

Smart Data for Smart Infrastructure Information



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Innovation in 3D

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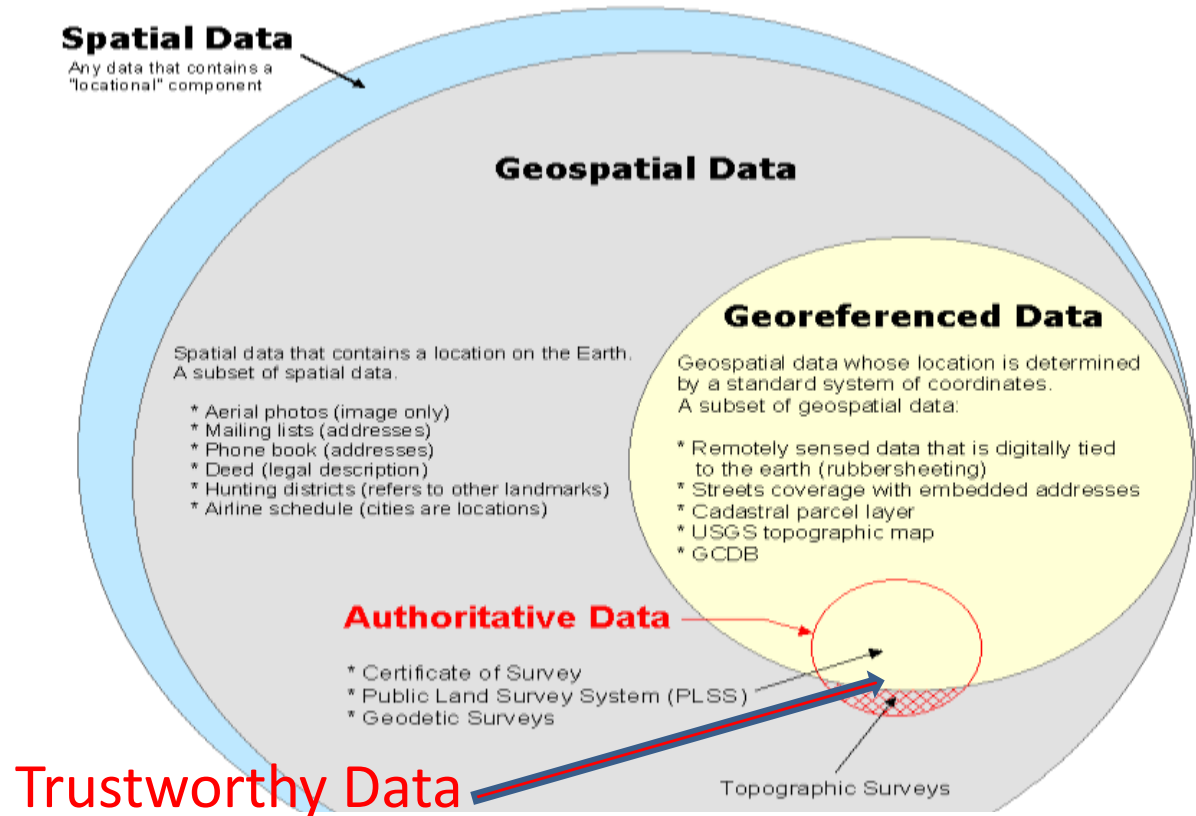


Smart Cities and Lidar

The explosive growth of cities is a tremendous challenge for the Economic, Environmental and Social impact on livability for the citizens.

