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Inlet Atlas 2.0

Accessing Geomorphic Analysis Products with Enterprise Services

Charlene Sylvester, Dr. Kaitlyn McPherran, Matheus de Assis Bose, Loderay Bracero Marrero, and Dr. Justin Shawler



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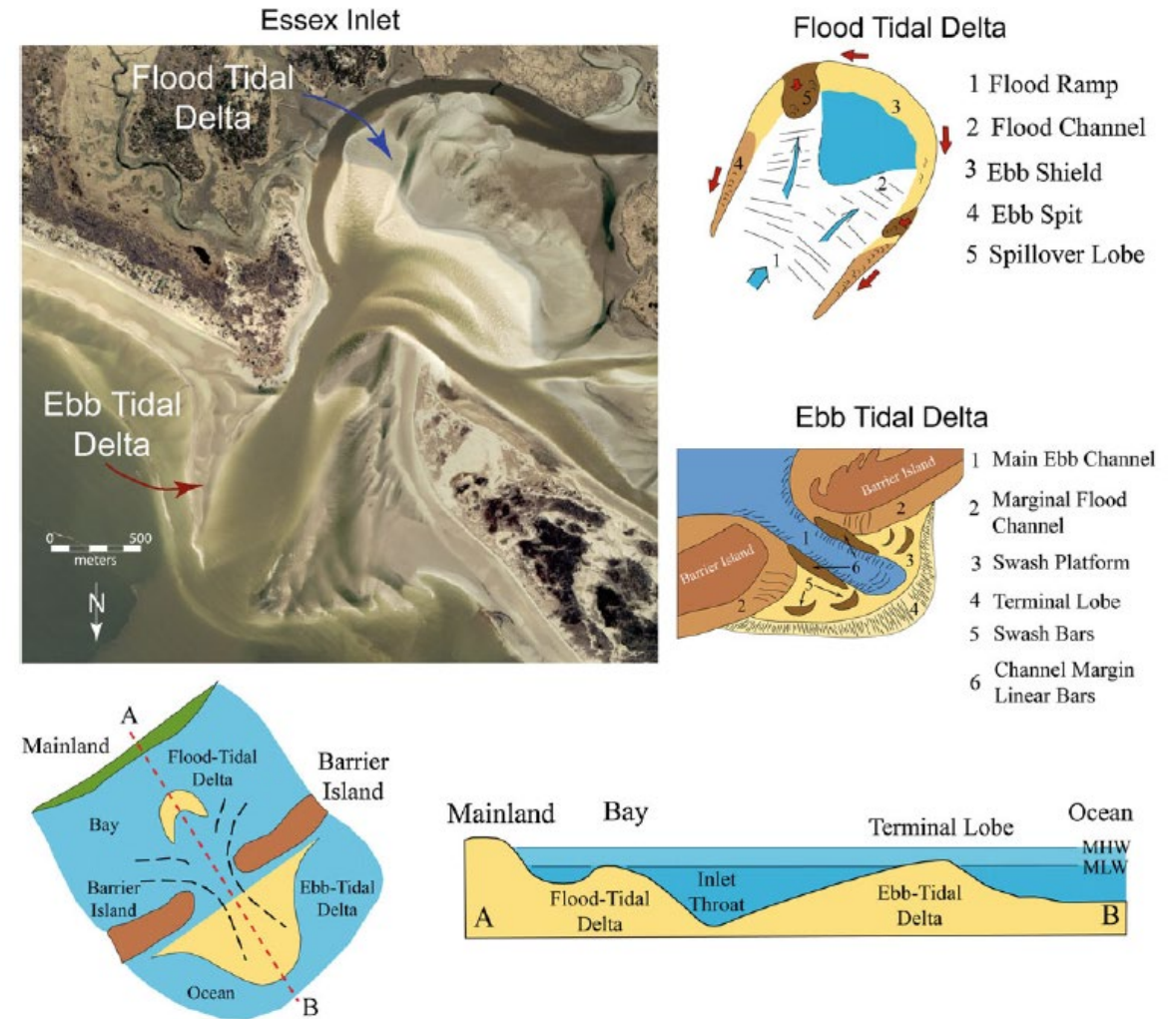
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Coastal Inlets

- Common feature on sandy barrier coasts
- Complex, rapidly changing geomorphology
- May quickly scour, infill, and migrate
- Drive regional sediment variability



Example tidal inlet morphologic features from Essex Inlet MA (Figure by FitzGerald and Buynevich (2021) in: Encyclopedia of Coastal Science)



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Coastal Inlets, cont.

- USACE maintains nearly 200 coastal inlets (USACE CIRP, 2025a)
- Provide millions of jobs and trillions of dollars in value to the nation (IWR, 2025)
- Dredges 223 Mcy/yr at cost of \$1.7B (total, including inlets) (USACE HQ, 2025)



Severe shoaling in the navigation channel of Manasquan Inlet NJ



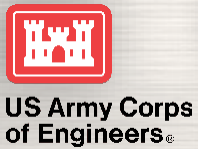
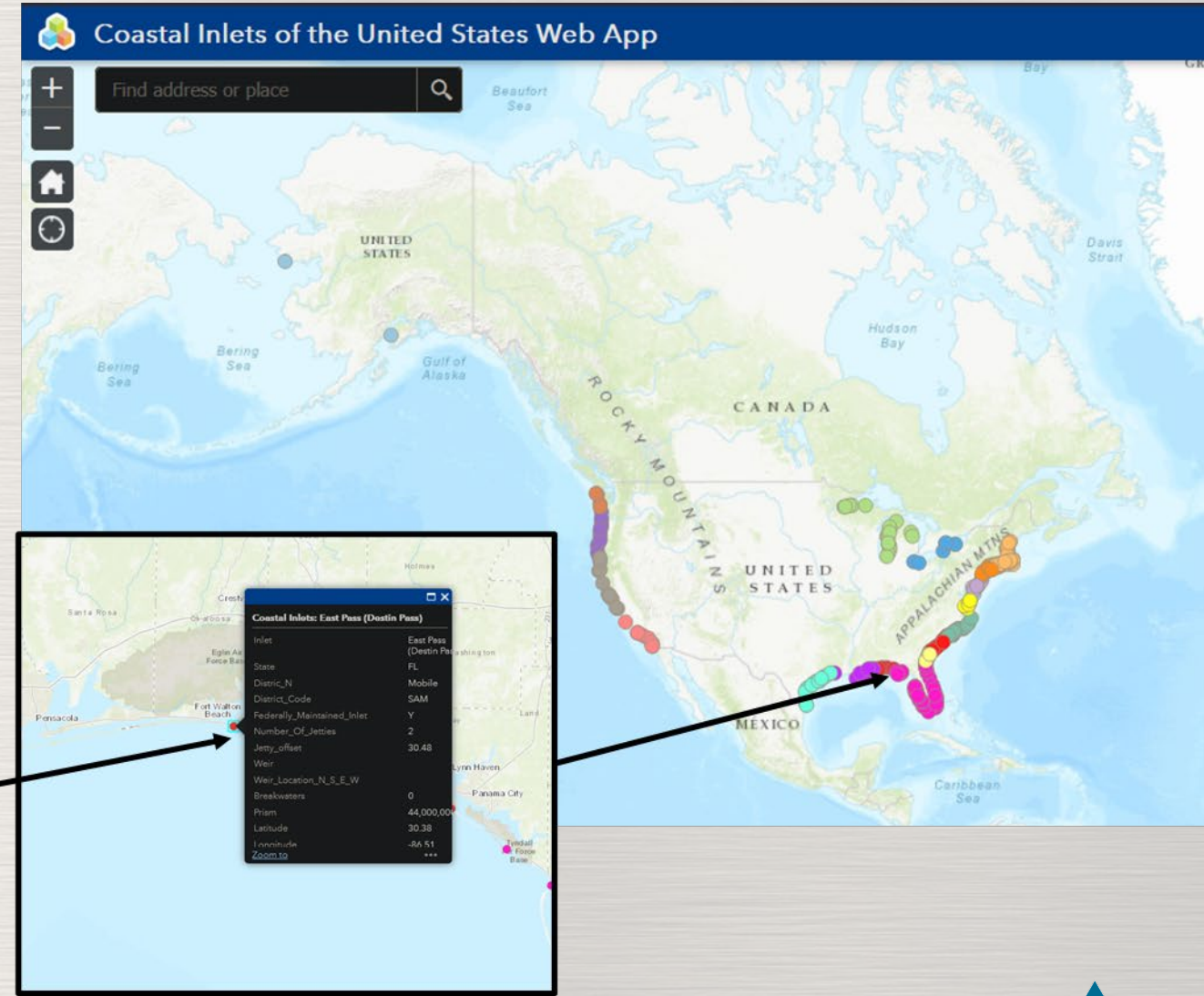


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CIRP US Coastal Inlet Atlas

- Database of info on federally maintained inlets
- Lacks ready made bathymetric datasets and geomorphometric data products
- Hosted on CHL's ArcGIS® Online Subscription
- Manual update and maintenance

Coastal Inlets: East Pass (Destin Pass)	
Inlet	East Pass (Destin Pass)
State	FL
District_N	Mobile
District_Code	SAM
Federally_Maintained_Inlet	Y
Number_Of_Jetties	2
Jetty_offset	30.48
Weir	
Weir_Location_N_S_E_W	
Breakwaters	0
Prism	44,000,000
Latitude	30.38
Longitude	-86.51
Zoom to	



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Expanding the Atlas

- High-resolution, repeat bathymetric maps
- Results from four geomorphometric analysis methods
 - Relative Relief (Wernette et al., 2016)
 - Geomorphons landform classification (Jasiewicz and Stepinski, 2013)
 - Chronostratigraphic analysis (Pearson et al., 2022)
 - Conformal Mapping analysis (Pearson et al., 2022)
- Enterprise Postgres Geodatabase hosted on RDE
- ESRI ArcGIS® Enterprise Portal web services, public maps and apps
- Spatio-Temporal Access Catalog (STAC)



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Modern data storage and dissemination architecture for efficient discovery, access, use, and maintenance of R&D products for field practitioners and researchers

