

NCDOT Coastal Inundation Points (Primary Roadways), March 2022 - NC Department of Transportation Geodatabase Feature Class



Tags interstates, highways, flooding, transportation, Eastern Seaboard, Atlantic Coast, resiliency, coastal, hurricanes, inundation, rivers, streams, East Coast, Hydraulics, Transportation, NCDOT, Environment, Location, North Carolina, ATLAS

Summary

This dataset was originally created in February 2022 as part of the Project ATLAS initiative at NCDOT to support the Hydraulics Unit with project delivery in the development phase.

This dataset visualizes primary road flooding potential along the North Carolina coast at various inundation depth levels above 0 ft (NAVD88).

Description

The NCDOT Coastal Inundation Points (Primary Roadways) dataset is a statewide point layer containing primary road flooding potential along the North Carolina coast. This is measured for various flood recurrence intervals measured as depth levels above 0 ft.

The layer is used to help understand road elevations in relation to flood events/inundation to help with planning, mitigation and emergency response. It allows ATLAS users to understand road elevations in relation to a project. This data is not meant to represent real-time forecasting or surge modeling.

The dataset comprises points every 50 feet along primary roads.

Points were generated every 50 feet along coastal secondary roads. Each point was assigned a road elevation from a LiDAR-based road elevation dataset provided by NC Emergency Management. Inundation extents were identified by extracting raster cells less than or equal to the desired inundation profile from LiDAR-based high-resolution digital elevation rasters. If a road point fell within the inundation area of a given profile, the water surface elevation was subtracted from the road elevation to determine whether the road flooded and, if so, to what degree. This methodology does not factor in hydraulic connectivity to waterbodies and is not based on mathematical storm surge models. Areas of open water are not included in inundation mapping.

Datasets developed under Project ATLAS do not replace any Hydraulics Unit field work for future projects and may not be used as a replacement for site visits / field surveys by licensed professionals and hence should be used only as a supporting platform for decision making. Use of this dataset for project scoping or screening is merely pre-decisional.

Credits

The Hydraulics Unit within NCDOT was tasked to create this dataset.

Maintenance of this dataset is handled by the Hydraulics Unit. Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

Use limitations

The North Carolina Department of Transportation shall not be held liable for any errors in this data. This includes errors of omission, commission, errors concerning the content of the data, and relative and positional accuracy of the data. This data cannot be construed to be a legal document. Primary sources from which this data was compiled must be consulted for verification of information contained in this data.

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Extent

West -78.677661

East -75.424321

North 36.586442

South 33.828479

Scale Range

Maximum (zoomed in) 1:5,000

Minimum (zoomed out) 1:625,000

Topics and Keywords

Themes or categories of the resource Boundaries, Inland Waters, Location, Transportation, Environment

Content type Downloadable Data

Theme keywords interstates, highways, flooding, transportation, Eastern Seaboard, Atlantic Coast, resiliency, coastal, NCDOT, hurricanes, inundation, rivers, streams, East Coast, Hydraulics, Transportation, NCDOT, Environment, Location, North Carolina, ATLAS, North Carolina

Thesaurus

Title User

Creation date 2022-02-08 00:00:00

Publication date 2022-03-31 00:00:00

Place keywords North Carolina

Thesaurus

Title User

Creation date 2022-02-08 00:00:00

Publication date 2022-03-31 00:00:00

Citation

Title NCDOT Coastal Inundation Points (Primary Roadways), March 2022 - NC Department of Transportation

Creation date 2022-02-08 00:00:00

Publication date 2022-03-31 00:00:00

Presentation formats digital map

Citation Contacts

Responsible party - resource provider

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

Address

Delivery point 4101 Capital Boulevard

City Raleigh

Administrative area NC

Postal code 27604

Country US

e-mail address ATLAS@ncdot.gov

Hours of service

9:00am – 5:00pm Monday - Friday

Contact instructions

Please send an email with any issues, questions or comments regarding the ATLAS Data Search Tool, ATLAS Screening Tool or ATLAS Workbench. If it is an immediate need, please call the contact number or indicate as such in the subject line in an email.

