Auxiliary Material Submission for Paper 2006GL026143 "Hurricane Forecasts with a Global Mesoscale-Resolving Model. Preliminary Results with Hurricane Katrina (2005)" by B.-W. Shen, R. Atlas, R. Reale, S.-J. Lin, J.-D. Chern, J. Chang, and C. Henze, J.-L. Li

Introduction:
This electronic supplement contains one table and five figures. The captions accompanying the table and figures are listed below.

Table 1: Summary of intensity evolution of Katrina at different stages. BegT: Beginning Time. DT: Duration Time. DP (DW): Difference of MSLP (MSW) within the period.

NHC	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
(BegT, DT)	(25/15Z, 24h)	(26/15Z, 18h)	(27/09Z, 18h)	(28/03Z, 18h)	(28/21Z,)
(MSLP,MSW)	(997, 93)	(981,130)	(945, 185)	(939,185)	(902, 269)
(DP,DW)	(-16, +37)	(-36, +55)	(-6, 0)	(-37,+84)	(,)
e32	Stage 1	Stage 2	Stage 3		Stage 4
(BegT, DT)	(25/15Z, 69h)	(28/12Z, 12h)	(29/00Z, 24h)		(30/00Z,)
(MSLP,MSW)	(1007.6, 49.7)	(983.8, 89.3)	(959.9, 125.3)		(951.8, 136.4)
(DP,DW)	(-23.8, +39.6)	(-23.9, +36)	(-8.1, +11.1)		(,)
g48	Stage 1	Stage 2			Stage 3
(BegT, DT)	(25/15Z, 48h)	(27/15Z, 45h)			(29/12Z,)
(MSLP,MSW)	(1007.7,48.6)	(988.5,92.5)			(895.7, 216.3)
(DP,DW)	(-19.2,+43.9)	(-92.8, +123.8)			(,)
g48-ncps	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
(BegT, DT)	(25/15Z, 48h)	(27/15Z, 9h)	(28/00Z, 21h)	(28/21Z, 12h)	(29/09Z,)
(MSLP,MSW)	(1008.6,51.1)	(980, 114)	(936, 154)	(928.5, 170.3)	(906.5,205)
(DP,DW)	(-28.6,+62.9)	(-44., +40)	(-7.5, +16.3)	(-22, +34.7)	(,)

