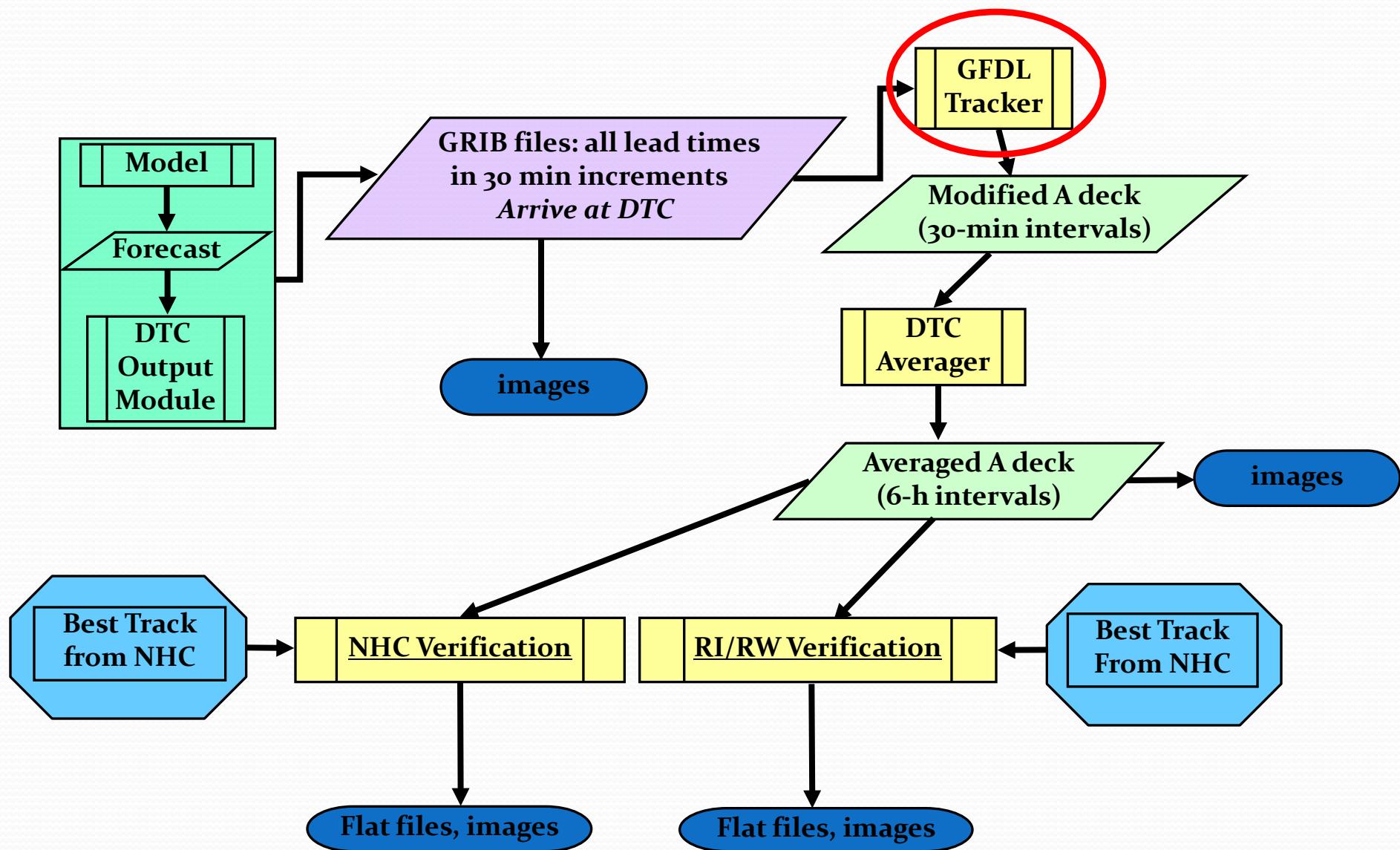


# GFDL VORTEX TRACKER for HRH TEST

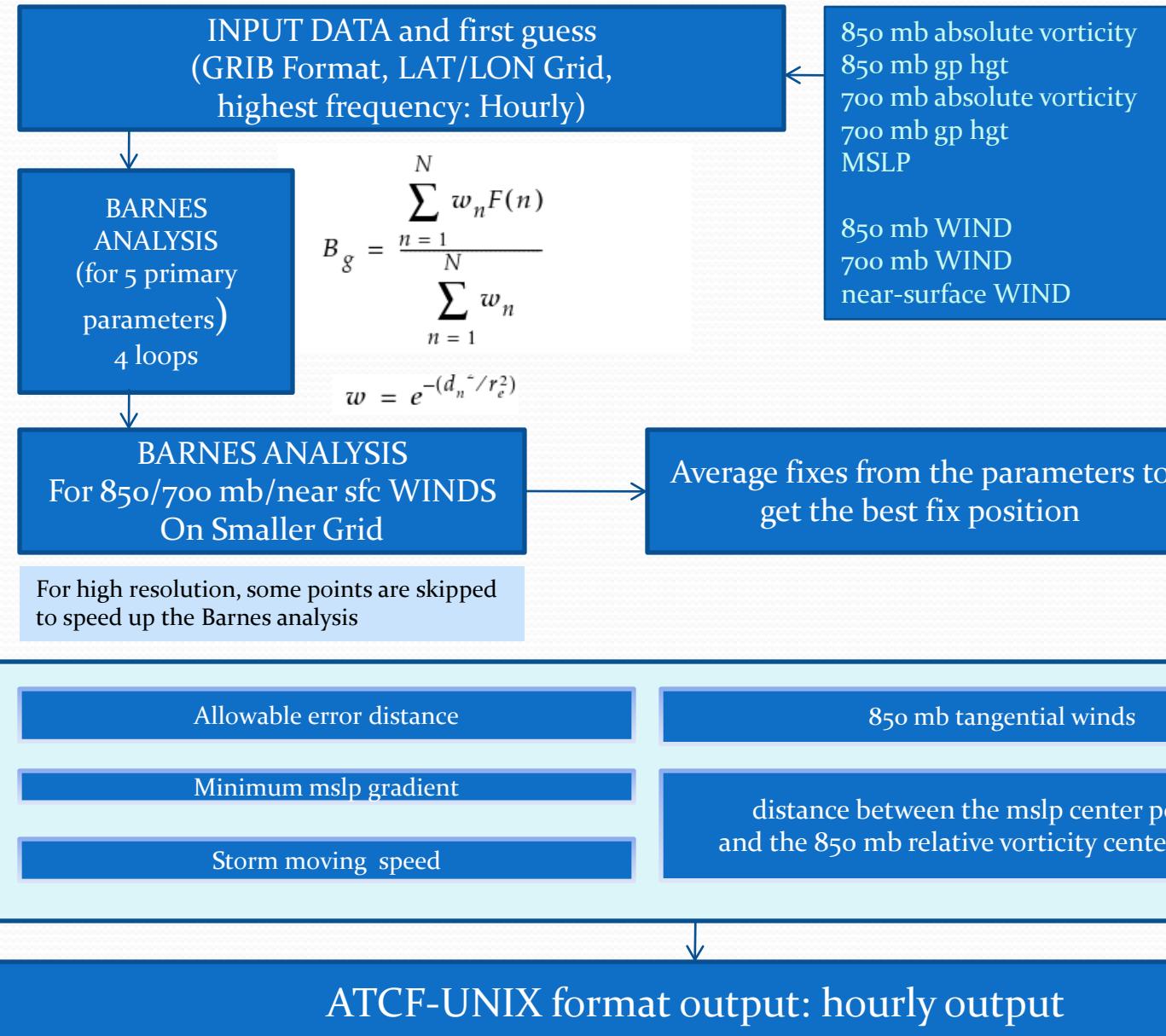
