Statistical Assessment of Cetacean Stranding Events in Cape Cod area

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The International Fund for Animal Welfare (IFAW) provided summary records of their responses to Mass Stranded (MS) cetaceans in Cape Cod, Massachusetts.

(Mass Stranding: 2+ animals in proximity, during one tidal cycle, not mother/calf pair)
IFAW MS Event Data Summary for Cape Cod

<table>
<thead>
<tr>
<th>Years:</th>
<th>1999 - 2014</th>
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</thead>
<tbody>
<tr>
<td># Events:</td>
<td>165</td>
</tr>
<tr>
<td># Animals:</td>
<td>924</td>
</tr>
<tr>
<td>Mean # Anim / Event:</td>
<td>5.6</td>
</tr>
<tr>
<td>Mean # Events / Yr:</td>
<td>10.4</td>
</tr>
<tr>
<td>Mean # Animals / Yr:</td>
<td>58</td>
</tr>
</tbody>
</table>

Species:
- Delphinus delphis  57.1%
- Lagenorhynchus ac.  32.9%
- Globicephala melas  8.3%
- Grampus griseus     1.2%
- S. coeruleoalba     0.2%
- Tursiops truncatus  0.2%
Avg Monthly Wind Correlates to MS Events

Wind Data from Buoy Station 44013

Avg Monthly Wind: Stn 44013

Avg. Wind Speed (m/s)

Month

Num. MS Events

Wind Magnitude (m/s)

Time-Shifted Correlation

Linear Regression w/ One-Month Shift

y = 7.98 x + 0.10

R² = 0.93
Summary

• Avg. monthly aggregated wind correlates strongly with aggregated MS events.
  – Other parameters were investigated for correlation, but none were as strongly correlated.

• Cannot conclude that wind is a factor in MS events based on this data alone.
  – Correlation is not causation.
  – We cannot say that the wind is causing mass strandings.

• Additional data, concepts and alternate approaches are welcome.