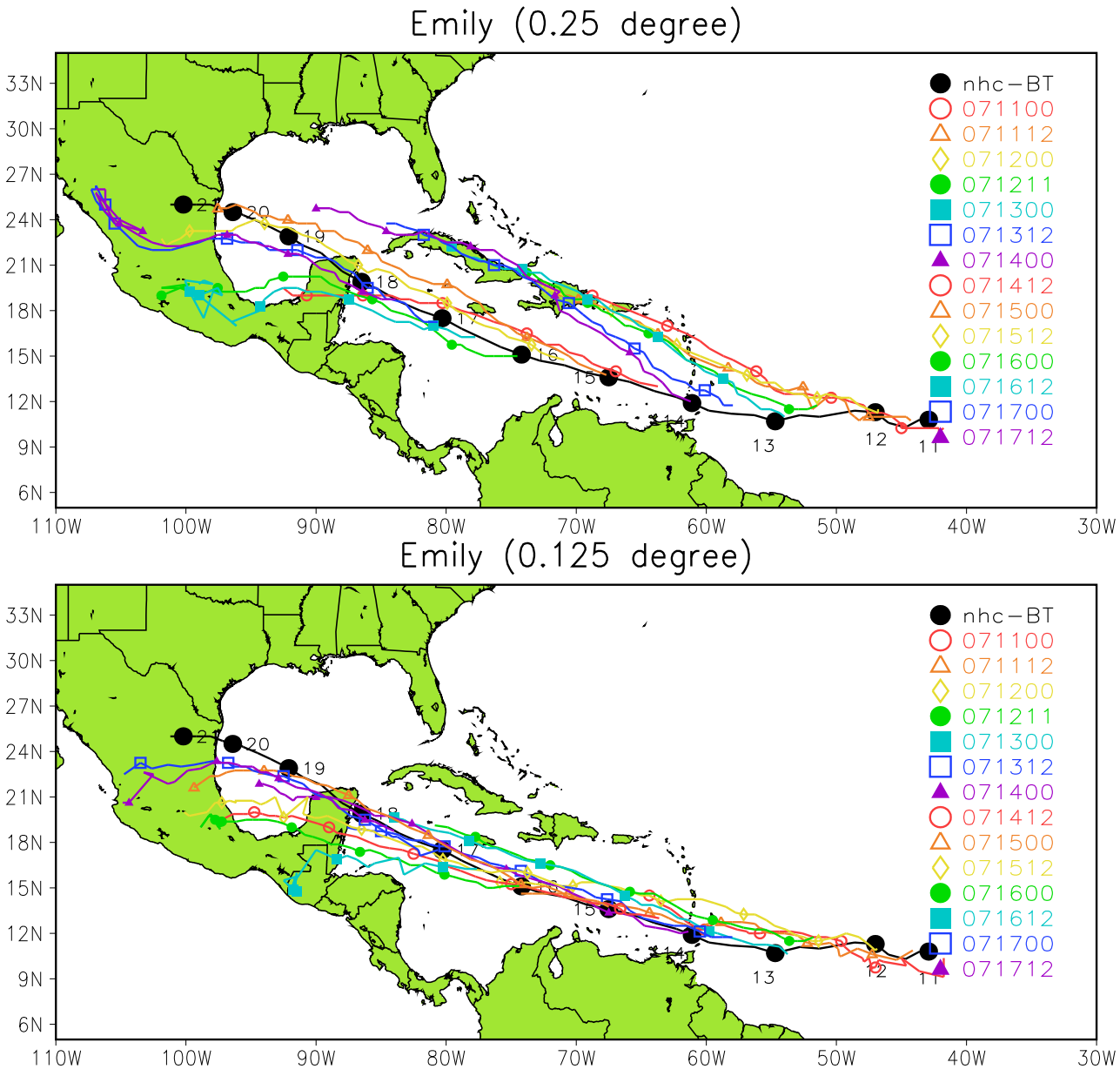


Figure S1. Model tests. Fourteen five-day track predictions of hurricane Emily initialized at 0000 and 1200 UTC from 11 to 17 July, 2005 with the fvGCM at the 0.25 degree resolution (top) and at the 0.125 degree resolution with no CPS (bottom).

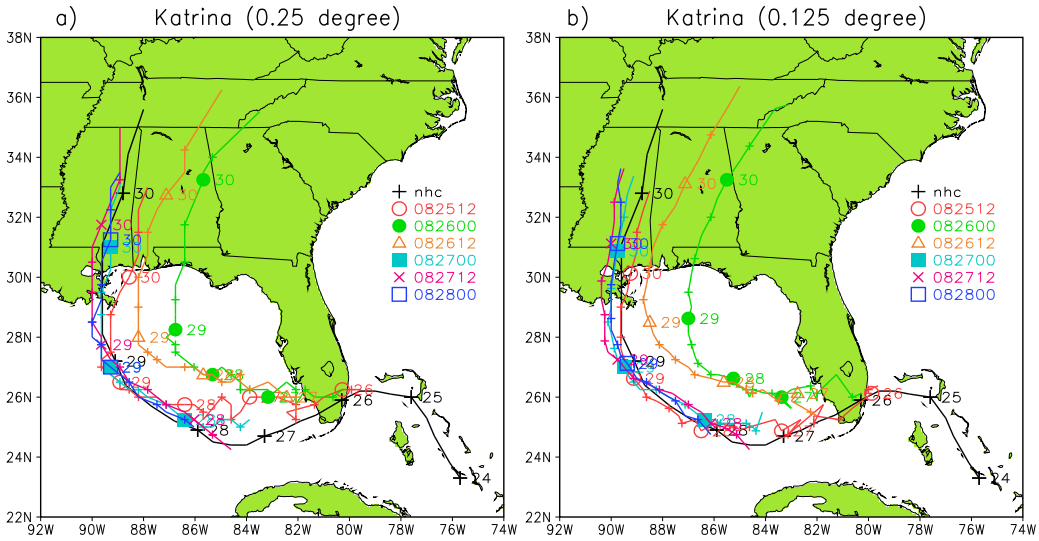


Figure S2. Six high-resolution five-day track predictions of hurricane Katrina initialized from 1200 UTC 25 August to 0000 UTC 28 August at (a) the 0.25 degree resolution and (b) the 0.125 degree resolution.

