North Carolina Geodetic Survey (NCGS): Positioning NC today and for the future!

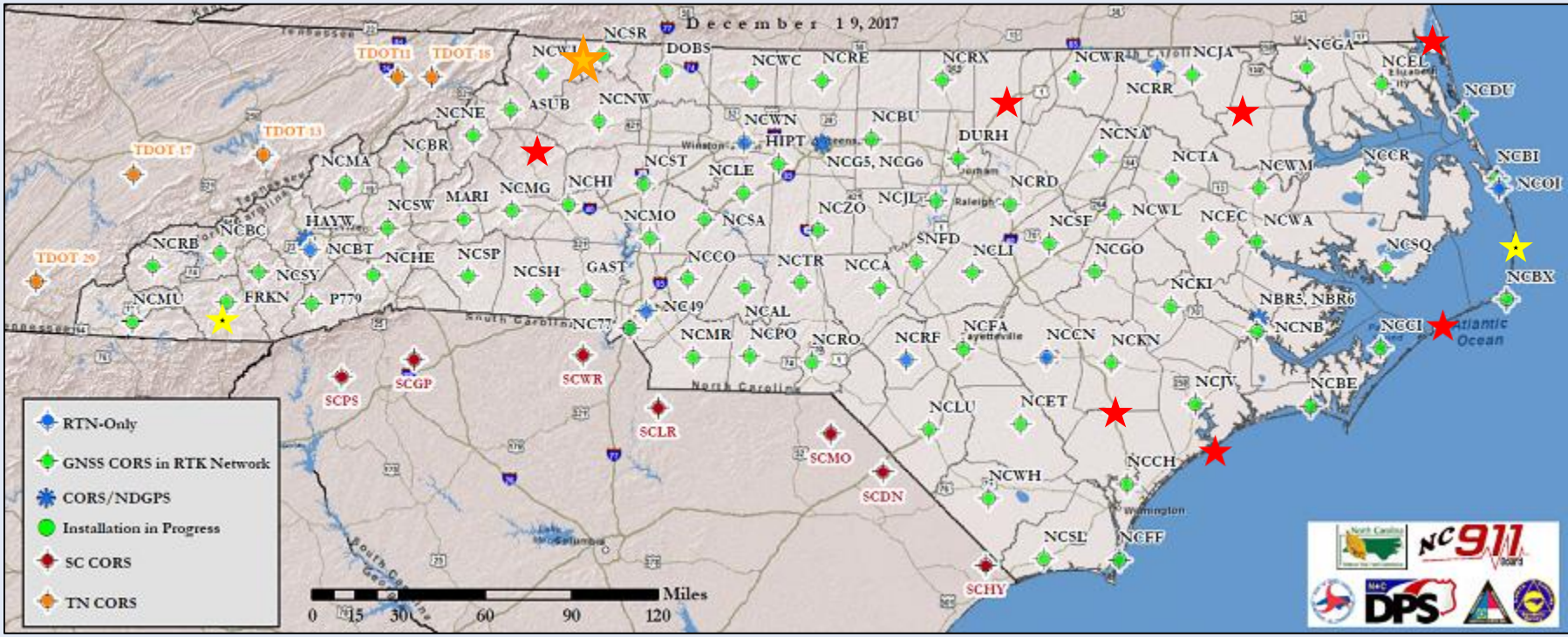
State Mapping Advisory Committee
July 13, 2022

