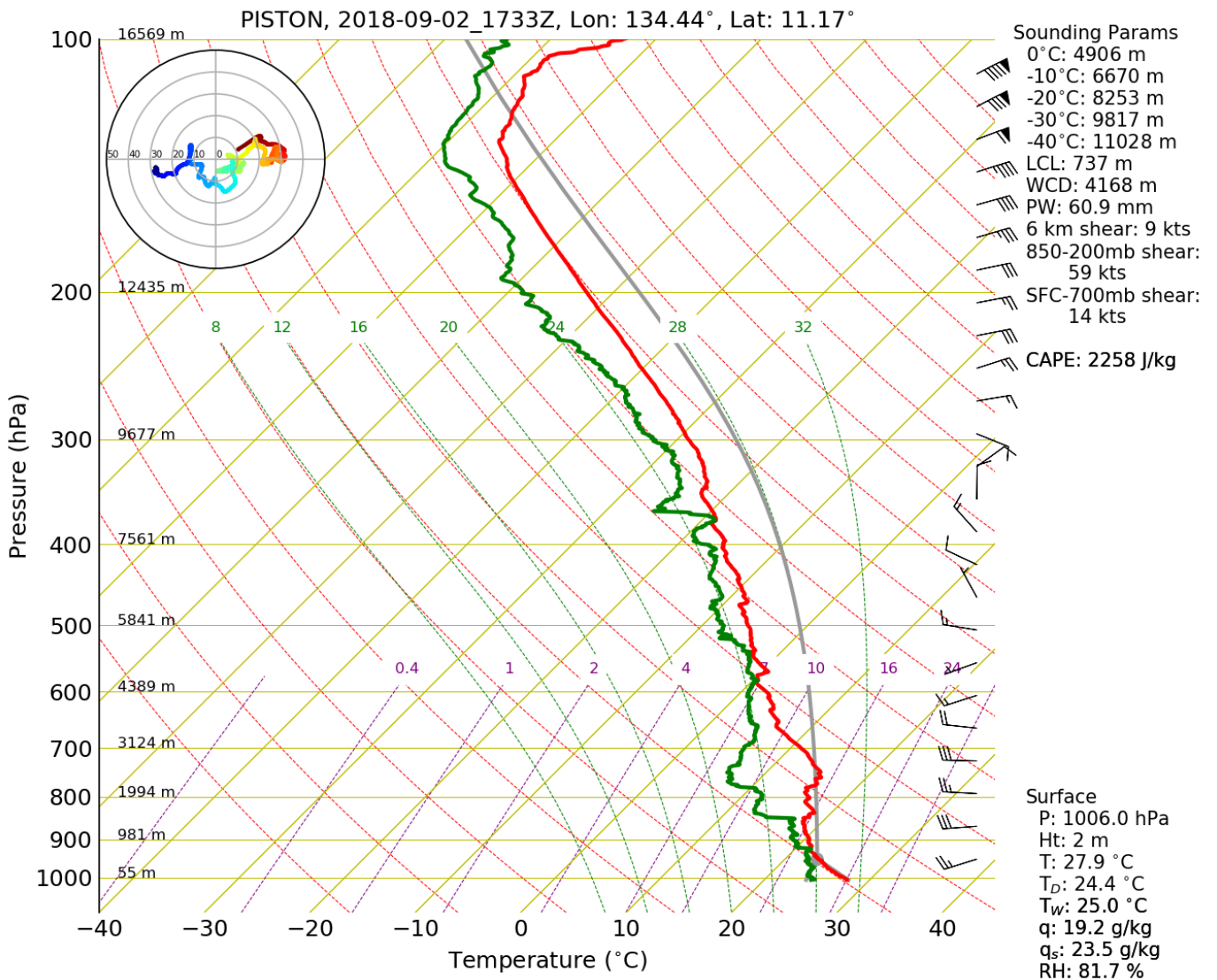
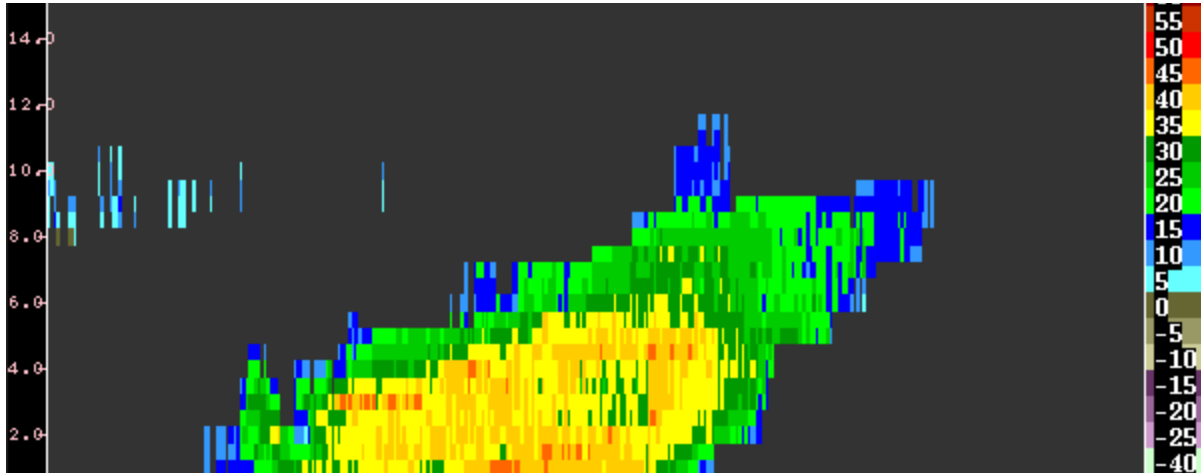
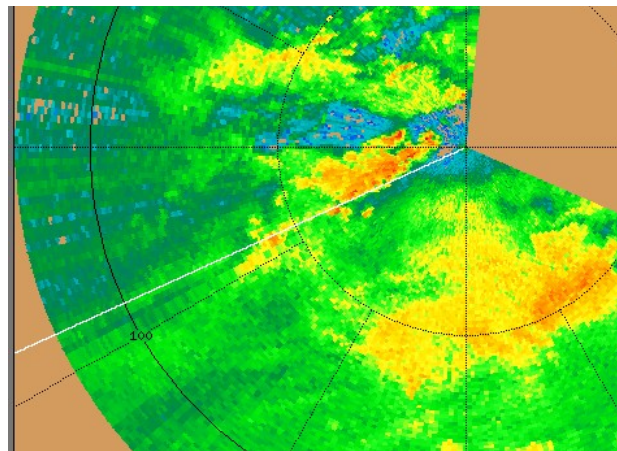


20180903  
 Day Shift (4a-4p L)  
 Timothy Lang and Kyle Chudler

0021 – Storms still appear very tilted today. 59 kts of 200-250 shear on 17 Z sounding. From an more isolated cell to the west:

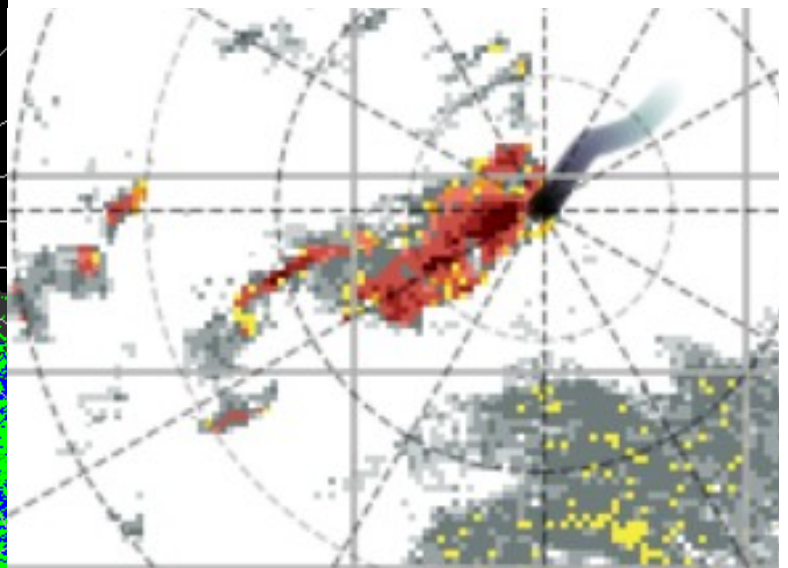
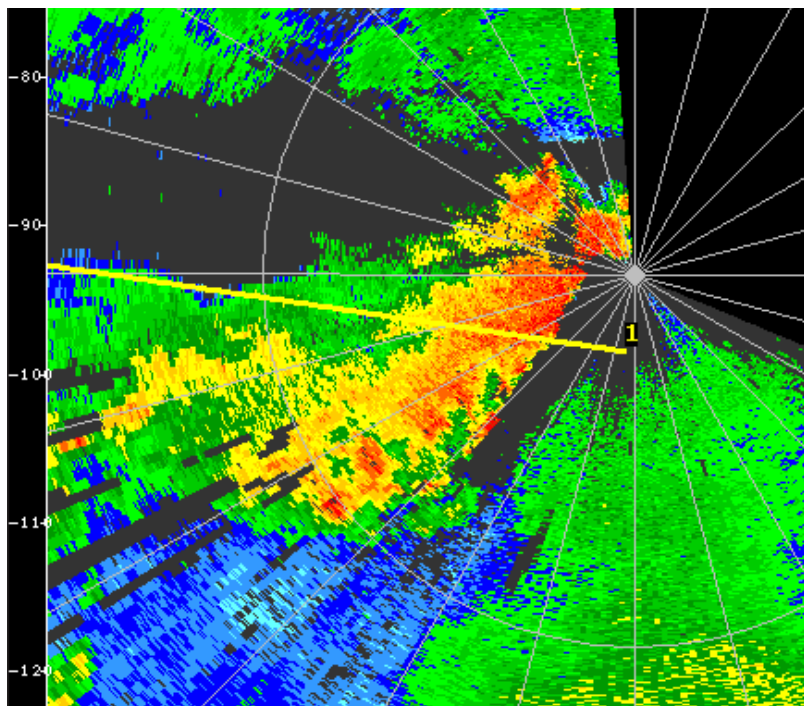


0032 – Convective line has moved out of scope. Switching to RHS from 245 to 267, 2deg spacing up to 30km, to get growing cell to west. Also switching to PISTON\_NEAR

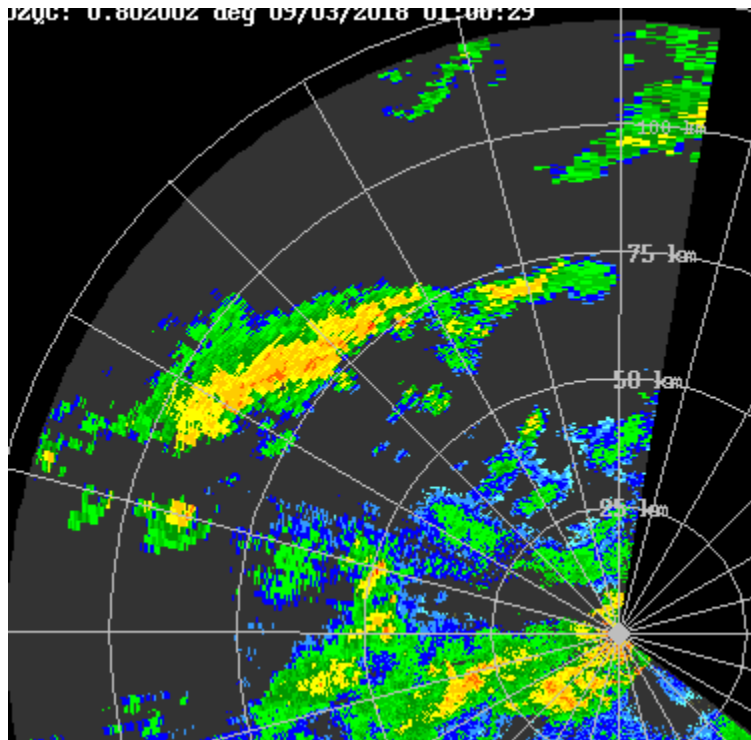


0041 – Did not manage to top the cell with RHIs even at 30 degree elevation. Too close.

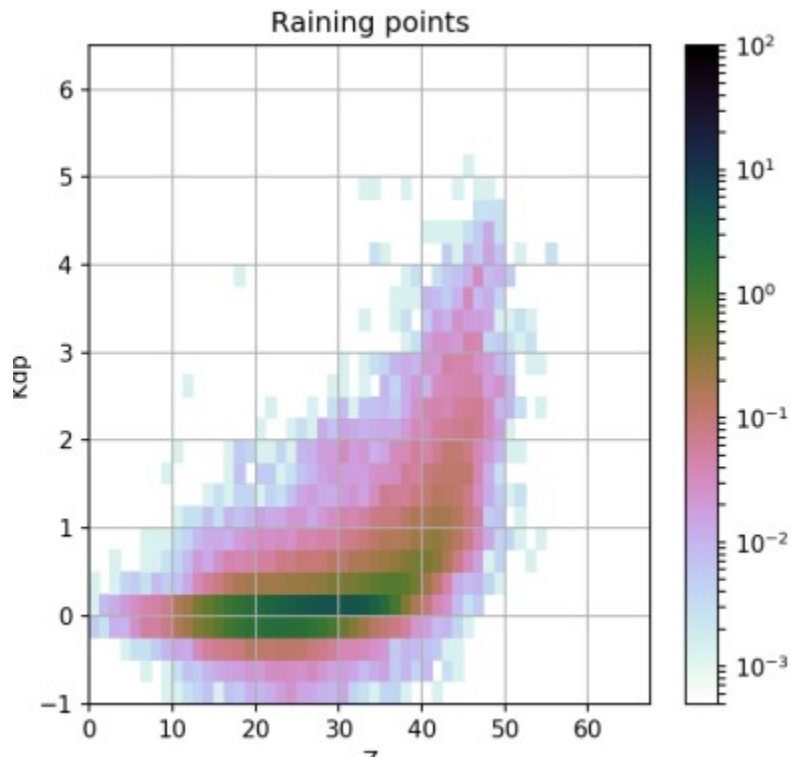
0055 – Extremely heavy rain began at ship with squall moving through. Instantaneous rain rate estimate over 300 mm/hr (darkest red on right image)



0104 – Cell close to ship is too tall to top and will move behind bridge soon, so will switch RHIs to cover new small line moving in from NW, and switch back to PISTON\_FAR