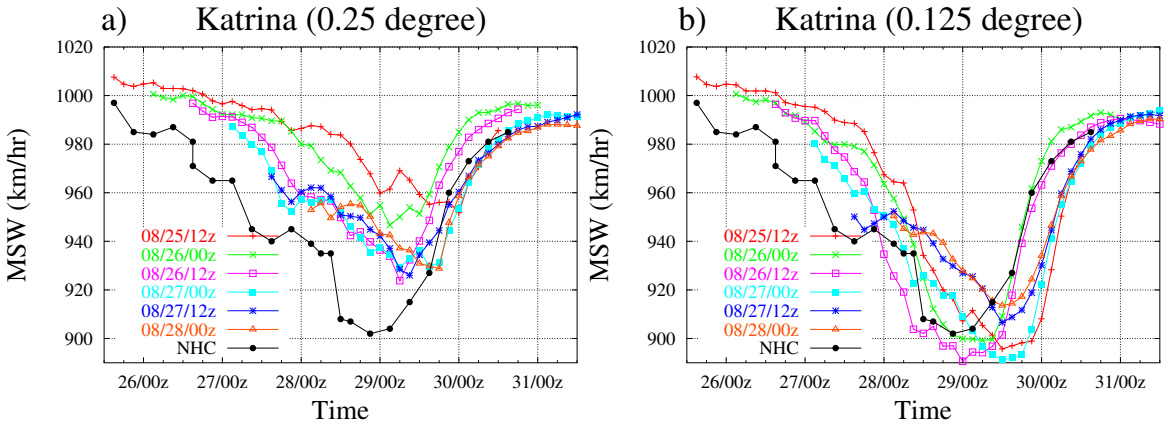


Figure S3. Six high-resolution five-day intensity predictions of hurricane Katrina initialized from 1200 UTC 25 August to 0000 UTC 28 August at (a) the 0.25 degree resolution and (b) the 0.125 degree resolution.