Developmental Testbed Center

MAY 07 2009

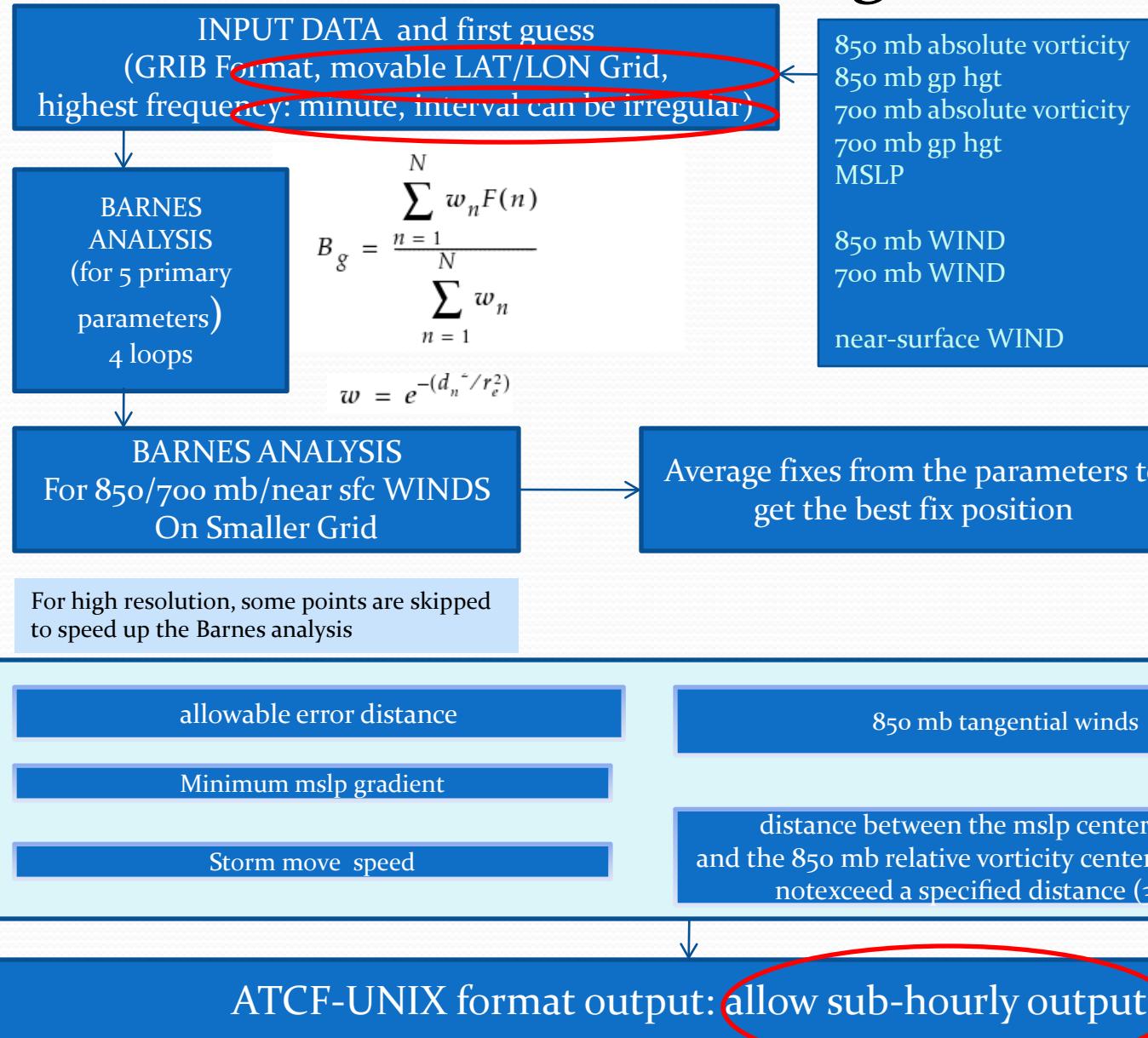
# DTC Evaluation System for