

Building Accessible Web Apps with ArcGIS Maps SDK for JavaScript and Calcite

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Agenda

- Introduction to Accessibility
- Web Content Accessibility Guidelines (WCAG)
- Build Accessibility into Mapping Apps
 - High contrast
 - Live regions and map descriptions
 - Focus trapping
 - Handling animations
 - Consistent focus
- Testing, tools and resources
- Road ahead

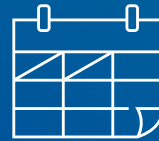
Introduction to accessibility

Why is accessibility important?



1.3 billion

Number of individuals living with a disability worldwide



2030

By this year, 2 billion people will need at least 1 assistive product



25+

Countries that currently have web accessibility laws and policies



20%

Percentage of web traffic that could come from a person with a disability

Web Content Accessibility Guidelines



Web standards

Web Content Accessibility Guidelines (WCAG) 2.2

- Success Criterion

1. Perceivable
2. Operable
3. Understandable
4. Robust

- Levels

- **A**: Basic
- **AA**: Desirable (Many organizations)
- **AAA**: Comprehensive

The screenshot displays the W3C Web Accessibility Initiative (WAI) website. The header includes the W3C logo, the text 'Web Accessibility Initiative WAI', and the tagline 'Strategies, standards, resources to make the Web accessible to people with disabilities'. There are links for 'Get Involved', 'About W3C WAI', and a search bar. A navigation menu contains 'Accessibility Fundamentals', 'Planning & Policies', 'Design & Develop', 'Test & Evaluate', 'Teach & Advocate', and 'Standards/Guidelines'. The breadcrumb trail reads 'Home / Standards/Guidelines / Web Content - WCAG 2'. The main content area is titled 'WCAG 2 Overview' and features a 'Summary' section with introductory text and quick links to resources like 'How to Meet WCAG 2 (Quick Reference)', 'WCAG 2.2 Standard, What's New in WCAG 2.2', and 'WCAG 2.1 Standard'. A 'Page Contents' section lists various links such as 'Introduction', 'Who WCAG is for', 'What is in WCAG 2', 'WCAG 2.0, 2.1, 2.2', 'Translations', 'WCAG 2.0 is ISO/IEC 40500', 'Who develops WCAG', and 'WCAG 3 and more information'. A left sidebar under 'Standards/Guidelines' lists various WCAG-related topics like 'Web Content - WCAG 2', 'How to Meet WCAG 2 (Quick Reference)', 'At a Glance', 'The Documents', 'Applying to Non-Web ICT', 'New in 2.2', 'New in 2.1', 'Translations', 'Commenting', 'Conformance Logos', 'FAQ', 'WCAG 3 Draft', 'Authoring Tool Accessibility Guidelines (ATAG) Overview', 'User Agents - UAAG', and 'WAI-ARIA'.

WCAG examples

Levels and their meaning


Level	Success Criterion	Description
A	1.4.1: Use of Color	Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.
AA	1.4.3: Contrast (Minimum)	The visual presentation of text and images of text has a contrast ratio of at least 4.5 to 1.
AAA	1.4.6: Contrast (Enhanced)	The visual presentation of text and images of text has a contrast ratio of at least 7 to 1.

