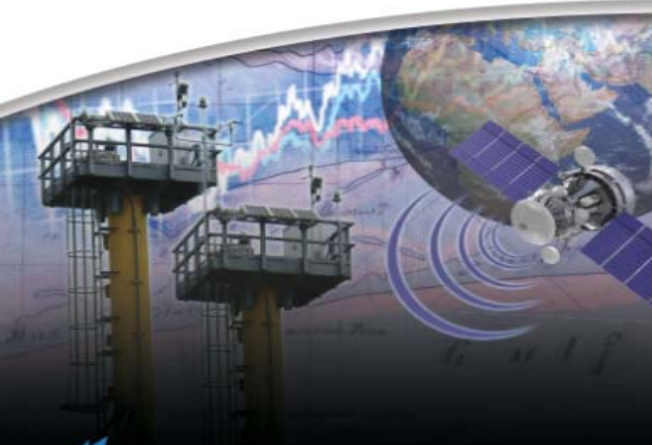




**Learning From
The Past...**



**...Surveying
The Future**



**TEXAS A&M
UNIVERSITY
CORPUS
CHRISTI** | **CONRAD BLUCHER
INSTITUTE**
FOR SURVEYING AND SCIENCE

RTK GPS on a Smartphone and Mobile Table Platforms

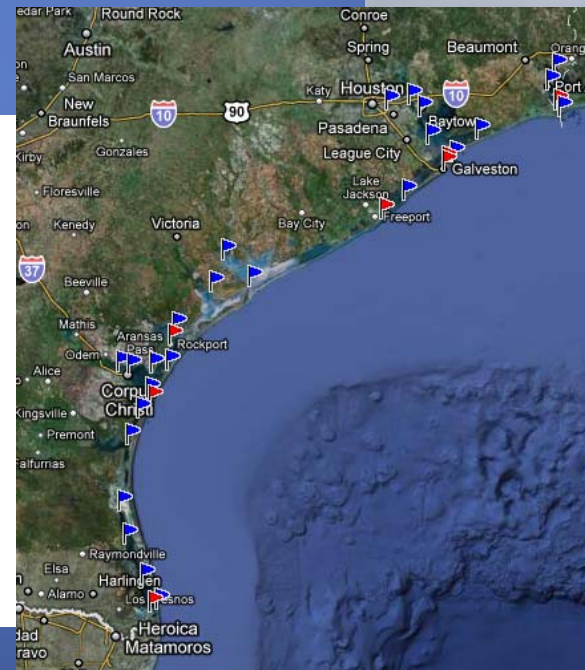
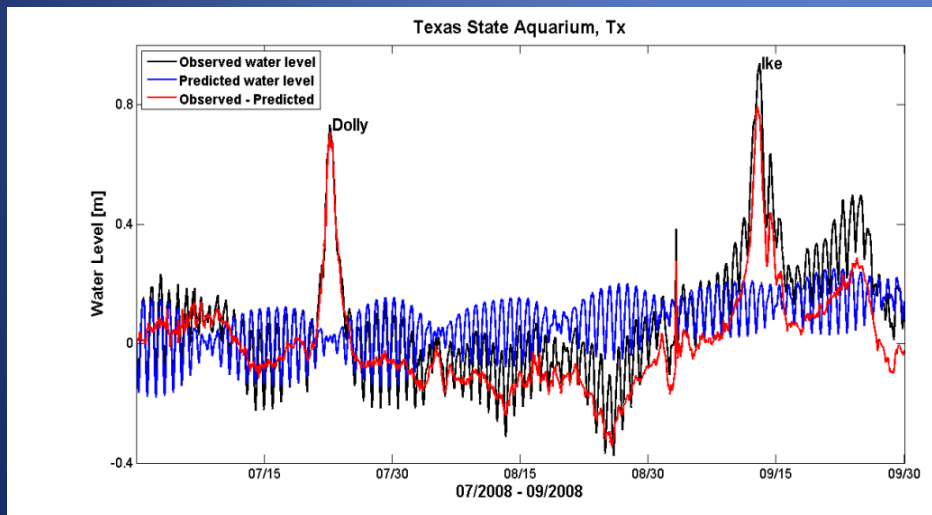
Stacey Lyle, Associate Professor
Texas A&M University Corpus Christi
Texas

