Portable Doppler Radar Evaluation Results at Phoenix Field, Antarctica

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Overview

- Background
- Results
- Conclusions
- Questions and Comments
A portable doppler radar (PDR) manufactured by EWR Radar Systems and facilitated through the U.S. Air Force was installed for evaluation at Phoenix Airfield in October 2019 and removed in February 2020.

The goals of the evaluation were:
- 1) Could the PDR detect small, dry snow particles?
- 2) Would the radar products improve USAP forecasting?
- 3) Could the radar physically operate in the harsh environment with winds, icing, and cold?
Detection of Snow
Detection of Snow
Detection of Snow
Doppler Velocity Results
Spectrum Width Results
Velocity Azimuth Display Results

<table>
<thead>
<tr>
<th>Height</th>
<th>Direction</th>
<th>Speed</th>
<th>RMS Error m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,248 ft</td>
<td>187.4°</td>
<td>22.7 KT</td>
<td>0.43</td>
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<tr>
<td>6,608 ft</td>
<td>190.7°</td>
<td>35.2 KT</td>
<td>0.08</td>
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<td>4,967 ft</td>
<td>201.5°</td>
<td>39.6 KT</td>
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<td>3,327 ft</td>
<td>202.3°</td>
<td>33.9 KT</td>
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<tr>
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<td>199.4°</td>
<td>25.8 KT</td>
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</tr>
<tr>
<td>46 ft</td>
<td>200.2°</td>
<td>17.5 KT</td>
<td>0.08</td>
</tr>
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</table>
Maintenance/Operation Results

- Some connection issues between PDR and MacWeather
- Software issues would delete loops of data
- Interference with aircraft onboard radar
- Suspected filtering or maintenance issue removed all meteorological returns
Conclusions

- Despite evaluation being cut short after 30 days due to technical issues, enough data was gathered to draw conclusions
  - 9 days with meteorological radar returns

- Radar was able to detect snow and possibly blowing snow

- Radar products provide unique data with low latency which will positively impact forecasting efforts
Acknowledgements
Questions and Comments