HRH



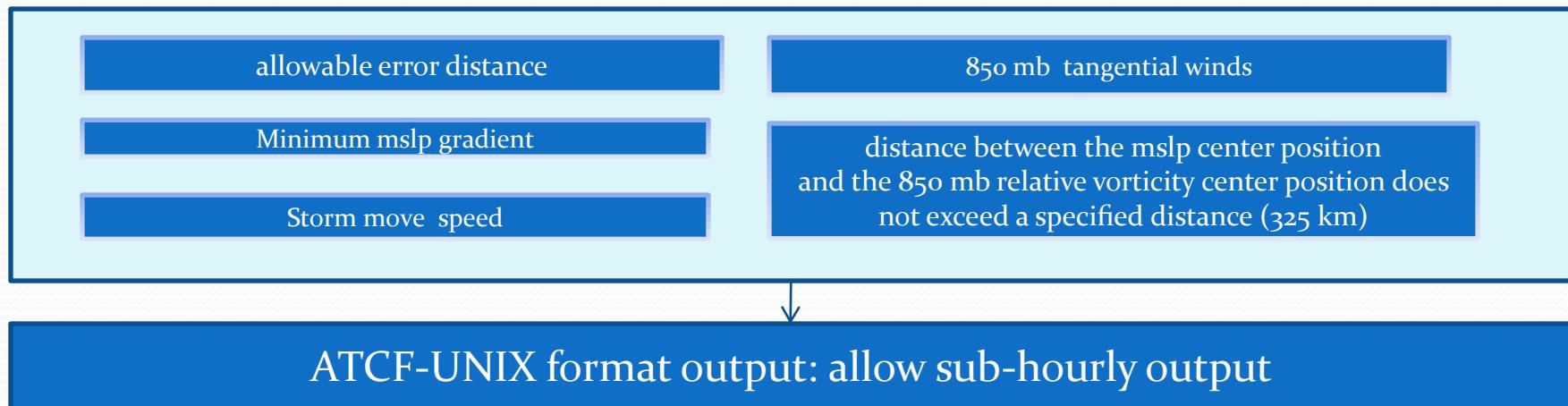
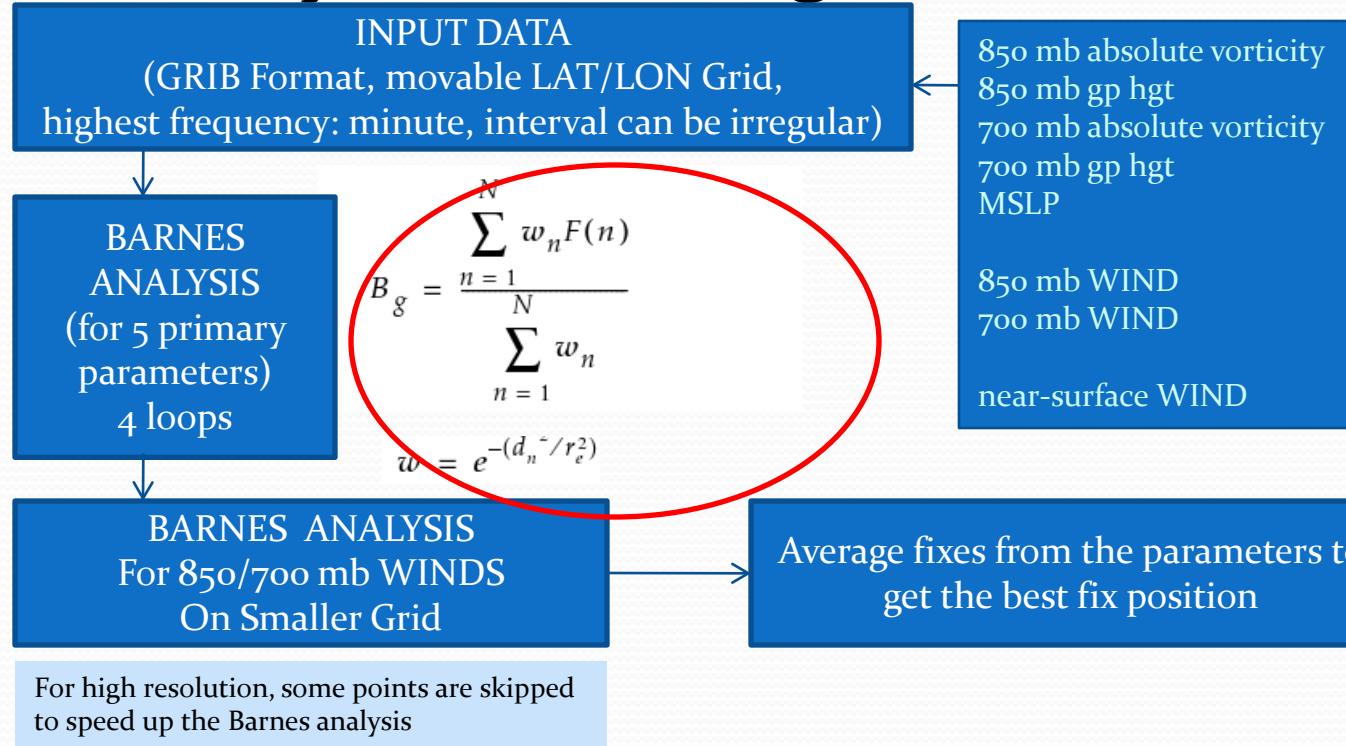
# GFDL VORTEX TRACKER