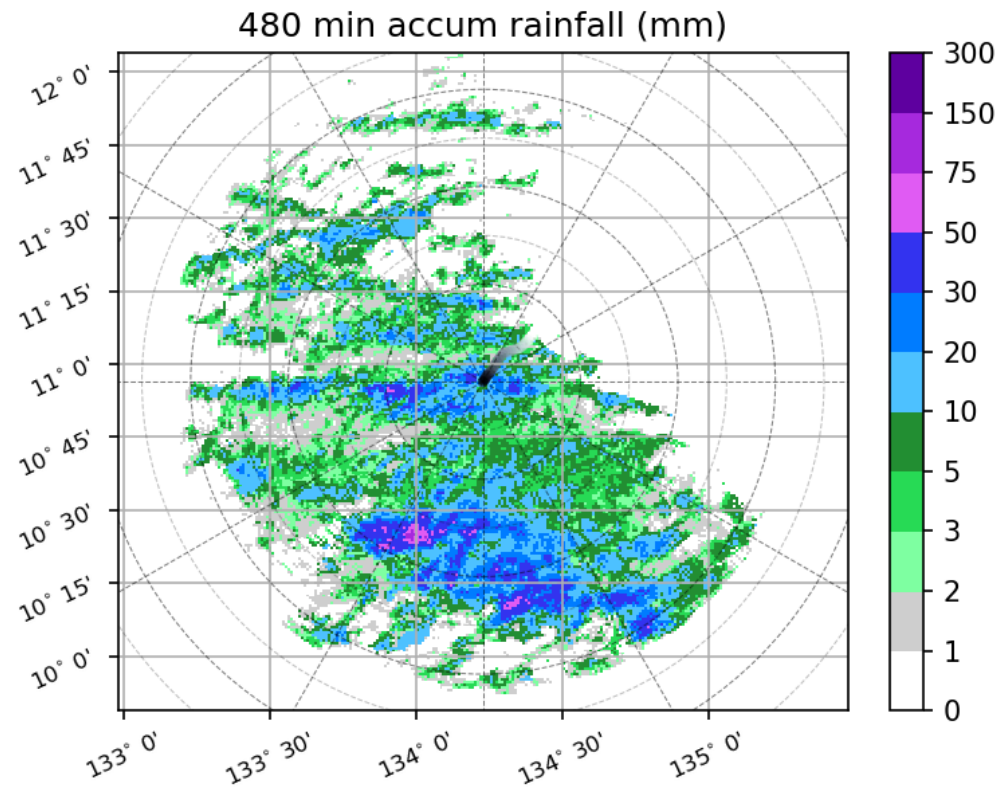
0112 – Great Z vs Kdp plot from when the well-organized line was in scope. Nice to actually have enough high-reflectivity returns to get a signal there



0133 – RHIs 180-210 az.

0146 – RHIs 160-190 az, following a N-S line of convection embedded within stratiform echo.

0158 – Latest 8-h rainfall accumulation is impressive, some places over 3 inches, where these successive MCSs have passed thru. That is impressive given their speed.



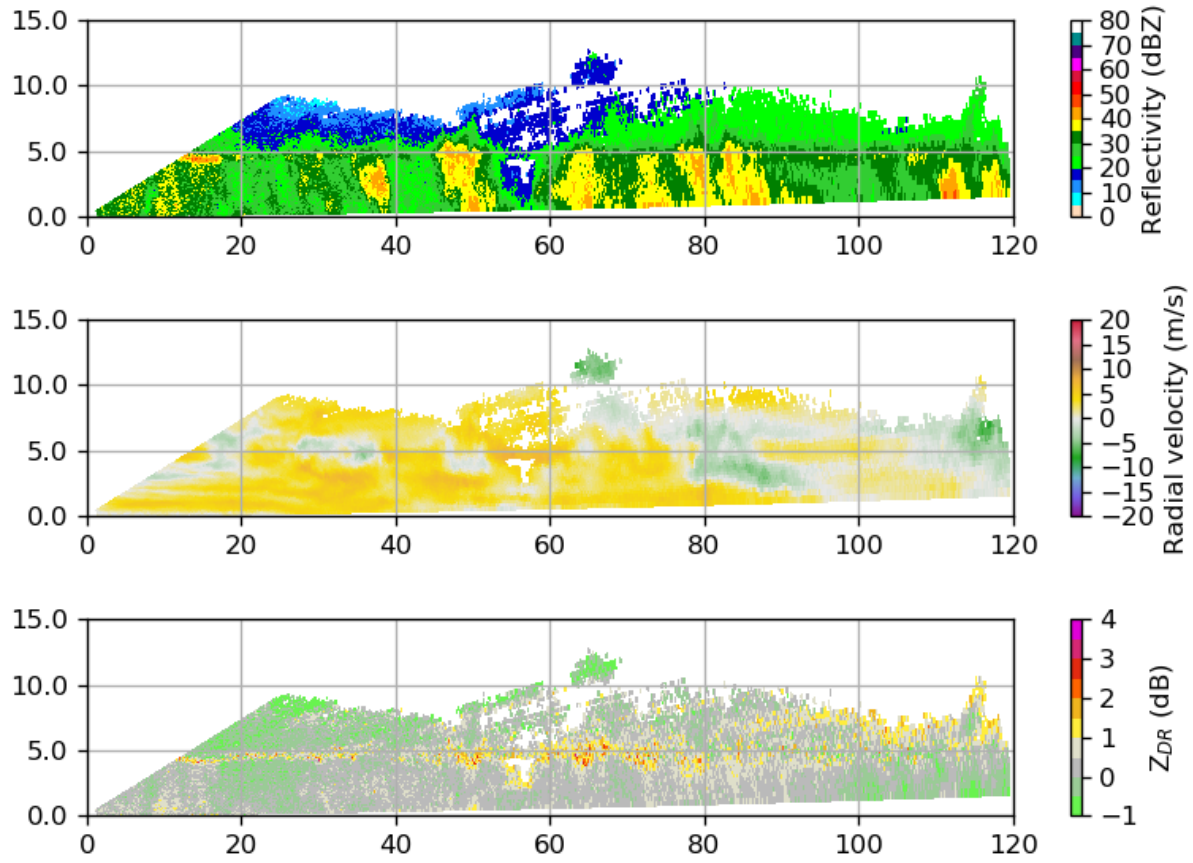
0201 – RHIs to 150-180 az.

0212 – Raining at ship. Again.

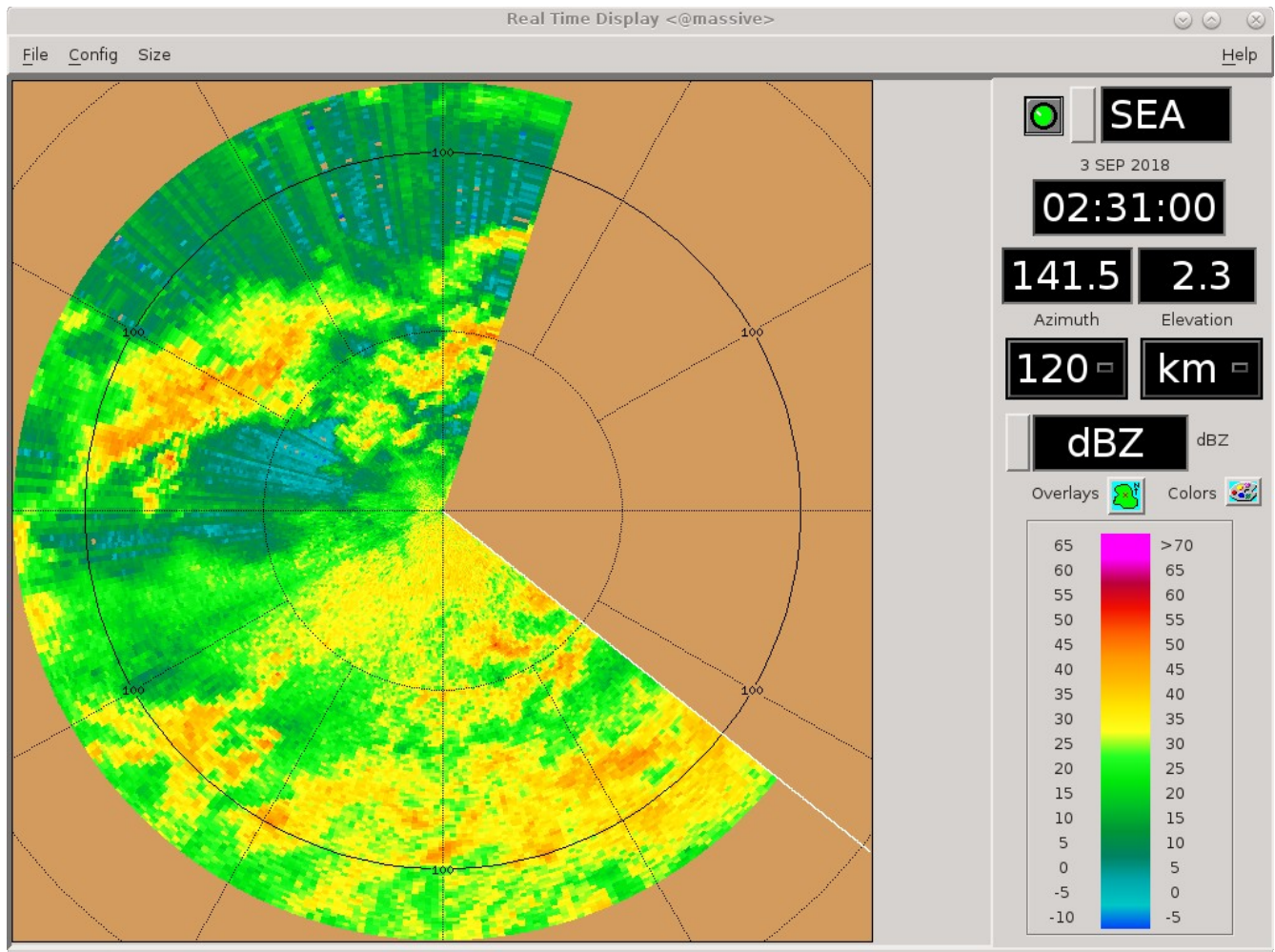
0217 – Switching RHIs to NW convection, the south is incredibly soupy now. All sorts of embedded convection in a larger stratiform envelope. RHIs to 330-360 az.

