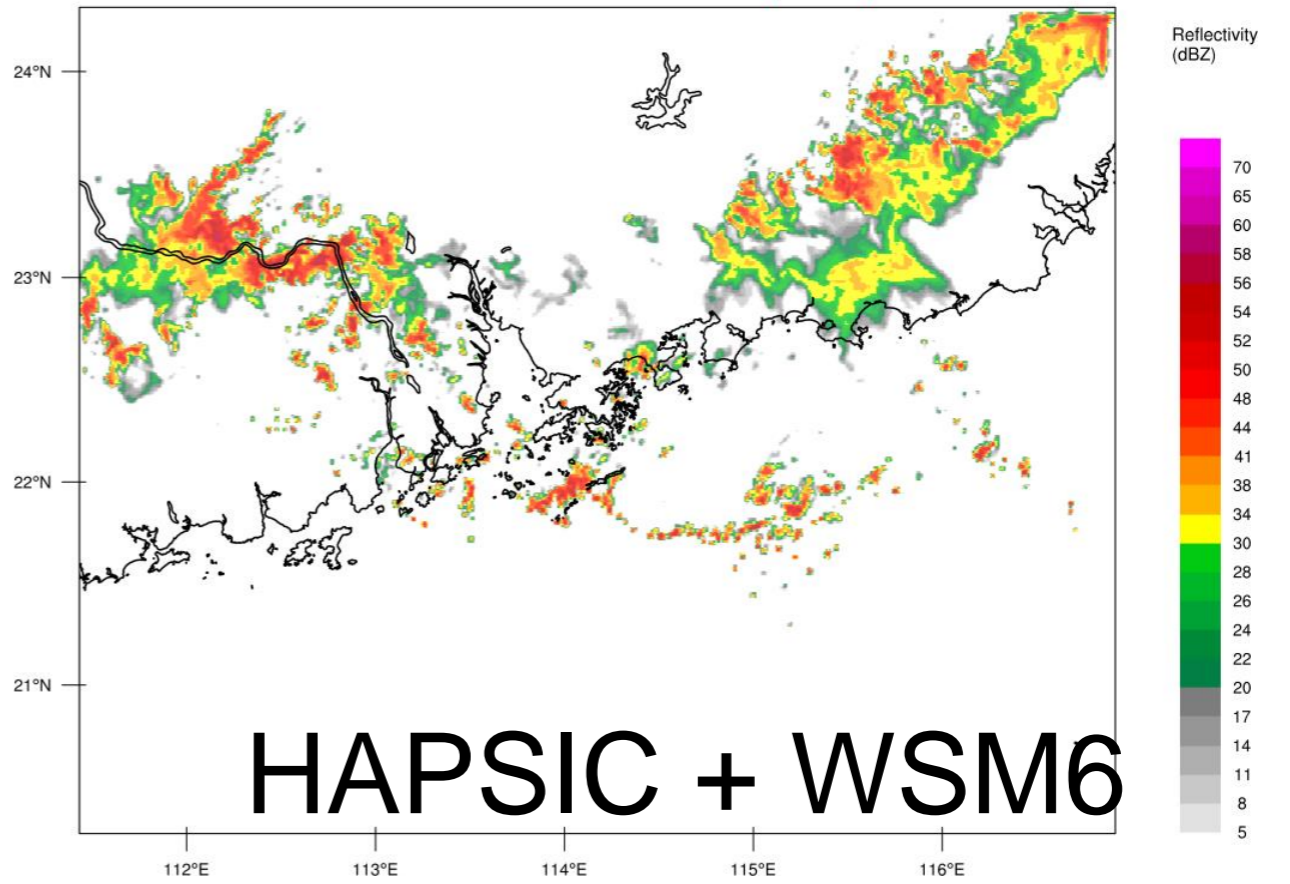
Initialized at:
2014-09-30 12:00 UTC



HKO Aviation Model
Simulated Reflectivity at 3 km

2014-09-30 16:00 UTC (TUE)