Responsible party - originator

Organization's name North Carolina Department of Transportation - Hydraulics Unit

Contact's position State Hydraulics Engineer

Contact information

Phone

Voice 919-707-6700

Address

Delivery point 1000 Birch Ridge Drive

City Raleigh

Administrative area NC

Postal code 27610

Country US

e-mail address ATLAS@ncdot.gov

Hours of service

9:00am – 5:00pm Monday - Friday

Responsible party - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

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Resource Details

Dataset languages English (UNITED STATES)

Dataset character set utf8 - 8 bit UCS Transfer Format

Status completed

Spatial representation type vector

Processing environment Version 6.2 (Build 9200) ; Esri ArcGIS 10.5.1.7333

Credits

The Hydraulics Unit within NCDOT was tasked to create this dataset.

Maintenance of this dataset is handled by the Hydraulics Unit. Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

Extents

Extent

Geographic extent

Bounding rectangle

West longitude -84.385099

East longitude -75.418397

South latitude 33.734997

North latitude 36.61497

Extent contains the resource Yes

Extent

Description

Data collection is complete.

Geographic extent

Bounding rectangle

West longitude -84.125201

East longitude -75.426058

South latitude 33.829738

North latitude 36.556356

Extent contains the resource Yes

Temporal extent

Beginning date 2022-02-08 00:00:00

Ending date 2022-02-08 00:00:00

Extent

Geographic extent

Bounding rectangle

West longitude -84.330352

East longitude -75.419514

South latitude 33.744722

North latitude 36.589925

Extent contains the resource Yes

Extent

Geographic extent

Bounding rectangle

Extent type Extent used for searching

West longitude -78.677661

East longitude -75.424321

North latitude 36.586442

South latitude 33.828479

Extent contains the resource Yes

Extent in the item's coordinate system

westBL 2097854.999210

eastBL 3050442.022254

southBL 46866.526149

northBL 1032569.276286

exTypeCode Yes

Resource Points of Contact

Point of contact - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

Address

Delivery point 4101 Capital Boulevard
City Raleigh
Administrative area NC
Postal code 27604
Country US
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Resource Maintenance

Resource maintenance

Update frequency as needed

Scope of the updates dataset

Other maintenance requirements

The Hydraulics Unit within NCDOT was tasked to create this dataset.

Maintenance of this dataset is handled by the Hydraulics Unit. Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

Maintenance contact - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

Address

Type

Delivery point 4101 Capital Boulevard

City Raleigh

Administrative area NC

Postal code 27604

Country US

e-mail address ATLAS@ncdot.gov

Hours of service

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Resource Constraints

Legal constraints

Limitations of use

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Security constraints

Classification unclassified

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Constraints

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Spatial Reference

ArcGIS coordinate system

Type Projected

Geographic coordinate reference GCS_North_American_1983

Projection NAD_1983_StatePlane_North_Carolina_FIPS_3200_Feet

Coordinate reference details

ProjectedCoordinateSystem

WKID 102719

XOrigin -121841900

YOrigin -93659000

XYScale 18939.39393939394

ZOrigin -100000

ZScale 10000
MOrigin -100000
MScale 10000
XYTolerance 0.00052800000000000004
ZTolerance 0.001
MTolerance 0.001
HighPrecision true
LatestWKID 2264
WKT
PROJCS["NAD_1983_StatePlane_North_Carolina_FIPS_3200_Feet",GEOGCS["GCS_North_American_1983",DATUM["79.0"],PARAMETER["Standard_Parallel_1",34.33333333333334],PARAMETER["Standard_Parallel_2",36.16666666666667],

Reference system identifier

Value 2264
Codespace EPSG
Version 6.12(9.0.0)

Spatial Data Properties

Vector

Level of topology for this dataset geometry only
Geometric objects
Feature class name CoastalInundationPointsPrimaries
Object type point
Object count 3562238

ArcGIS Feature Class Properties

Feature class name CoastalInundationPointsPrimaries
Feature type Simple
Geometry type Point
Has topology FALSE
Feature count 3562238
Spatial index TRUE
Linear referencing FALSE

Data Quality

Scope of quality information

Resource level dataset

Data quality report - Completeness omission

Data quality measure reference

Measure description

After processing, the dataset is checked for drawing display and number of records and file sizes compared

with source materials.

Conformance test results

Test passed Yes

Result explanation

Pass

Product specification

Title NCDOT Geospatial Data Specifications

Creation date 2021-12-15 00:00:00

Publication date 2022-01-28 00:00:00

Data quality report - Conceptual consistency

Data quality measure reference

Measure description

The dataset is converted to file geodatabase (FGDB) format using tools in ArcGIS. The geometry is checked, and if needed repaired.