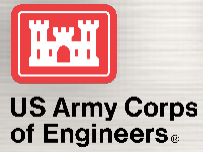
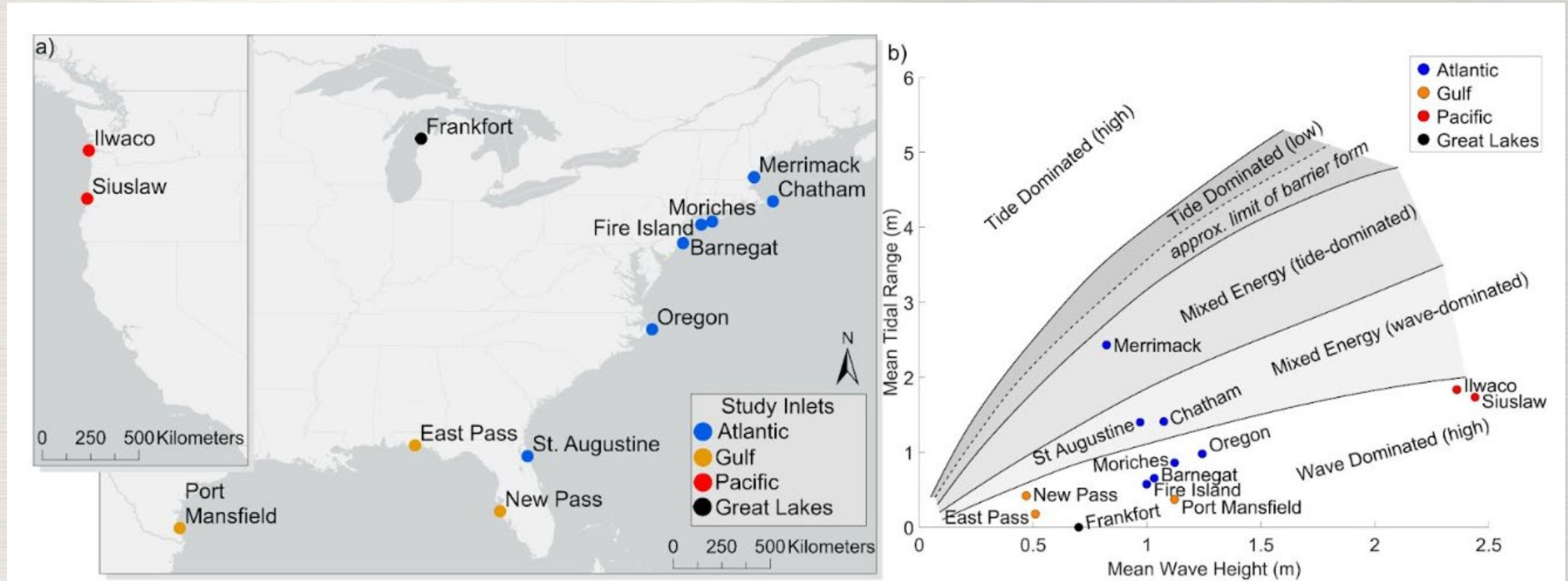
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Study Sites



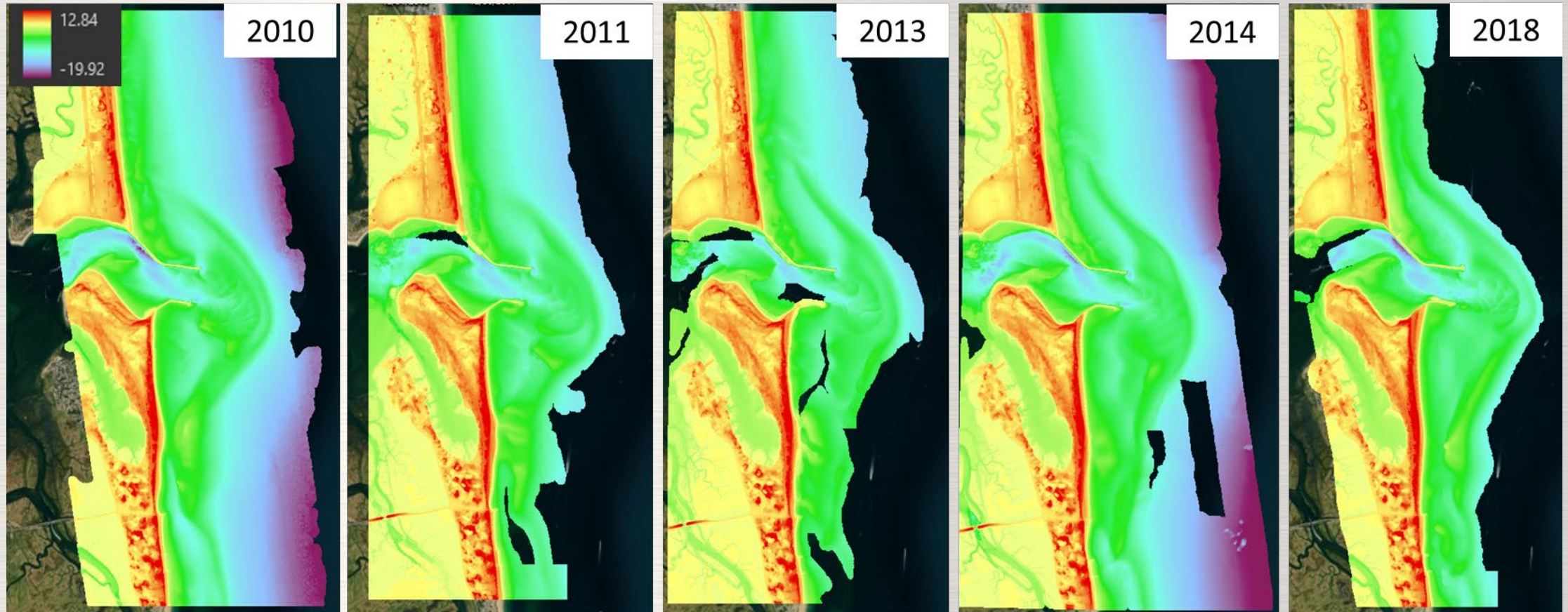
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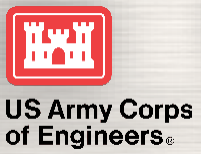


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US Tidal Inlet Atlas 2.0



Merrimack MA topobathymetric lidar elevation data (m) (NCMP).



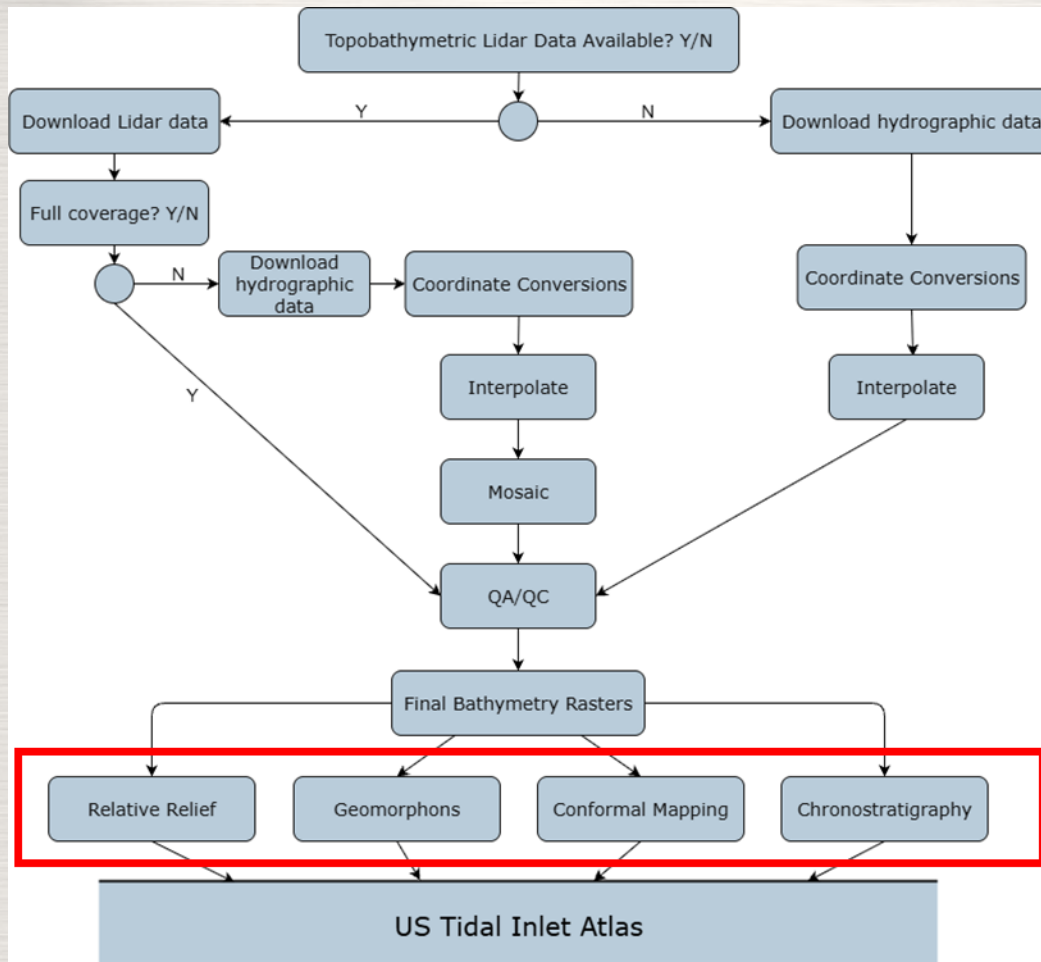
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Geomorphic Analyses



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ERDC/CHL CHETN-IV-132
APRIL 2025

Tools for Inlet Geomorphic Mapping: An Overview and Application at East Pass, Florida and Fire Island Inlet, New York

by Justin L. Shawler, Charlene S. Sylvester, Kaitlyn A. McPherran,
Matheus de Assis Bose, and Rekea Williams



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Jasiewicz, Jaroslaw, and Tomasz F. Stepinski. 2013. "Geomorphons—A Pattern Recognition Approach to Classification and Mapping of Landforms." *Geomorphology* 182: 147–56. <https://doi.org/10.1016/j.geomorph.2012.11.005>.

Pearson, S. G., E. P. L. Elias, B. C. van Prooijen, H. van der Vegt, A. J. F. van der Spek, and Z. B. Wang. 2022. "A Novel Approach to Mapping Ebb-Tidal Delta Morphodynamics and Stratigraphy." *Geomorphology* 405: 108185. <https://doi.org/10.1016/j.geomorph.2022.108185>.

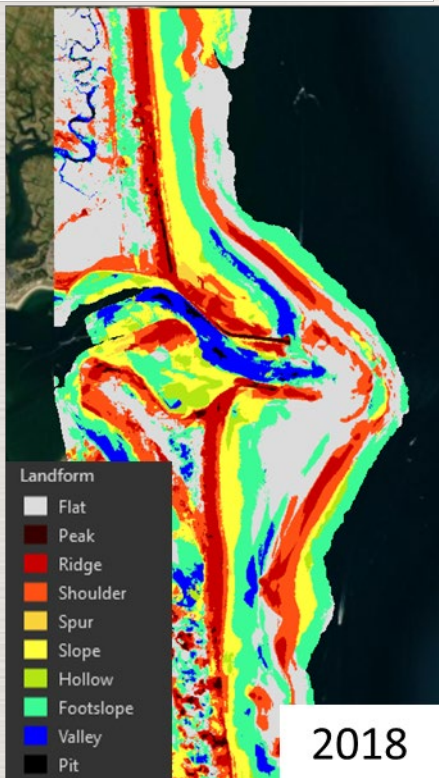
Wernette, Phillipe, Chris Houser, and Michael P. Bishop. 2016. "An Automated Approach for Extracting Barrier Island Morphology from Digital Elevation Models." *Geomorphology* 262: 1–7. <https://doi.org/10.1016/j.geomorph.2016.02.024>.