# Ability to read in forecast lead time in minutes and movable grid



# Ability to track high-resolution grid



# Barnes analysis parameters

grid space > 1.26 deg

rads=350km

re=150km

ri=300km

grid space < 1.26 deg

rads=300km

re=75km

ri=150km

0.1 deg < grid space < 0.4 deg

rads=200km

re=75km

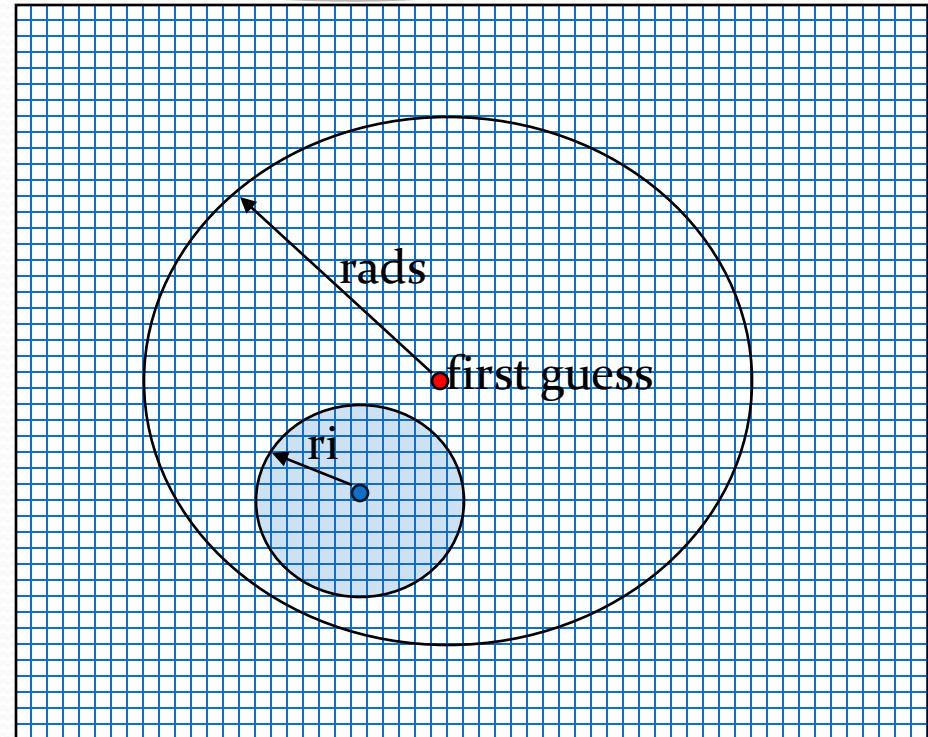
ri=150km

grid space < 0.1 deg

rads=150km

re=60km

ri=150km



$$B_g = \frac{\sum_{n=1}^N w_n F(n)}{\sum_{n=1}^N w_n}$$

$$w = e^{-(d_n / r_e^2)}$$

rads --maximum radius for searching for the storm center  
re----- e-folding radius (for Barnes smoothing)  
ri----- influence radius (for Barnes smoothing )

# Barnes analysis parameters for WINDS

rads=120km

ri=120km

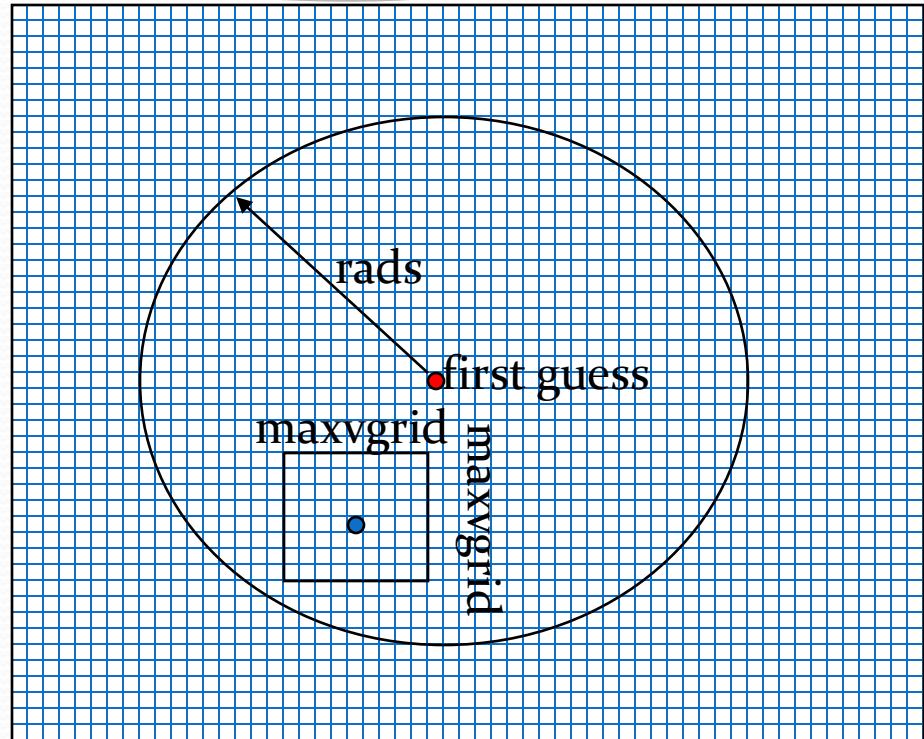
re=f(maxvgrid)