1.4.1: Use of Color

Level A

Color is not used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

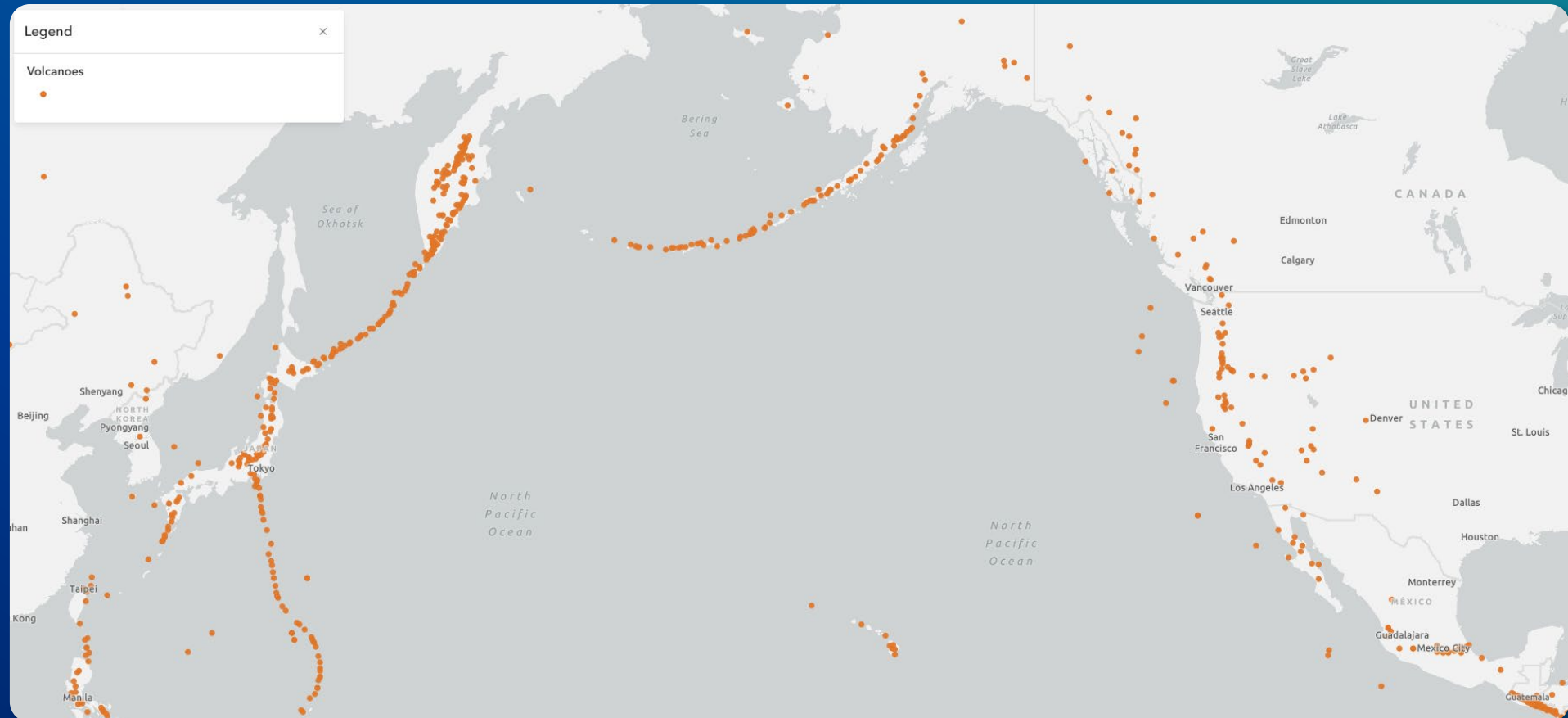
Favorite color

 A color must contain at least 3 characters. Current value is 2 characters.

1.4.3: Contrast (Minimum)

Level AA

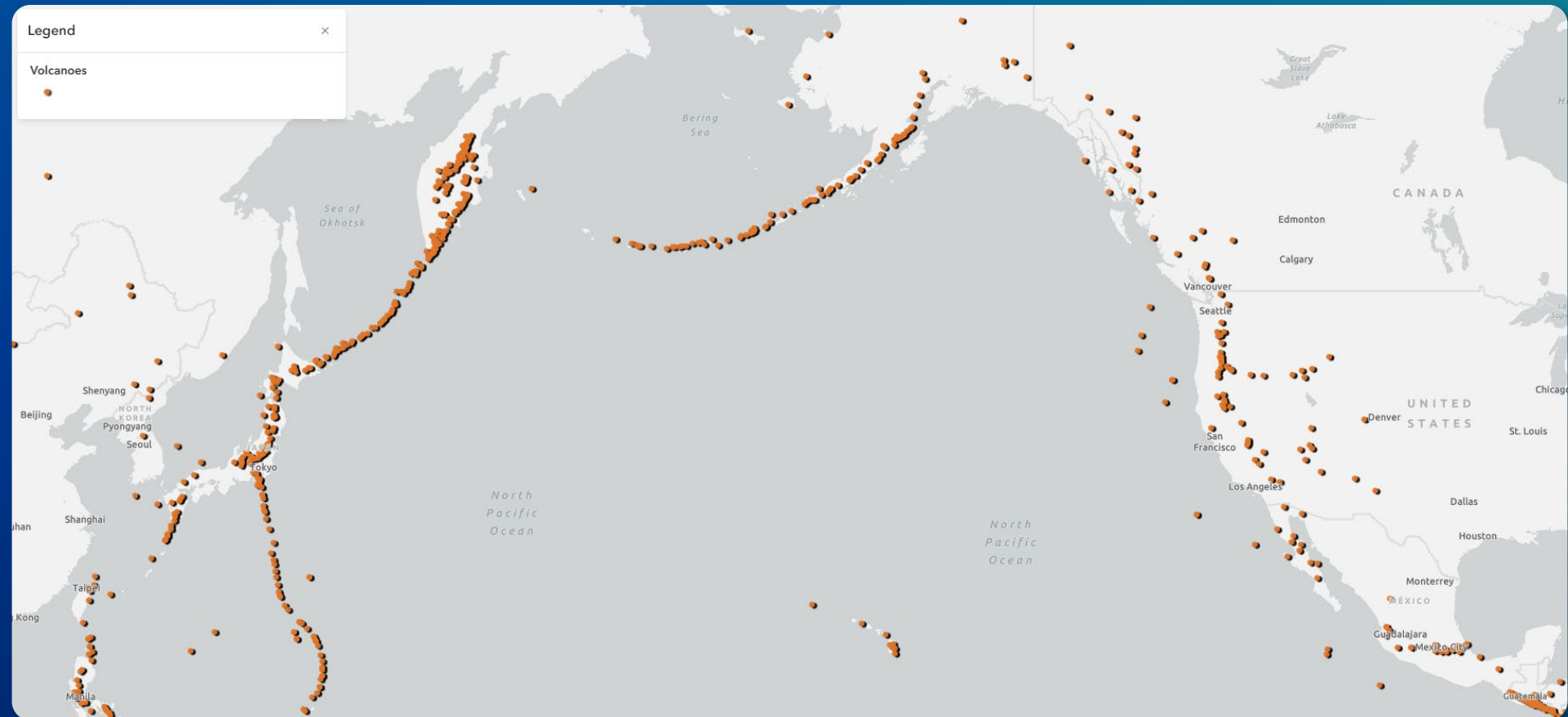
The visual presentation of text and images of text has a contrast ratio of at least 4.5 to 1.