Geodetic Control

DEPARTMENT OF PUBLIC SAFETY

North Carolina Emergency Management

North Carolina (NC) Continuously Operating Reference Station (CORS) Network



Future CORS location = ★
CORS installed = ★
Earthquake CORS = ★

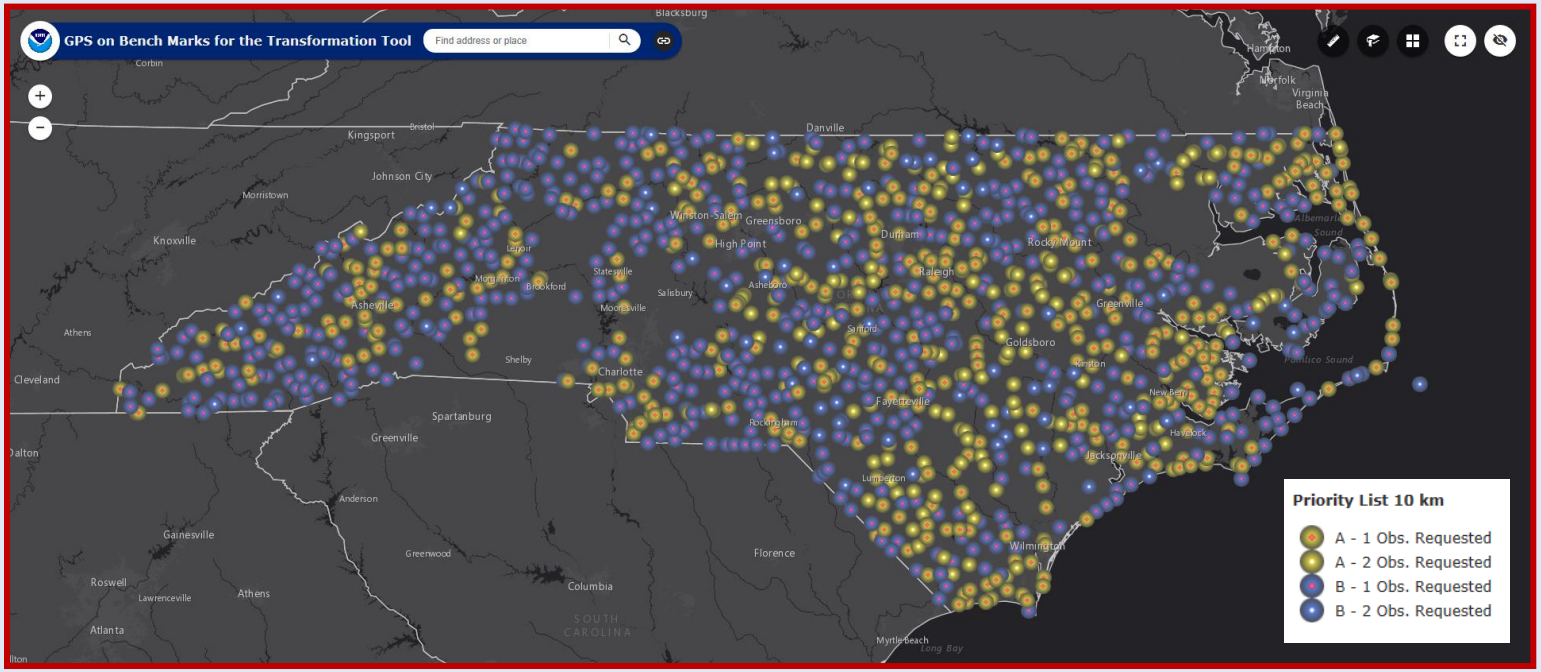