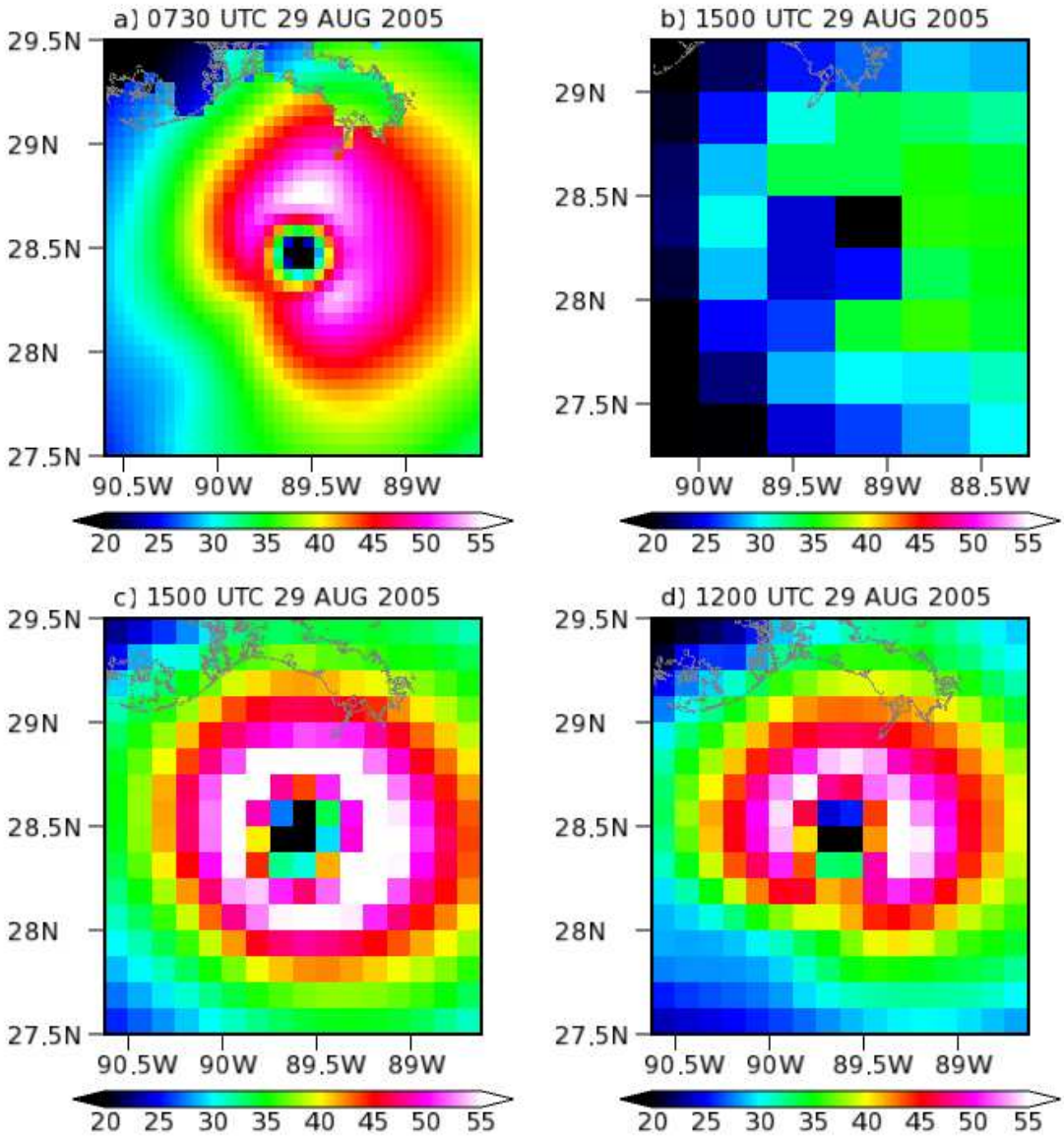


Figure S4. Comparison of wind distribution near the hurricane eye in a 2x2 degree box without spatial interpolations among (a) AOML high-resolution (0.0542^o) surface wind analysis data at 0730 UTC AUG 29, (b) the 0.25^o 10m winds at 99h simulations ending 1500 UTC 29, (c) the 0.125^o 10m winds at 99h simulations ending 1500 UTC 29, and (d) the 0.125^o 10m winds without convection parameterization at 96h simulations ending 1200 UTC 29.