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Data Products

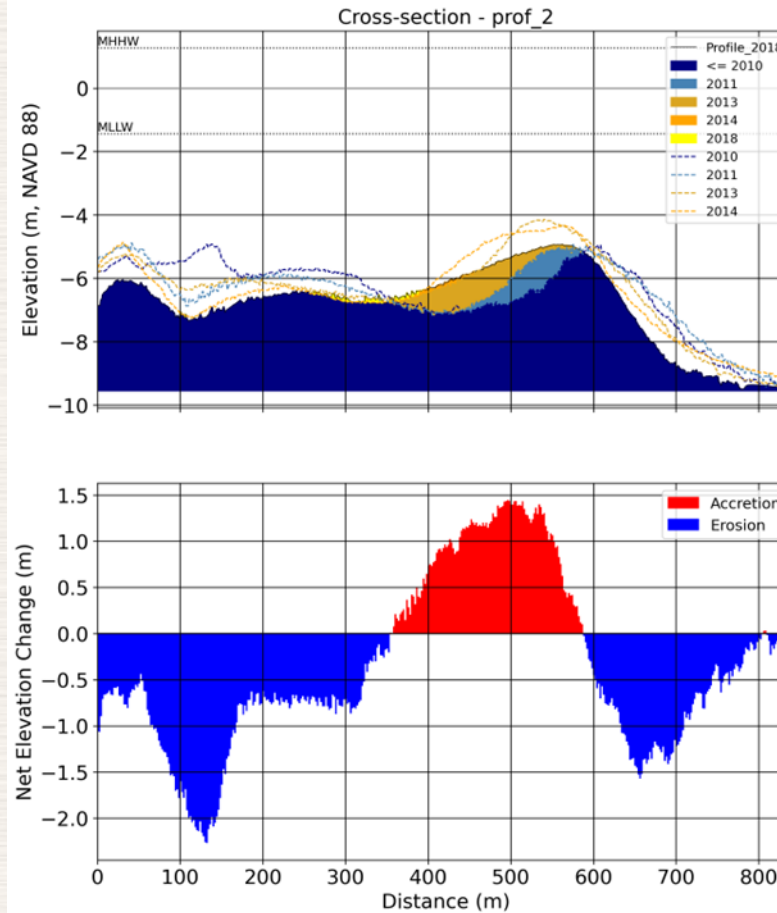
Geomorphon Landform Classification



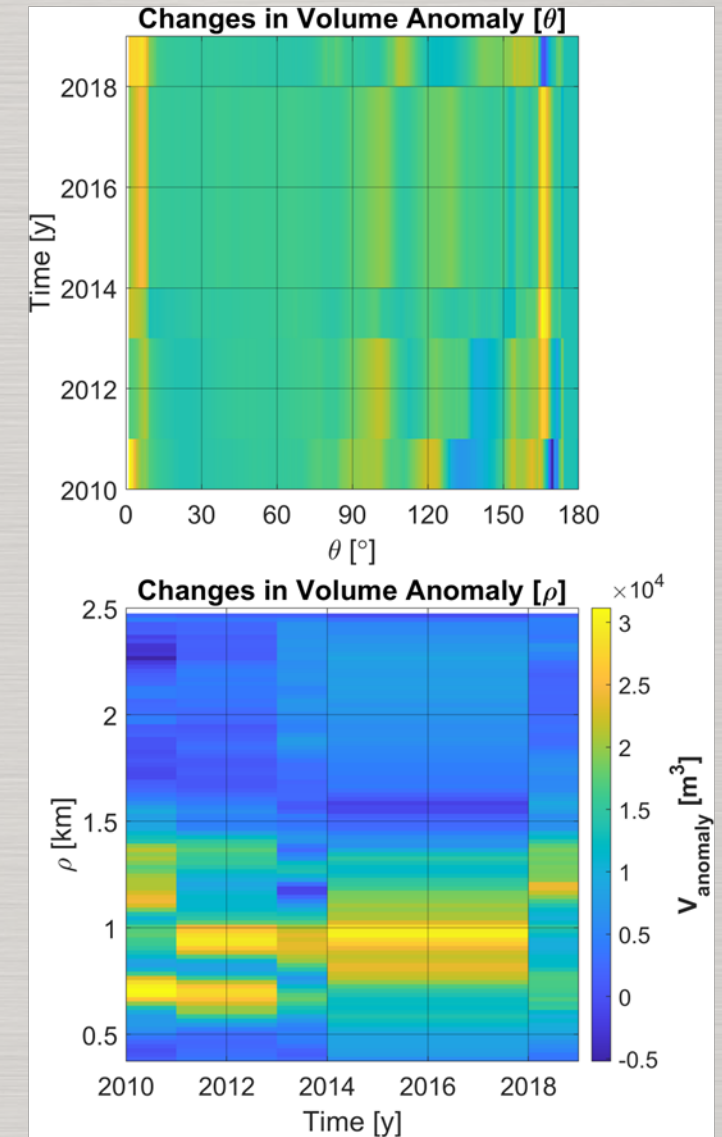
Relative Relief Analysis



Chronostratigraphic Analysis



Conformal Mapping Analysis



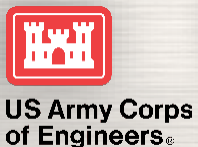
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Potential Management Applications

- Identify sediment borrow and placement areas for BUDM.
- Track shoal migration for targeted mapping efforts.
- Provide data and information for hydrodynamic and sediment transport models to improve numerical modeling efforts.
- Identify areas of problematic shoaling outside the narrow bounds of the federal navigation channel which still affect navigation.
- Estimate post-dredge recharge rates to optimize dredging strategies.
- Aid in the siting and scoping stages of coastal engineering projects.
- Identify bypassing directions and rates to incorporate inlet-scale processes into regional sediment management practices.
- Inclusion into other ready-made USACE tools such as the Sediment Budget Analysis System (USACE CIRP, 2025b).

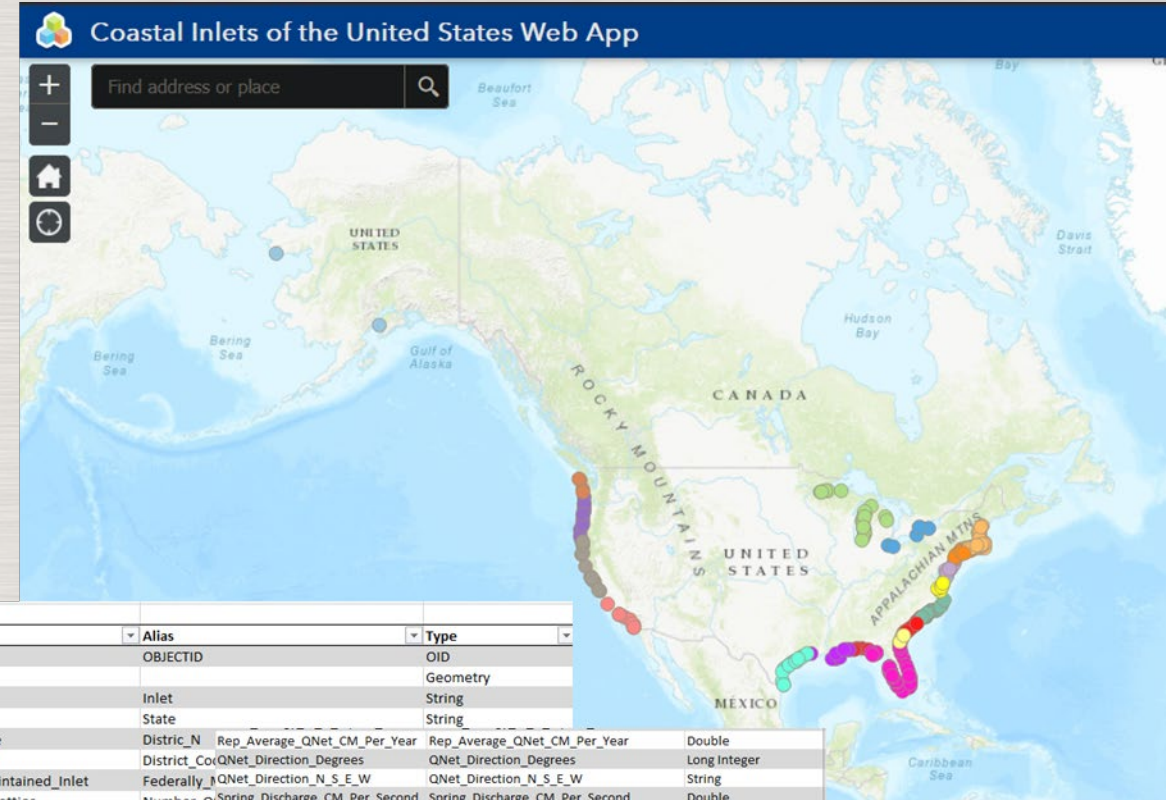




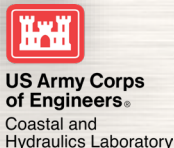
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Existing Inlets Atlas

- Storage – Hosted feature layer in ArcGIS® Online, consuming minor amount of ESRI credits
- One primary point feature class with all attributes
- Data is disconnected from authoritative data sources, requiring manual update and maintenance of feature layer.
- Backup - Copies of data exist across MS Teams and local machines. Which source is authoritative? Current?



Field			
Name	Alias	Type	
OBJECTID	OBJECTID	OID	
Shape		Geometry	
Inlet_Name	Inlet	String	
State	State	String	
District_Name	District_N	Rep_Average_QNet_CM_Per_Year	Rep_Average_QNet_CM_Per_Year
District_Code	District_Coi	QNet_Direction_Degrees	QNet_Direction_Degrees
Federally_Maintained_Inlet	Federally_M	QNet_Direction_N_S_E_W	QNet_Direction_N_S_E_W
Number_Of_Jetties	Number_O	Spring_Discharge_CM_Per_Second	Spring_Discharge_CM_Per_Second
Jetty_offset	Jetty_offse	Avg_River_Discharge_CM_Per_Sec	Avg_River_Discharge_CM_Per_Sec
Weir	Weir	Max_River_Discharge_CM_Per_Sec	Max_River_Discharge_CM_Per_Sec
Weir_Location_N_S_E_W	Weir_Locat	Median_Grain_Size_D50_MM	Median_Grain_Size_D50_MM
Breakwaters	Breakwater	Channel_Cross_Sectional_Area	Channel_Cross_Sectional_Area
Prism	Prism	Minimum_Cross_Sectional_Width	Minimum_Cross_Sectional_Width
Latitude	Latitude	Distance_Offshore_KM	Distance_Offshore_KM
Longitude	Longitude	Distance_Downdraft_Attachment	Distance_Downdraft_Attachment
Ebb_Tidal_Delta_Volume_CM	Ebb_Tidal_I	Distance_Updraft_Attachment	Distance_Updraft_Attachment
Flood_Tidal_Delta_Volume_CM	Flood_Tidal	Avg_Annual_Entrance_Dredging	Avg_Annual_Entrance_Dredging
Minimum_Width_Meters	Minimum_M	Min_Annual_Entrance_Dredging	Min_Annual_Entrance_Dredging
WIS_Station_Number	WIS_Station	Max_Annual_Entrance_Dredging	Max_Annual_Entrance_Dredging
WIS_Station_Latitude	WIS_Station	Maint_Dredge_Depth_OverBar	Maint_Dredge_Depth_OverBar
WIS_Station_Longitude	WIS_Station	Maint_Dredge_Width_OverBar	Maint_Dredge_Width_OverBar
WIS_Station_Depth_Meters	WIS_Station	Advance_Dredge_Depth_OverBar	Advance_Dredge_Depth_OverBar
Mean_Wave_Height_Hmo_Meters	Mean_Wav	Maint_Entrance_Channel_Depth	Maint_Entrance_Channel_Depth
Mean_Peak_Period_Tp_Seconds	Mean_Peak	Maint_Entrance_Channel_Width	Maint_Entrance_Channel_Width
Wave_Energy_Ef_N_MperS_M	Wave_Ener	Advance_Entrance_Dredging	Advance_Entrance_Dredging
		Referenced_Wave_Height	Referenced_Wave_Height
		Rep_Wave_Period	Rep_Wave_Period
		Rep_Minimum_QNET	Rep_Minimum_QNET
		Rep_Maximum_QNET	Rep_Maximum_QNET
		Rep_Average_QGross	Rep_Average_QGross
		Rep_Minimum_QGross	Rep_Minimum_QGross



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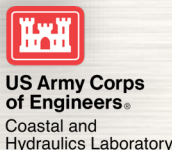
Inlets Atlas 2.0

Existing Atlas

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- Backup - Copies of data exist across MS Teams and local machines. Which source is authoritative? Current?