1.4.6: Contrast (Enhanced)

Level AAA

The visual presentation of text and images of text has a contrast ratio of at least 7 to 1.



Build Accessibility into Mapping Apps



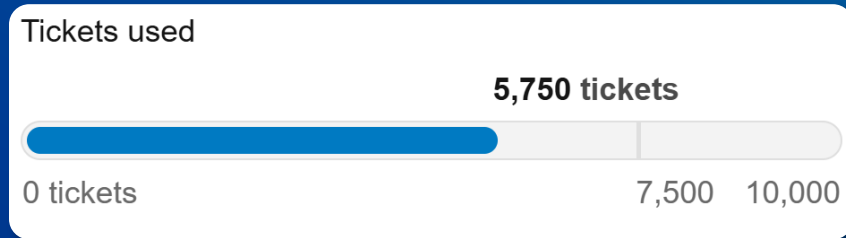
High contrast

1.4.3 Contrast (Minimum)

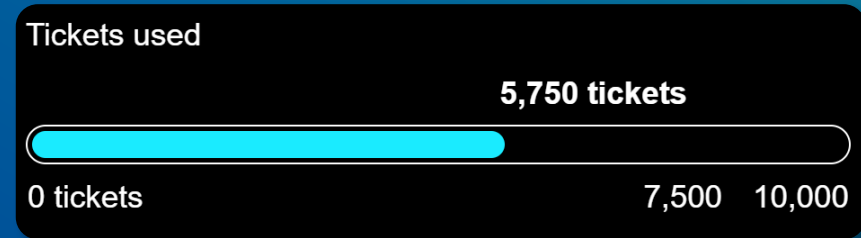
- **1.4.3: Contrast (Minimum) – Level AA**
 - Visual presentation has a contrast ratio of at least 4.5 to 1
 - Benefits visual, low vision, and cognitive impairments

High contrast in components

calcite-meter, calcite-button, calcite-link



Learn more about [Gingko trees](#)

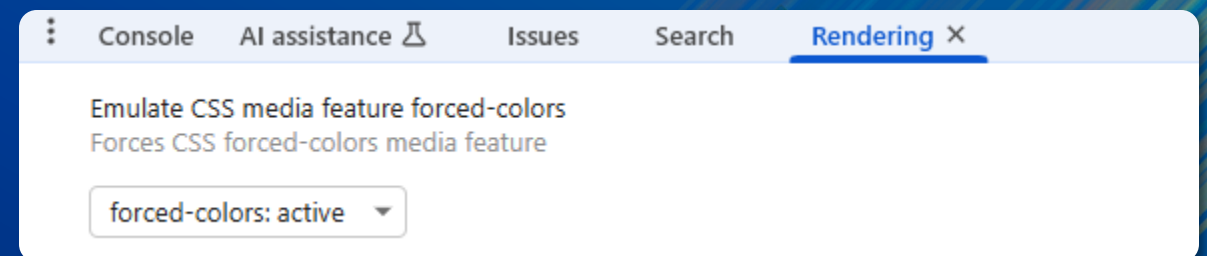
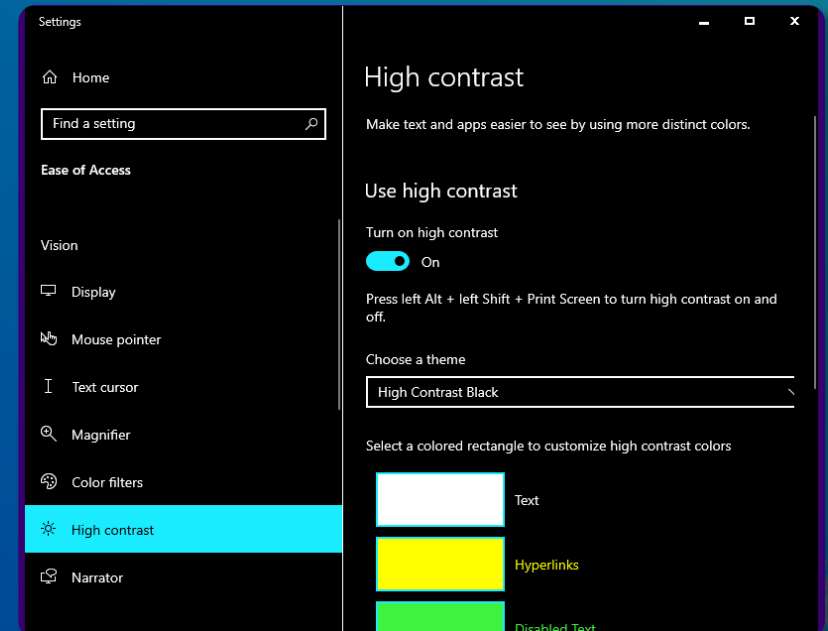