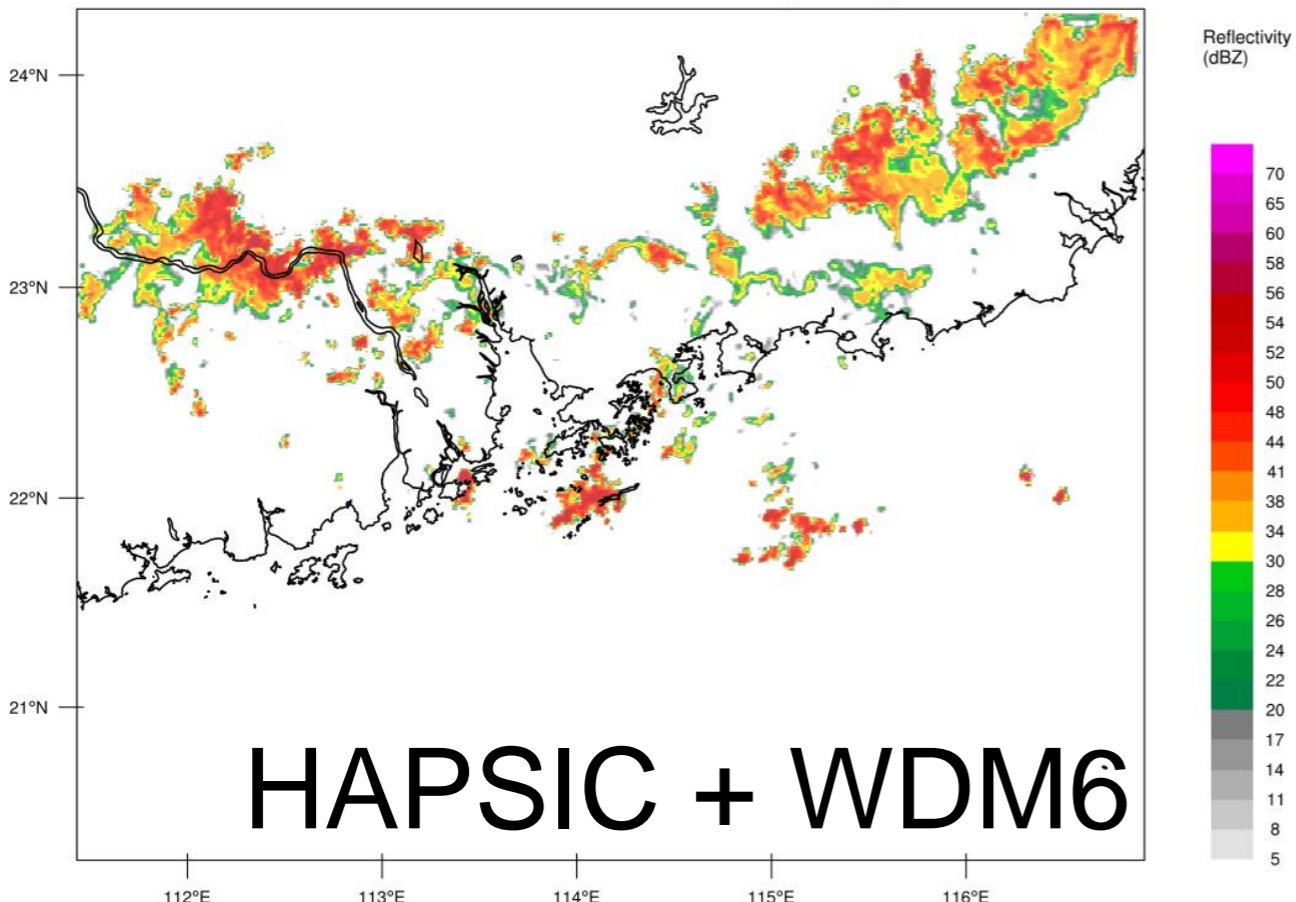
Initialized at:
2014-09-30 12:00 UTC



HKO Aviation Model
Simulated Reflectivity at 3 km

2014-09-30 16:00 UTC (TUE)