Inlets Atlas 2.0

- Storage – Enterprise geodatabase hosted on ERDC RDE network in partnership with USACE CorpsCam
- SDSFIE-compliant feature classes, tables, relationship classes, and metadata
- Authoritative data in the Enterprise geodatabase stays in sync with web services and applications.
- Backup - Routine backups of the geodatabase are accomplished by system admin.



Modern data storage and dissemination architecture for efficient discovery, access, use, and maintenance of R&D products for field practitioners and researchers





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Inlets Atlas 2.0 Enterprise Architecture

- Postgres geodatabase paired with ArcGIS® Enterprise on ERDC RDE network
 - Admin by Mike Forte
- SDSFIE-compliant when possible
 - Geospatial data – vector and raster datasets
 - Tabular data – business tables for metadata, related data, etc.
 - Relationship classes – establishes connections between geospatial and tabular data
- CHL THREDDS server and Spatio-Temporal Access Catalogs (STAC)
 - Support from Mitch Brown



PostgreSQL database paired with ArcGIS® Enterprise 11.3 Portal and Server

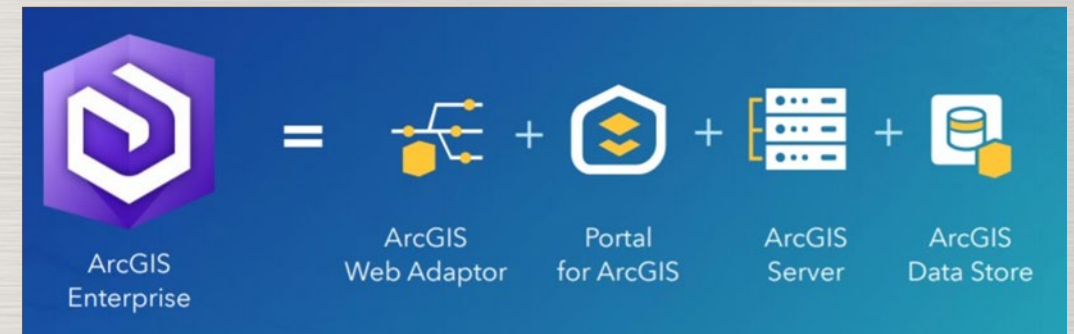
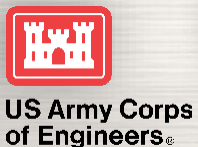


Image Source: Esri



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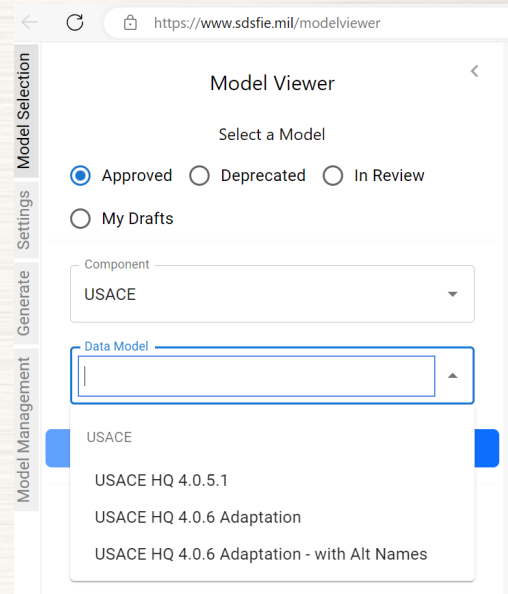




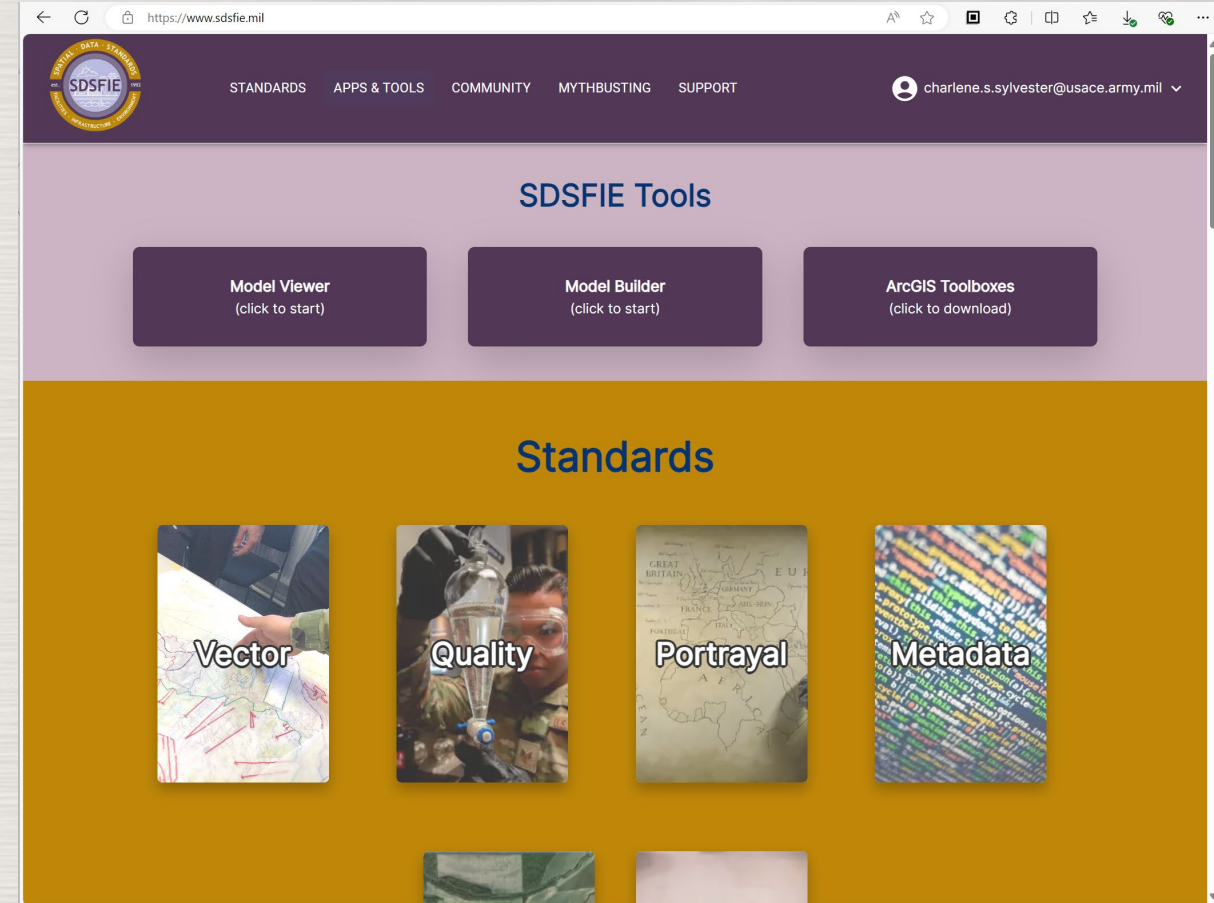
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SDSFIE Introduction

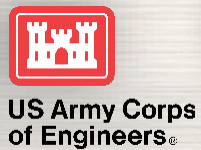
- Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)
- Family of standards and data models to promote **F**indable, **A**ccessible, **I**nteroperable, and **R**eusable (FAIR) data
- DODI 8130.01 Installation Geospatial Information and Services
- Installation and Civil Works geospatial data



USACE data models



Reference for more information [Microsoft PowerPoint - 1.2 SDFSIE Use and Governance 20230908.pptx](#) and [SDSFIE Website](#)



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SDSFIE Example

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Attributes:

Standardizes attribution

COLUMNS FILTERS DENSITY EXPORT

Model Name	Alias Name	Definition	Data Type
archiveIndicat...	Archive Indica...	Indicates whether a project is historic or active.	YesOrNo
districtCode	District Code	A 2 digit code that refers to the district.	String

Entity FIND IN TREE

USACE HQ 4.0.5.1

(point) Inlet Inform

Names

Model Name

ProjectReferencePoint

Alias Name

Project Reference, Point

Standardizes featur

Justification

Definition

The location of or area delineating a specific project expressed in point form. This is the v

Note

The entity specifically supports the following USACE programs and/or functional areas: CP

Other Properties

Default Geometry

P

Permissible Geometry

P

Gold

No

Superclass

ProjectReference



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From [SDSFIE M](#)

*CAC Log-in

Model Generation

No model selected, please return to the Model Selection tab to select a model and entities to generate.

Generate Physical Model

Generate Logical Model

Generate ASW from Model

Download ArcGIS Toolboxes

From [SDSFIE Model Builder](#)*

*CAC Log-in

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sdsld	Globally Uniq...	The unique identifier for all entities in the SDSFIE.	GUID
-------	------------------	---	------



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Inlets Atlas 2.0 Enterprise Geodatabase

‘CIRP’ geodatabase instance

User Roles

Controls who can view, edit (insert, update, or delete), and create datasets in the geodatabase

Feature Classes and Business Tables

sdsfie.mil/Apps&Tools

Physical Data Model (PDM) created with SDSFIE Model Builder Tool



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CIRP



Inlets Atlas 2.0 Enterprise Geodatabase

Enablers of open, linked, interoperable data

- Relationship classes used to extend attribution of SDSFIE feature classes and link datasets
- One-to-one
 - Inlet location to inlet information
- One-to-many
 - Inlet location to product footprints
- Globally-unique identifiers are used for primary keys and foreign keys

Geoprocessing

Create Relationship Class

This tool modifies the input data.