Conformance test results

Test passed Yes

Result explanation

Pass

Product specification

Title NCDOT Geospatial Data Specifications

Creation date 2021-12-15 00:00:00

Publication date 2022-01-28 00:00:00

Data quality report - Quantitative attribute accuracy

Data quality measure reference

Measure description

A contractor created the layer using numerous manual and automated checks as well as QA/QC of the layers used in creation and the final product by NCDOT personnel. The original layers had gone through the normal process from NC Emergency Management to assure quality.

Conformance test results

Test passed Yes

Result explanation

Pass

Product specification

Title NCDOT Geospatial Data Specifications

Creation date 2021-12-15 00:00:00

Publication date 2022-01-28 00:00:00

Lineage

Lineage statement

Points were generated every 50 feet along primary roads.

Each point was assigned a road elevation from a LiDAR-based road elevation dataset provided by NC Emergency Management.

If a road point fell within the greatest floodplain extent (100-yr or 500-yr), the water surface elevation was subtracted from the road elevation to determine whether the road flooded and, if so, to what degree.

Bridges, overpasses, and areas of open water are not included in this dataset.

Roads that were analyzed but did not have inundation impacts are not included in this dataset.

Analysis is based on NCDOT's 2021 Q2 road network and 2014-2018 LiDAR.

Process step

Description

Geodatabase was forwarded on to the GIS Unit for publishing as part of data for project ATLAS.

Process contact - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

Address

Delivery point 4101 Capital Boulevard

City Raleigh

Administrative area NC

Postal code 27604

Country US

e-mail address ATLAS@ncdot.gov

Hours of service

9:00am – 5:00pm Monday - Friday

Contact instructions

Please send an email with any issues, questions or comments regarding the ATLAS Data Search Tool, ATLAS Screening Tool or ATLAS Workbench. If it is an immediate need, please call the contact number or indicate as such in the subject line in an email.

Process step

Description

Data was reviewed in ESRI's Data Reviewer tool to verify geometry. No legitimate errors were found.

Process contact - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling

Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

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Distribution

Distributor

Contact information - distributor

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling

Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

Address

Delivery point 4101 Capital Boulevard

City Raleigh

Administrative area NC

Postal code 27604

Country US

e-mail address ATLAS@ncdot.gov

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Distribution format

Name File Geodatabase Feature Class

Version 10.5

Fields

Details for object CoastalInundationPointsPrimaries

Type Feature Class

Row count 3562238

Definition

Primary Road flooding potential along the North Carolina coast

Definition source

NCDOT

Field OBJECTID

Alias OBJECTID

Data type OID

Width 4

Precision 0

Scale 0

Field description

Internal feature number.

Description source

Esri

Description of values

Sequential unique whole numbers that are automatically generated.

Field Shape

Alias Shape

Data type Geometry

Width 0

Precision 0

Scale 0

Field description

Feature geometry.

Description source

Esri

Description of values

Coordinates defining the features.

Field Division

Alias Division
Data type SmallInteger
Width 2
Precision 0
Scale 0

Field description
The NCDOT highway division number.

Description source
NCDOT

Field RouteID

Alias RouteID
Data type String
Width 20
Precision 0
Scale 0

Field description
An 11-digit route identifier, derived from NCDOT’s NCRoutes feature class.

Description source
NCDOT

Field RouteClass

Alias RouteClass
Data type String
Width 5
Precision 0
Scale 0

Field description
The route classification, derived from NCDOT’s NCRoutes feature class. A value of 1 is an interstate. A value of 2 is a U.S. route. A value of 3 is an NC route. Larger values are secondary routes.

Description source
NCDOT

List of values

- Value** 1
Description Interstate
Enumerated domain value definition source NCDOT
- Value** 2
Description US Route
Enumerated domain value definition source NCDOT
- Value** 3

Description	NC Route	
Enumerated domain value definition source		NCDOT
Value	4	
Description	Secondary Route	
Enumerated domain value definition source		NCDOT
Value	5	
Description	Non-System	
Enumerated domain value definition source		NCDOT
Value	6	
Description	Other State Agency Route	
Enumerated domain value definition source		NCDOT
Value	7	
Description	Federal Route	
Enumerated domain value definition source		NCDOT
Value	80	
Description	Ramp	
Enumerated domain value definition source		NCDOT

Field RouteName

Alias	RouteName
Data type	String
Width	20
Precision	0
Scale	0
Field description	The route name, derived from NCDOT’s NCRoutes feature class.