gridsize > 0.04 deg

maxvgrid=8

gridsize < 0.04 deg

maxvgrid=12

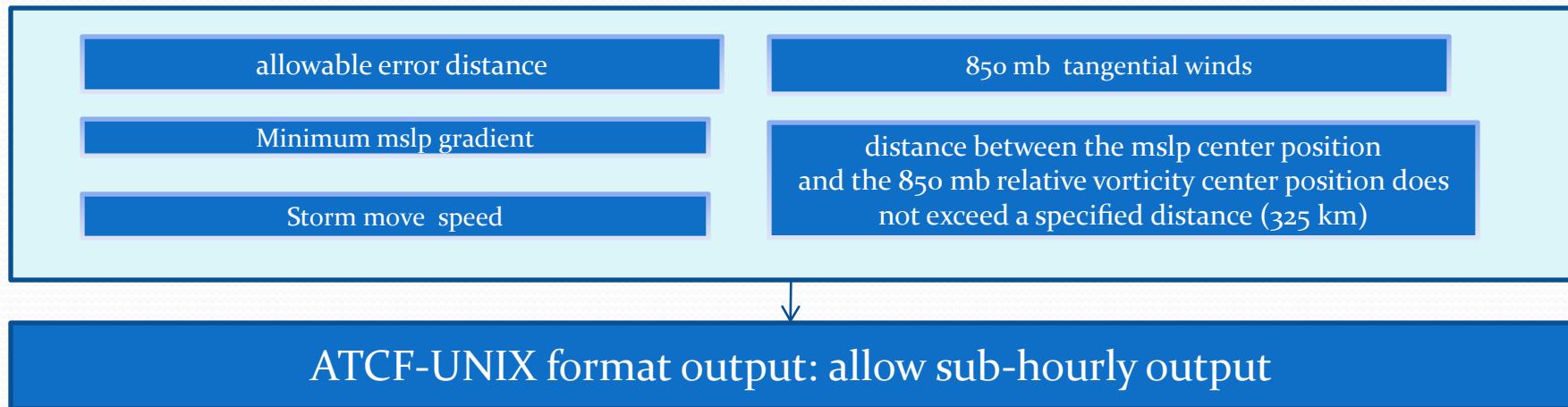
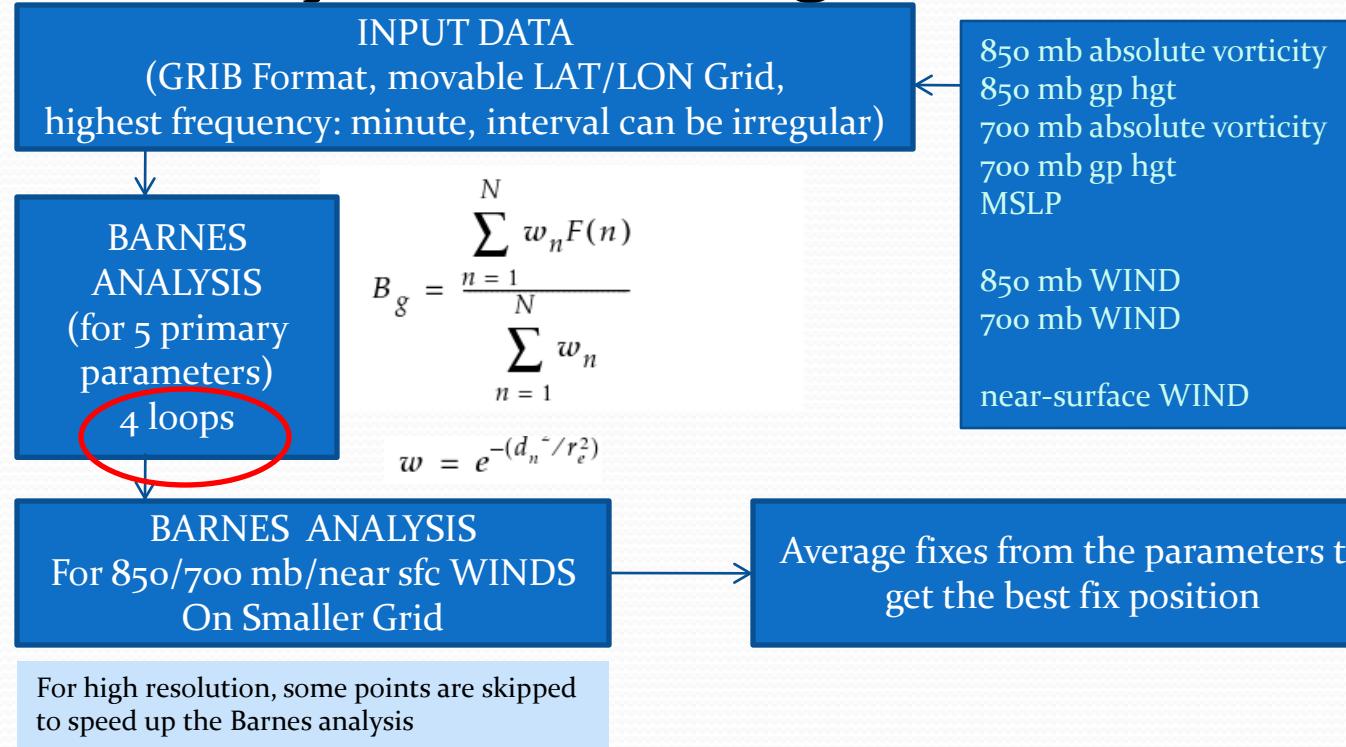


$$B_g = \frac{\sum_{n=1}^N w_n F(n)}{\sum_{n=1}^N w_n}$$

$$w = e^{-(d_n^2 / r_e^2)}$$

rads --maximum radius for searching for the storm center  
re----- e-folding radius (for Barnes smoothing)  
ri----- influence radius (for Barnes smoothing )