Learn more about [Gingko trees](#)

forced-colors CSS media feature

<https://developer.mozilla.org/en-US/docs/Web/CSS/@media/forced-colors>

- Detects if user agent has enabled forced colors mode
 - Browser setting
 - Chrome Rendering tab
 - Windows high contrast mode

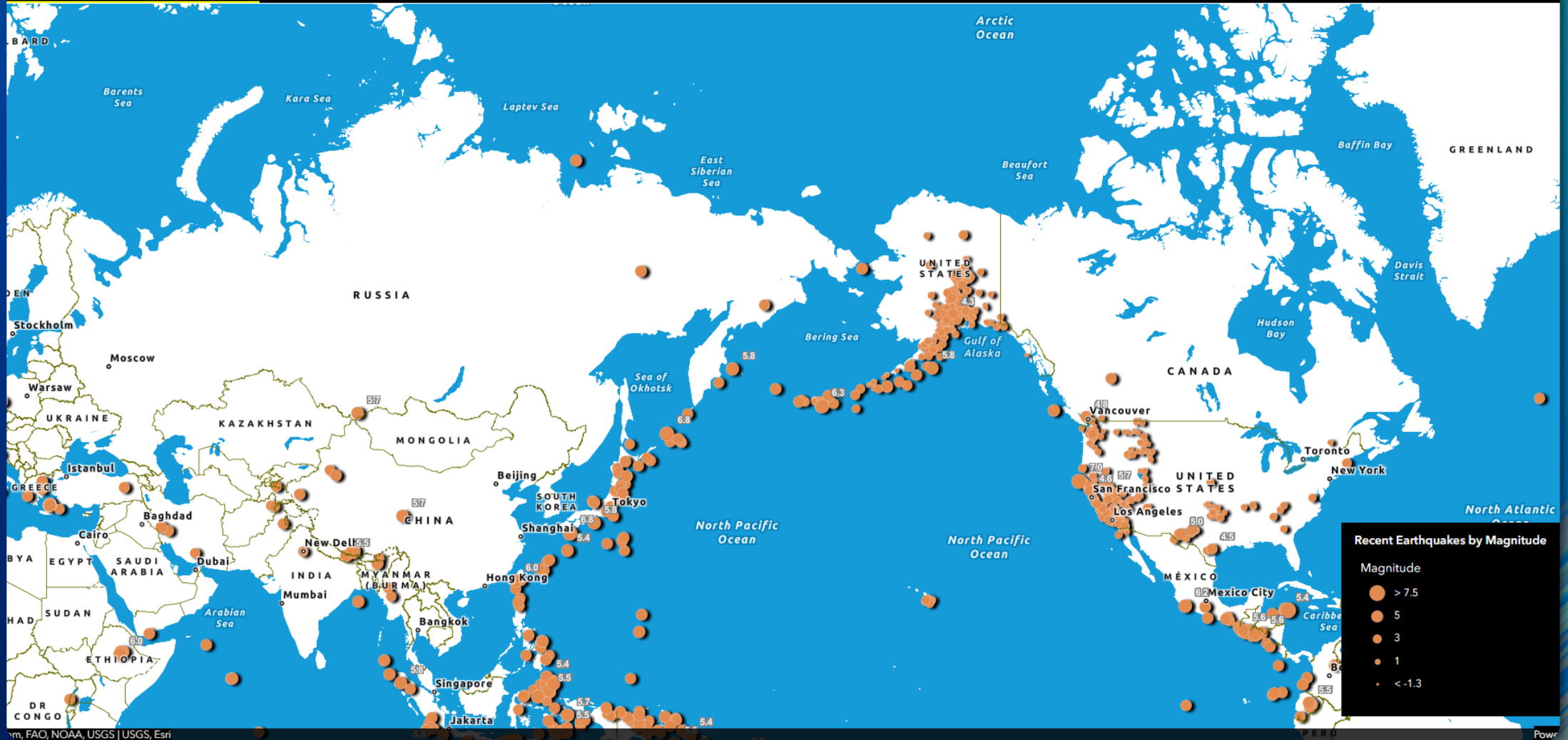


matchMedia markup

```
const contrastMedia = matchMedia("(forced-colors: active)");  
mapEl.basemap = contrastMedia.matches ? highContrastDarkBasemap : "dark-gray-vector";
```