The incredible complexity of today's Cities means Policy Makers and Urban Managers increasingly need information they can trust to make reliable and impactful decisions

Authoritative Data

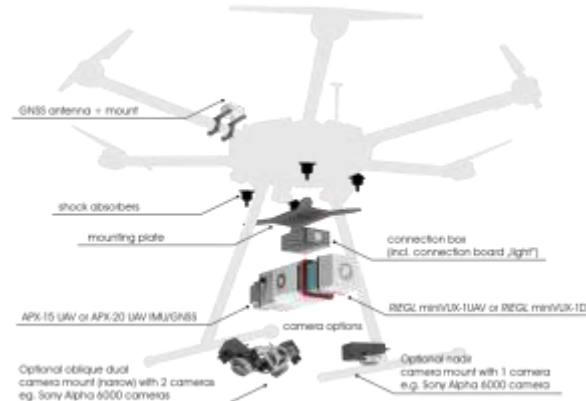


Remote Sensing and LiDAR

- ***Light detection and ranging (LiDAR) has evolved as an essential remote sensing technology needed to support high-value applications, such as flood risk management, water supply and quality, infrastructure and construction management, natural resources conservation, geologic resource assessment, and hazard mitigation. LiDAR is one of the primary technologies used to support mapping of elevation and other Earth surface characteristics.***

The Increasing Use of Drones and Lidar

- Easy and user-friendly integration
- Successful integration in the marketplace
- Control scanner via UAV remote controller
- No user action during operation → RXPCutter



RIEGL Multi-Sensor Integrations

- VUX-SYS with APX-20 UAV INS/GNSS
 - Flir Tau 2 thermal camera
 - Sony Alpha 7R



weight: 5.7 kg



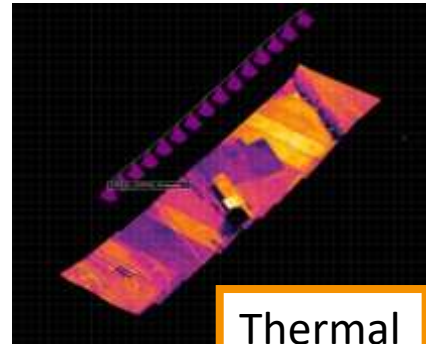
Front Mount



Integration Kit



RGB



Thermal

Multi-Sensor Options

- Oblique „wide“:
2 x Sony A6000
- Oblique „narrow“:
2 x Sony A6000
- Nadir:
Sony A6000 or Sony 7R
- Thermal (Flir Tau 2):
Sony A6000 or Sony 7R



Collaboration with Trimble - Applanix

IMU & GNSS	Applanix APX-15 UAV	Applanix APX-20 UAV	Applanix AP20
IMU Accuracy – Roll, Pitch	0.025°	0.015°	0.015°
IMU Accuracy – Heading	0.085°	0.035°	0.035°
IMU – Sampling Rate	200 Hz	200 Hz	200 Hz
Position Accuracy – Horizontal	< 0.05 m	< 0.05 m	< 0.05 m
Position Accuracy – Vertical	< 0.1 m	< 0.1 m	< 0.1 m

- VUX-SYS incl. APX-20 UAV:
 - much lighter (~ 1 kg)
 - same accuracy level
- VUX-SYS incl. AP20:
 - multiple-use (ALS/MLS/ULS)
 - 4 cameras (ALS/MLS/ULS)
 - Somag mount (ALS)
 - flight guidance (ALS)
 - DMI option (MLS)
 - GAMS option (MLS)