North Carolina Emergency Management

NC CORS Network

- New CORS to replace FRKN

National Geodetic Survey
GPS on Bench Marks 2020

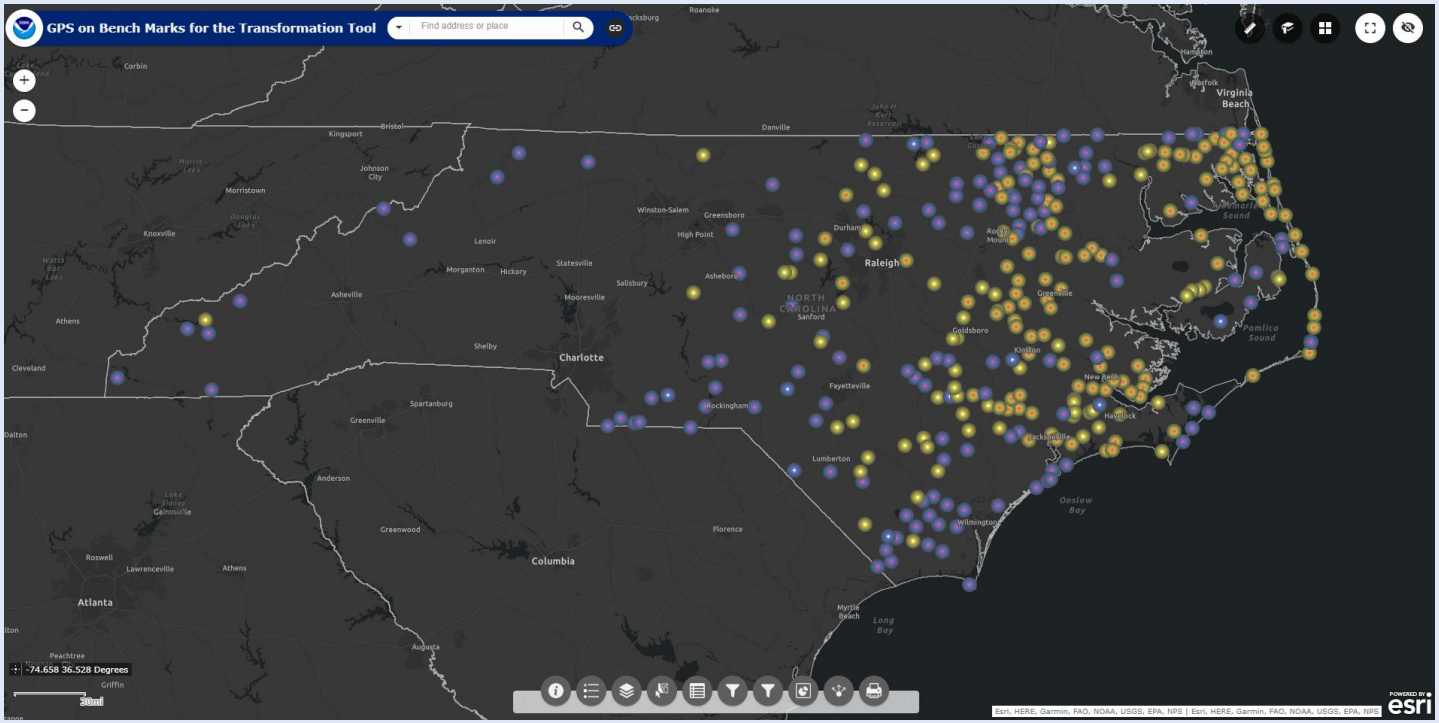
- 2020
  - NGS has prepared a list of geodetic monuments that we review for possible GNSS data collection