Parameters

Origin Table
Project Reference, Point

Destination Table
ProjectReferencePointInfo

Output Relationship Class
cirp.cirp_owner.ProjectReferencePoint_ProjectReferencePointInfo

Relationship Type
Simple

Forward Path Label
cirp.cirp_owner.ProjectReferencePointInfo

Backward Path label
cirp.cirp_owner.ProjectReferencePoint

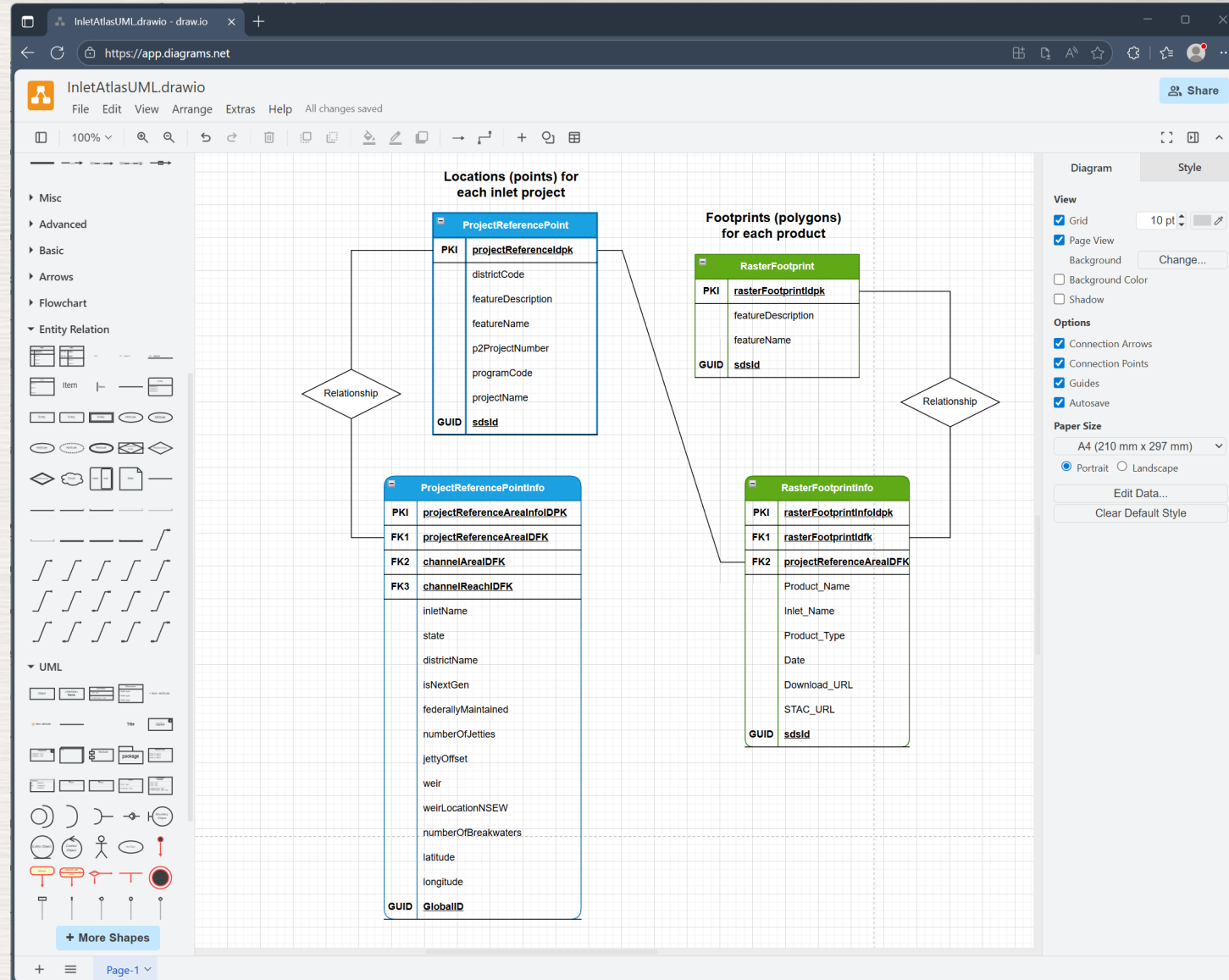
Message Direction
None (no messages propagated)

Cardinality
One to one (1:1)

☐ Relationship class is attributed

Origin Primary Key
projectreferenceidpk

Origin Foreign Key
projectreferencepointidfk



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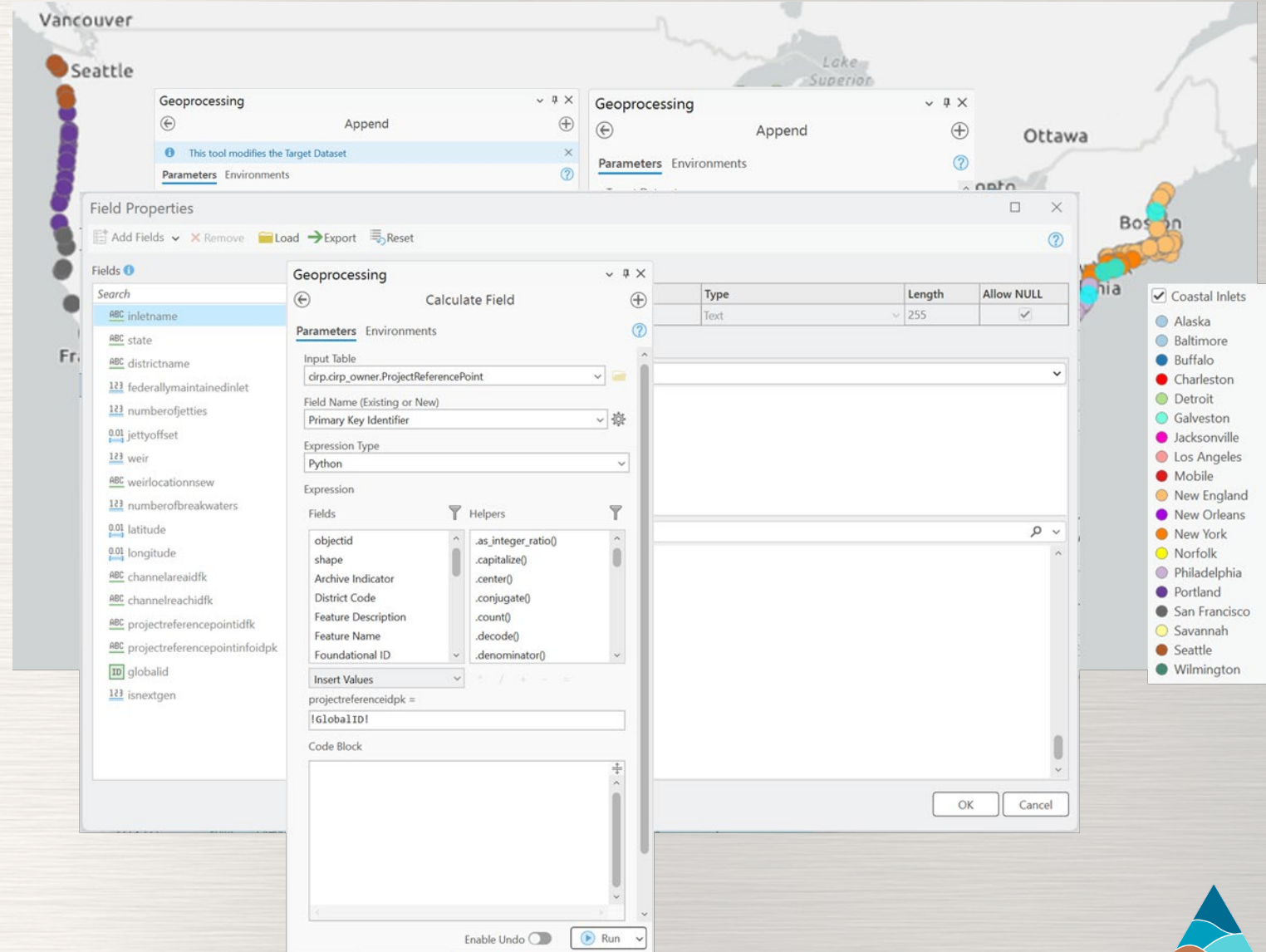
CIRP



Populating the Geodatabase

Vector and Tabular Data

- Append inlet locations (points) from existing atlas to feature class *ProjectReferencePoint* and table *ProjectReferencePointInfo*
- Use a field map to populate SDSFIE attributes and extended attributes
- Calculate primary and foreign keys
- Verify relationship between points and table



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Populating the Geodatabase

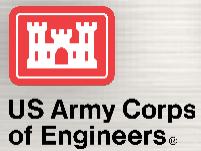
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The screenshot displays the ArcGIS Enterprise interface. The main map shows a coastal area with a point labeled 'Oregon Inlet'. The 'Contents' pane on the left lists data sources, including 'Test_CIRP_Publish' and 'ProjectReferencePointInfo'. The 'ProjectReferencePointInfo' table is selected, and its data is displayed in a table view below the map. The table has columns: objectid, shape, Archive Indicator, District Code, Feature Description, Feature Name, Foundational ID, and Foundational Name. The 'Oregon Inlet' feature is highlighted in row 8.

objectid	shape	Archive Indicator	District Code	Feature Description	Feature Name	Foundational ID	Foundational Name
1	Point	<Null>	SAM	East Pass (Destin Pass)	<Null>	<Null>	<Null>
2	Point	<Null>	NAN	Fire Island Inlet	<Null>	<Null>	<Null>
3	Point	<Null>	NAN	Moriches Inlet	<Null>	<Null>	<Null>
4	Point	<Null>	NAE	Newburyport Harbor (...)	<Null>	<Null>	<Null>
5	Point	<Null>	SAJ	New Pass, Lee County	<Null>	<Null>	<Null>
6	Point	<Null>	NWP	Coos Bay	<Null>	<Null>	<Null>
7	Point	<Null>	NAP	Barneget Inlet	<Null>	<Null>	<Null>
8	Point	<Null>	SAW	Oregon Inlet	<Null>	<Null>	<Null>

Below the table, a 'Click to add new row.' button is visible. The 'ProjectReferencePointInfo - Oregon Inlet' pop-up window on the right shows the attribute values for the selected feature, including OBJECTID (408), Inlet (Oregon Inlet), State (NC), District Name (Wilmington District), Federally Maintained Inlet (1), Number Of Jetties (2), Jetty Offset (<Null>), Weir (<Null>), Weir_Location_N_S_E_W (<Null>), Number of Breakwaters (0), Latitude (35.8), Longitude (-75.5), channelreachidfk (CESAW_MN_30_OIE_1), channelreachidfk (CESAW_MN_30_OIE_1), projectreferencepointidfk (3FBD0E81-4894-4E01-8015-369C2DA7B2C2), projectreferencepointinfoidfk (0D813A05-9BA6-4230-A8C6-D0B3CFE29E0C), globalid (0D813A05-9BA6-4230-A8C6-D0B3CFE29E0C), and isnextgen (<Null>).