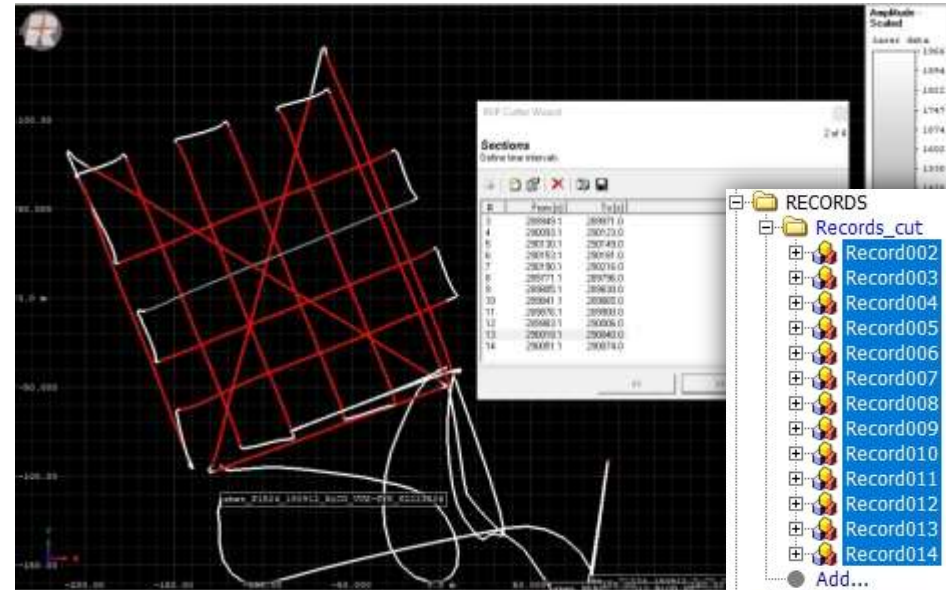
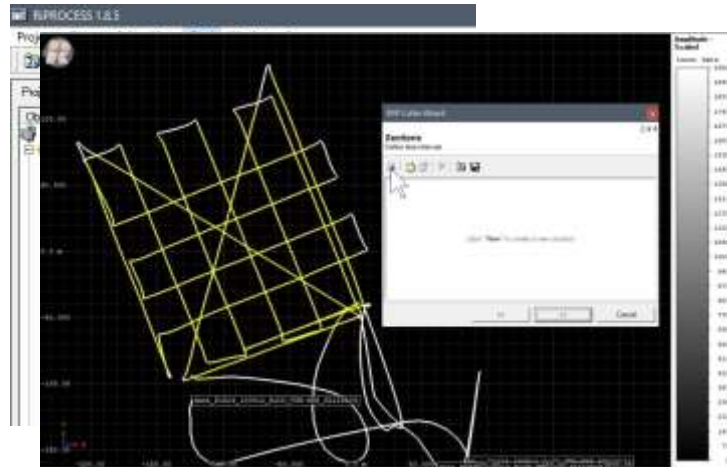
Embedded tools for real-time data acquisition

- Scanner:
 - miniVUX-1UAV
 - miniVUX-1DL
 - VUX-240
- INS/GNSS:
 - APX-15 UAV
 - APX-20 UAV



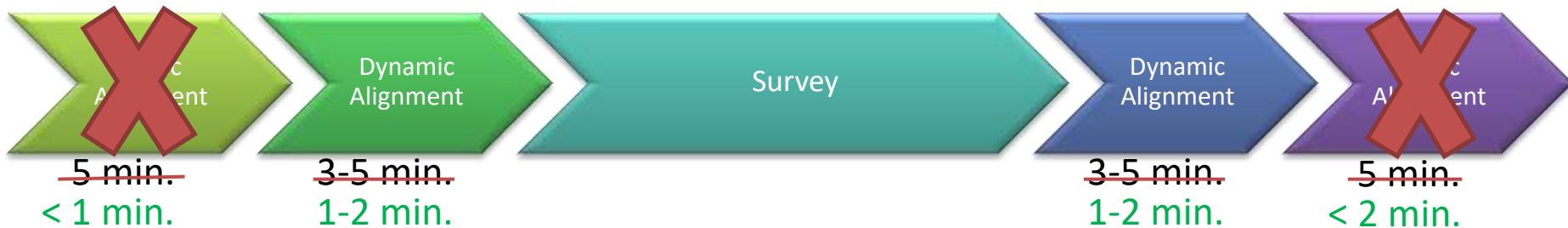
RXPCutter (embedded in RiPROCESS)

- no user action during operation required
- time in the field can be reduced
- less error at UAV on-site operation



