

What's new in GPS



Duncan Parnell
Rick Lusher

Quick Intro

Rick Lusher

1-800-353-7392

rickl@duncan-parnell.com

www.duncan-parnell.com/gps.html

www.duncan-parnell.com/support.html

Quick Survey

- Who uses a GPS unit now?
- What type of equipment/accuracy?
- Types of software?

What's new in GPS

■ Hardware

- New equipment
- North Carolina VRS – What it is, how it works (Not new, but more people are starting to use this)



■ Software

- ArcPad 8 is now out
- TerraSync 4.10



New Equipment - GeoExplorer 2008 Series

- Three models: three levels of accuracy
 - GeoXH™ handheld—Subfoot (<30 cm) and decimeter (10 cm)*
 - GeoXT™ handheld—Submeter
 - GeoXM™ handheld—1 to 3 meter
- High resolution VGA display
- Bluetooth® and 802.11b/g wireless LAN connectivity
- Windows Mobile® version 6 operating system with multiple language support
- 1 GB onboard storage plus removable SD/SDHC card storage
- Powerful 520 MHz processor and 128 MB RAM
- Rugged handheld with all day battery



*with optional Zephyr™ antenna

NC VRS (Virtual Reference Station)

What is a VRS?

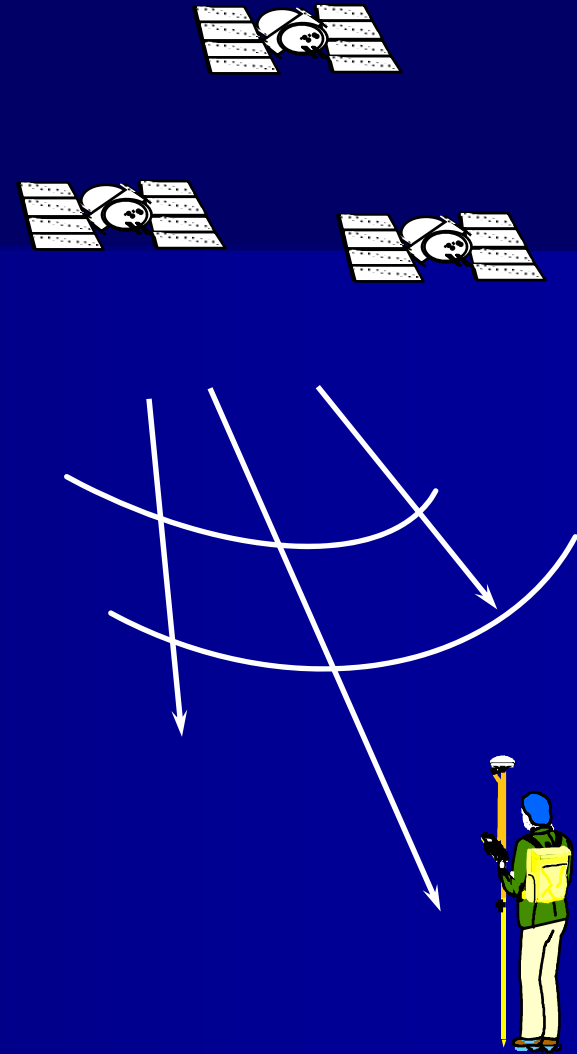
How does it help you out?

