

PISTON 2019 Daily Science Summary

18 September Daily Summary: Retreating south into drier conditions PISTON 2, R/V Sally Ride

Prepared by: Kyle Chudler, Brenda Dolan, Adam Clayton, and Marqi Rocque

Our journey south to put distance between the ship and the fickle 95W continued today, with calmer seas and a blank radar awaiting us at our final location at 128E, 15N. As the ship progressed further south throughout the day, the mid-level dry layer, which was thought to be suppressing convection in days prior, slowly grew stronger (Fig. 1). The only notable radar observation of the day occurred around 18Z as an area of small convective cells began developing to the SW of the ship. Most of these cells had high (4+ dB) Zdr cores (Fig. 2) which, interestingly resided on the downwind edge of the storms. This is fairly consistent with what we have been observing, in that the high Zdr's tend to be on the edges of new growth. Additionally, an RHI on one cell in particular revealed a core with reflectivity in excess of 60 dBZ (Fig. 3). It was also noted that, after being processed by the QC code, this core has been filtered out (not shown). The bridge reported lightning off the port bow at 2020, and RHIs showed a bit deeper penetration of the 45 dBZ echo up to 7 km (Fig. 4). This would be consistent with the increased CAPE (above 2500 J/kg) we are seeing from the soundings (Fig. 1)

The oceanography instruments were removed from the water, so nothing to report on that front.