Workflow Improvements (APX INS/GNSS)

- Increases survey time using improved heading initialization
 - Skip **static alignment phase** (before / after) → ~ 10 (5/5) min. less time effort
 - Automatic start-up of scanner, working/logging → no user interaction required
 - Automatic shutdown using **motion detection** → no user interaction required
 - Reduces time for **dynamic alignment phase** → ~ 3-4 min. less time effort

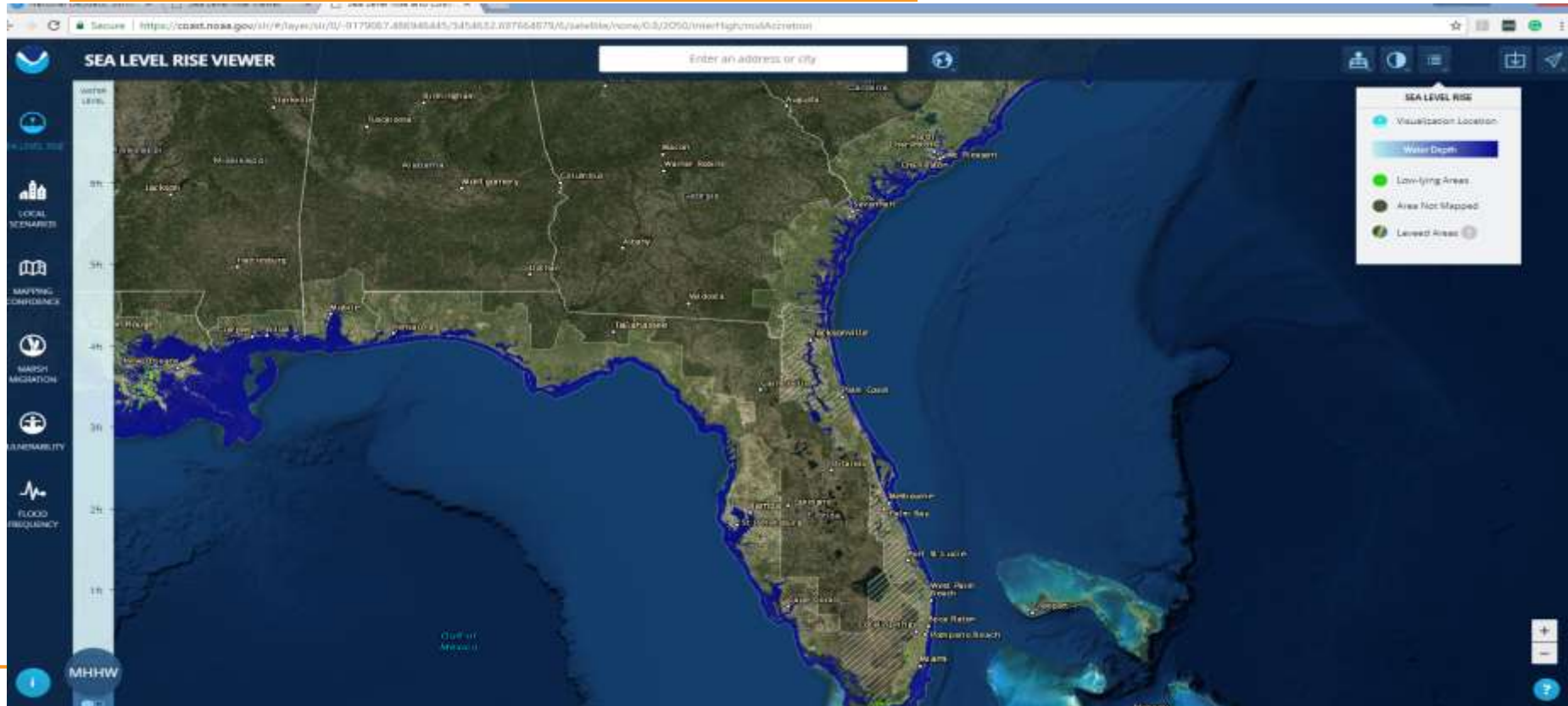


- Overall set-up time / survey time gets **maximized!** → **higher productivity**

