USNG in Florida

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United States National Grid

- Lessons learned have taught us that standardized grids are needed for positional reporting.

- As far back as Hurricane Andrew, problems were recognized for emergency managers…

What's wrong with current systems?

- We already have…
  - Latitude/Longitude
  - Township/Range/Section
  - Street Address and Zip
  - UTM

Latitude/Longitude

- **Multiple formats are confusing**

DD -85.990151, 30.272240

DM -85 59.409089, 30.16.334386

DMS 85 59’24.545”W, 30 16’20.063”N

All the same location!!!

How far is a second anyway?

- **What is the distance from….**

  85 59’24.545”W, 30 16’20.063”N

- **To here….**

  85 59’26.292”W, 30 16’14.546”N

Worse yet…

- What is the distance from

  -85.990443, 30.275358

- To here….

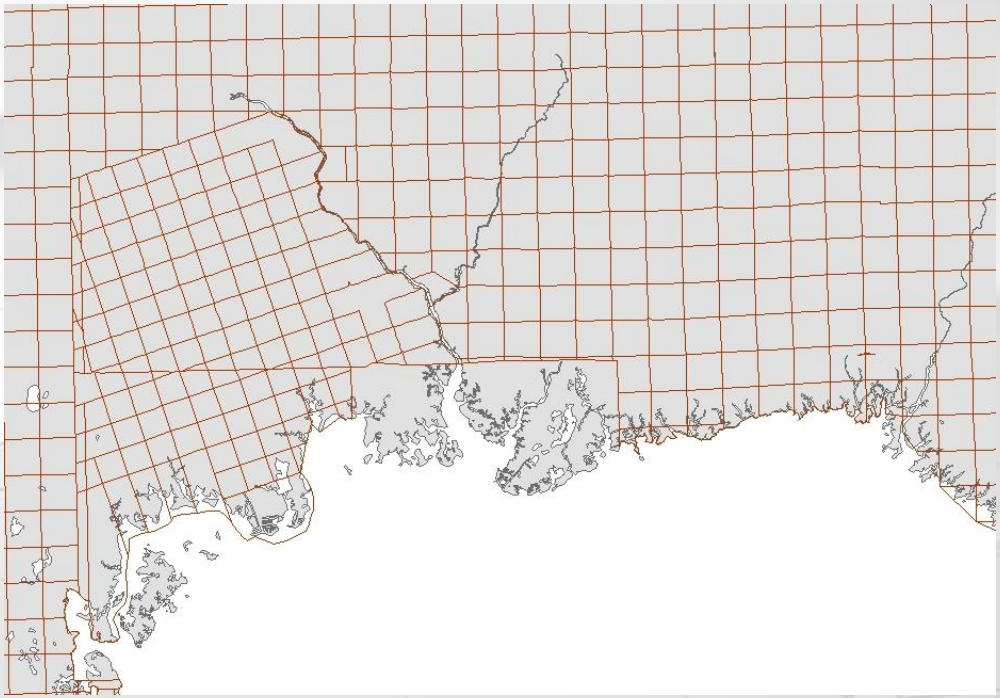
  85 59.364547, 30 16.504539

Township/Range/Section

- Township/Range/Section grid from the Public Lands Survey System is an important and good system…
  - basis of land ownership records
  - been in use for over 180 years

Township/Range/Section

- But a perfect section really doesn't exist



  - irregular in coastal areas
  - too large to meet needs of ground crews

Street Address and Zip

- Problematic due to…
  - rural routes
  - post office boxes

- What do you do when the SIGNS are gone?

- **What do you do when the ROADS are gone?**

Universal Transverse Mercator

- Measuring distances and obtaining positional accuracy has always been a challenge.