North Carolina Emergency Management

National Geodetic Survey
GPS on Bench Marks 2020/2021

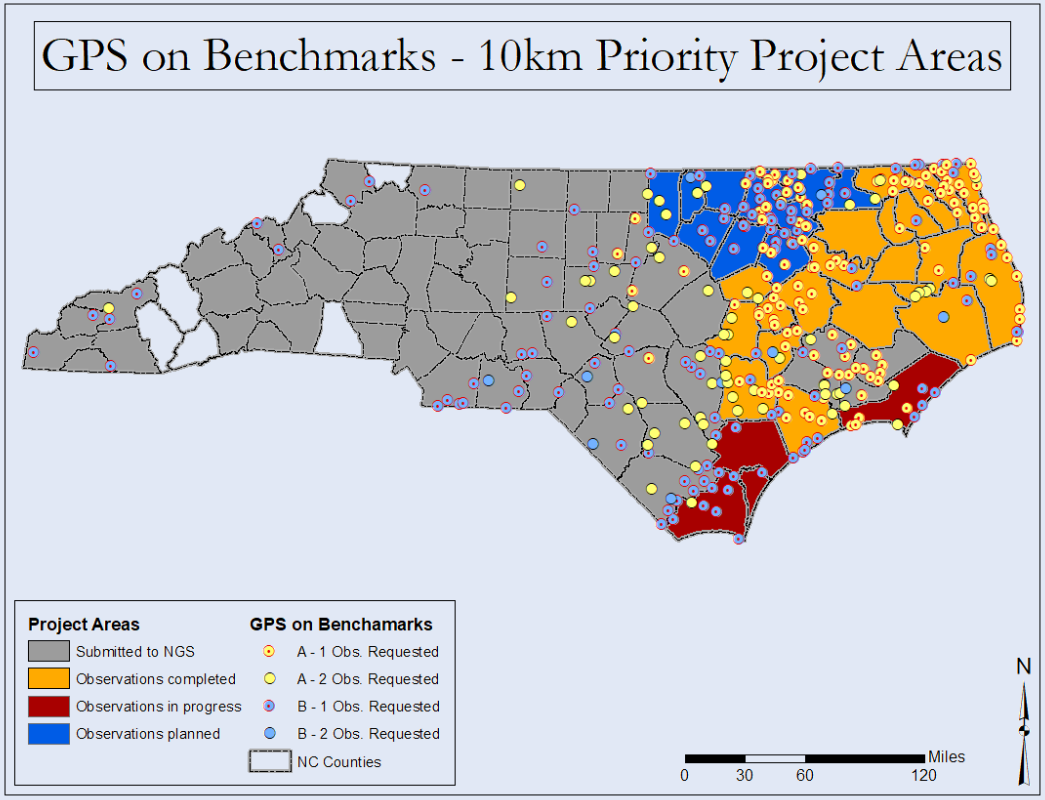
- 2021
  - Status of 06/28/2022



North Carolina Emergency Management

National Geodetic Survey