0220 – Interesting look at how the embedded convection disrupts the melting band near 5 km.

# SEAPOL 2018-09-03 02:09:40 RHI 164.0°

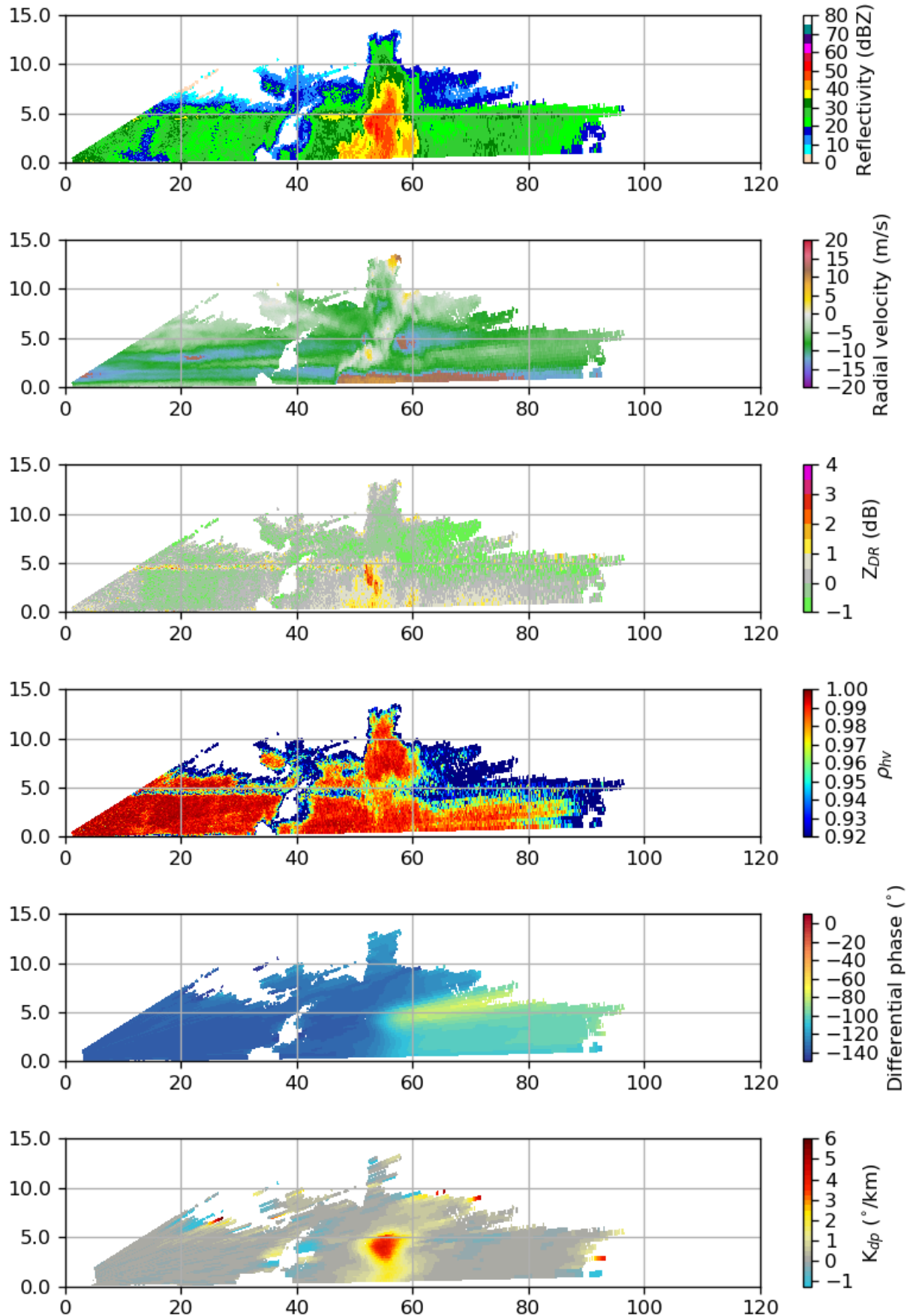


0231 – Now that is some soup right there. RHIs to 286-316.



0254 - This RHI caught a nice developing core aloft. Big mass of precip on its way to the ocean surface!

# SEAPOL 2018-09-03 02:39:48 RHI 312.0°



0312 – RHIs were not running, starting them late. Damn IRIS strikes again.

0316 – RHIs to 300-330. Incoming line has more sharply defined leading edge now.

0332 – RHIs to 330-360 az. The northern line is moving off scope, only the western half remains.

0343 – PPIs/RHIs not completely topping the closest convection, but it is almost off scope so not switching top angles.

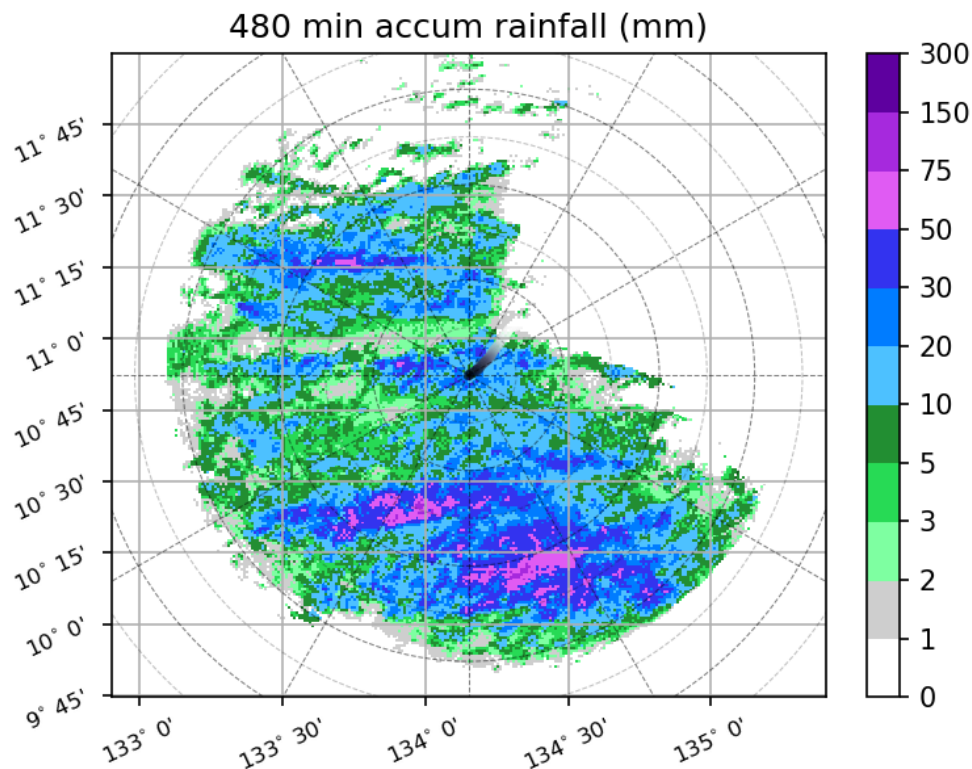
0346 – RHIs back to the southern soup, 150-180 az. Scope is almost completely filled with echo.