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Populating the Geodatabase

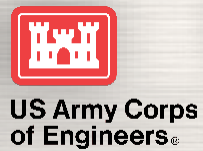
Raster Data

- Load raster products into geodatabase
- Build and configure a mosaic dataset
- Append footprints to feature class *RasterFootprint* and table *RasterFootprintInfo*
- Calculate primary and foreign keys and other attributes
- Verify relationship between points and table

The screenshot displays the ArcGIS Enterprise interface with the following components:

- Top Toolbar:** Includes Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Help, Time, Standalone Table, and Versioning tabs.
- Contents Panel:** Shows a tree view of the geodatabase structure. The 'Data Source' section includes 'Test_CIRP_Publish', 'sde.DEFAULT (Traditional) - cirp_owner@10.200...', and 'cirp.cirp_owner.RasterBathymetry'. The 'RasterFootprintInfo' table is highlighted.
- Map View:** Displays a topographic map with a green overlay representing the raster data. A red rectangle indicates the selected area.
- Pop-up Window:** Shows details for the selected feature, including 'OBJECTID', 'name', 'groupname', 'productname', 'date', 'download_url', 'stac_url', 'rasterfootprintidfk', 'rasterfootprintinfoidfk', 'projectreferenceareaidfk', and 'globalid'.
- Table View:** Displays a table with columns: 'groupname', 'productname', 'date', and 'download_url'. The table contains two rows of data.

groupname	productname	date	download_url
Oregon	Relative Relief	10/1/2018	https://chldata.erd.cdrn.mil/thredds/fileServer/...
Oregon	Bathymetry	10/1/2018	https://chldata.erd.cdrn.mil/thredds/fileServer/...



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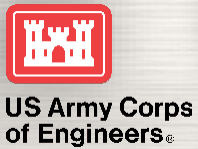
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Building a Spatio-Temporal Access Catalog (STAC)

- Migrate Inlets Atlas 2.0 Final_Products folder to [CHL THREDDS Server](#)
- Python script to [build a STAC](#) locally
 - URLs to products and thumbnails
 - Collection and Item metadata
- Migration of STAC to CHL THREDDS Server
- Populate STAC_URL attribute in Enterprise table
RasterFootprintInfo

The image displays three screenshots of the CHL Data Server THREDDS Catalog interface, illustrating the migration of STAC data. The first screenshot shows the main catalog with a list of datasets. The second screenshot shows the 'CIRP Inlets Atlas data' dataset with a 'Products' folder. The third screenshot shows the 'cirp-inlets-atlas-2-catalog/' dataset with a 'catalog.json' file and several collections. A diagram at the bottom right shows a 'Catalog' folder containing 'catalog.json', three 'Collection' folders, and one 'Item' folder.

Image Source: stacspec.org



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Publishing Web Feature Services

- Configure ArcGIS® Pro map with Enterprise vector feature classes and business tables
- Register geodatabase as a Data Store
- Share map as a Web Layer
 - *Add summary and tags*
 - *Reference registered data, feature access*
 - *Set Portal folder and server URL*
 - *Set sharing levels*



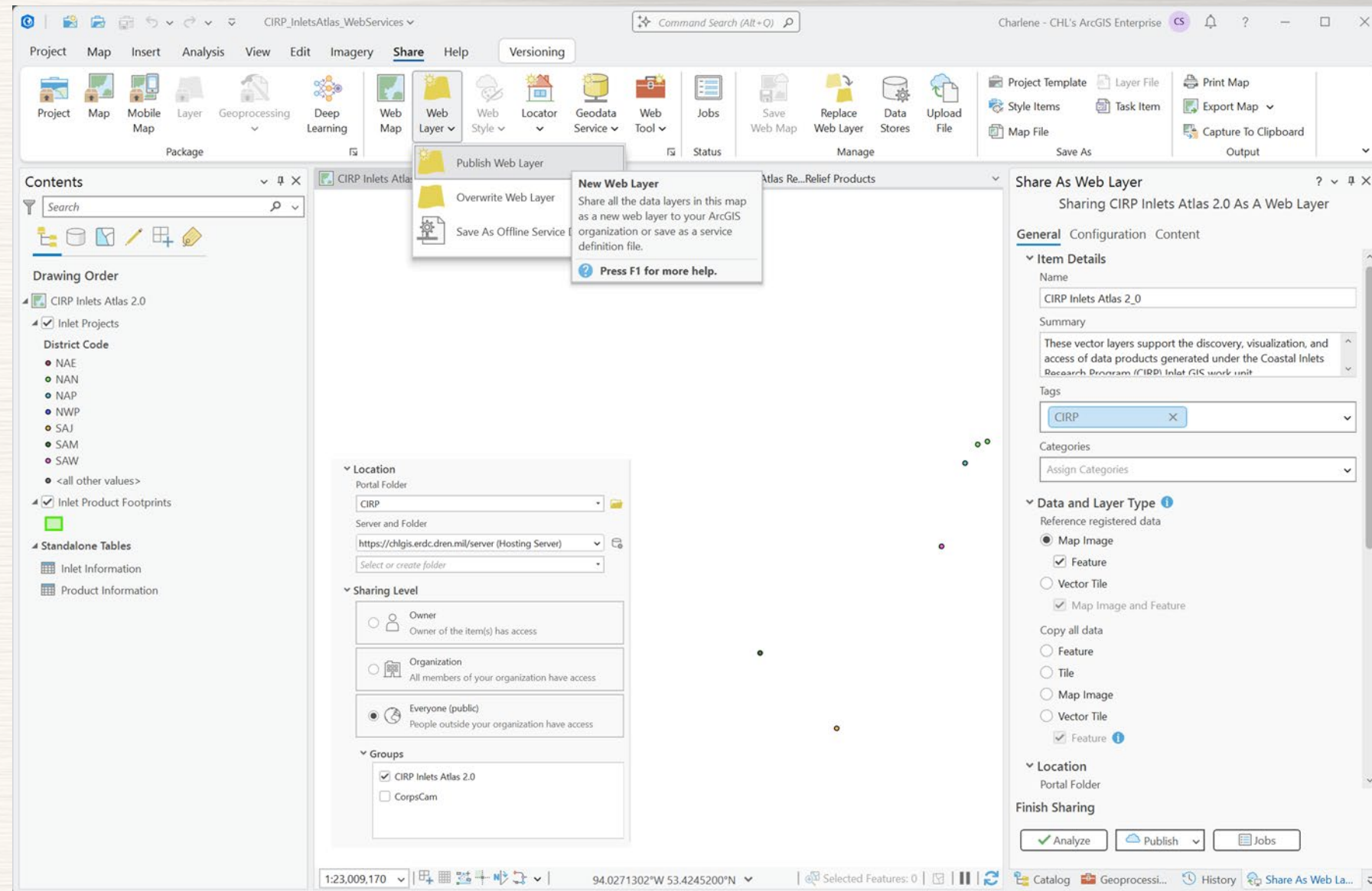
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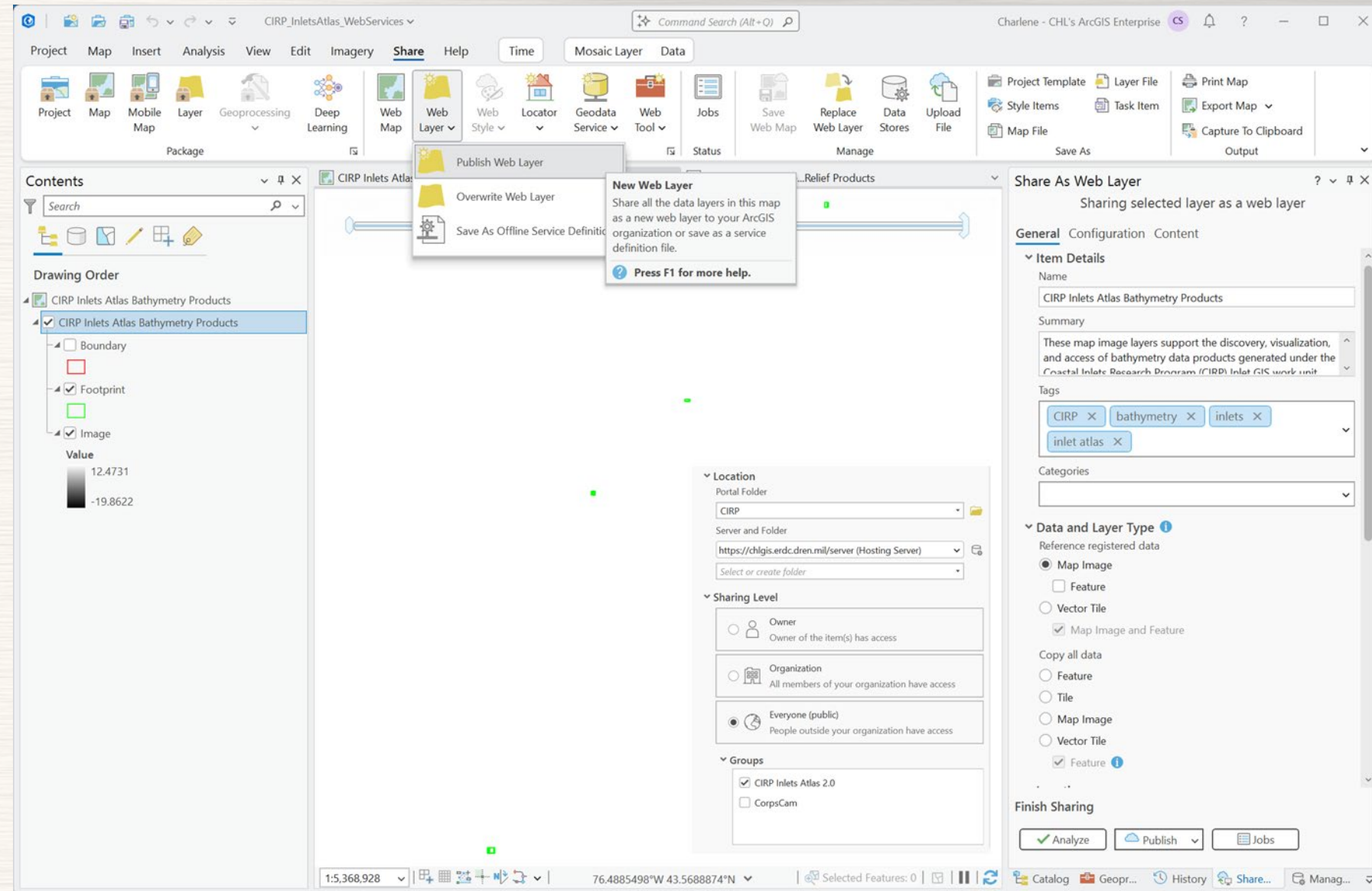
CIRP



Publishing Map Image Layers

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- Configure ArcGIS® Pro map for each mosaic dataset
 - Bathymetry
 - Relative Relief
 - Geomorphons
- Share maps as Map Image Layers
 - *Add summary and tags*
 - *Reference registered data as Map Image*
 - *Set Portal folder and server URL*
 - *Set sharing levels*