GPS on Bench Marks 2022

- Projects in progress

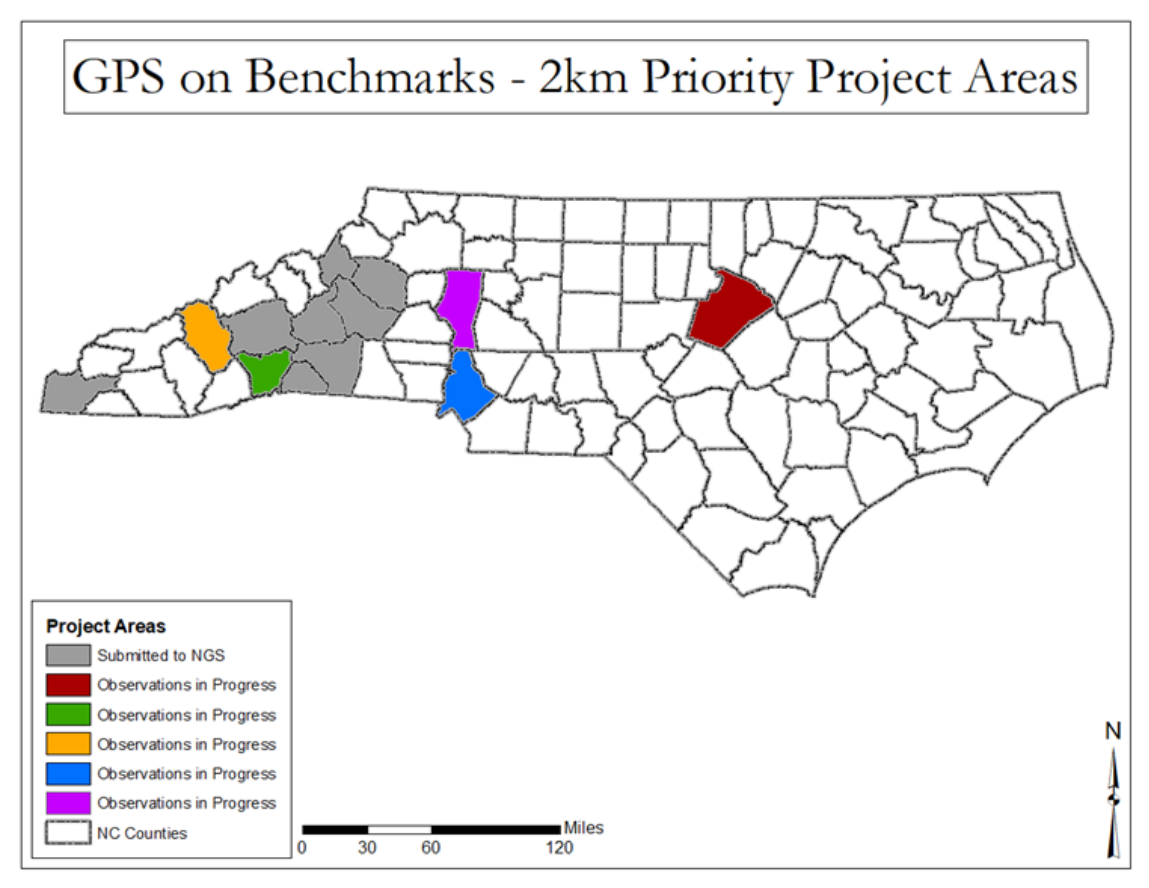


DEPARTMENT OF PUBLIC SAFETY

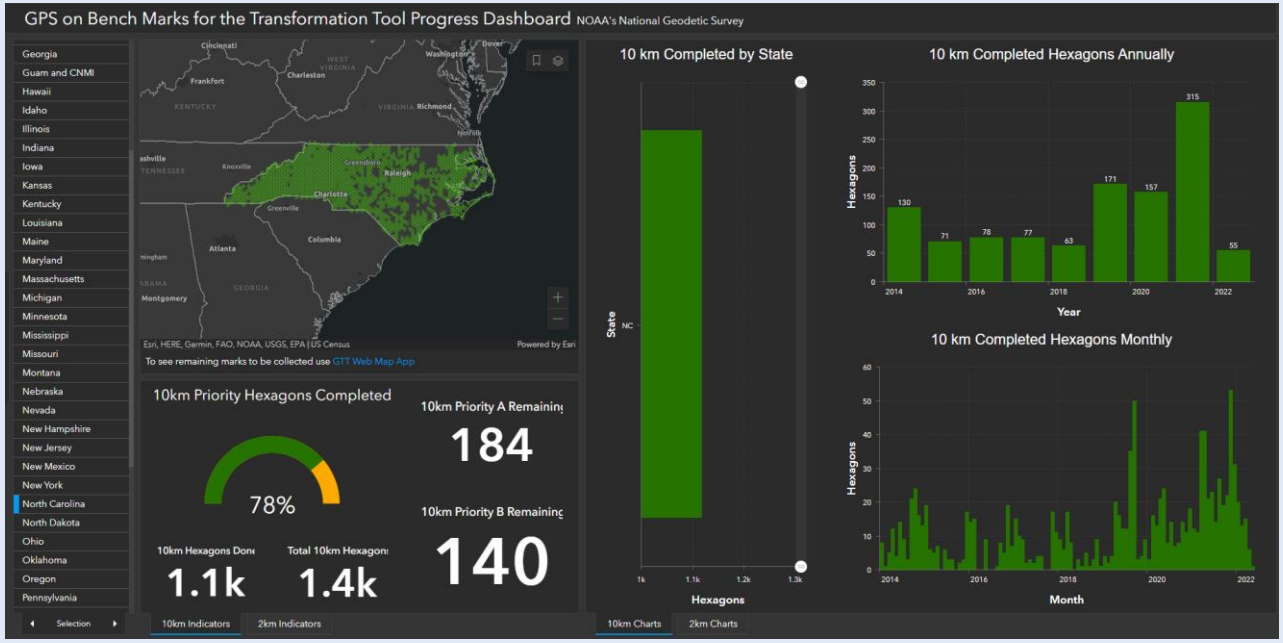
North Carolina Emergency Management

National Geodetic Survey