Conrad Blucher Institute for Surveying
And Science



Operations

Collecting real-time and long term ocean coastal observations
Managing coastal observing systems for navigation and transportation

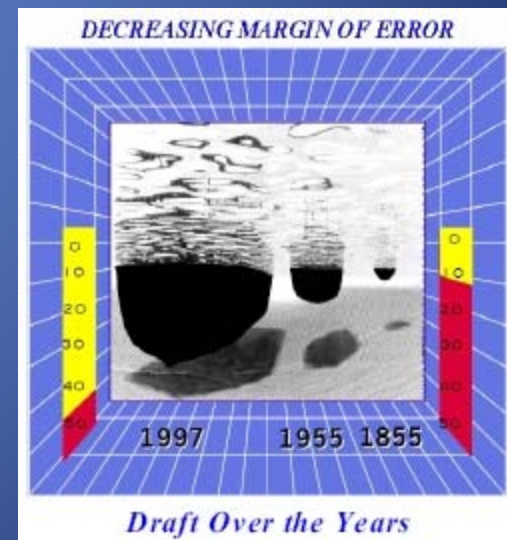




Physical Oceanographic Real-Time System (PORTS®)



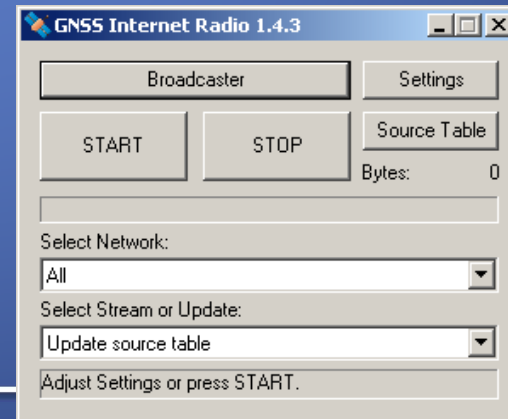
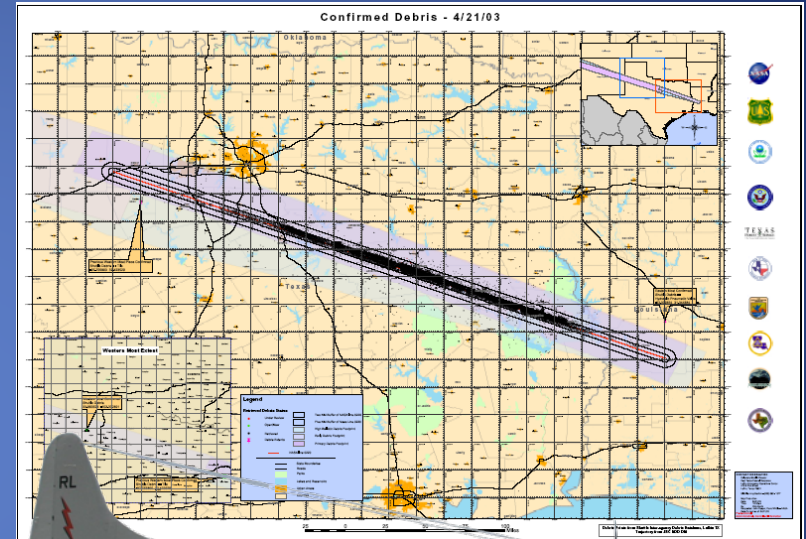
- Houston/Galveston
- Sabine-Neches
- Gulfport
- Pascagoula
- Mobile Bay
- Lake Charles





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)