0414 – Some pockets of 14-km tall convection in the southern soup.

0416 – Moving to the western N-S “line” that has gotten close enough to be worth RHIs. Focusing on 238-268 az.

0446 – RHIs to cover different portion of the echo, near 316-346. Hard to pick an azimuth you wouldn't get some echo from.

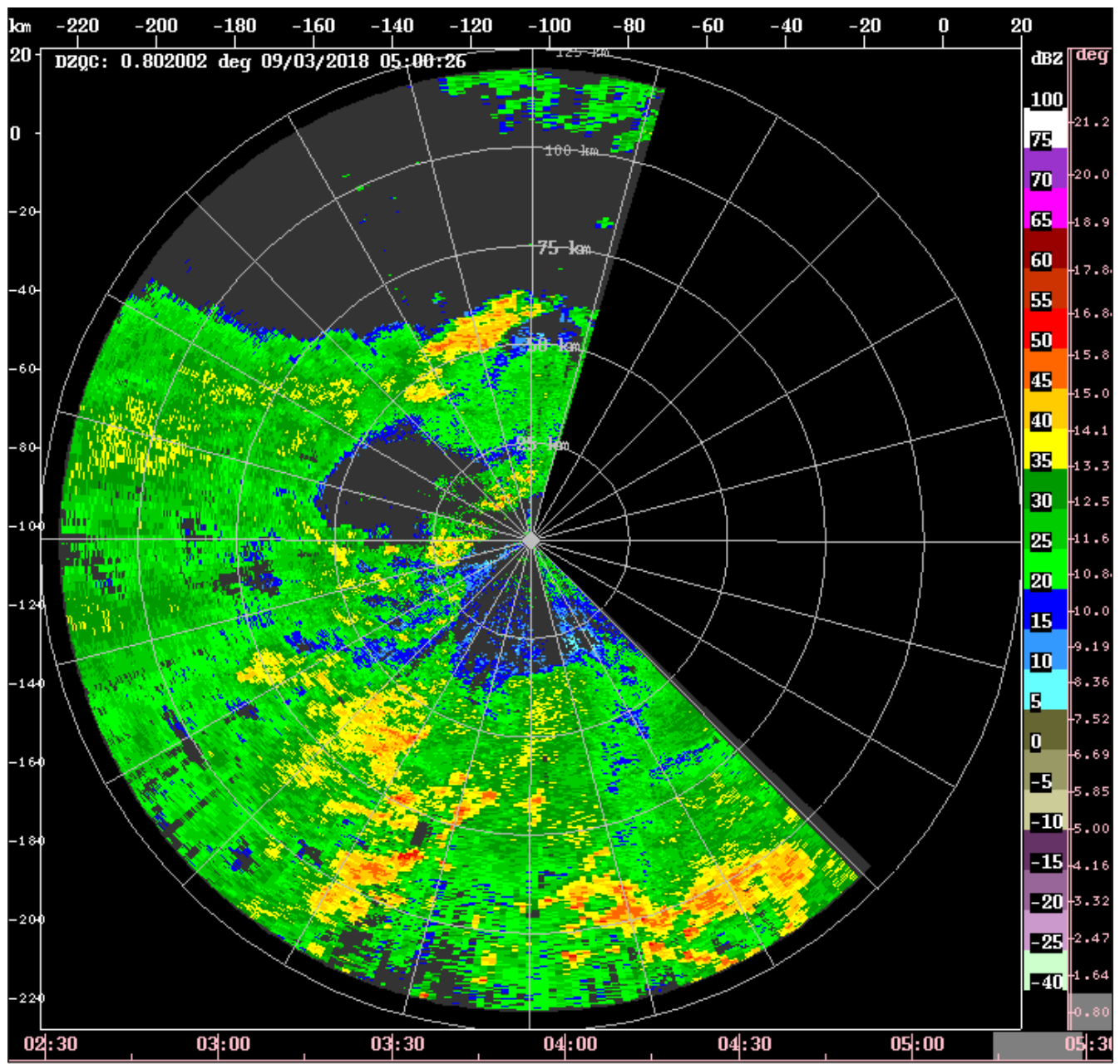
0501 - RHIs to 334-4, following this northern storm. The rain accumulations just keep increasing!



0508 - Another storm right near the radar, not getting topped by FAR but it will be off scope very soon.

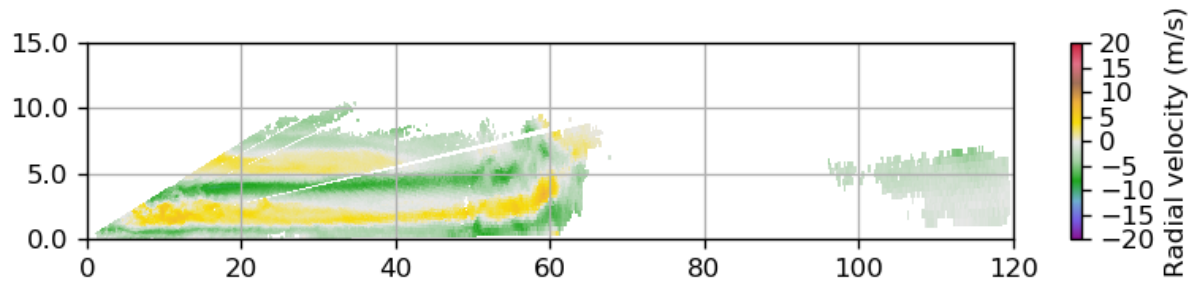
0516 – RHIs to 180-210. Just moving them about, too many targets from which to choose. Here is a recent CIDD overview. Still very soupy.





0518 – Raining at the ship.

0519 – Beautiful wind shear pattern in the stratiform echo (0509Z, 187 deg). The convection near 60 km range is bending the pattern upwards.



0521 – Ship back to near-westward heading, leading to maximized RFI.

0527 – Back up to 30-kt sfc winds in this convection rolling over the ship.

0546 – RHIs to 160-190.

0601 – RHIs to 146-176.

0615 – Some of the stratiform rain below the bright band is quite intense, ~40 dBZ.

0622 – Not seeing much new convection moving on scope from the west. Is this event finally starting to run out of steam?

0630 – Some more convection poking in from the NW. Adding a SUR this round.

0646 – RHIs to 269-291. Some small lines are moving in from the west, and one of them is contained in this swath.

0656 – Missed the screenshot, but long-range suggests we might have some breaks in convection from the immediate west. The north and south are quite active, though.

### Shift Summary

This was easily the most actively precipitating day shift since the start of the cruise. Multiple mesoscale systems streamed through the domain from west to east, from shift start to shift end. One of the highlights early on was the development of a leading line, trailing stratiform MCS. The Doppler data especially demonstrated the kinematic linkages between the convection and stratiform in this storm. Later in the shift, much of the scope was filled with stratiform echo, but embedded convective systems continued to move through, leading to very large rainfall accumulations in certain locations, especially in the southern portion of the domain.