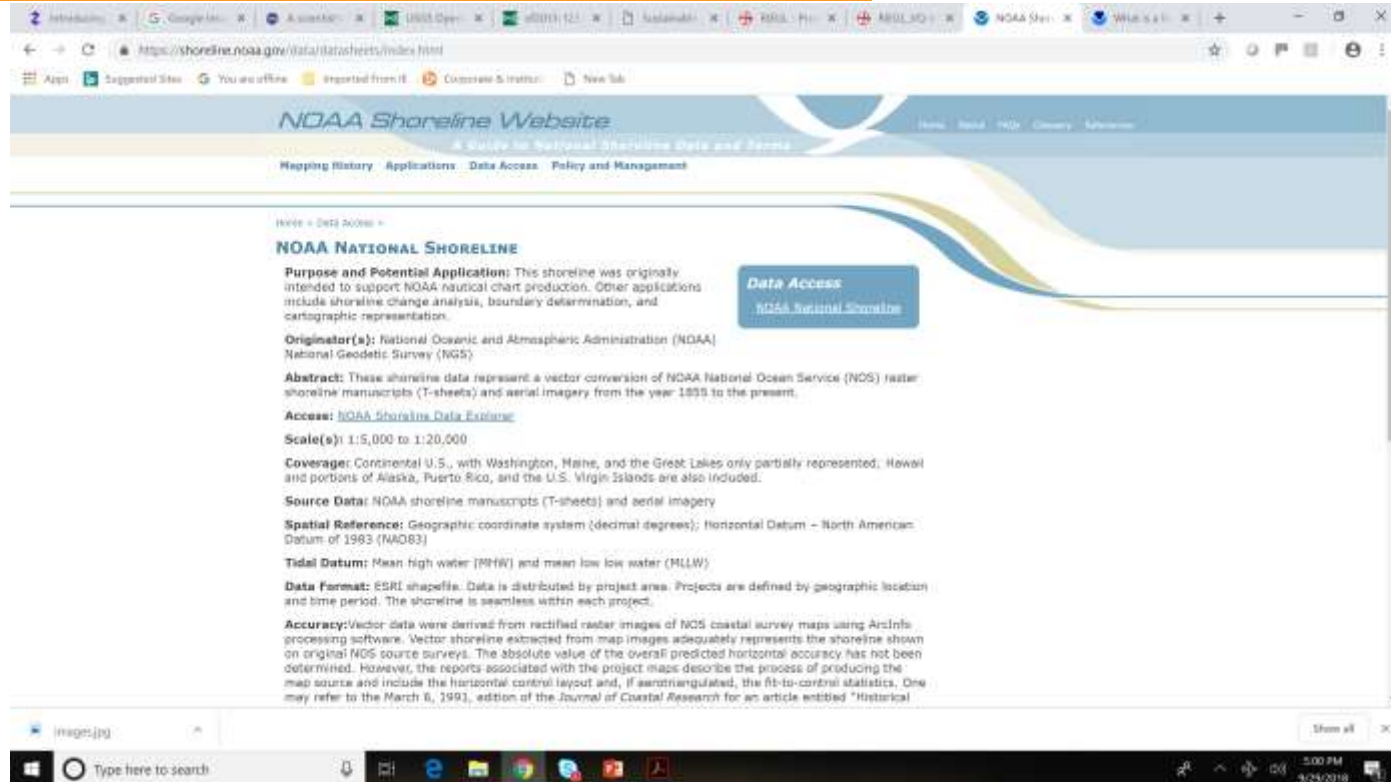
GeoSpatial data acquisition paradigm shift

