RTK GPS on a Smartphone and Mobile Table Platforms

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Operations

Collecting real-time and long term ocean coastal observations
Managing coastal observing systems for navigation and transportation
Physical Oceanographic Real-Time System (PORTS®)

- Houston/Galveston
- Sabine-Neches
- Gulfport
- Pascagoula
- Mobile Bay
- Lake Charles
Research

- NASA
  - Columbia Recovery (Lyle and Smith, 2003)
  - Geospatial Authentication (NASA, 2009)
  - Aerial Vediography Direct Georeference Rocket Payloads (NASA, 2009)
- NOAA/NGS
  - Spacebased RTK (Lyle and Mulcare, 2005)
  - Airborne Gravity (Prouty and Lyle, et al., 2007)
  - GPS Quality (Lyle and Wood, 2002)
NPS and TxGLO UAS

- RS 16
  - 16’ wing spread
  - 13,000’ ceiling
  - 16 hour flight time
  - 25 pound load
- Photogrammetry Payload
- Direct GeoReferencing
Smartphone RTK

RTN GPS: VRS or RTCM Server

Local Wi-Fi Network

Real Time Map

2G/3G/4G
USDA: Low Cost Machine Control

- Low Cost RTK GPS
- Space-based RTK
- CORS Connection
L₁ RTK Horizontal
Considerations

- QWERTY keyboard
- Kick-out keyboards
- Touch screen
- Smaller data collectors in existence
- User adaptations
Phone Considerations

- iPhone 4:
  - 3G – 6 hours
  - Wi-Fi – 10 hours
  - Standby – 300 hours
  - Bluetooth – worse

- Android and Windows – similar
<table>
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<tr>
<th>Application Steps</th>
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<tbody>
<tr>
<td>1. App starts- Settings</td>
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<td>2. Post Processing vs. RTK</td>
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<td>3. Start Job</td>
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<td>4. Smart phone gets corrections</td>
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<td>5. Surveying started with selected accuracy</td>
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<td>6. GNSS configured to output</td>
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<td>7. Real Time Mapping and/or Control</td>
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<td>8. App closed</td>
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Availability

- Open Source
- Work in progress
- Will be found in:
  - Markets
  - Websites
  - Software application management software
Thank You

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