GPS on Bench Marks 2022

- Projects in progress



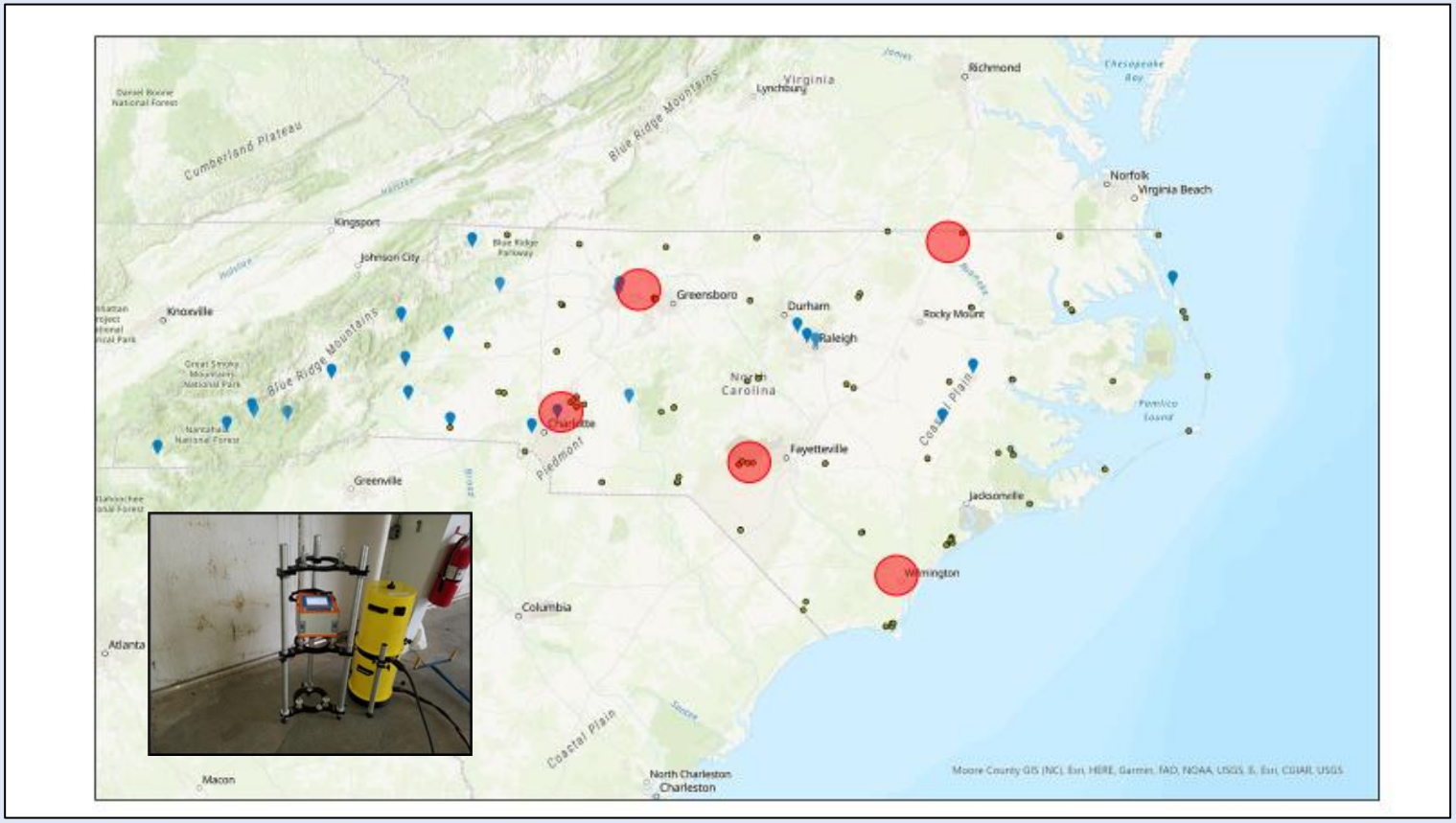
North Carolina's Progress Dashboard



10km Priority A Remaining
24
10 Km Priority B Remaining
140 (100 in progress)