Night Shift (4p-4a L)  
Scott Powell

1130: RHIs suspended starting this cycle.

1256: CYGNSS overpass: 120 was blind, and biggest echo was a weak remnant of stratiform near 140 deg. 300 radial had nothing on it. Did RHIs on mesoscale system to north. Closest to CYGNSS was 345 deg, so this one didn't work out too well.

1417: Another southeastward moving squall line is on the way. Interesting considering that the winds in the sounding are mostly zonal. Distant lightning ahead of the ship associated with this squall was seen around 1500

1519: Radial velocities along the approach radial (~300 deg) indicate winds of up to about 18-19 m/s, so maybe 30-40 kt gusts on the way.

1545: 40+ kt gusts just leading the precipitation, then 30-40 kt sustained for a couple minutes in the squall line at the ship. No lightning. Ship radar indicated that line of cells at leading edge was also growing to the northeast, in SEAPOL's blind spot. Very large rain drops in leading convection; I'd

estimate they would yield a 55-60 dBZ reflectivity. Too bad the disdrometer isn't working. But it does make some of these 55+ dBZ reflectivities we've been seeing more believable.

1735: Mostly decaying stratiform to the north. Some new or persistent convection to the south. SCS data shows a 50-55 kt gust at the front of the convection earlier.

1748: GPM overpass to the NE, but we are blind in that direction. We're also SW of our expected position, now at 10.7N, 133.8E. Based on the surveillance scan and the convection passing through, I'd expect some form of nonlinear convective line with trailing stratiform.

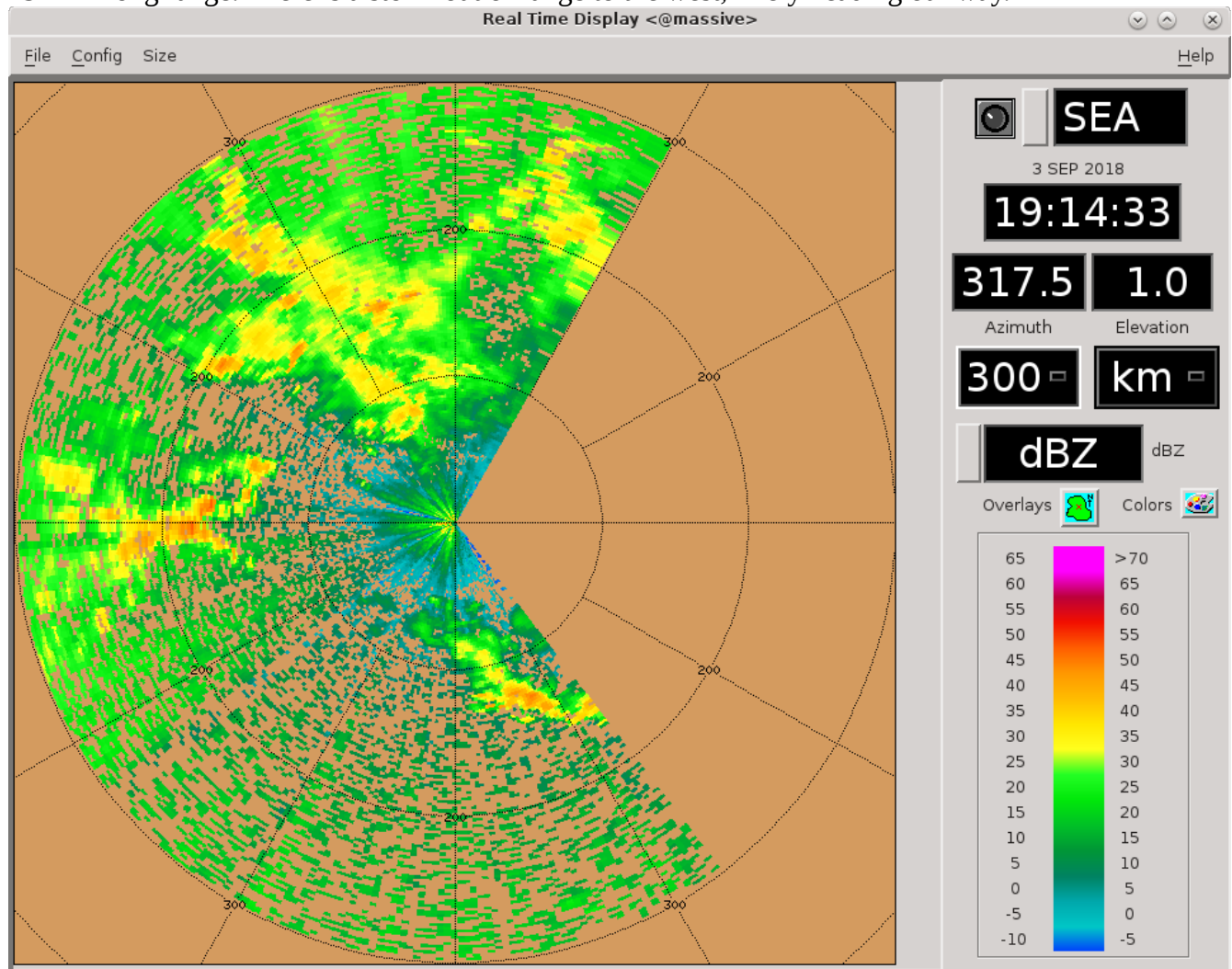
1849: Terminating RHIs. Could probably go to LOW scan but will leave at FAR for continuity in case more stuff pops up.

Day Shift (4a-4p L)

Timothy Lang and Kyle Chudler

1902 – RHIs to 320-342 to capture a short line moving SE from the NW. RFI is really bad on this westward heading, and is chewing up the stratiform rain echo. Minimum Z at range is ~25 dBZ.

1914 – Long range. There is a storm out of range to the west, likely heading our way.



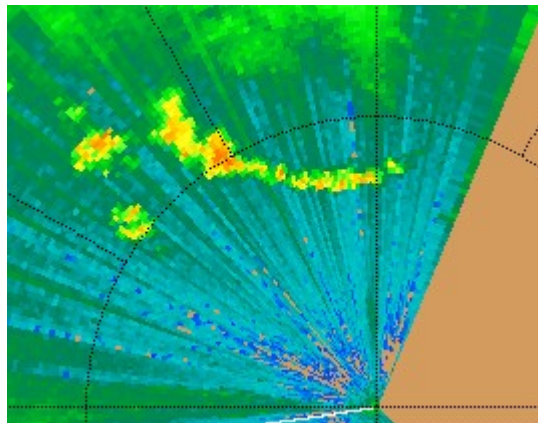
1916 – RHIs to 320-350. Killing SUR for now.

1929 – Skipping RHIs next round. Storm still a bit distant and too stratiform for this level of RFI.

1938 – Adding SUR for now.

1946 – 12-sweep RHI to cover some convection in the 306-328 az sector.

2002 – Expanding RHIs to 16 tilts and dropping SUR. Convection continuing to fire along this boundary that is propagating SE from more distant NW convection. Ship has turned a bit toward SW, and this has improved RFI lately.