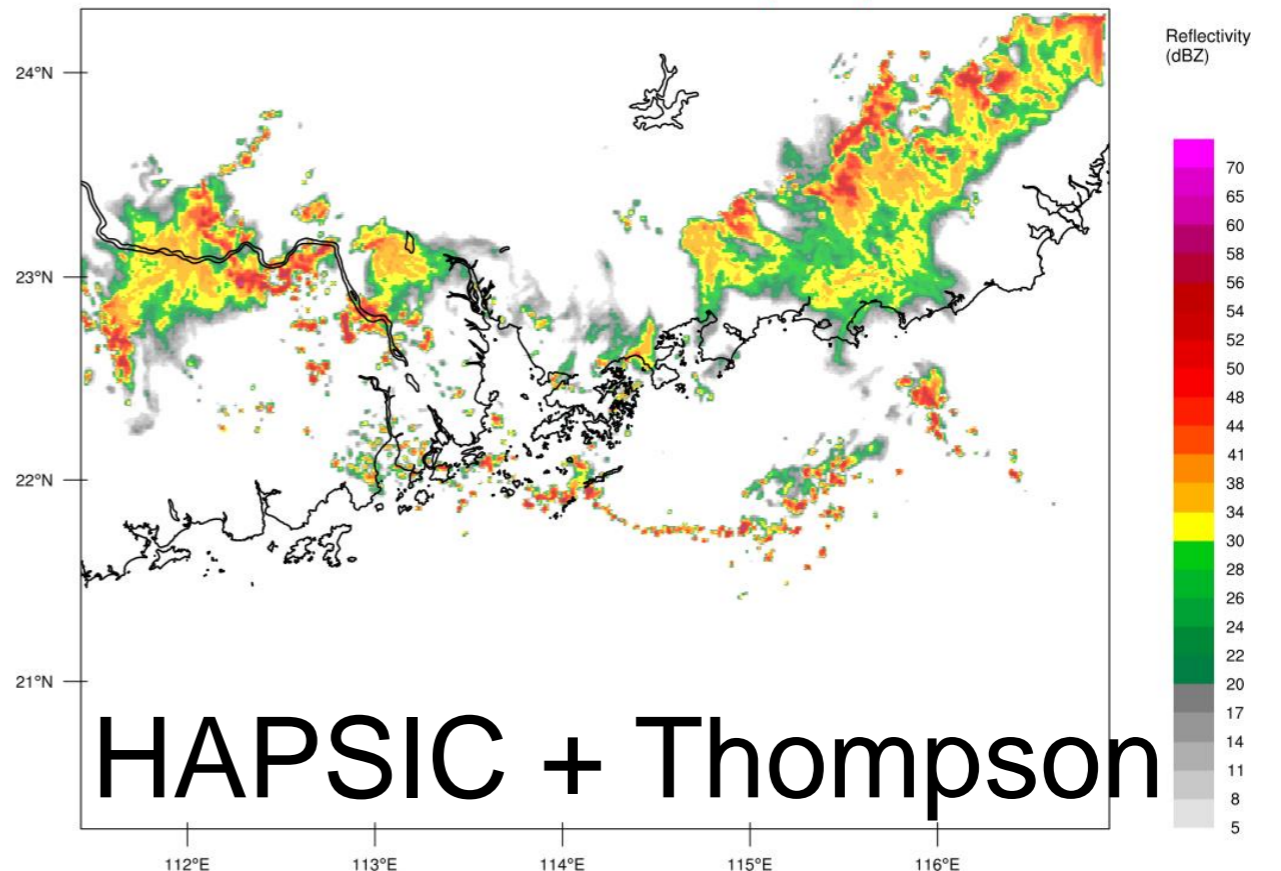
Initialized at:
2014-09-30 12:00 UTC



HKO Aviation Model
Simulated Reflectivity at 3 km

2014-09-30 16:00 UTC (TUE)