High contrast demo

High contrast
Esri Developer & Technology Summit 2025



High contrast markup functionality

```
require(["esri/Basemap"], (Basemap) => {
  const mapEl = document.getElementById("mapEl");

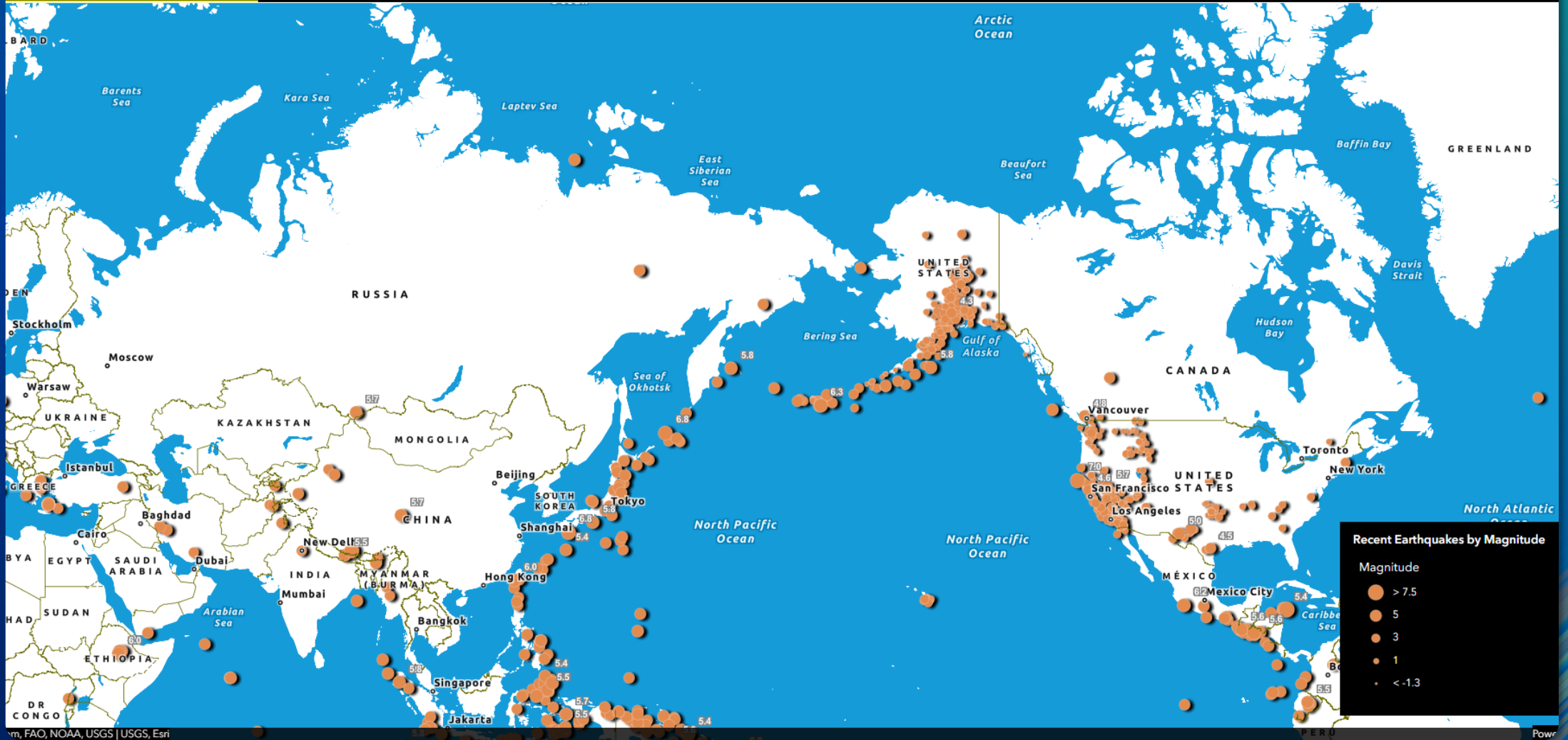
  const highContrastDarkBasemap = new Basemap({
    portalItem: {
      id: "3e23478909194c54992eaaee78b5f754" // Dark
    },
    title: "High contrast dark theme",
    id: "high-contrast-dark"
  });

  const highContrastLightBasemap = new Basemap({
    portalItem: {
      id: "084291b0ecad4588b8c8853898d72445" // Light
    },
    title: "High contrast (light theme)",
    id: "high-contrast-light"
  });

  // If high contrast is enabled, display a high contrast basemap, else display a gray basemap
  if (contrastMedia.matches) {
    mapEl.basemap = isDarkMode ? highContrastDarkBasemap : highContrastLightBasemap;
  } else {
    mapEl.basemap = isDarkMode ? "dark-gray-vector" : "gray-vector";
  }

  // High contrast support with basemap and layer effects
  const contrastMedia = matchMedia("(forced-colors: active)");
  function checkContrastMedia() {
    try {
      if (mode == "dark") {
        mapEl.basemap = contrastMedia.matches ? highContrastDarkBasemap : "dark-gray-vector";
        //mapEl.basemap = "dark-gray-vector";
        contrastMedia.matches ? mapEl.map.layers._items[2].effect = "bloom(1.5, 0.5px, 0.1)" :
          mapEl.map.layers._items[2].effect = "bloom(0, 0px, 0)";
      } else {
        mapEl.basemap = contrastMedia.matches ? highContrastLightBasemap : "gray-vector";
        //mapEl.basemap = "gray-vector";
        contrastMedia.matches ? mapEl.map.layers._items[2].effect = "drop-shadow(3px, 1px, 3px)" :
          mapEl.map.layers._items[2].effect = "drop-shadow(0px, 0px, 0px)";
      }
    } catch(err) { }
  }

  // Event listeners on map load and high contrast media query
  mapEl.addEventListener("arcgisViewChange", checkContrastMedia);
  contrastMedia.addListener(checkContrastMedia);
});
```