Description source	NCDOT
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Field County

Alias	County
Data type	String
Width	20
Precision	0
Scale	0
Field description	The name of the North Carolina county the point is located in.

Description source	NCDOT
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Field RoadElev

Alias	RoadElevation
Data type	Double
Width	8

Precision 0

Scale 0

Field description

The LiDAR-based elevation of the road at the point location.

Description source

NCDOT

Field WSE

Alias WSE

Data type Double

Width 8

Precision 0

Scale 0

Field description

The water surface elevation (WSE) associated with the inundation profile, relative to 0 ft (NAVD88). Units are in NAVD88 feet.

Description source

NCDOT

Field Depth

Alias Depth

Data type Double

Width 8

Precision 0

Scale 0

Field description

The depth of flooding on top of the road, in feet. If the road elevation is 2 ft and the inundation profile is 5 ft, then the depth of water on the road would be 3 ft.

Description source

NCDOT

Field DepthCat

Alias DepthCat

Data type SmallInteger

Width 2

Precision 0

Scale 0

Field description

Categorizes depth values based on their severity, ranging from 1 to 4. A value of 1 represents minimal flooding, 0.1 to 0.5 ft, which may permit continued use of the road. A value of 2, for 0.5 to 2 ft of flooding, represents severe flooding that would bar passage for most vehicles. A value of 3, for 2 to 5 ft of flooding, denotes roads impassable to all but military and emergency response vehicles. A value of 4 represents heavy

flooding, over 5 ft, which renders the road impassable for all vehicles.

Description source

NCDOT

List of values

Value 1

Description Minimal flooding, 0.1 to 0.5 ft of flooding, may permit continued use of the road.

Enumerated domain value definition source NCDOT

Value 2

Description 0.5 to 2 ft of flooding, severe flooding that would bar passage for most vehicles.

Enumerated domain value definition source NCDOT

Value 3

Description 2 to 5 ft of flooding, roads impassable to all but military and emergency response vehicles.

Enumerated domain value definition source NCDOT

Value 4

Description Heavy flooding, over 5 ft, renders the road impassable for all vehicles.

Enumerated domain value definition source NCDOT

Field EvacRt

Alias EvacuationRoute

Data type String

Width 5

Precision 0

Scale 0

Field description

Whether the route is an established evacuation route. Evacuation routes can accommodate heavy traffic volumes and higher speeds.

Description source

NCDOT

List of values

Value Y

Description Yes, Evacuation Route

Enumerated domain value definition source NCDOT

Value N

Description No, not an Evacuation Route

Enumerated domain value definition source NCDOT

Metadata Details

Metadata language English (UNITED STATES)

Metadata character set utf8 - 8 bit UCS Transfer Format

Scope of the data described by the metadata dataset

Scope name dataset

Last update 2022-06-08

ArcGIS metadata properties

Metadata format ArcGIS 1.0

Metadata style ISO 19139 Metadata Implementation Specification

Standard or profile used to edit metadata ISO19139

Created in ArcGIS for the item 2026-08-26 14:16:43

Last modified in ArcGIS for the item 2022-06-08 14:55:52

Automatic updates

Have been performed Yes

Last update 2022-06-08 14:55:52

Metadata Contacts

Metadata contact - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

Contact information

Phone

Voice 919-707-6136

Address

Delivery point 4101 Capital Boulevard

City Raleigh

Administrative area NC

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Metadata Maintenance

Maintenance

Update frequency as needed

Other maintenance requirements

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Maintenance of this dataset is handled by the Hydraulics Unit. Support and maintenance of the enterprise spatial database where this data resides is handled by NCDIT's Transportation GIS Unit.

Maintenance contact - point of contact

Organization's name North Carolina Department of Transportation - EAU Mitigation and Modeling Unit

Contact's position Environmental Program Consultant

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Metadata Constraints

Security constraints

Classification unclassified

Classification system None

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Thumbnail and Enclosures

Thumbnail

Thumbnail type

Image file