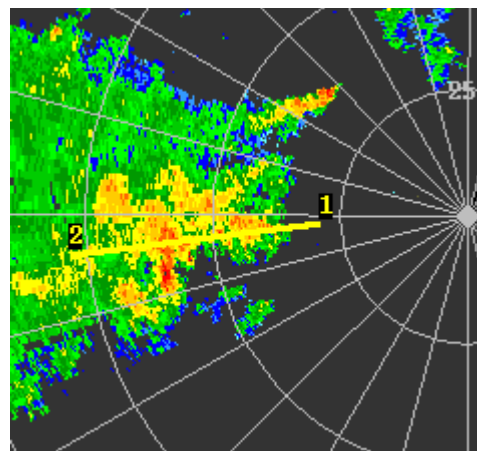
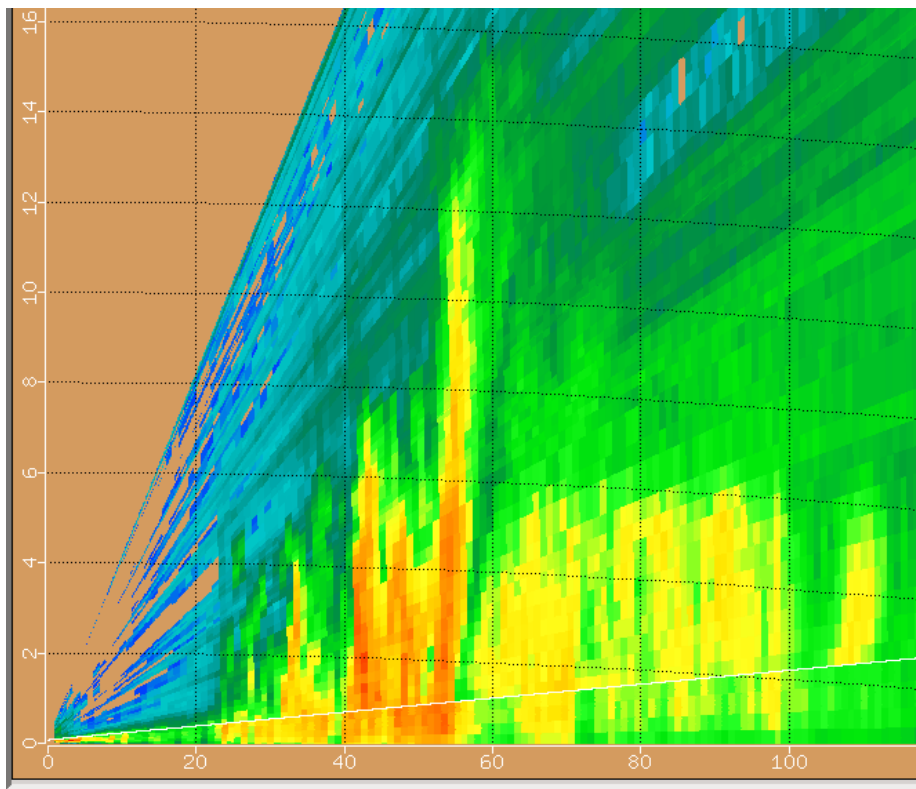
2017 – RHIs 308-338 az.

2031 – RHIs to 316-346 az.

2046 – RHIs to 285-315, the western convection has moved closer and is strengthening.

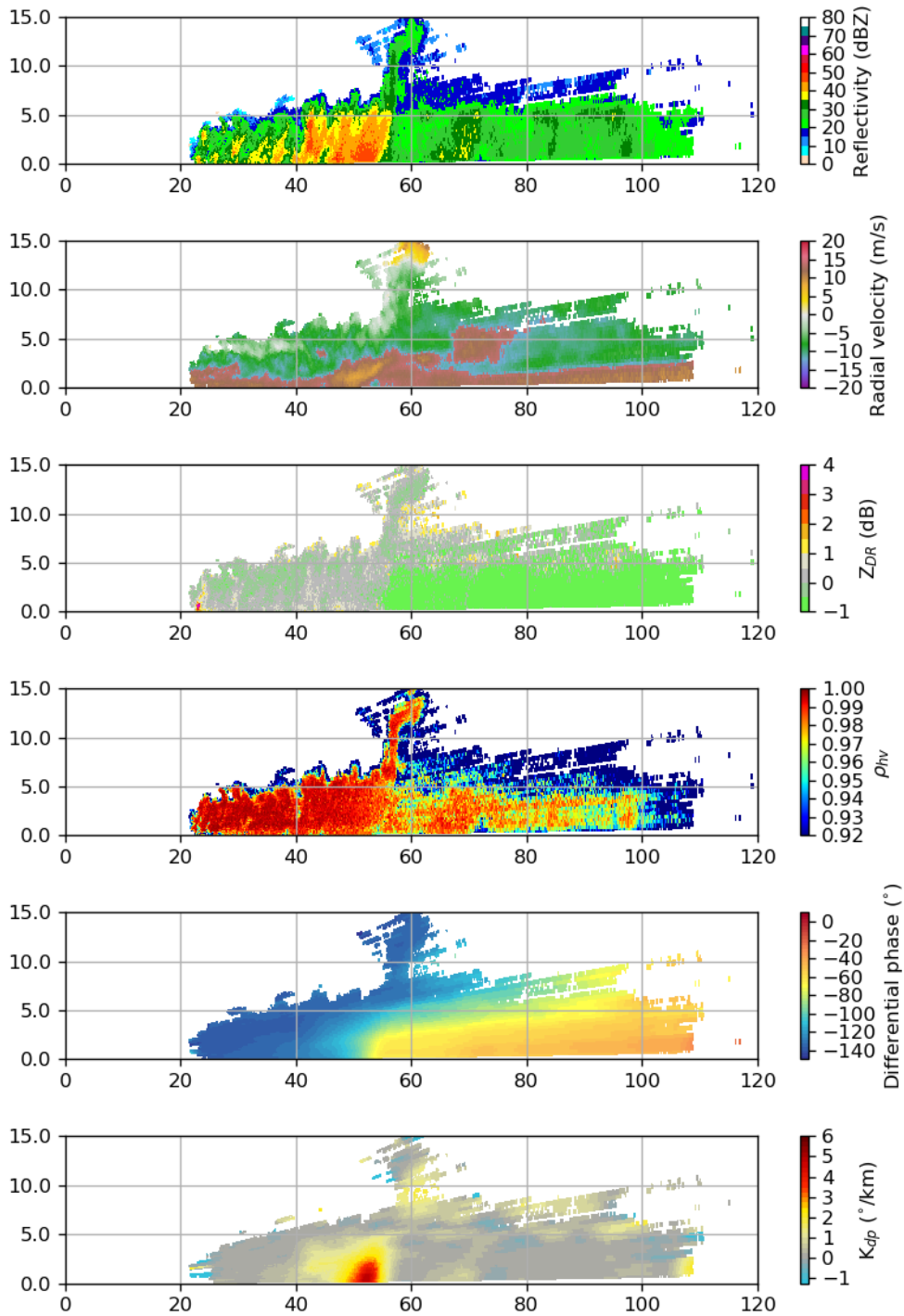
2102 – RHIs to 266-301 az, 3-deg spacing.

2132 – Narrowing RHIs to 244-274, 2 degree spacing. Tops of to 14km on the latest RHI here. Not particularly well organized yet, at least compared to yesterday.