aria-describedby

WCAG 1.1.1 Non-text content

- All non-text content that is presented to the user has a text alternative that serves the equivalent purpose (Level A)
- **aria-describedby** links an element to additional descriptive text, making it available to screen readers.
- Helps provide **context and details** about maps for visually impaired users.
- Works well with **long descriptions** (e.g., a list of landmarks, routes, or important locations).

Aria Live Regions

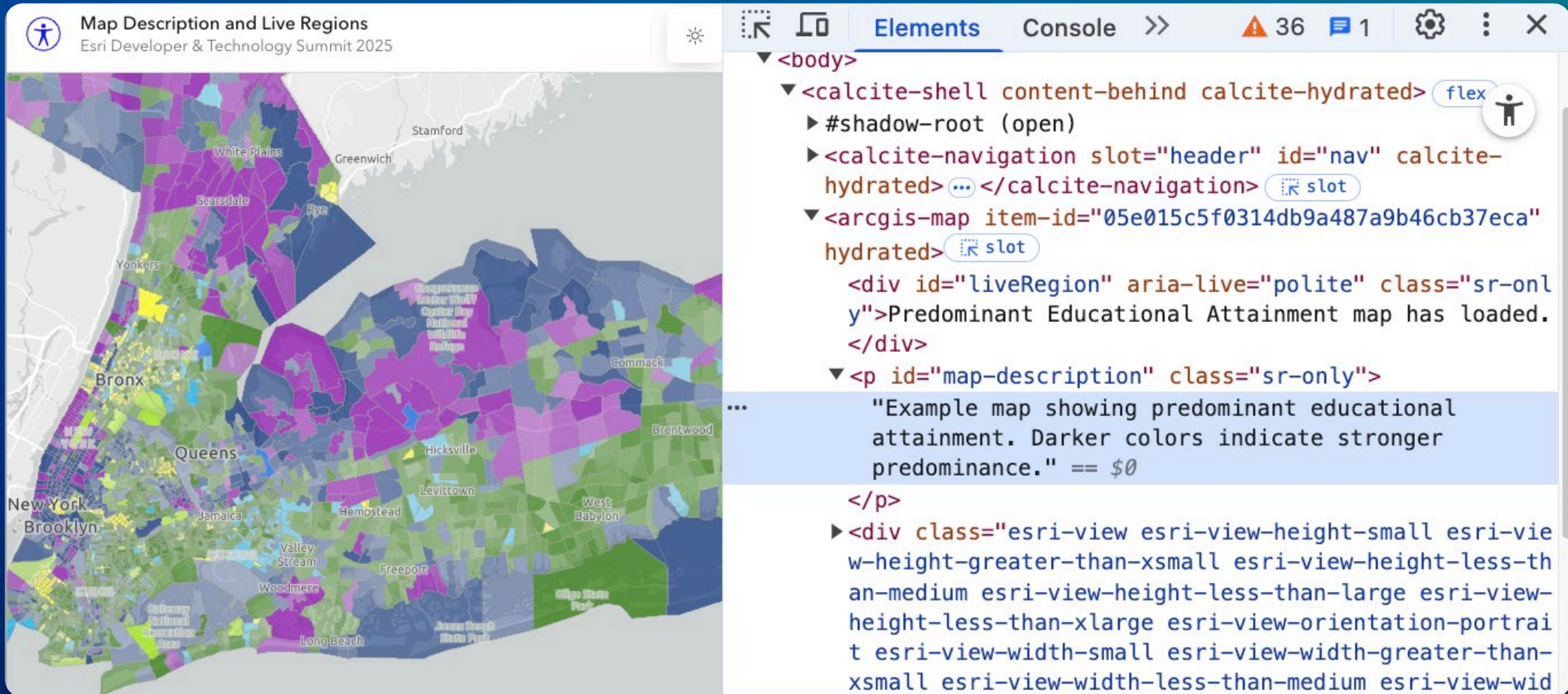
- ARIA (Accessible Rich Internet Applications) **Live Regions** help assistive technologies announce dynamic content updates.
- Used for content that updates **without user focus**, such as notifications, chat messages, or form validation messages.
- **ARIA attributes:**
 - `aria-live="polite"` – Announces updates **when idle**, avoiding interruptions.
 - `aria-live="assertive"` – Announces updates **immediately**, interrupting other speech.
 - `aria-live="off"` – Default setting; no announcement occurs.