# Ability to track high-resolution grid



# Subsequent refined searches

gridsize > 1.2 deg

    numinterp = 4

gridsize > 0.50 .and. gridsize <= 1.2 then

    numinterp = 3

gridsize > 0.25 .and. gridsize <= 0.5 then

    numinterp = 2

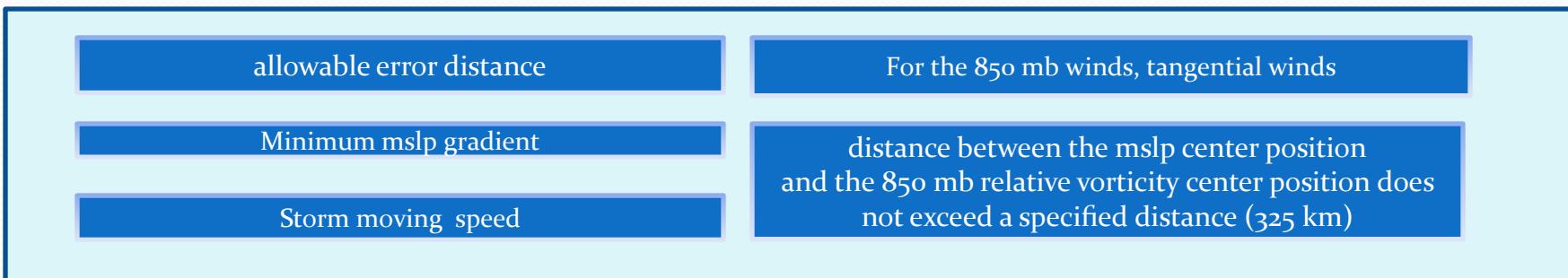
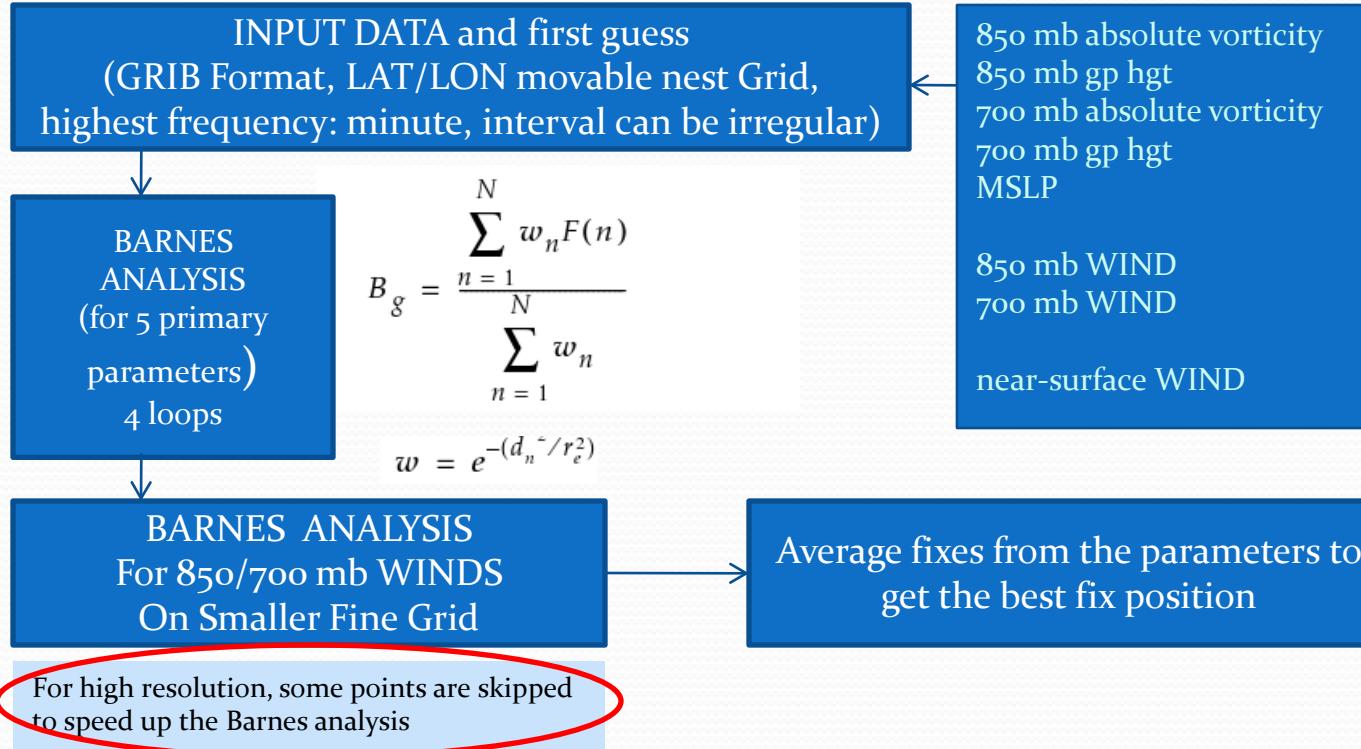
gridsize > 0.10 .and. gridsize <= 0.25 then

    numinterp = 1

gridsize <= 0.10 then

    numinterp = 0

numinterp: number of refined searches.