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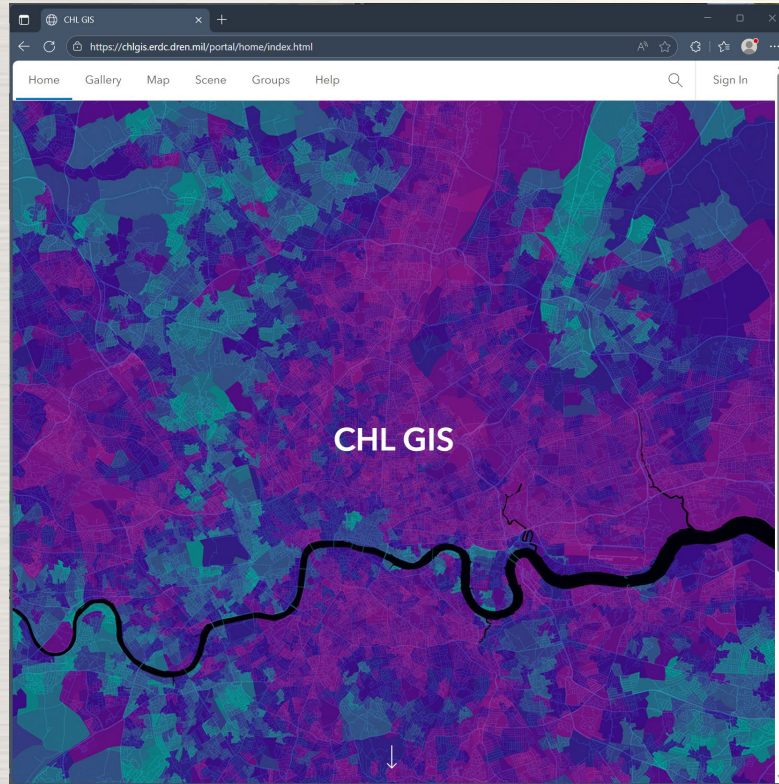
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CIRP

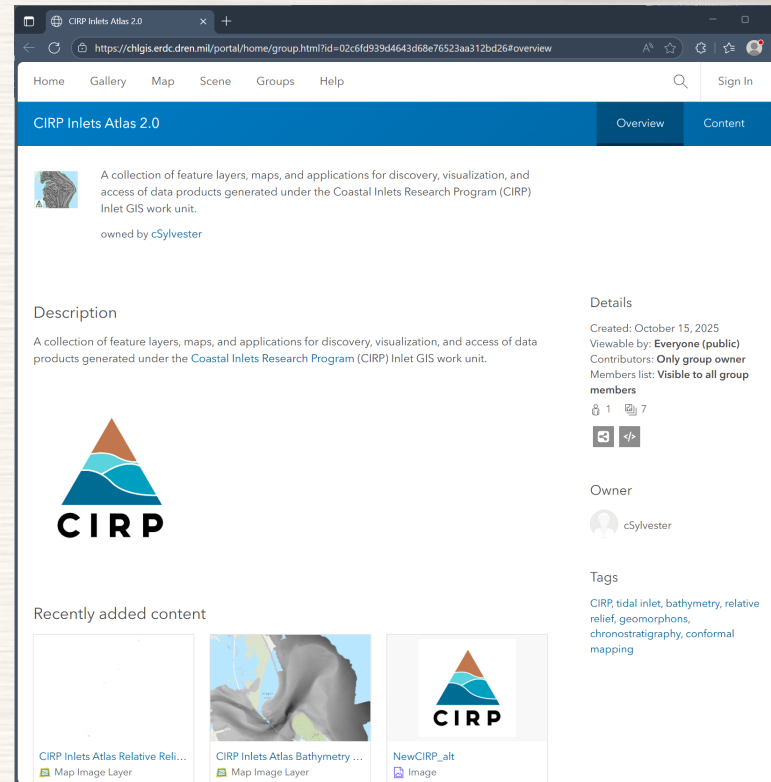


Discovery and Access

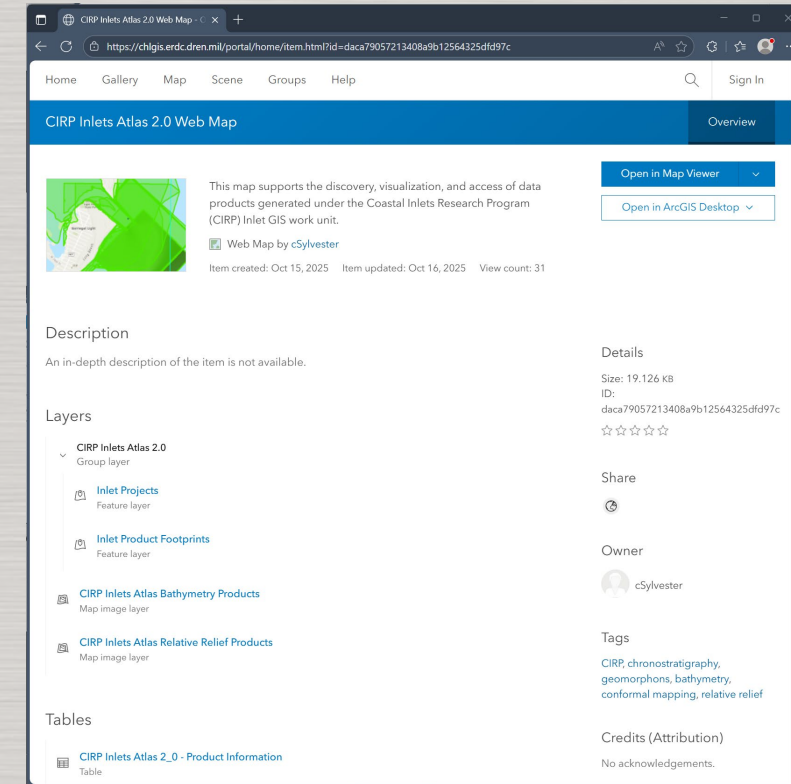
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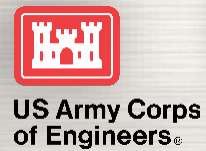
[CHL GIS Portal](#) content management system for layers, maps, apps



Inlet Atlas 2.0 [Group](#) to organize content



Inlet Atlas 2.0 [Item](#) (e.g., web map)



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Discovery and Access, cont.

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CIRP Inlets Atlas 2.0 Web Map

Home Gallery Map Scene Groups Help

CIRP Inlets Atlas 2.0

Overview Data Visualization

Description

An in-depth description of the item is not available.

Layers

- CIRP Inlets Atlas 2.0 Group layer
 - Inlet Projects Feature layer
 - Inlet Product Footprints Feature layer
- CIRP Inlets Atlas Bathymetry Products Map image layer
- CIRP Inlets Atlas Relative Relief Products Map image layer

Tables

- CIRP Inlets Atlas 2.0 - Product Information Table

Description

These vector layers support the discovery, visualization, and access of data products generated under the Coastal Inlets Research Program (CIRP) Inlet GIS work unit.

Feature layer by cSylvester

Item created: Oct 15, 2025 Item updated: Oct 16, 2025 View count: 31

Description

An in-depth description of the item is not available.

Layers

- CIRP Inlets Atlas 2.0 Group layer
 - Inlet Projects Feature layer
 - Inlet Product Footprints Feature layer
- CIRP Inlets Atlas Bathymetry Products Map image layer
- CIRP Inlets Atlas Relative Relief Products Map image layer

Tables

- CIRP Inlets Atlas 2.0 - Product Information Table

Description

These vector layers support the discovery, visualization, and access of data products generated under the Coastal Inlets Research Program (CIRP) Inlet GIS work unit.

Inlet Projects provides the locations (points) of inlets where next-generation morphometric and conformal mapping workflows were used to derive a series of data products including bathymetry, relative relief, geomorphons, chronostratigraphy, and conformal mapping. Inlet information from prior Inlet Atlas efforts is included in the related table "Inlet Information".

This work unit is funded under the USACE [Coastal Inlets Research Program](#) (CIRP).

Details

Source: Feature Service
Size: 1 KB
ID: a47a9b0b399e4ed2a5508df10b9993
☆☆☆☆

Share

Owner

cSylvester

URL

<https://chlgis.erdrc.dren.mil/>

CIRP Inlets Atlas 2.0 Web Map

Open in Map Viewer Classic Sign In

Layers

- CIRP Inlets Atlas 2.0
- CIRP Inlets Atlas Bathymetry Products
- CIRP Inlets Atlas Bathymetry Products
- CIRP Inlets Atlas Bathymetry Products
- Boundary
- Footprint
- Image
- CIRP Inlets Atlas Relative Relief Products

Inlet Project: Moriches_NY_2022

Zoom to

objectid	18
Feature Description	CIRP Inlet Atlas Product Footprint
Feature Name	Moriches_NY_2022

Inlet Product Information

Moriches_NY_2022_lidar_final 30

Moriches_NY_2022_Relative

Moriches_NY_2022_lidar_final 30

OBJECTID	30
name	Moriches_NY_2022_lidar_final
groupname	Moriches
productname	Bathymetry
date	1/1/2022
download_url	View
stac_url	

Click to download

12/31/2003 - 12/31/2023

2005 2007 2009 2011 2013 2015 2017 2019 2021 2023

12/31/2003 12/31/2023

Esri, NASA, NGA, USGS, FEMA | Esri Community Maps Contributors, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, ... Powered by Esri

All available footprints (green) and processed bathymetry data (grayscale) for Moriches Inlet, NY.

URL to RESTful feature service to use in ArcGIS® Pro or access programmatically

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Discovery and Access, cont. again

- Interoperability with USACE National Channel Framework (NCF)
- NCF information was manually populated in the prior Atlas
- Use of NCF foreign keys (e.g. *channelreachidfk*) with custom Arcade to link inlet information table to NCF information in a web map pop up

Enabling open, linked, interoperable data

Tables

Test CIRP Publish - Inlet Information

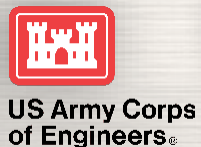
Add table

Inlet Information: East Pass (Destin Pass)

Zoom to

channelareaidfk	CESAM_CF_14_DEC
channelreachidfk	CESAM_CF_14_DEC_1
District Name	Mobile District
Federally Maintained Inlet	1
Inlet	East Pass (Destin Pass)
isnextgen	1
Jetty Offset	30.50
Latitude	30.40
Longitude	-86.50
Number of Breakwaters	0
Number Of Jetties	2
State	FL
Weir	
Weir_Location_N_S_E_W	
National Channel Framework Info	
Depth Authorized	12
Depth Maintained	12
Reach Name	Destin Entrance

Proof-of-concept for linking USACE NCF web services to Inlets Atlas 2.0 services



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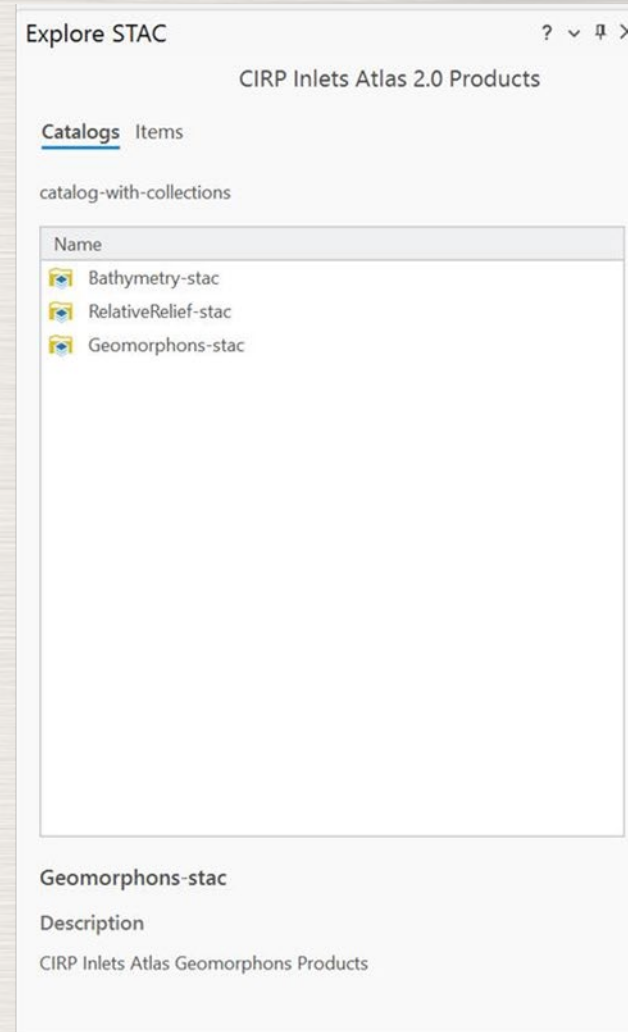