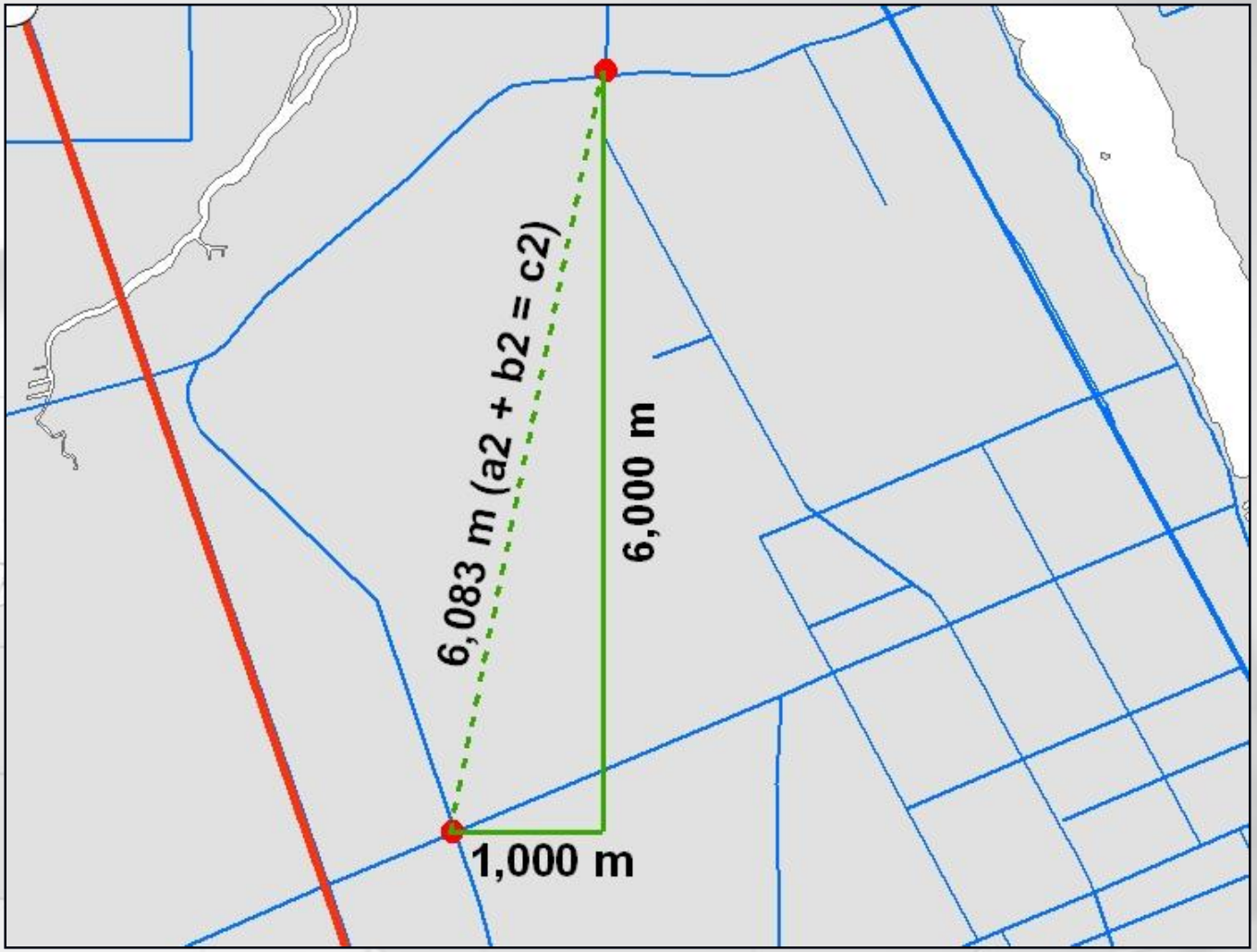
- Following World War II, several European allies demonstrated the utility of grid-based conformal maps.

Abbreviated as "UTM"

UTM

- Calculating the distance between two points on these maps could be performed more easily in the field using the Pythagorean theorem instead of using trigonometric formulas required under the Latitude and Longitude system.