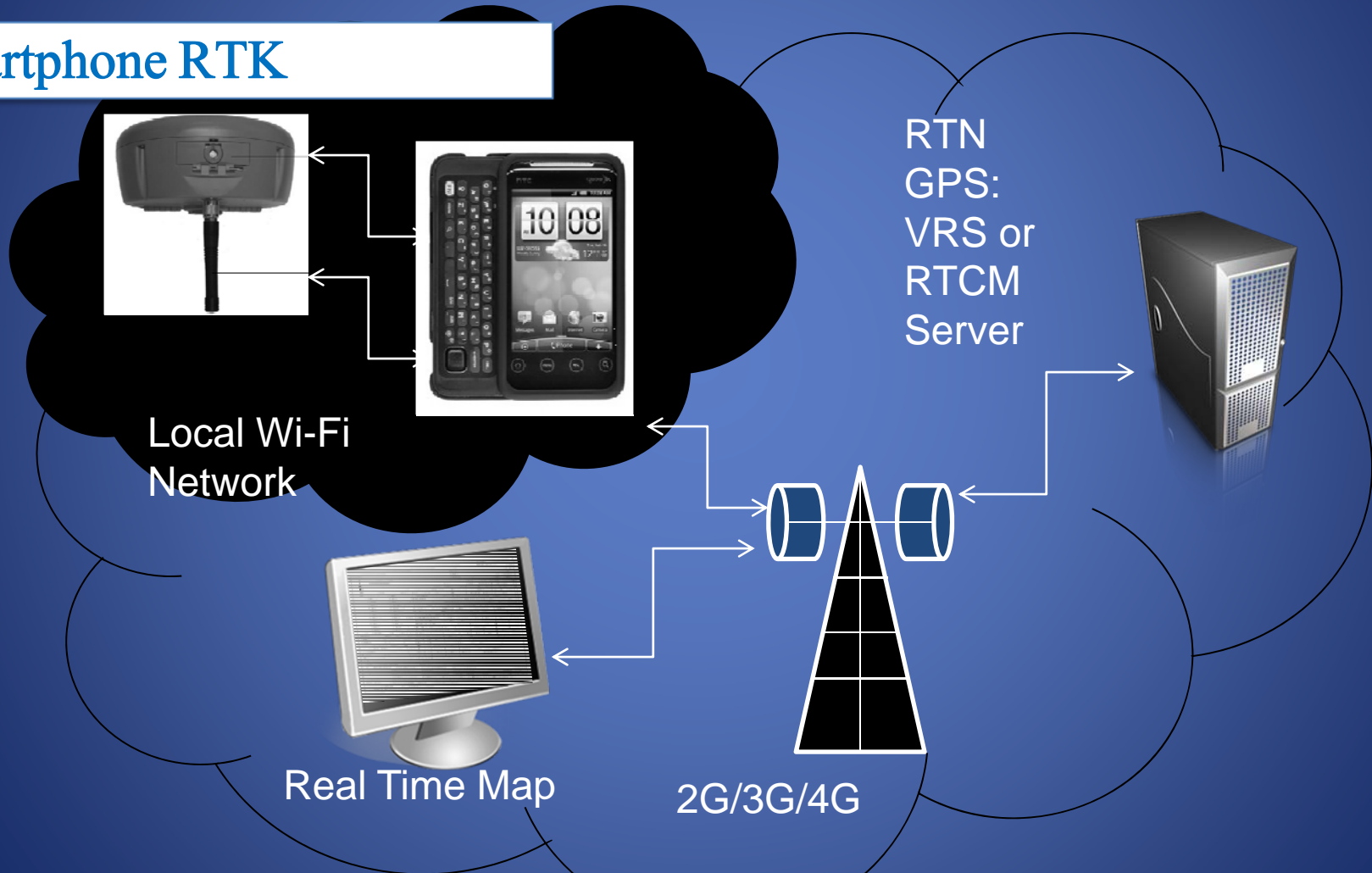
NPS and TxGLO UAS

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





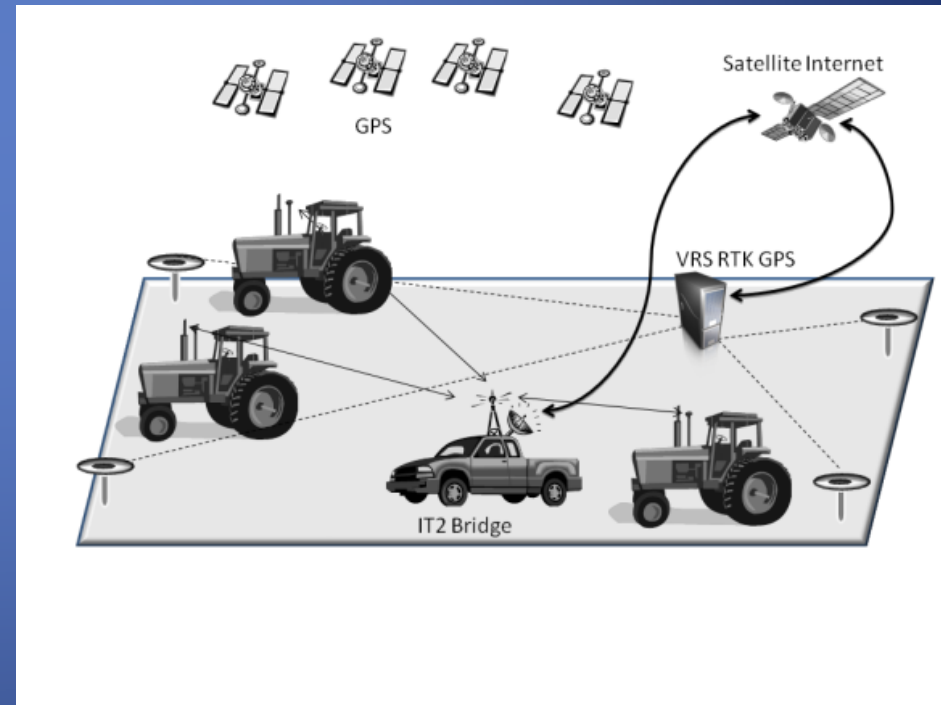
Smartphone RTK





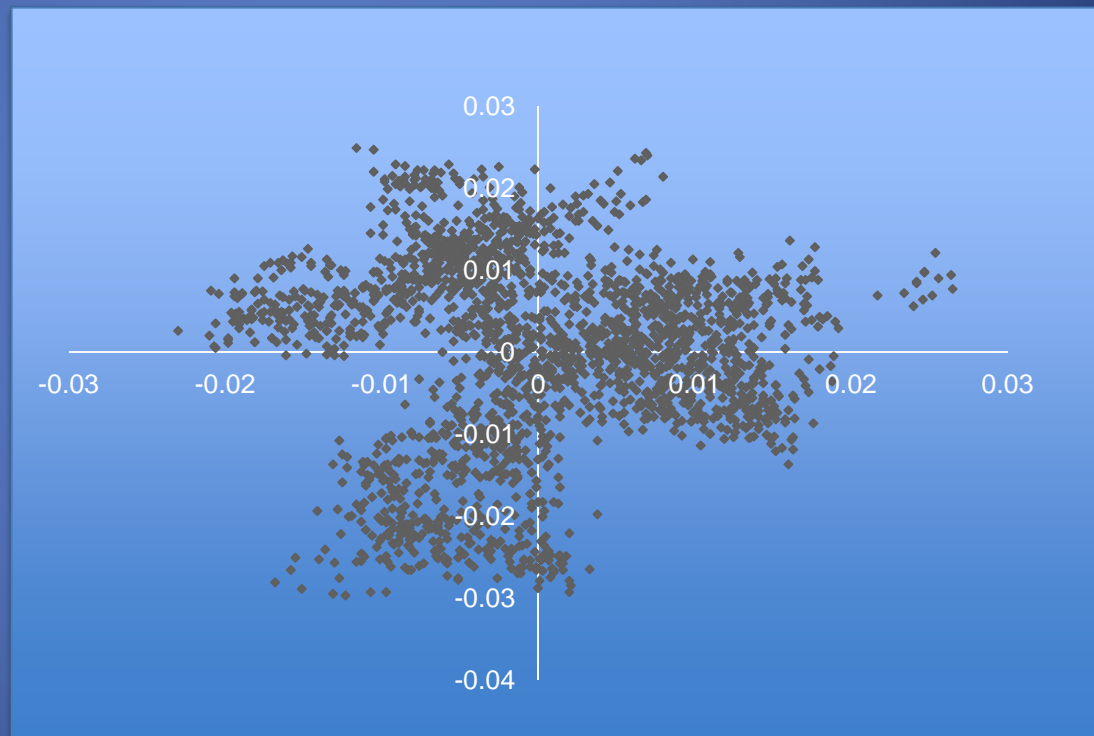
USDA: Low Cost Machine Control

- Low Cost RTK GPS
- Space-based RTK
- CORS Connection



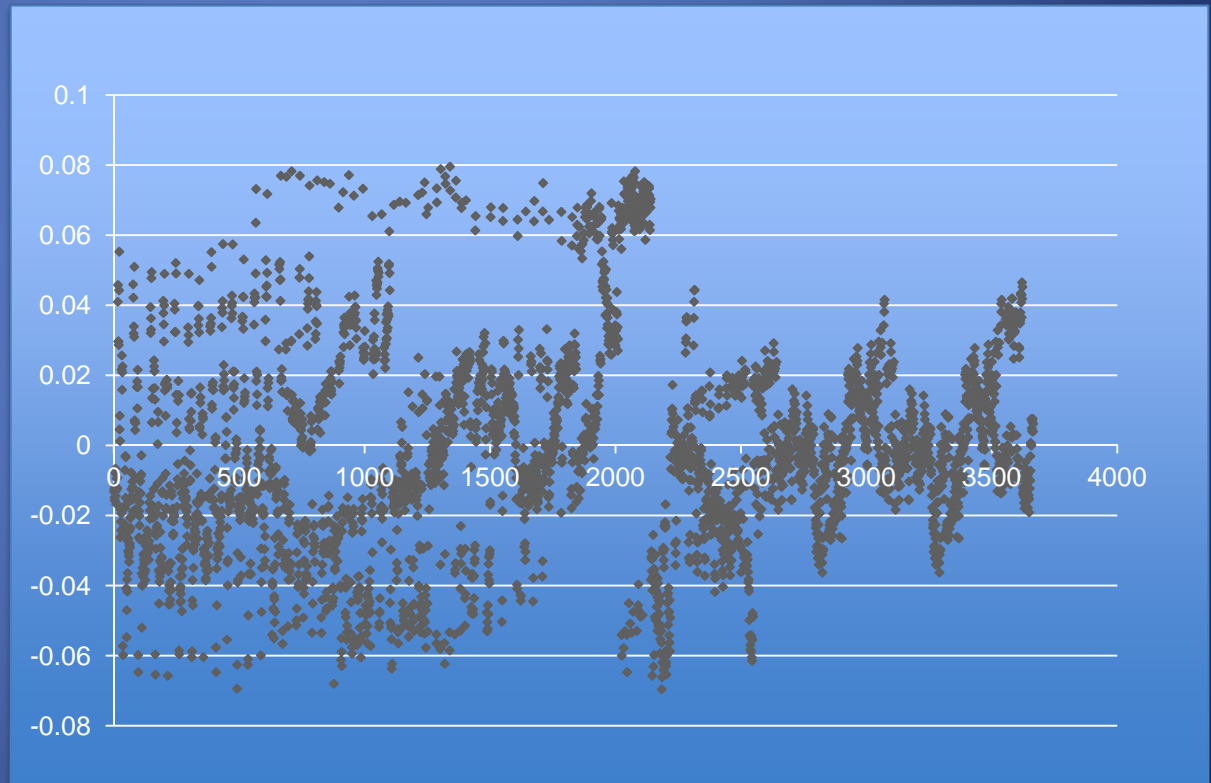


L1 RTK Horizontal





L1 RTK Vertical



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



Application Steps

1. App starts- Settings
2. Post Processing vs. RTK
3. Start Job
4. Smart phone gets corrections
5. Surveying started with selected accuracy
6. GNSS configured to output
7. Real Time Mapping and/or Control
8. App closed





Availability

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



**Office of Research and
Graduate Studies**

**Texas A&M University
Corpus Christi
The Island University**

Thank You

Conrad Blucher Institute for
Surveying and Science
6300 Ocean Drive
Corpus Christi, Texas 78412

Stacey.lyle@tamucc.edu

361-548-8852