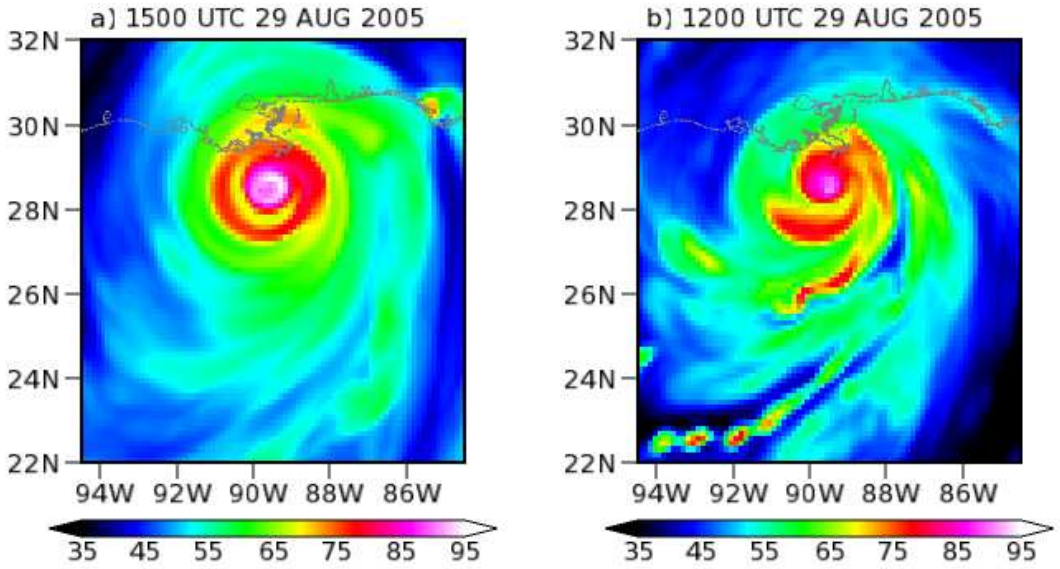
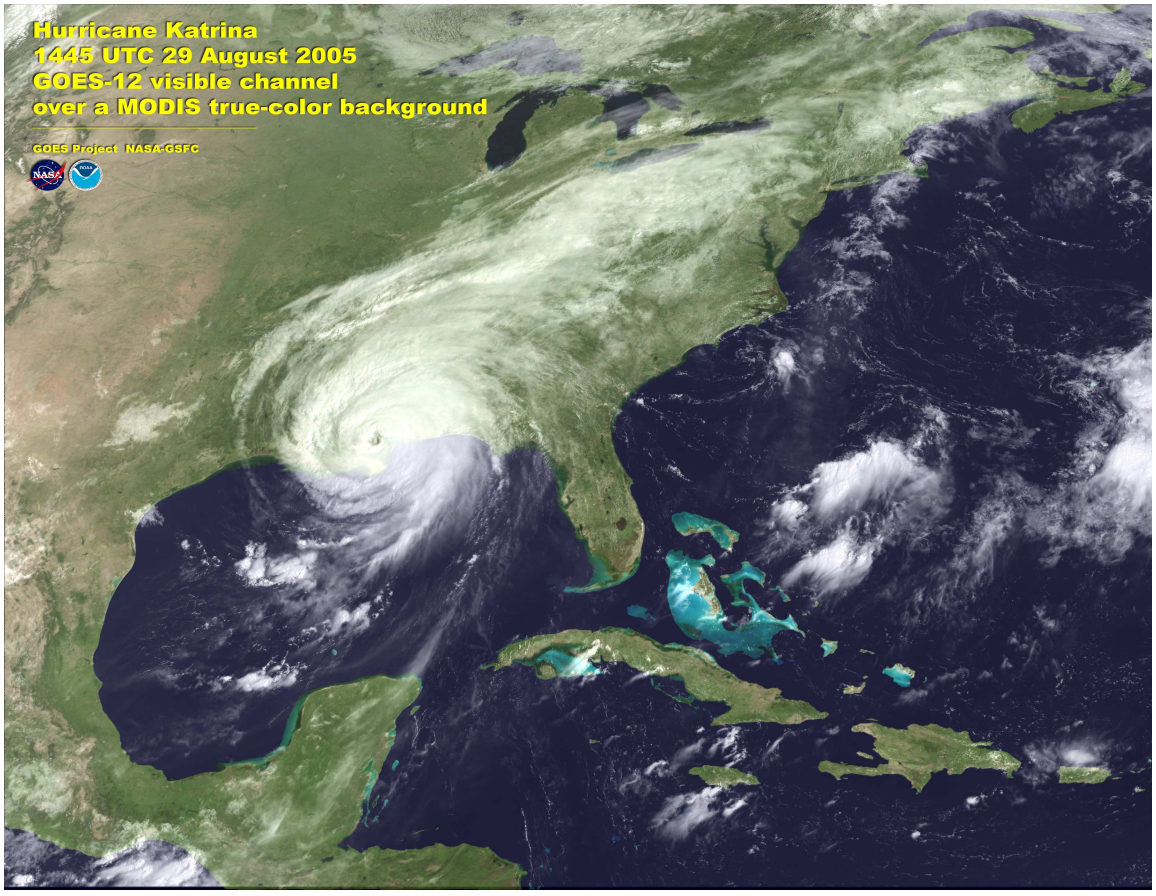
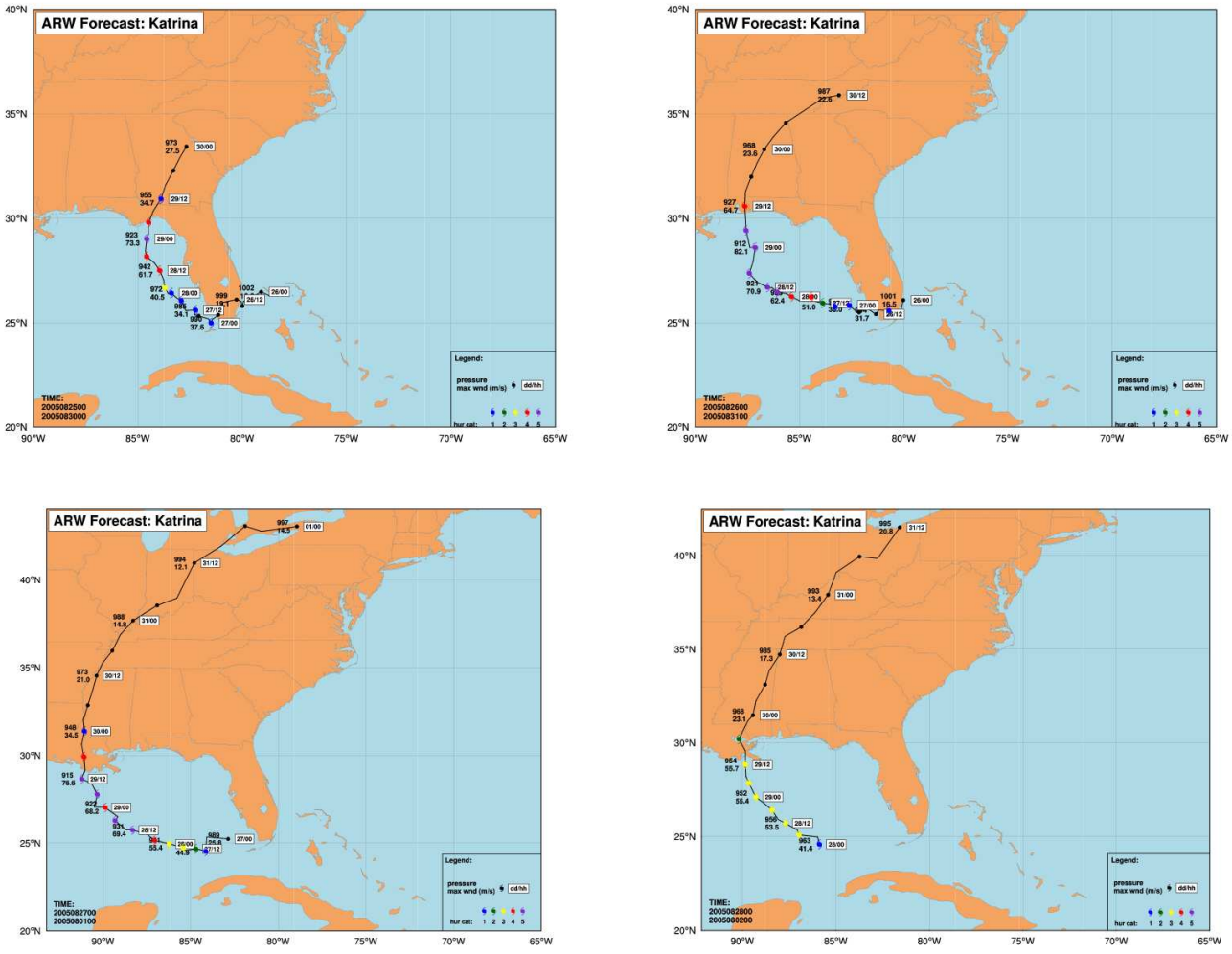


Figure S5. Simulated total precipitable water with the 0.125^o fvGCM initialized at 1200 UTC 25 August, 2005, at (a) 99h forecast with convection parameterization and (b) 96h forecast without convection parameterization.

For readers' convenience, the following two figures are downloaded from web sites, and attached for comparisons with model results.



The satellite image of hurricane Katrina validated at 1445 UTC 29 AUG 2005, which is from http://rsd.gsfc.nasa.gov/goes/pub/goes/050829.katrina.jpg. A comparison of model forecasts (Figure S5) with the above image indicates that the run without convection parameterization better simulates the asymmetry of the spiral band.



WRF forecasts: Four five-day track predictions of hurricane Katrina initialized from 0000 UTC from 25 to 28 August with the Weather Research and Forecasting model (WRF) at a resolution of 12km. Results are from http://www.mmm.ucar.edu/prod/rt/wrf/hur12/200508XX00/hur_track.png. Here XX is from 25 to 28.