First – let's cover Basic GPS



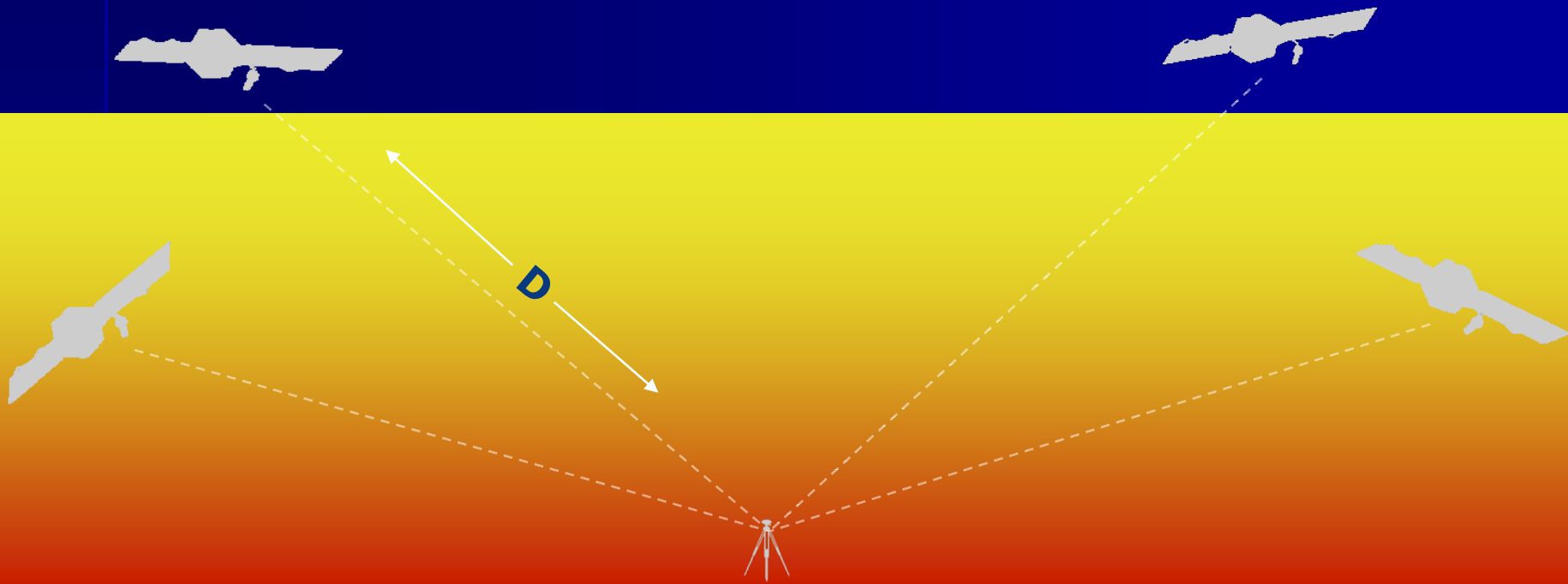
Basics

The basic idea behind GPS is to measure our distance from a group of satellites in space, this is accomplished by simply measuring the amount of time that it takes for a radio signal to reach us.