ATCF-UNIX format output: allow sub-hourly output

gridsize > 0.20

bskip = 1

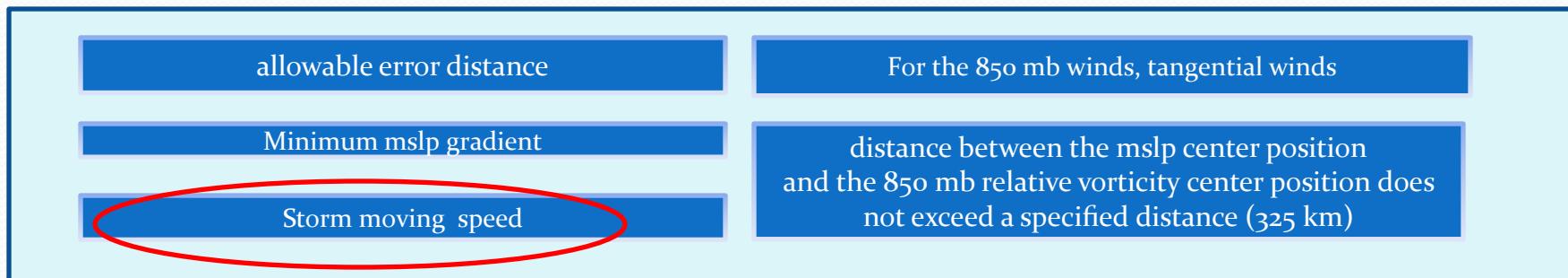
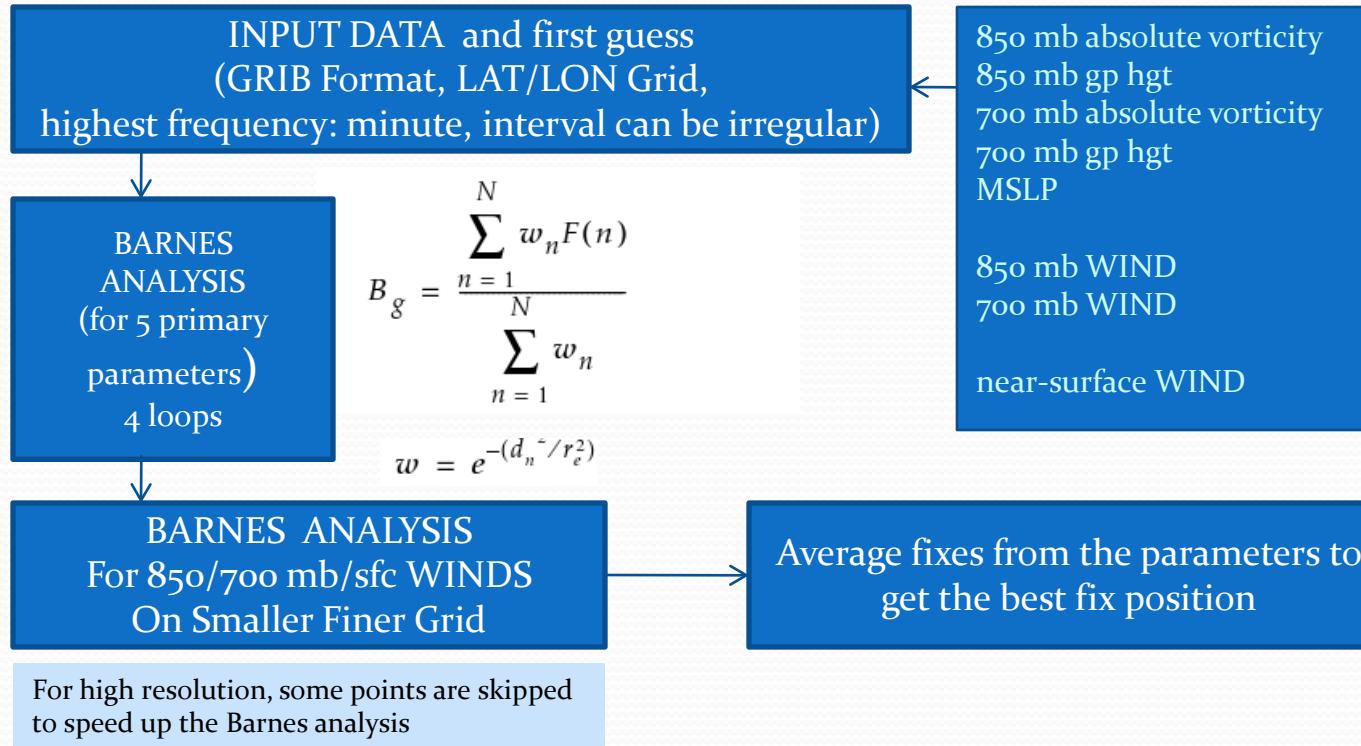
gridsize > 0.10 .and. gridsize <= 0.20 bskip = 2