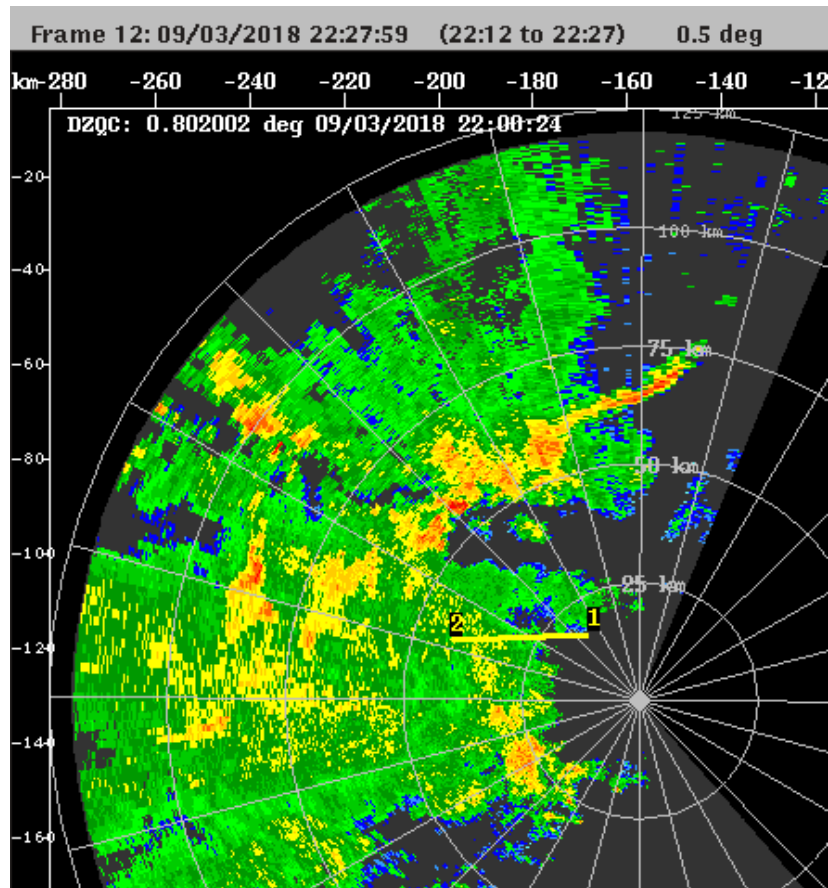
2137 – Interesting narrow column of high-reaching reflectivity on this RHI Strong phase shift right before it.

### SEAPOL 2018-09-03 21:24:45 RHI 261.0°



2147 – Arcus cloud just overtook ship associated with storm incoming from West. Anemometer wind did not increase too much.

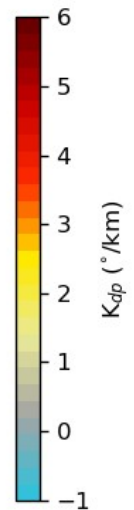
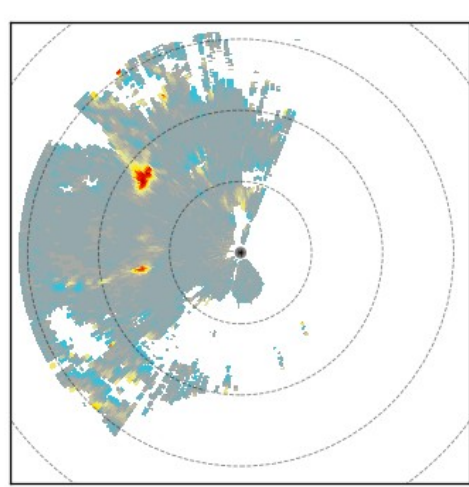
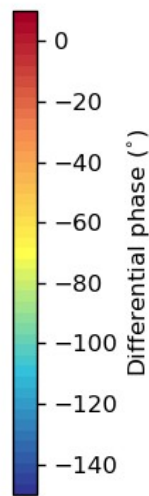
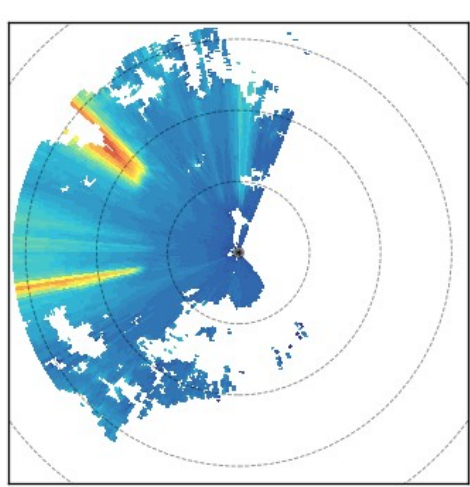
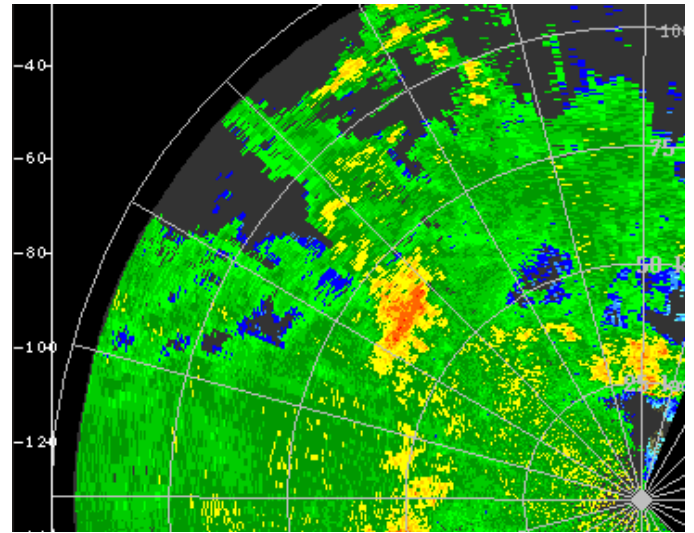
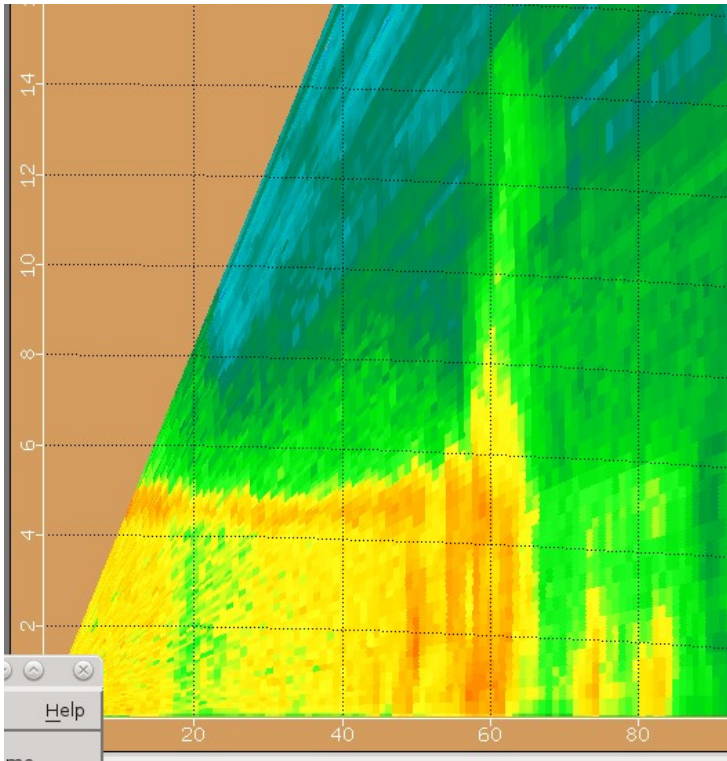
2217 – Stratiform with embedded convection covering much of scope to the west now. Rain has somehow not yet commenced at ship, they must have the forcefield turned on. Switching RHIs to 315-345 to target a stronger-looking embedded line moving in from NW



2229 – Didn't catch the screen grab in time, but some tops around 15km in that embedded line

2248 – Switching RHIs to 285-315, 2 degree spacing, to capture new N-S oriented embedded line coming in from west.

2301 – High echo top, big phase shift with a small blob of embedded convection to the NW



2308 – Raining at ship.

2316 – RHIs to 301-331. Looks like some lumpy stratiform there, trying to get more convection into the RHIs. A lot of stratiform on scope to the west.

2332 – RHIs to 329-359. Still looking for decent convection. Mostly have seen just occasional shallow cells embedded in stratiform. Still lots of RFI-induced issues in the stratiform above the bright band.

2346 – RHIs to 190-220. It looks like RFI occasionally affects rays of ZDR. See the below example from 2230. There is enhanced ZDR along a radial revealed by RHO to be affected by RFI.