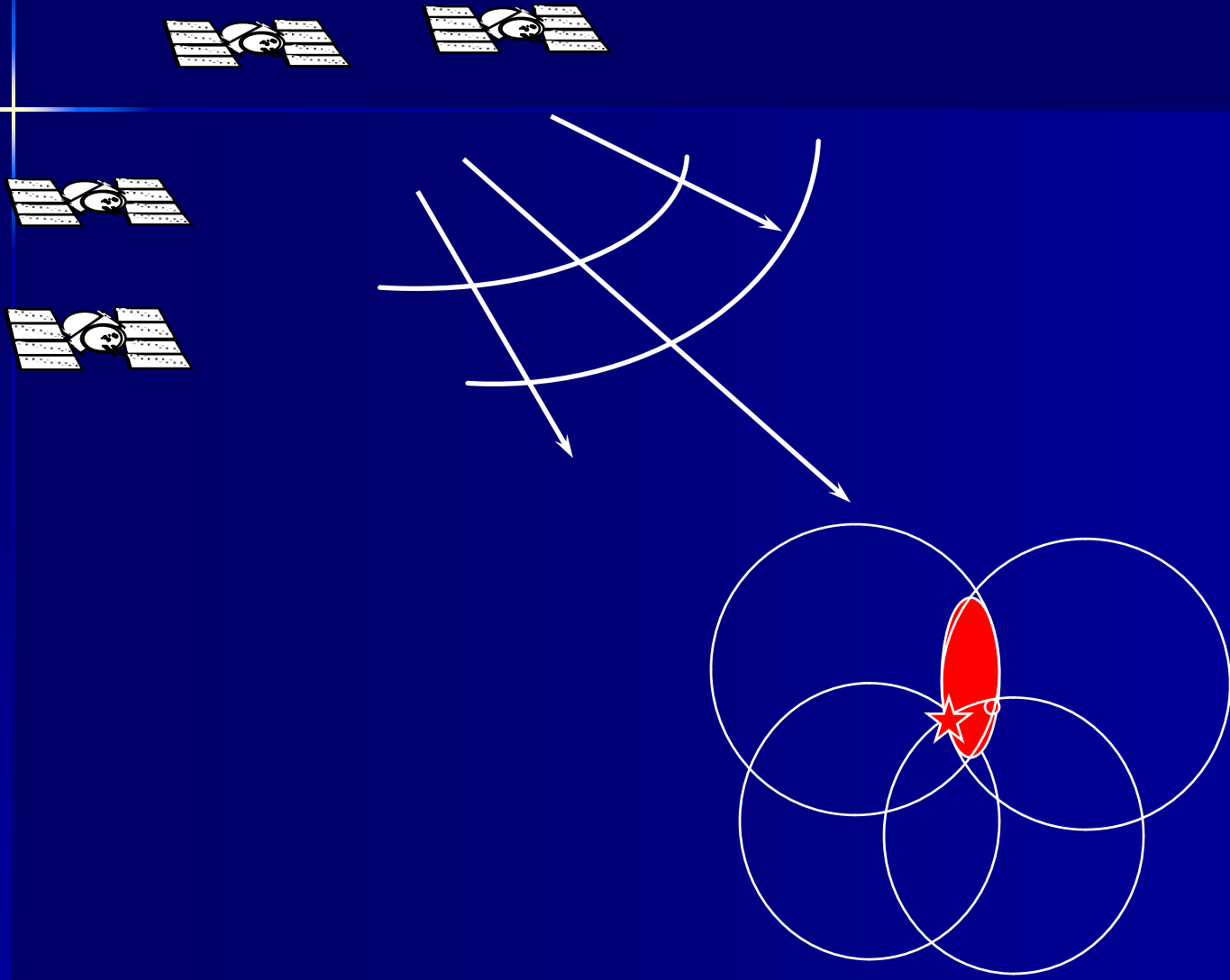


GPS by Trilateration

Distance $D = \text{Speed of light} \times \text{Time}$

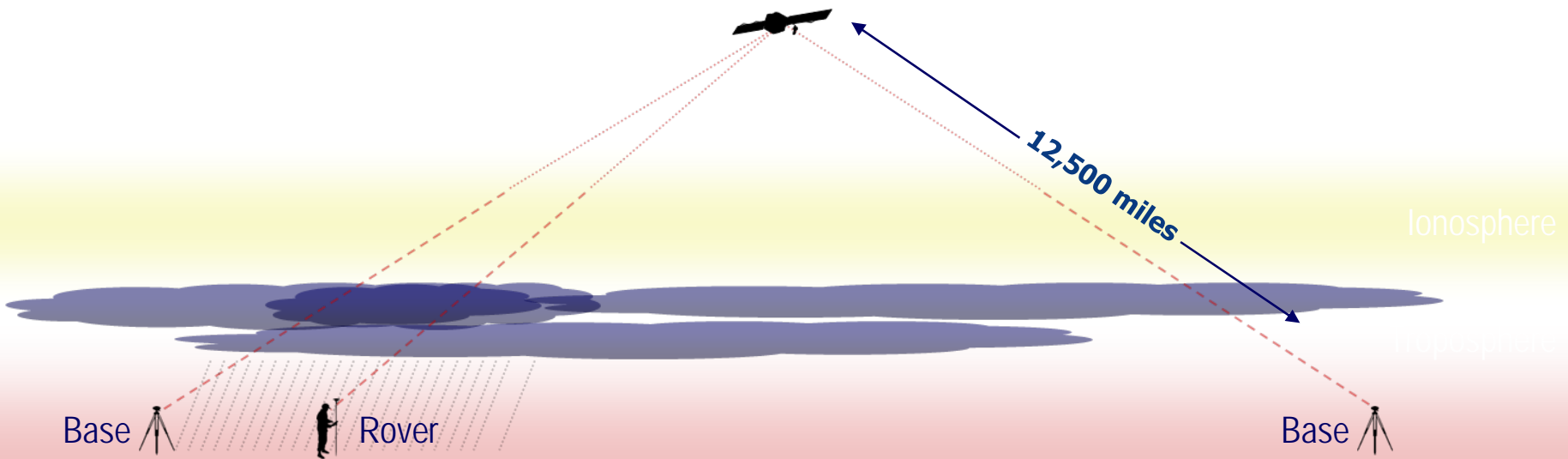


How does GPS get our location?



