Cloud-Native Streamline Computation

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Goal

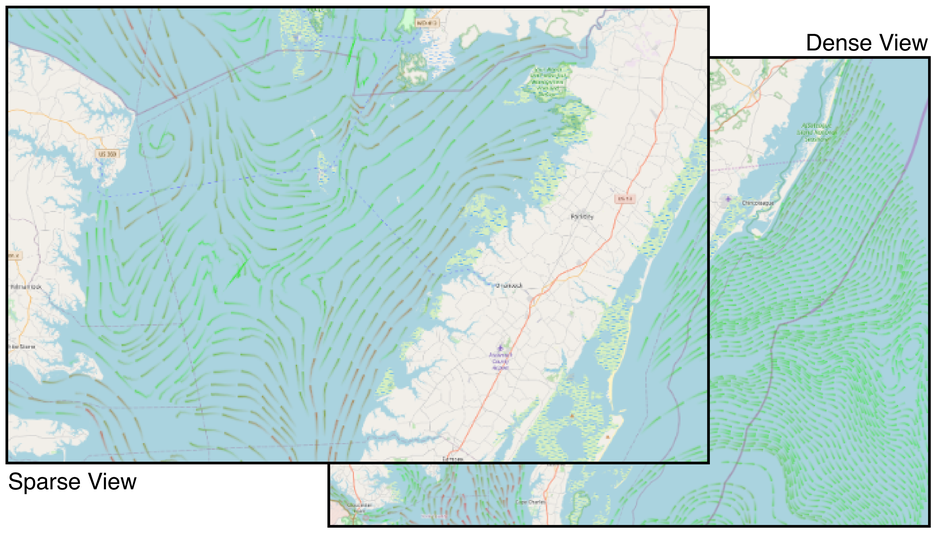
The goal of this project is to convert the current NOAA visualization model for water currents to the modern visualization model of Vector-Tiles through an Amazon Web Services serverless application.

AWS Serverless Model

Using several services from AWS we have designed our data pipeline for minimum cost using strictly on-demand processing. Our public API follows the Vector-Tile specification to allow the dynamic serving of content based on the location & zoom from the client's view.

Why?

- Existing system renders raw data on-demand with high latency
- Our pipeline efficiently renders raw data once and dynamically serves streamlines to all users
- Our pipeline stores rendered data in a modern and lightweight format - Vector-Tiles
- The Vector-Tile standard dynamically serves usable data block by block



Users

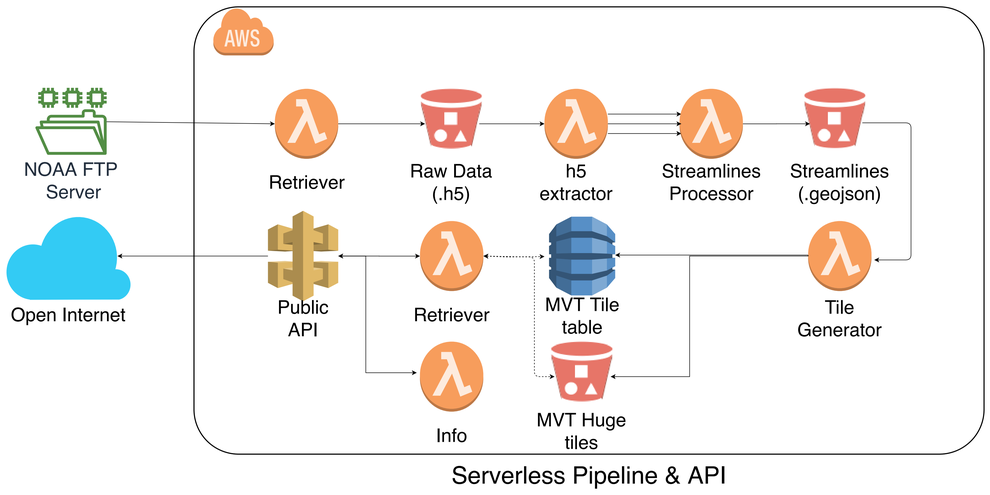
- Research
- Aquatic Robotics
- Naval Navigation
- International Shipping
- Weather
- Conservation
- Fishing
- Coastal Management
- Cruise Lines
- Military

Benefits

- Easy visualization of water currents
- Fast, reliable data for planning navigation routes
- Served in MVT format delivering all zoom levels in one call

Our Pipeline

- Our pipeline processes data from the NOAA data center and converts it to the Vector-Tile format
- Our public API dynamically serves tiles based on the location & zoom level of the client's view
- Our entire backend is one-click deployable on any AWS account



Serverless Pipeline & API

AWS Breakdown