one year later ...

**Data status:**

* Both KA and WCR data were refined and new archives produced.
* Known problems with in situ data: reverse flow temp. sensor wetting; usual PMS probe questions.
* Known issues with radar data: attenuation; velocity error

**Basic work done:**

* Flight reports.
* Options examined for common reference frame for ground radar and aircraft.

**Analyses:**

  january 11: long-lived cluster

  january 14: statistical sampling
brief notes posted on these:

- selection of common reference frame for SPol and aircraft data
- jan 18-19 mini-cyclone
- C-130 and King Air in-trail cloud penetration for instrument intercomparison

most work done so far on these:

- jan 11 - long-loved cell cluster; 13 passes
- jan 14 - “statistical” sampling of 26 clouds
- jan 17 -
Themes to pursue:

- Updrafts are are fragmented thermals, not echo-weak, contiguous entities. Small fractions of cloud volumes are updraft.

- Frequent coincidence of updrafts and precipitation is notable. Preferred growth of large drops in updrafts is evident (e.g. jan 17, etc.).

- Erosion of horizontal momentum carried from below cloud base in thermals is slow compared to loss of LWC, hence it appears that LWC removal by precipitation is more important than entrainment.

- Clear correlation between LWC and vertical velocity.

- Buoyancy ??

- Some cloud clusters have exceptionally long lives (e.g. dec 23, jan 11, ...)

- The major puzzle: causes for mesoscale organization (e.g. jan 14, ......).
RICO 20051210  17:28:26 - 17:29:52
656 m altitude
Pass along 245° heading.

800 μm drops
2050114 18:20-19:20
1685 m altitude
1-Hz data
33 km in cloud (14% of total path)

<table>
<thead>
<tr>
<th>percentile</th>
<th>1</th>
<th>5</th>
<th>10</th>
<th>50</th>
<th>90</th>
<th>95</th>
<th>99</th>
</tr>
</thead>
<tbody>
<tr>
<td>w (m s(^{-1}))</td>
<td>-2.7</td>
<td>-1.7</td>
<td>-1.1</td>
<td>1.1</td>
<td>3.8</td>
<td>4.8</td>
<td>6.6</td>
</tr>
<tr>
<td>LWC g m(^{-3})</td>
<td>0.037</td>
<td>0.070</td>
<td>0.12</td>
<td>0.53</td>
<td>0.99</td>
<td>1.1</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**WCR data**

**velocity threshold (m s\(^{-1}\))** | **fraction of echo (%)** | **area (mean ± std. dev.)**
--- | --- | ---
-2 | 53 ± 20 |
-1 | 36 ± 18 |
0  | 21 ± 14 |
1  | 11 ± 8  |
2  | 4.8 ± 4.2 |
3  | 2.0 ± 1.6 |
4  | 0.93 ± 0.3 |
drizzle in cloud-free air
updraft and highest drizzle rate in the middle of precip.
RICO 1/17/2005
3226 m altitude
13:52:40 - 13:54:10
Pass along 250° heading.
2620 m altitude pass, 117° heading
air velocity with respect to advecting frame
RICO 1/11/2005 SPol and King Air data for long-lived cell cluster.
SPol maximum reflectivity as color field (can be single pixel).
King Air in situ updraft maxima on right hand scale.
Max. drop sizes from 2D-C and 2D-P probes are indicated at the altitudes of the penetrations.