Error: Atmospheric Delay

- GPS signals are knocked around / delayed as they pass through the atmosphere



Types of Differential Correction

■ In the Field

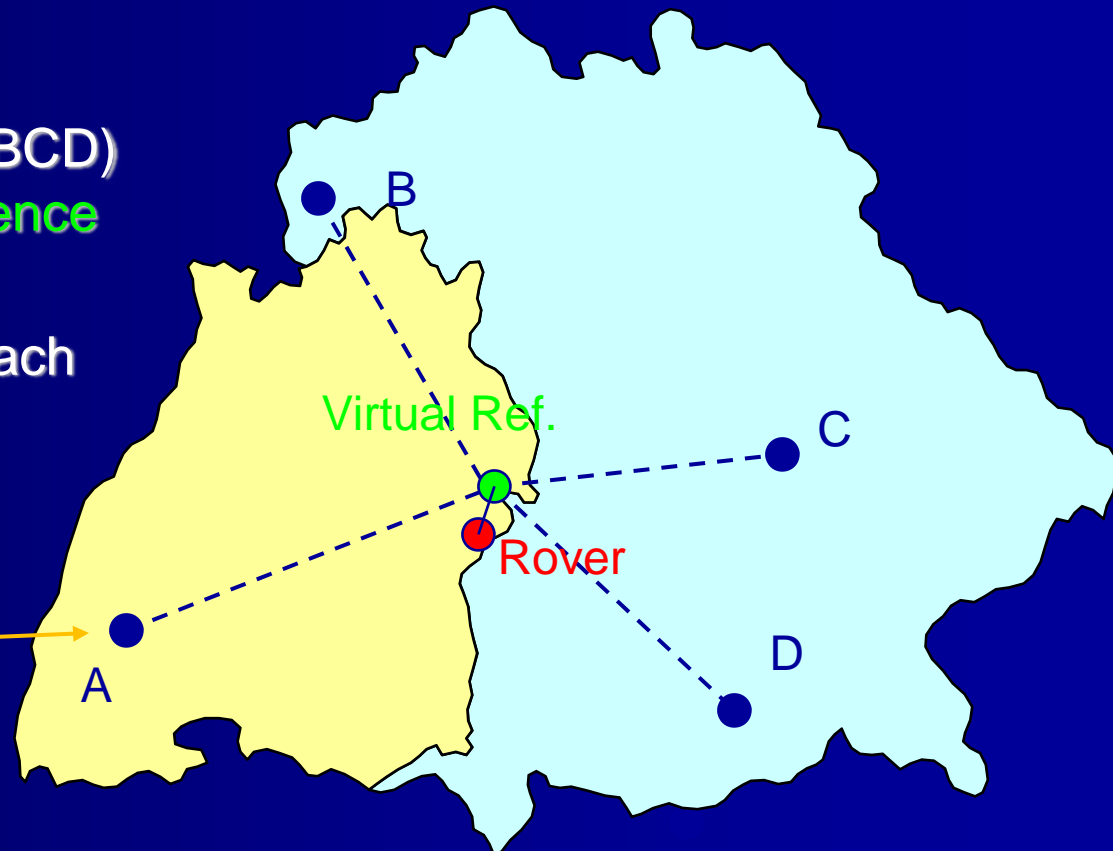
- VRS (around 5 inches with a 2008 GeoXH)
- WAAS/SBAS (sub-meter)
- Coast Guard Beacon (sub-meter)
- Omni-Star