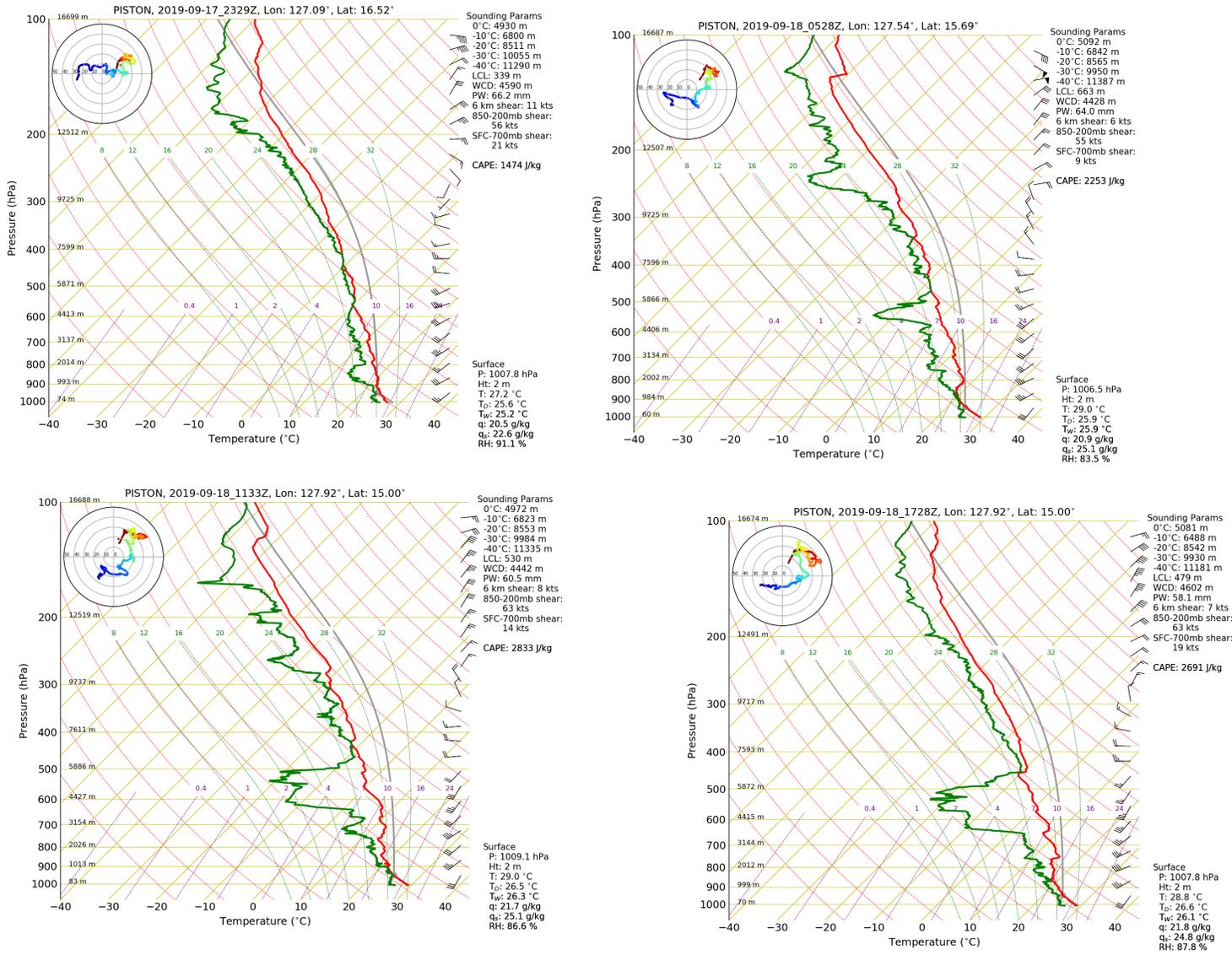


Fig. 1: 00,06,12,18Z Soundings

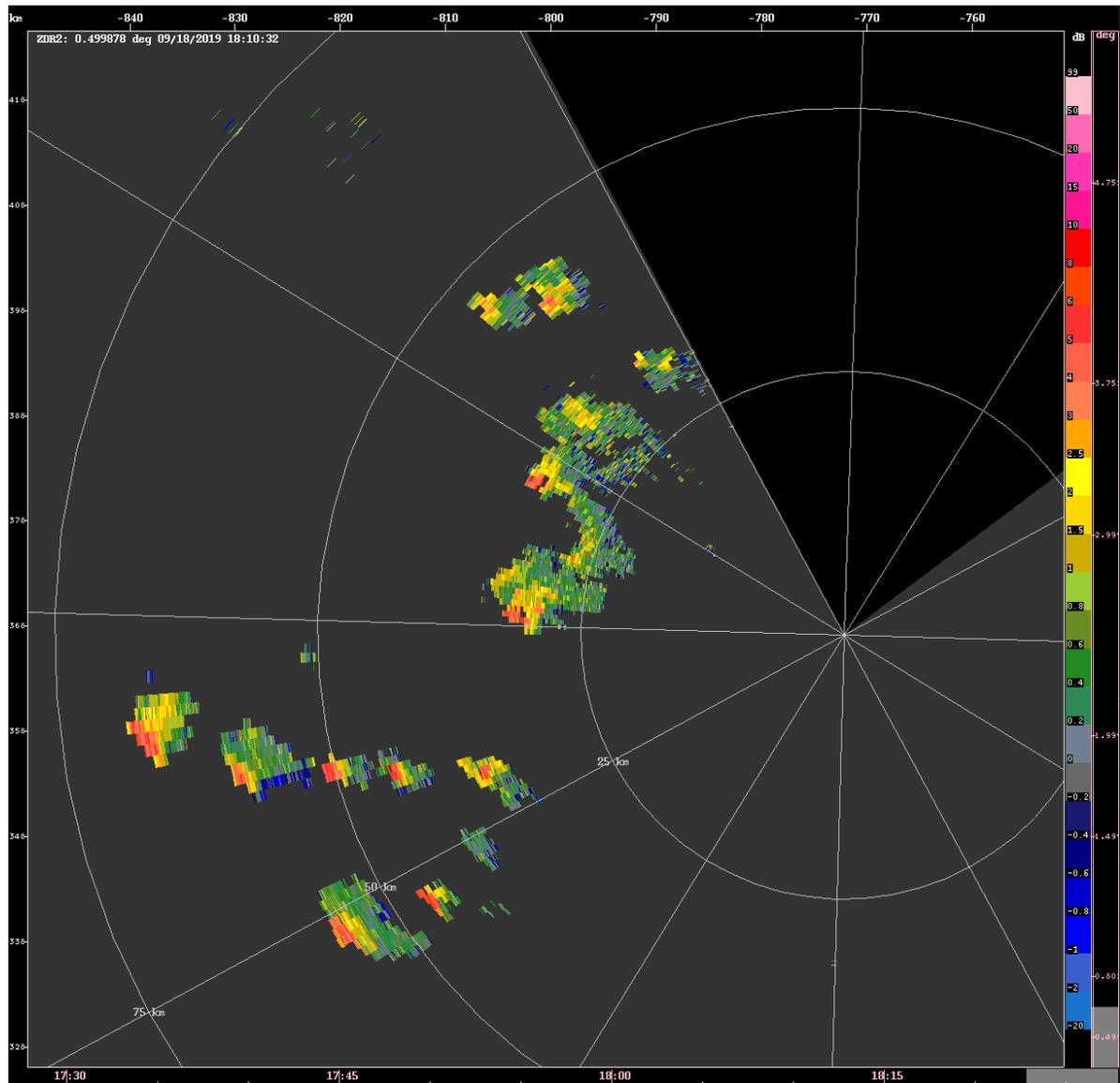


Fig. 2: Cluster of small cells all with a high ZDR core. These cores were approximately co-located with the highest reflectivity, which was generally around 45-50 dBZ