UTM



UTM

- Developed by the United States Army in 1947
- A position is reported by the UTM longitude zone, the distance from the central meridian (called the easting) and the distance from the equator (called the northing)

16R 766000 3364820

Military Grid Reference System

- Based on UTM
- Newer standard used by United States Armed Forces and NATO

Abbreviated as “MGRS”

MGRS

- Uses a 2 to 10 character geocode
  - 2 digits implies precision of 10 km
  - 10 digits implies precision of 1 m
  - 100,000 m grids truncated and replaced with alpha-numeric grid

16R GU 66000 64820

United States National Grid

- Essentially the same as Military Grid Reference System…
- So same format…

16R GU 66000 64820

Abbreviated as “USNG”

How to read USNG

Grid Zone Designation – for a world-wide unique address, identifies the longitude zone number and the latitude band letter

100,000 Meter Grid – identification for regional areas

Grid Coordinates – Easting and Northing position

Truncate for less accuracy…

16R GU 66000 64820

66000 64820 **Locates within 1 meter**

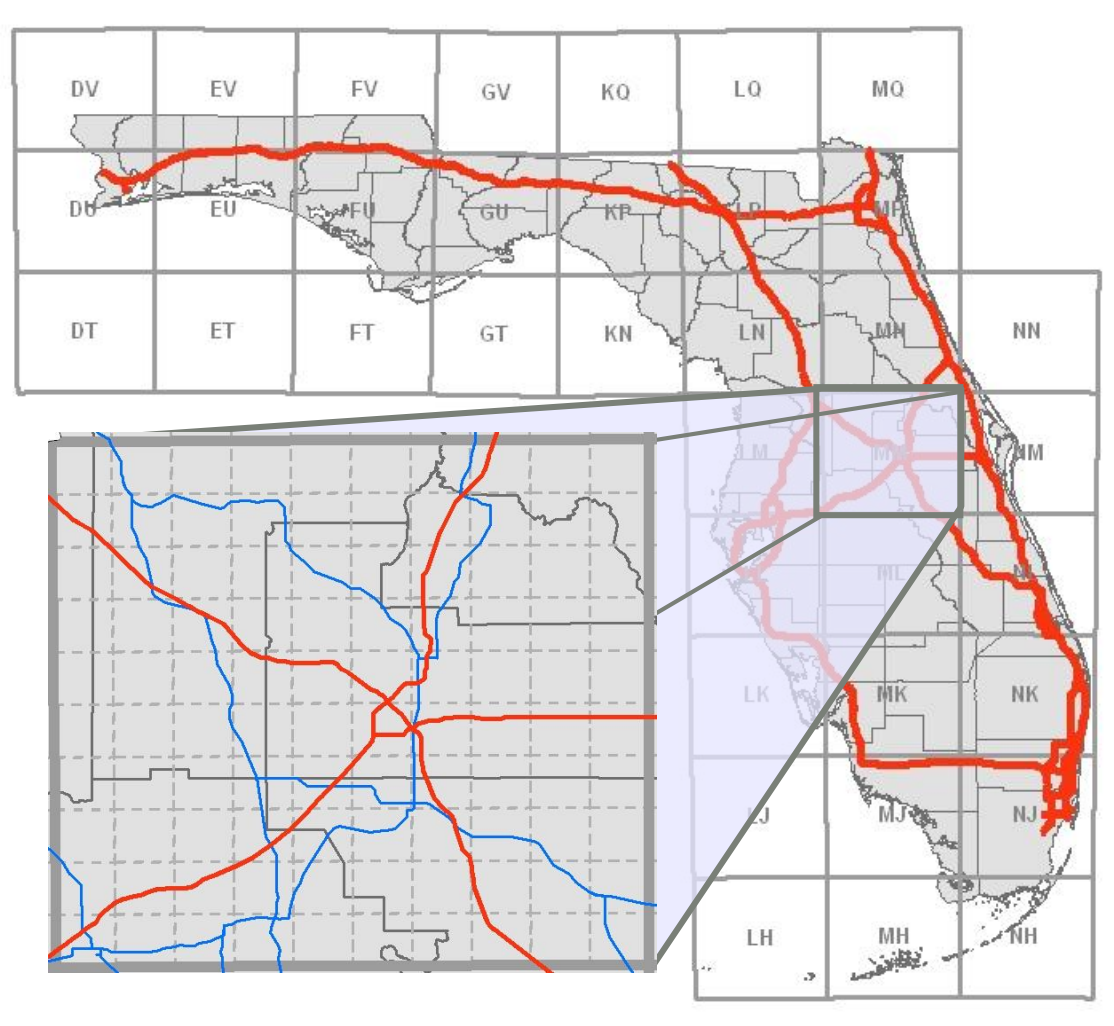
6600 6482 **Locates within 10 meters**

660 648 **Locates within 100 meters**

66 64 **Locates within 1000 meters**

USNG

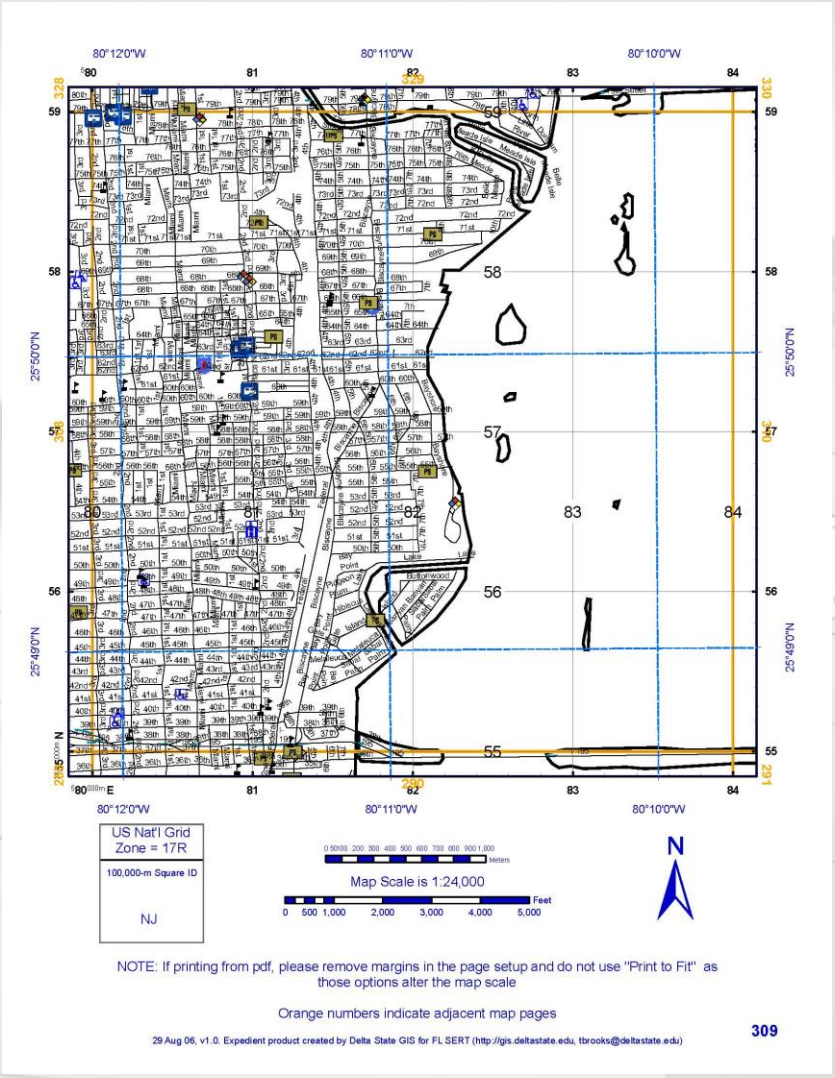
- Easily scaleable
- Pin-point and cell based locational reporting
- “Grid within a Grid”