■ Back in the office

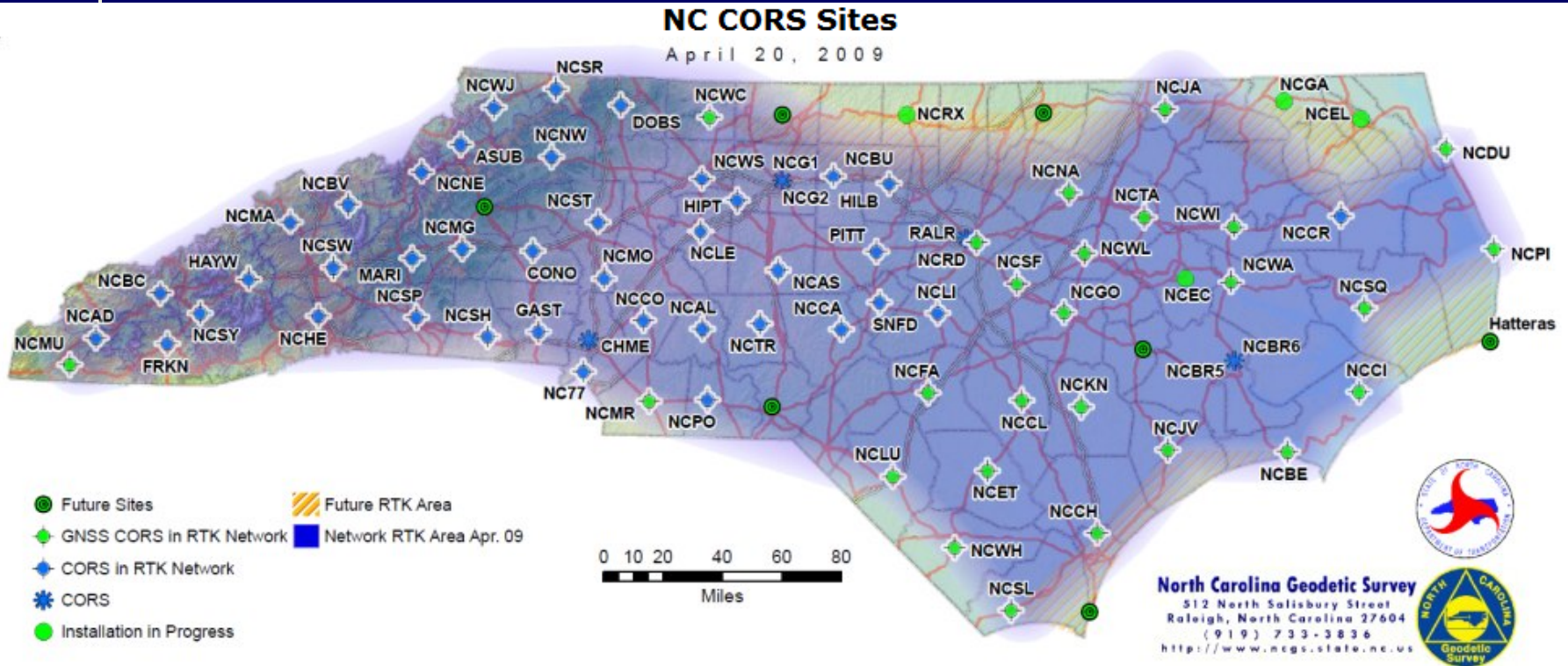
- Trimble GPS Analyst (an extension for ArcGIS)
- Trimble Pathfinder Office

Concept of Virtual Reference Stations (VRS)

- ◆ Uses a Network of Reference Stations (ABCD) to create **Virtual Reference Stations (VRS)**
- ◆ A **VRS** is created for each user location.



NC Base Station locations



What is needed to hook up to the VRS?

■ Hardware

- VRS account
- GPS receiver (Your accuracy will depend on the type of receiver)
- Cell phone with data plan to connect to VRS

■ Software

- Field
 - ArcPad or TerraSync
- Office
 - ArcGIS

Trimble Yuma

- 17.8 cm touchscreen
- Intel Atom 1.6 GHz processor
- 32 GB solid state hard drive
- Integrated WiFi, Bluetooth, and GPS(2-5M)
- 2 integrated cameras
- ExpressCard slot
- SDIO slot
- Outdoor rugged design



Juno SB/SC

- 3.5G cellular modem(SC Model)
- Feature packed, fully integrated solution
- 3 megapixel camera
- High-sensitivity GPS receiver
- Long life battery for all-day use
- Lightweight and compact



Customer Stories

- Winning the War on Weeds
- *An in-depth case study demonstrating the benefits of high-accuracy GPS mapping and navigation in the development of sustainable weed management program*
- http://www.trimble.com/mgis/customer_stories.aspx

One More Thing:

Questions?

Thank you for attending



Rick Lusher

rickl@duncan-parnell.com

919-280-4126

www.duncan-parnell.com