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VOCALS/Southeast Pacific science: Role of drizzle and mesoscale organization in determining cloud characteristics

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The VOCALS-REx campaign took place during October and November of 2008 in the South-Eastern Pacific (SEP) off the Chilean coast. The SEP region is home to a large, semi-permanent area of stratocumulus over the ocean. Within the Sc deck there are clear signatures of embedded mesoscale organization which become more pronounced in the (typically) deeper boundary-layer further to the West. We examine data collected onboard the NSF/NCAR C130 along 20˚S. Flight legs were conducted above cloud, in cloud, and below cloud (at ~150m) . The Wyoming Cloud Radar (WCR) and Wyoming Cloud Lidar (WCL) onboard the C130 are used to separate drizzling from non-drizzling segments. In-situ thermodynamic properties are then computed for each regime and examined. We look at variability in structure and mesoscale organization within each leg to determine characteristic properties of both drizzling and non-drizzling regimes. These characteristic properties are used to examine differences in boundary layer decoupling between the two regimes. Finally, legs are broken into individual mesoscale features ('drizzle-cells') identified visually in the WCR and WCL data series. The visual determination of the drizzle-cells is used to assess their characteristic features and to investigate how these structures modulate the properties of the cloud field.