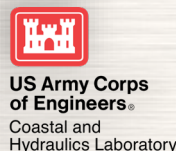
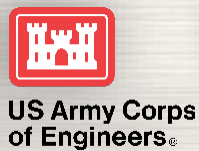
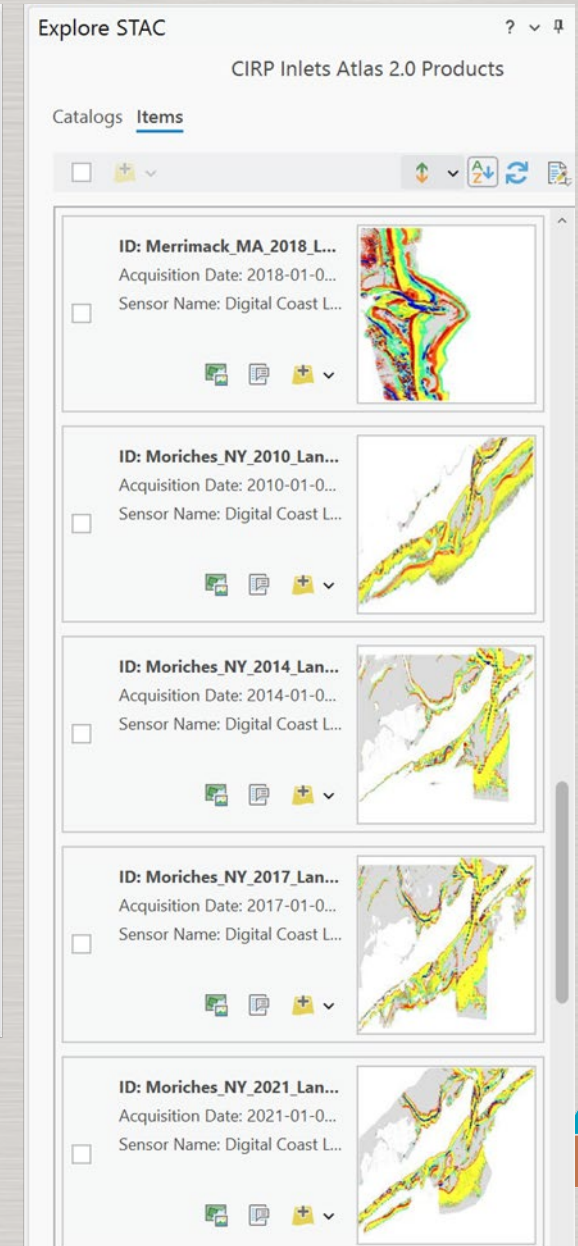
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Discovery and Access via STAC

- Products are also available in a STAC at <https://chldata.erdc.dren.mil/thredds/fileServer/inletsAtlas/cirp-inlets-atlas-2-catalog/catalog.json>
- Direct access in ArcGIS Pro
 - Insert > Connections > STAC Connection
- Programmatic access via [PySTAC](#) and other Python libraries



STAC Catalog as seen in ESRI ArcGIS® Pro.



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Next Steps

- Incorporate feedback on Inlet Atlas 2.0 products and services from PDT members, CIRP geospatial products team members, and others
 - Ease of access and use
 - Interpretability of products and services
 - Sufficiency of attribution and ideas for expansion
- *Scientific Data* paper submission (McPherran et al.) and Zenodo database
- Complete the ingestion of products into the Inlet Atlas 2.0 products
 - Chronostratigraphy and conformal mapping products
 - Chatham, St. Augustine, New Pass, East Pass, Port Mansfield, Ilwaco, and Siuslaw
- Creation of an Inlets Atlas 2.0 web experience
- Further automation of workflows to ingest products into Enterprise services
- Provide raster products as image services vs. map image layers
 - [FAQ: When to Publish a Raster Dataset as a Map Image Service vs. an Image Service?](#)



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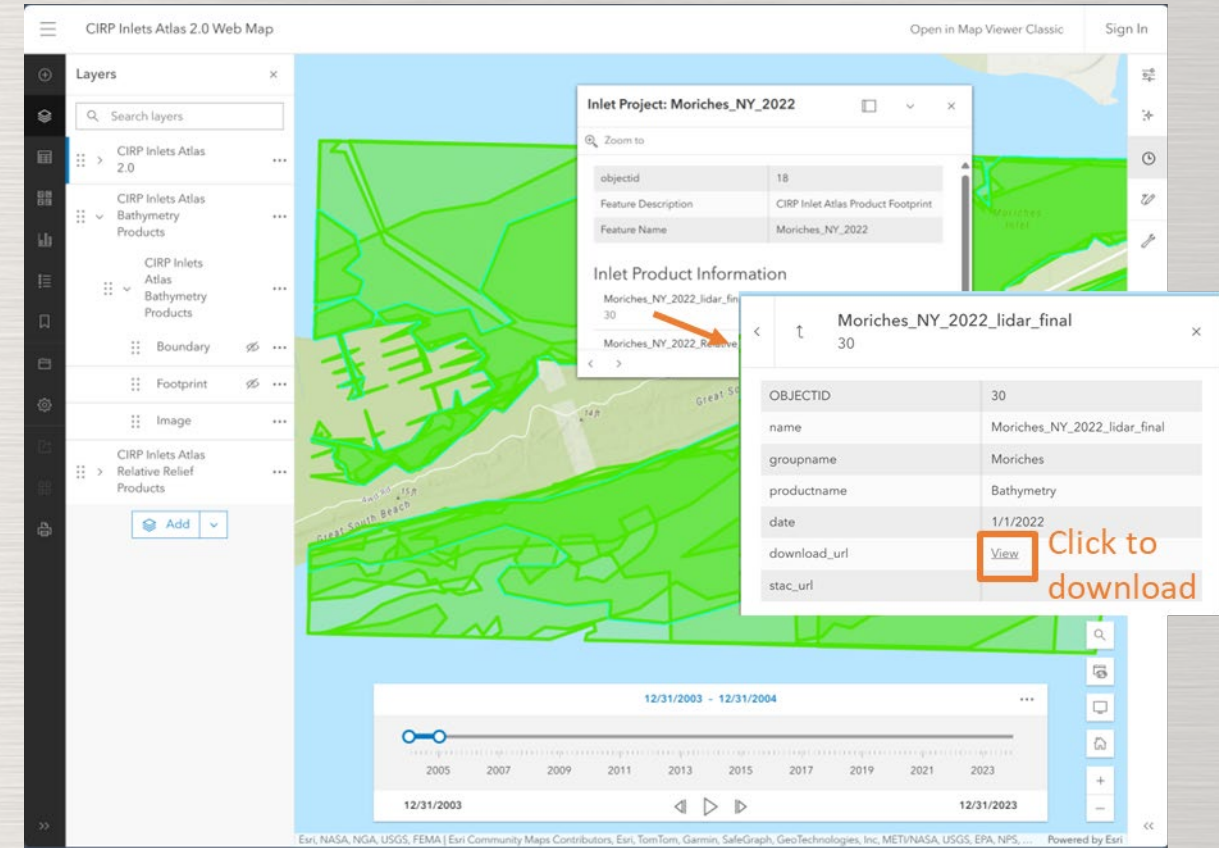
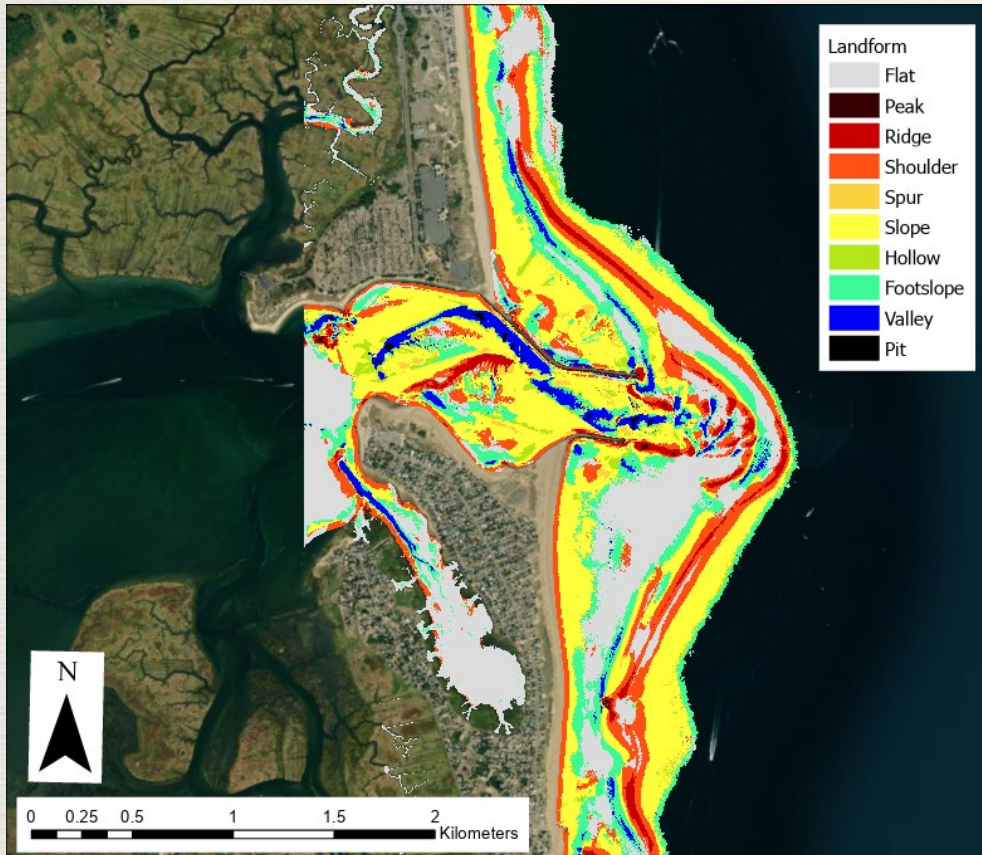


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Questions?

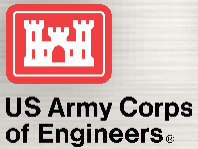
kaitlyn.a.mcpherran@usace.army.mil

charlene.s.sylvester@usace.army.mil



Merrimack MA 2018 (NCMP) geomorphon landform classification.

Inlets Atlas 2.0 Web Map



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