Live region and aria-describedby

```
mapEl.addEventListener("arcgisViewReadyChange", handleArcgisViewReadyChange);

function handleArcgisViewReadyChange(event) {
  const mapDescription = document.getElementById("map-description");
  const { portalItem } = event.target.map;
  liveRegion.innerText = `${portalItem.title} map has loaded.`;
  mapDescription.innerText = portalItem.snippet;
  document.querySelectorAll(".esri-view-surface").forEach(el =>
    el.setAttribute("aria-describedby", "map-description")
  );
}
```

Live Regions and aria-describedby



The screenshot displays a web browser window with a map of New York City. The map is titled "Map Description and Live Regions" and is from the "Esri Developer & Technology Summit 2025". The map shows various regions in different colors, representing predominant educational attainment. A live region is present on the map, containing the text: "Example map showing predominant educational attainment. Darker colors indicate stronger predominance."

The browser's developer tools are open, showing the DOM structure. The live region is defined by the following HTML code:

```
<div id="liveRegion" aria-live="polite" class="sr-only">
  Predominant Educational Attainment map has loaded.
</div>
```

The map description is defined by the following HTML code:

```
<p id="map-description" class="sr-only">
  "Example map showing predominant educational
  attainment. Darker colors indicate stronger
  predominance." == $0
</p>
```

Focus trapping

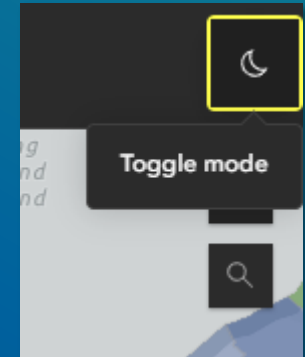
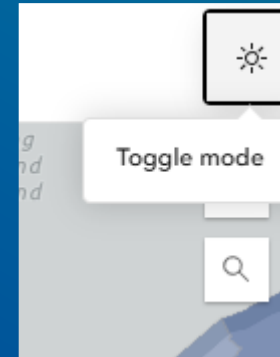
1.4.3: Contrast (Minimum) and 2.1.2: No Keyboard Trap

- **1.4.3: Contrast (Minimum) – Level AA**
 - Visual presentation has a contrast ratio of at least 4.5 to 1
 - Benefits visual, low vision, and cognitive impairments
- **2.1.2: No Keyboard Trap – Level A**
 - Ensure keyboard users don't get stuck in an interface
 - Benefits keyboard users including visual and cognitive impairments

