Introduction

NOAA’s National Centers for Environmental Information (NCEI) hosts and provides public access to a wide range of environmental data, including coastal, oceanic, geophysical, and atmospheric data. NCEI has long made many of these datasets publicly-accessible through interactive mapping applications utilizing the legacy ArcGIS API for JavaScript 3.x and ArcGIS Server map services. NCEI is now working to modernize these web applications by taking advantage of ArcGIS Online (e.g. hosted feature layers and web maps/scenes) and the latest ArcGIS API for JavaScript 4.x. The new, easy-to-use map viewers are implemented using current well-supported web technologies such as React, TypeScript, and MUI. This poster covers four new web mapping applications developed over the past year: Tsunami Events (1850-Present) Time-Lapse Animation, Trackline Geophysical Data Viewer, Ocean Exploration Data Atlas (showcasing data from the NOAA Ship Okeanos Explorer), and Historical Magnetic Declination Viewer.

Technologies Used

**esri**
ArcGIS API for JavaScript

Esri’s application programming interface (API) for building rich, interactive mapping applications in both 2D and 3D. We are now using the latest 4.x version of the API, which has many advantages and performance improvements over previous versions of the API.

**NOAA’s GeoPlatform (ArcGIS Online)**

NOAA’s instance of Esri’s ArcGIS Online, a cloud-based software-as-a-service for hosting geospatial layers, web maps, and apps (including StoryMaps). We are increasingly utilizing hosted feature layers, which are high-performance and flexible, allowing us to take advantage of Esri’s infrastructure for storing, querying, and visualizing data.

**React**

JavaScript library for building efficient user interfaces. An application is built up from a “tree” of modular components (using powerful JSX syntax). Utilizing the “virtual DOM”, you manage the application state, then React determines when to render/update individual components in the browser.

**MUI** *(formerly Material-UI)*

Popular collection of UI components for React. Makes it easy to build a beautiful, functional, user-friendly interface with buttons, menus, switches, select inputs, etc.

**TypeScript**

An extension of the JavaScript programming language that is strongly typed. By enforcing variable types, it improves consistency/robustness of the code, reducing mistakes made by the developer. Integrates well with editors (i.e. Visual Studio Code) with “intellisense” (code completion, parameter info, etc.)