Regional Comparisons of Marine Stratocumulus Characteristics
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Introduction
Low marine clouds are an important source of cooling within the Earth’s radiation budget. The albedo of these clouds is closely tied to whether a given area of cloudiness has an open cell or closed cell organization. Drizzle has been found to be a necessary but not sufficient condition for closed cells to transition to open cells. Our initial work has focused on mapping the spatial distribution and frequency of drizzle within the southeastern Pacific and southeastern Atlantic (Namibian) cloud decks.

Drizzle controls on cloudiness: Some drizzling, closed cell clouds transition to open cell clouds while others do not.

Data Inventory - Sep., Oct., Nov. (SON)

<table>
<thead>
<tr>
<th>Year</th>
<th>SEP</th>
<th>Namibia</th>
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</thead>
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<td>2009</td>
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AMSR-E V002
- AE_L2A - AMSR-E/Aqua L2A Global Swath Spatially-Resampled Brightness Temperatures
- AE_Ocean - AMSR-E/Aqua L2B Global Swath Ocean Products derived from Wentz Algorithm
- MODIS Series 51
  - MYD06_L2 - Aqua MODIS Level 2 Cloud Product
  - IR
- NCEP/CPCC 4-km Global (60°N - 60°S) IR Dataset

Methodology
We use 89 GHz emission from AMSR-E to detect drizzling clouds with LWP > 200 gm² (Miller and Yuter, 2012). The 89 GHz drizzle detection method and the AMSR-E liquid water path are highly correlated in terms of spatial distribution (Fig. 3) and total area (Fig. 6). The 89 GHz drizzle detection method has the advantage of utilizing finer spatial resolution inputs.

Conclusions
There are distinct differences between the Southeast Pacific and Namibian marine stratocumulus regions during the peak drizzle season of September, October, and November.
- Overnight drizzle occurs more frequently and over larger areas within Southeast Pacific marine stratocumulus as compared to the Namibian marine stratocumulus.
  - High drizzle area fraction > 15% occurs five times more often in the Southeast Pacific than the Namibian region.
  - Three-month accumulated overnight drizzle area is more than twice as large in the Southeast Pacific compared to the Namibian region.
- Drizzle area fraction > 15% in the southeast Pacific trends to occur for three to four nights in a row before dropping off. In the Namibian region, higher drizzle area fractions tend not to occur on consecutive nights.
- 4-5 day variations in IR cloud top temperatures do not appear to have a direct relationship to variations in drizzle area fraction.
- Our next step in this analysis is to examine cloud drop effective radius and its relation to drizzle occurrence.

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