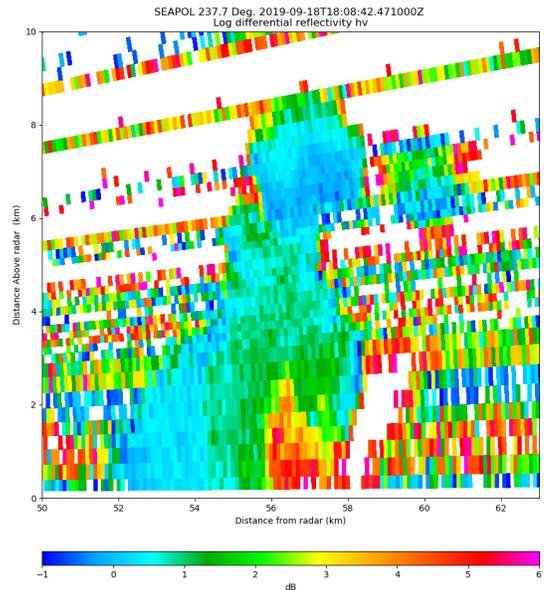
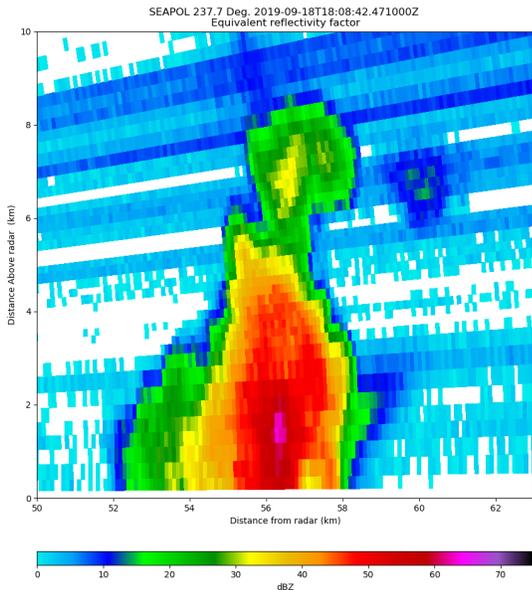


Fig. 3: RHI of cell with 60+ dBZ and high ZDR

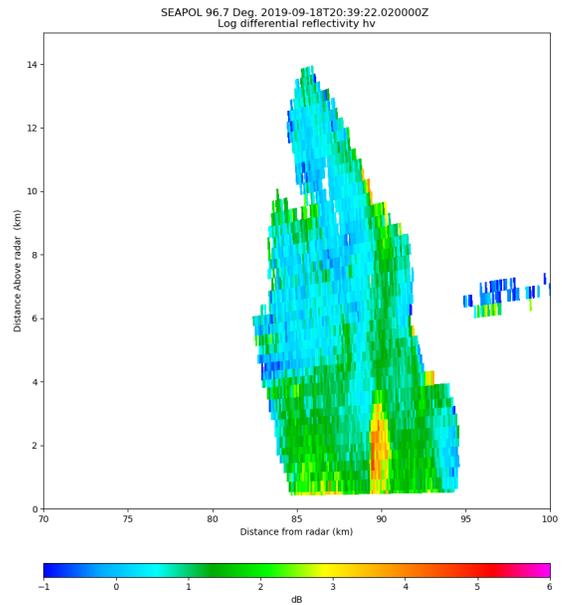
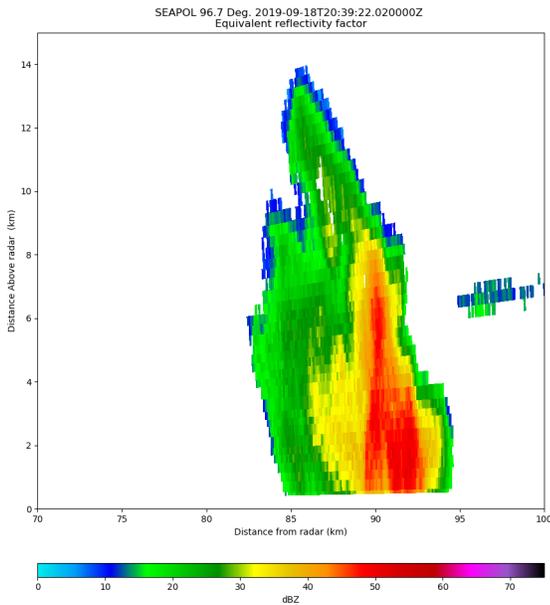


Fig. 4: RHI of reflectivity and Zdr which could be associated with reports of lightning.