- Establish the requirements
- Determine the political and economic drivers
- Remove organizational silos,
- Remove redundancy -map it once, not many times
- Determine the cycle and refresh rates
- Establish relevant standards
- Conduct capacity planning

NOAA Sea Level Rise Viewer –For Consumers



NOAA Data Distribution Portal



The screenshot shows a web browser window displaying the NOAA National Shoreline website. The browser's address bar shows the URL <https://shoreline.noaa.gov/data/datasheets/index.html>. The website header includes the NOAA logo and the text "NOAA National Shoreline". Below the header, there is a navigation menu with links: Home, About, FAQs, Contact, and Subscriptions. The main content area features a large blue button labeled "Data Access" and a link to "NOAA National Shoreline". The text on the page describes the purpose and potential application of the shoreline data, its origin, and provides details on its format, scale, and accuracy.

NOAA National Shoreline

Purpose and Potential Application: This shoreline was originally intended to support NOAA nautical chart production. Other applications include shoreline change analysis, boundary determination, and cartographic representation.

Originator(s): National Oceanic and Atmospheric Administration (NOAA) National Geodetic Survey (NGS)

Abstract: These shoreline data represent a vector conversion of NOAA National Ocean Service (NOS) raster shoreline manuscripts (T-sheets) and aerial imagery from the year 1855 to the present.

Access: [NOAA Shoreline Data Explorer](#)

Scale(s): 1:5,000 to 1:20,000

Coverage: Continental U.S., with Washington, Maine, and the Great Lakes only partially represented; Hawaii and portions of Alaska, Puerto Rico, and the U.S. Virgin Islands are also included.

Source Data: NOAA shoreline manuscripts (T-sheets) and aerial imagery

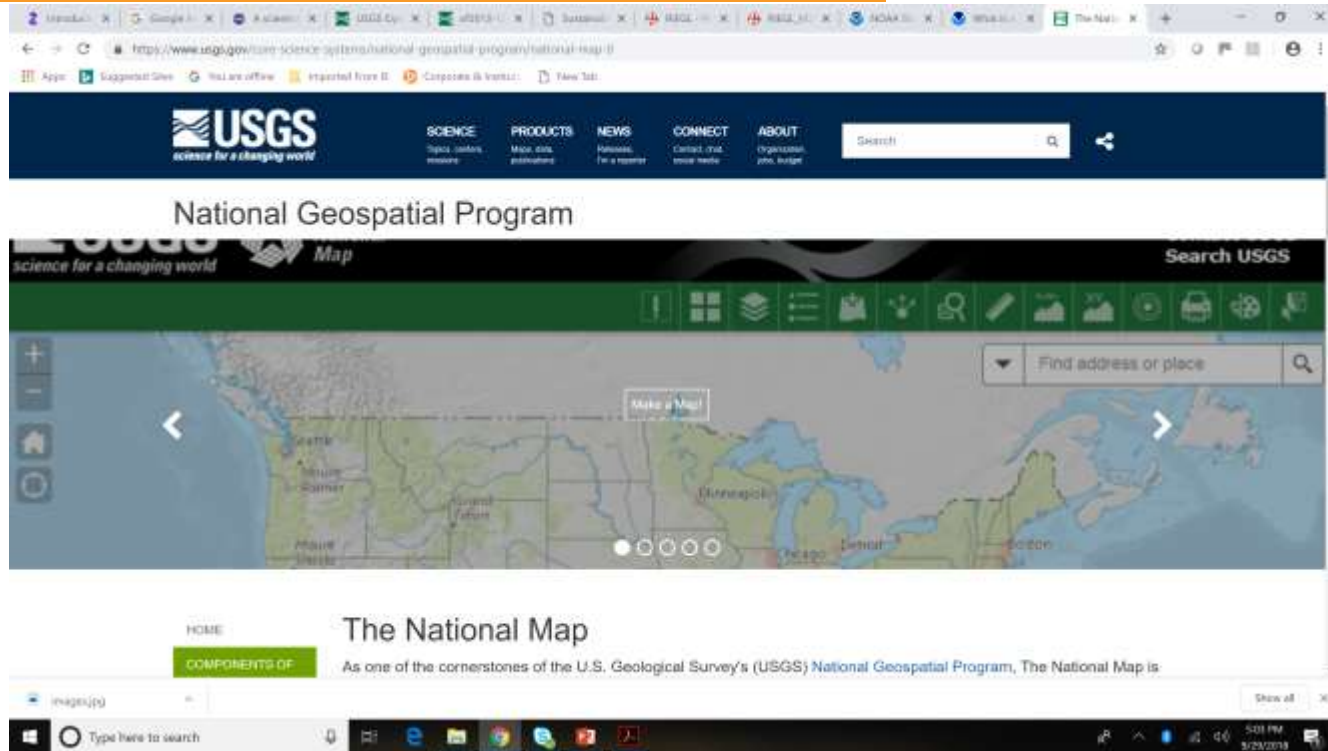
Spatial Reference: Geographic coordinate system (decimal degrees); Horizontal Datum – North American Datum of 1983 (NAD83)