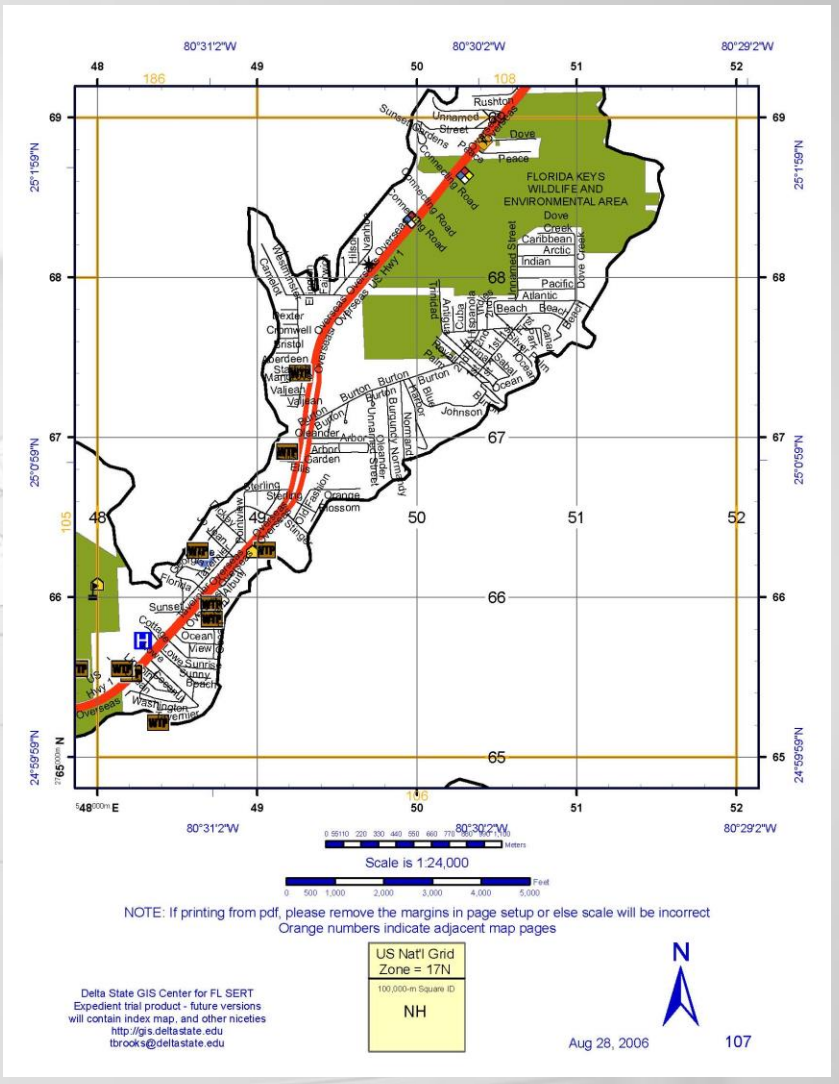


Global Positioning Systems

- I have GPS…why do I need to care about any of this?
  - USNG can be used with GPS
  - GPS supplements USNG
  - However, USNG can also work when GPS won't

USNG Sample Maps





Florida Adopts the USNG

- USNG was officially adopted by the FFCA
- FDEM to adopt the USNG in the States CEMP
- Updates of GIS/Maps in the 11 Regional Evacuation Studies will include USNG grids
- Florida Fire College, Florida Fire Chiefs Association, Fl National Guard to develop curriculum and instructor manuals
- FFC will be incorporating an intro module in the Firefighter II curriculum

FDEM Adopts the USNG

- Creating downloadable shapefiles by county
- Will handle requests for production of shapefiles for specific areas
- Has made available training materials and presentations via web
- Working with DEP to create coordinate transformation tools available via web
- With Sue McLellan and others at DOF

ESRI Adopts the USNG

- PLTS and Military Analyst extensions contain tools to work with USNG
- USNG tool available for download from ArcScripts
- USNG toolbar available for download elsewhere on ESRI site
- ArcGIS 9.2 includes USNG tools

More information…

http://www.floridadisaster.org/gis/usng