gridsize > 0.05 .and. gridsize <= 0.10 bskip = 3

gridsize > 0.03 .and. gridsize <= 0.05 bskip = 5

gridsize <= 0.03

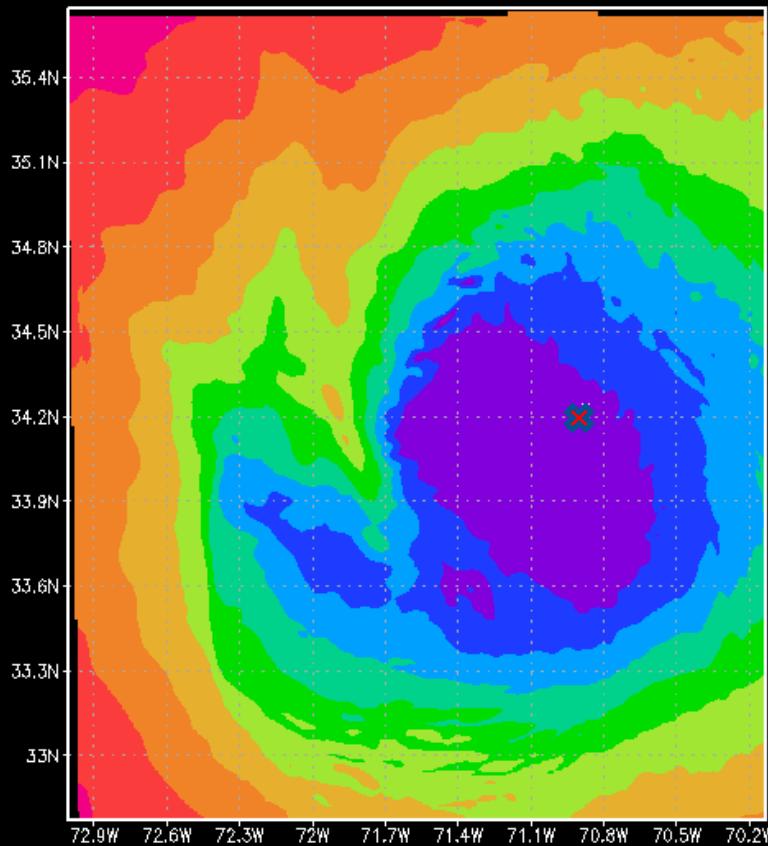
bskip = 10



ATCF-UNIX format output: allow sub-hourly output

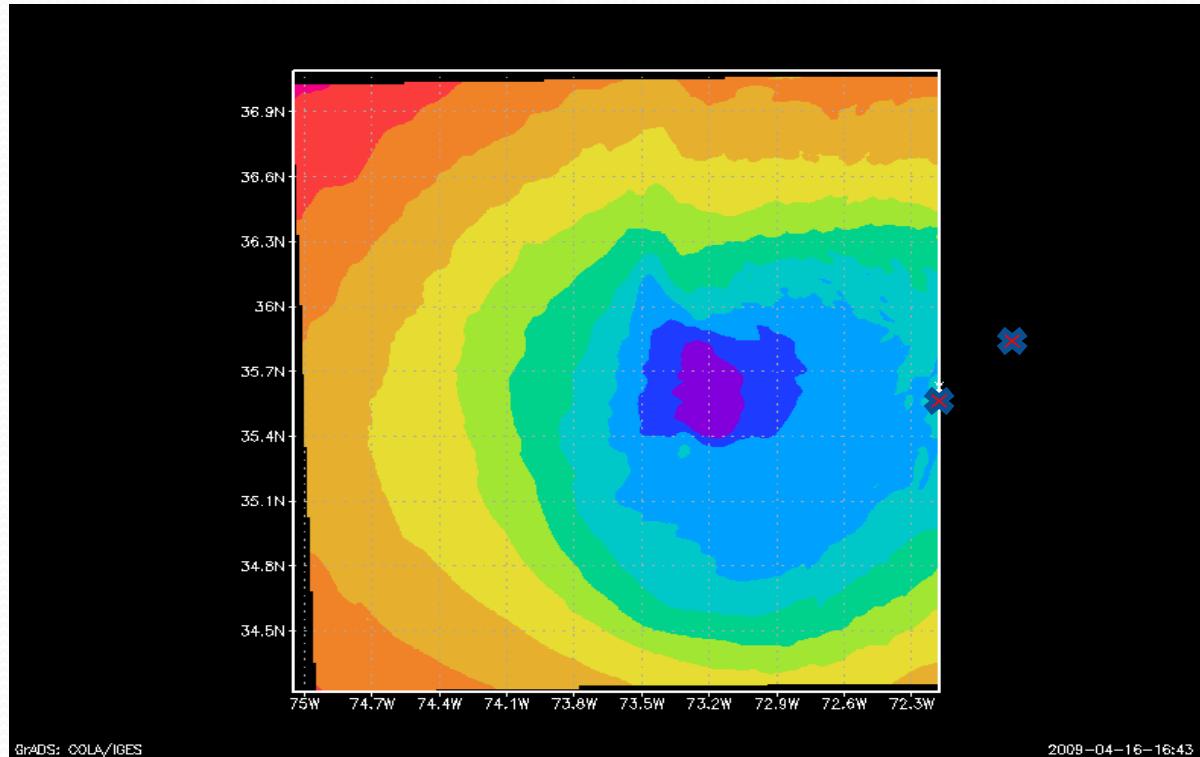
# Outstanding Issues

When storm is weak and disorganized.



# Outstanding Issues

When storm is on a very limited size grid and furthermore is skewed off to the one side of the grid



Possible solutions:

- 1) Tim has provided us code to fix this , DTC will implement it soon
- 2)Interpolate the inner nest grid to the outer domain, and use tracker to track outer domain (as in HWRF and GFDL operational)