Initialized at:
2014-09-30 12:00 UTC



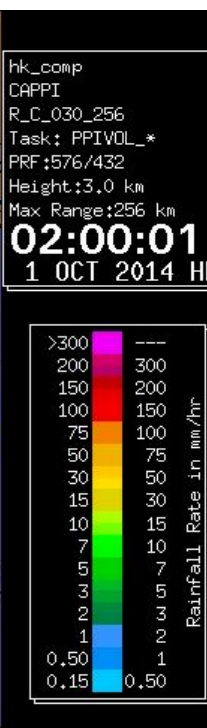
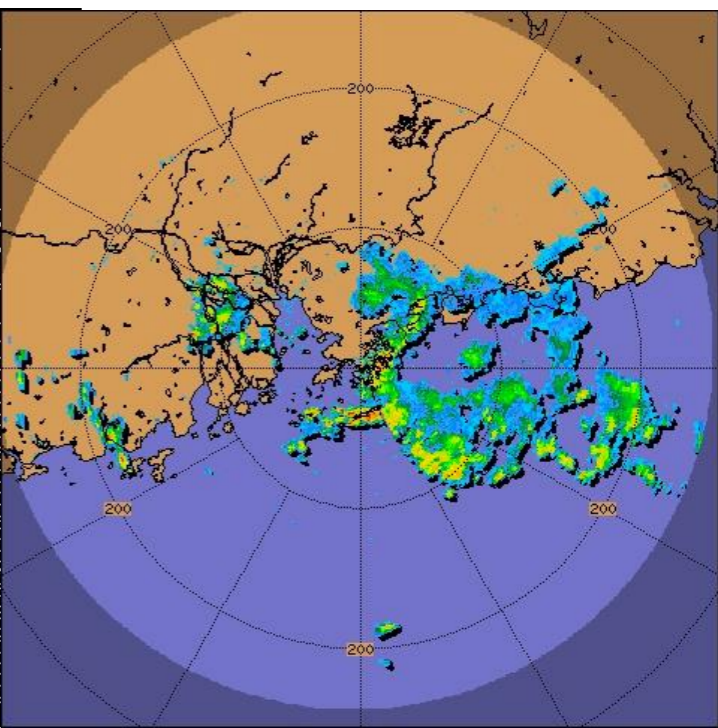
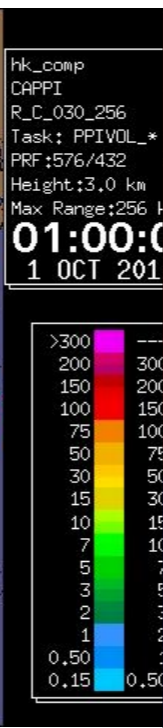
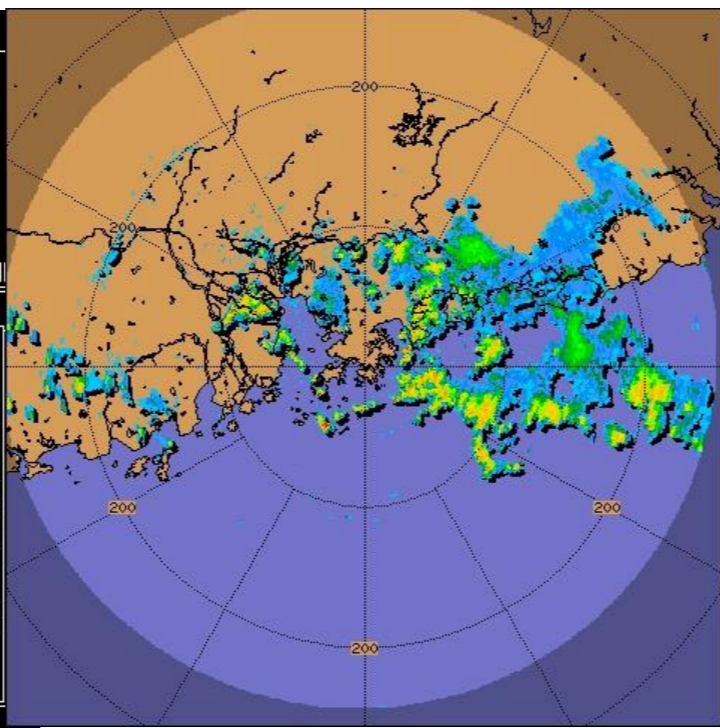