North Carolina Emergency Management

Gravity Data Collection



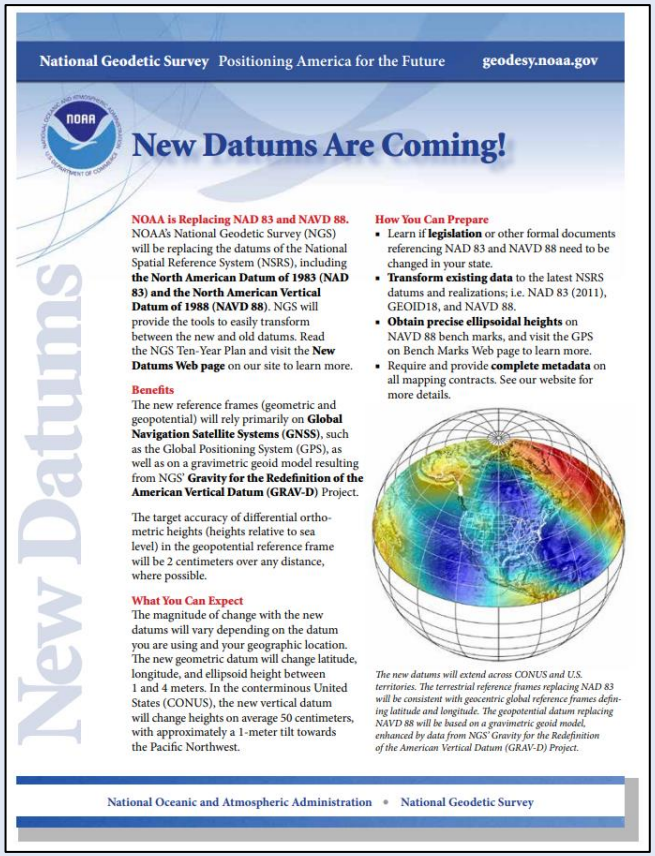
DEPARTMENT OF PUBLIC SAFETY

EMAP Accredited

North Carolina Emergency Management

EMERGENCY MANAGEMENT NORTH CAROLINA

New Datums are Coming!
2024- 2025



National Geodetic Survey Positioning America for the Future geodesy.noaa.gov

New Datums Are Coming!

New Datums

NOAA is Replacing NAD 83 and NAVD 88.
NOAA's National Geodetic Survey (NGS) will be replacing the datums of the National Spatial Reference System (NSRS), including **the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88)**. NGS will provide the tools to easily transform between the new and old datums. Read the NGS Ten-Year Plan and visit the **New Datums Web page** on our site to learn more.

Benefits
The new reference frames (geometric and geopotential) will rely primarily on **Global Navigation Satellite Systems (GNSS)**, such as the Global Positioning System (GPS), as well as on a gravimetric geoid model resulting from NGS' **Gravity for the Redefinition of the American Vertical Datum (GRAV-D)** Project.

The target accuracy of differential ortho-metric heights (heights relative to sea level) in the geopotential reference frame will be 2 centimeters over any distance, where possible.

What You Can Expect
The magnitude of change with the new datums will vary depending on the datum you are using and your geographic location. The new geometric datum will change latitude, longitude, and ellipsoid height between 1 and 4 meters. In the conterminous United States (CONUS), the new vertical datum will change heights on average 50 centimeters, with approximately a 1-meter tilt towards the Pacific Northwest.

How You Can Prepare
- Learn if **legislation** or other formal documents referencing NAD 83 and NAVD 88 need to be changed in your state.
- **Transform existing data** to the latest NSRS datums and realizations; i.e. NAD 83 (2011), GEOID18, and NAVD 88.
- **Obtain precise ellipsoidal heights** on NAVD 88 bench marks, and visit the GPS on Bench Marks Web page to learn more.
- Require and provide **complete metadata** on all mapping contracts. See our website for more details.

The new datums will extend across CONUS and U.S. territories. The terrestrial reference frames replacing NAD 83 will be consistent with geocentric global reference frames defining latitude and longitude. The geopotential datum replacing NAVD 88 will be based on a gravimetric geoid model, enhanced by data from NGS' Gravity for the Redefinition of the American Vertical Datum (GRAV-D) Project.

National Oceanic and Atmospheric Administration • National Geodetic Survey

Draft revisions to North Carolina General Statute 102 is being developed

North Carolina Emergency Management