Tidal Datum: Mean high water (MHW) and mean low low water (MLLW)

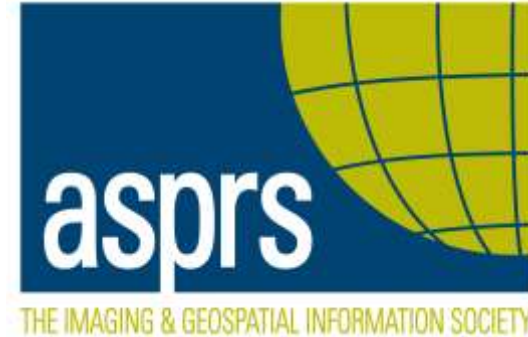
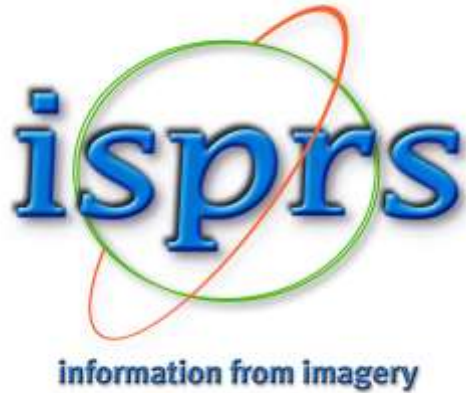
Data Format: ESRI shapefile. Data is distributed by project area. Projects are defined by geographic location and time period. The shoreline is seamless within each project.

Accuracy: Vector data were derived from rectified raster images of NGS coastal survey maps using ArcInfo processing software. Vector shoreline extracted from map images adequately represents the shoreline shown on original NGS source surveys. The absolute value of the overall predicted horizontal accuracy has not been determined. However, the reports associated with the project maps describe the process of producing the map source and include the horizontal control layout and, if aerotriangulated, the fit-to-control statistics. One may refer to the March 6, 1991, edition of the *Journal of Coastal Research* for an article entitled "Historical

USGS DATA DISTRIBUTION PORTAL



Important Associations



U.S. Geospatial Association for Commercial Firms

MAPPS is the only national association of geospatial, mapping and photogrammetry firms with the following objectives:

- **Advocate** on Capitol Hill for sound geospatial policy and legislation
- **Expand** the geospatial market and create growth opportunities
- **Provide** professional recognition for innovation and projects
- **Increase** private sector use by government entities
- **Serve** as the voice of the private geospatial firms
- **Enhance** ability to participate in the free enterprise market
- **Promote** business interests and contest unfair competition
- **Offer** engaging business networking, professional knowledge exchange, and educational programs





Thank you for your kind attention!