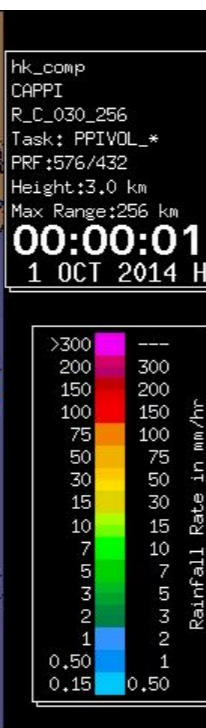
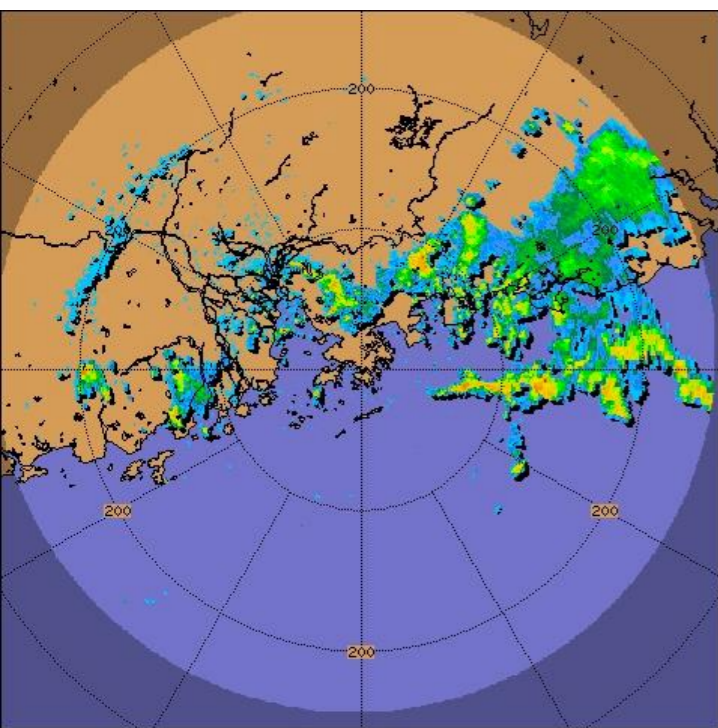
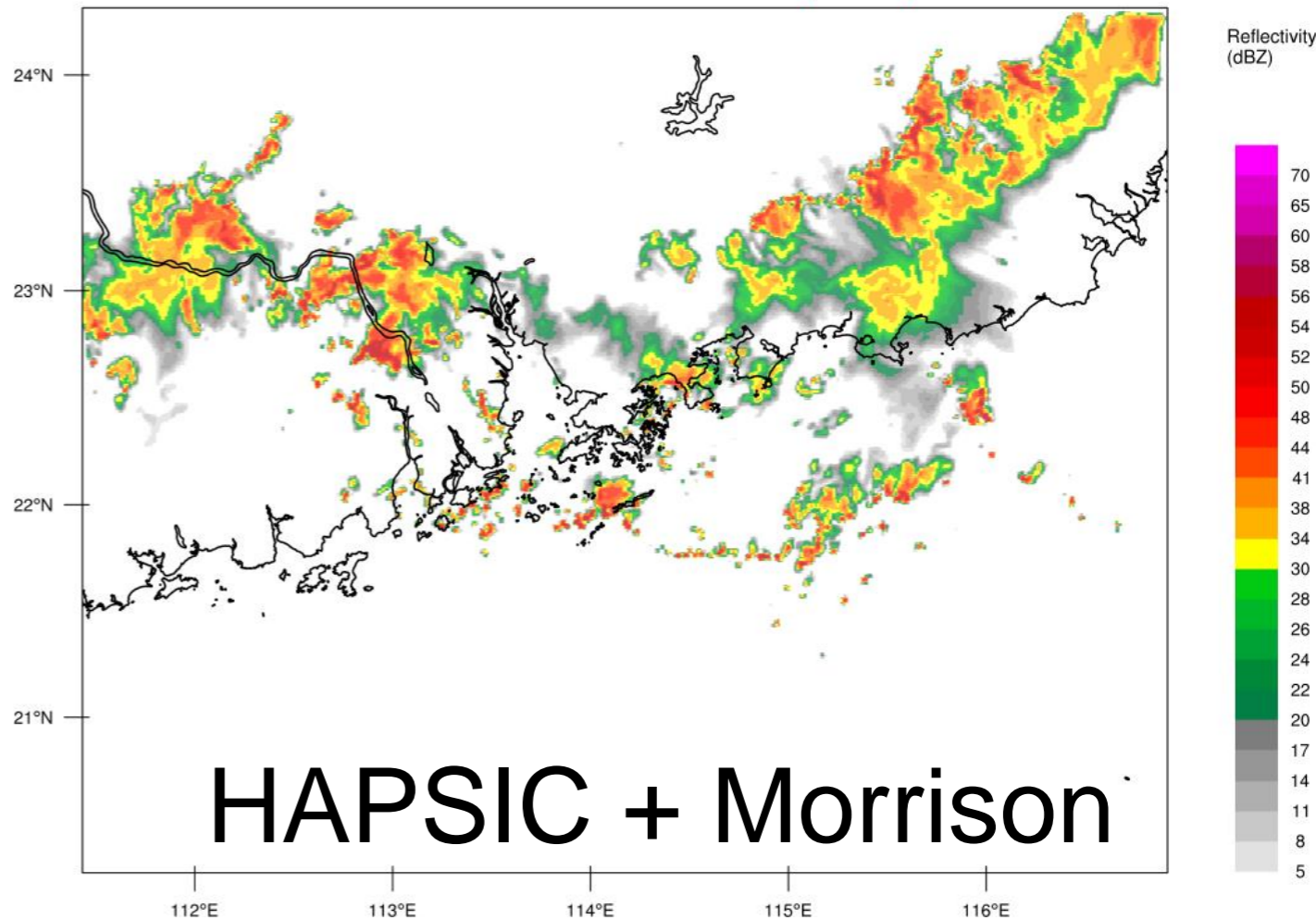
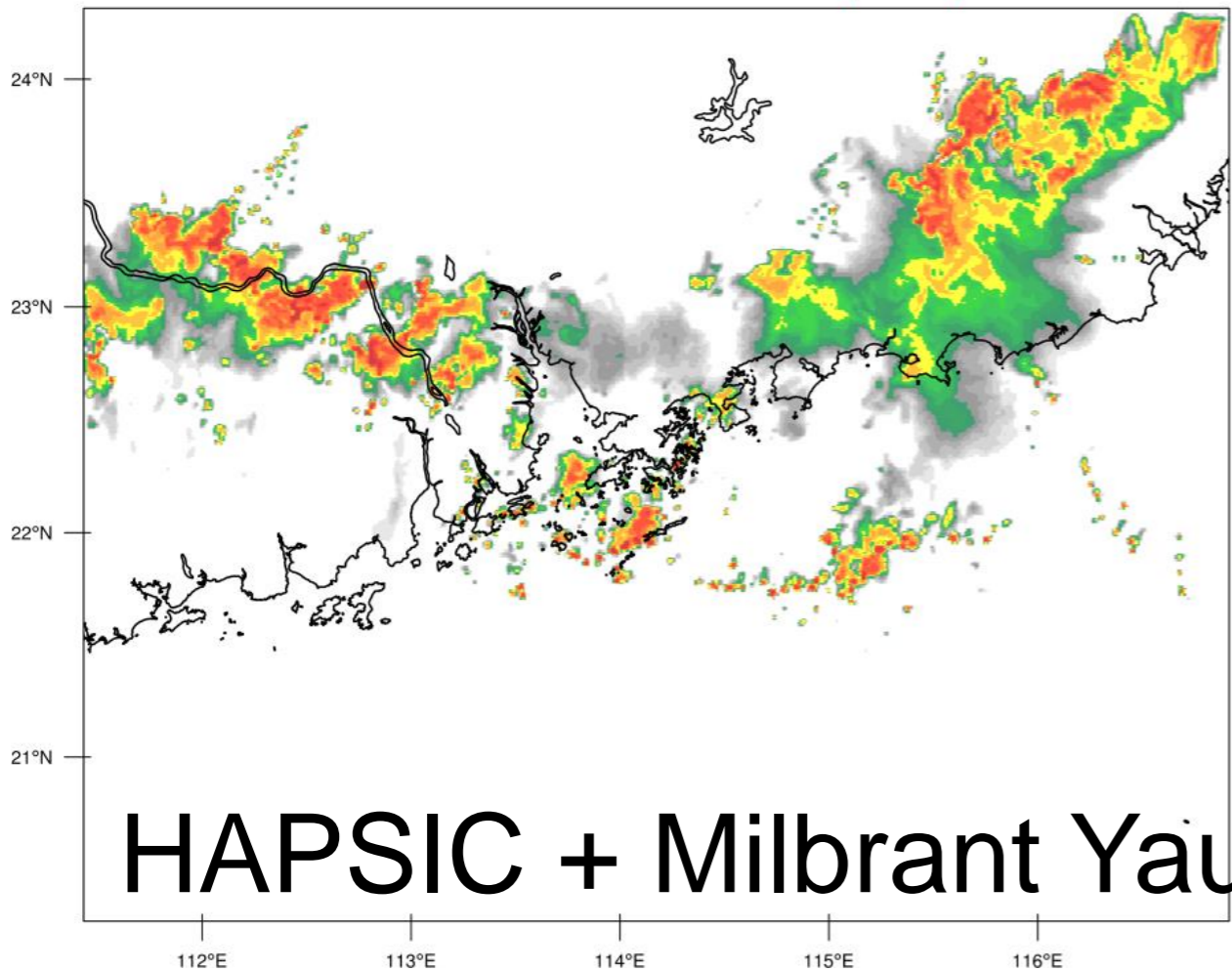
HKO Aviation Model
Simulated Reflectivity at 3 km

2014-09-30 16:00 UTC (TUE)

Initialized at HKO Aviation Model
2014-09-30 Simulated Reflectivity at 3 km

2014-09-30 16:00 UTC (TUE)

Initialized at:
2014-09-30 12:00 UTC



Thank you very much