Focus color

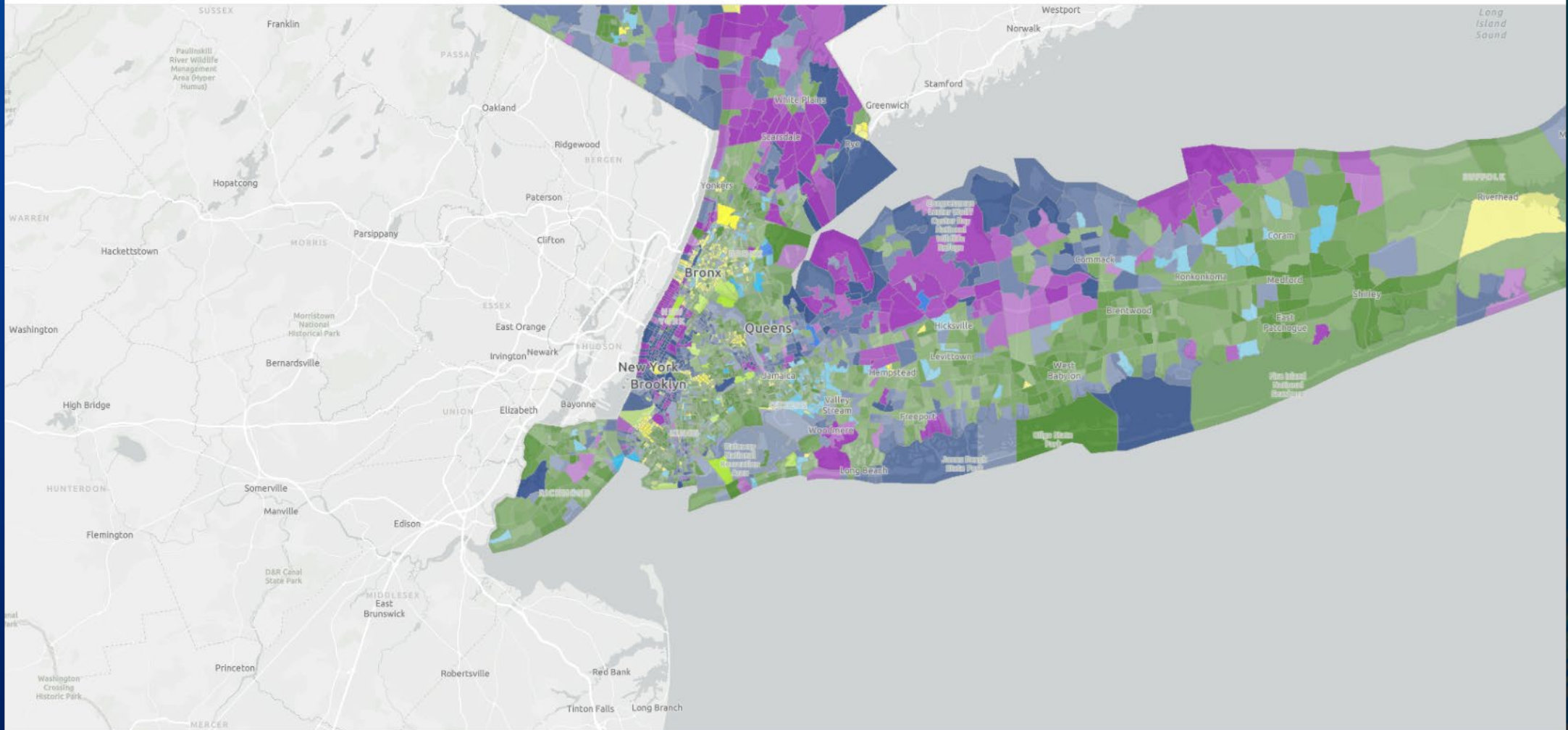
Contrast support

```
/* Light mode */  
body,  
:focus {  
  --calcite-color-brand: #000;  
  --calcite-color-focus: var(--calcite-color-brand);  
}  
  
/* Dark mode */  
body.calcite-mode-dark,  
.calcite-mode-dark :focus {  
  --calcite-color-brand: #FEFE4D;  
  --calcite-color-focus: var(--calcite-color-brand);  
}
```



Focus trapping demo

Expand Component Focus Trap Disabled
Esri Developer & Technology Summit 2025



Focus trapping HTML markup

```
<arcgis-map item-id="05e015c5f0314db9a487a9b46cb37eca">  
  <arcgis-home position="top-right"></arcgis-home>  
  <arcgis-expand id="expand-el" focus-trap-enabled="false" close-on-esc position="top-right" mode="floating">  
    <arcgis-search id="search-el"></arcgis-search>  
  </arcgis-expand>  
</arcgis-map>
```

Mutation observers

<https://developers.arcgis.com/javascript/latest/watch-for-changes/#using-a-mutation-observer>

- **Component events emit a change to their state**

- Initiated internally
- User interaction
- Setting an attribute or property

- **Mutation observers watch for changes in the Document Object Model (DOM) tree**

- All documented attributes trigger an observer

```
const mapEl = document.querySelector("arcgis-map");
mapEl.addEventListener("arcgisViewChange", (Event) => {
  const { zoom } = event.target;
  console.log(`The zoom is ${zoom}`);
});
```

arcgisViewChange event fires when aspects of the View changes

Mutation observers continued...

<https://developers.arcgis.com/javascript/latest/watch-for-changes/#using-a-mutation-observer>

```
<!-- Before panning the map -->  
<arcgis-map item-id="05e015c5f0314db9a487a9b46cb37eca"></arcgis-map>  
  
<!-- During map panning -->  
<arcgis-map item-id="05e015c5f0314db9a487a9b46cb37eca" updating></arcgis-map>
```

```
const mapEl = document.querySelector("arcgis-map");  
const observer = new MutationObserver((mutations, observer) => {  
  for (let mutation of mutations) {  
    console.log(`Mutation observer: ${mutation.attributeName} changed to ${mutation.target[mutation.attributeName]}`);  
  }  
});  
  
// Start observing the map's attributes for changes, such as the updating property  
observer.observe(mapEl, { attributeFilter: ["updating"] });  
  
// Change the zoom level after 10 seconds  
setTimeout(() => {  
  mapEl.zoom = 7;  
}, "10000");
```

Resetting focus functionality

Mutation observers and reactiveUtils

```
require(["esri/core/reactiveUtils"], (reactiveUtils) => {

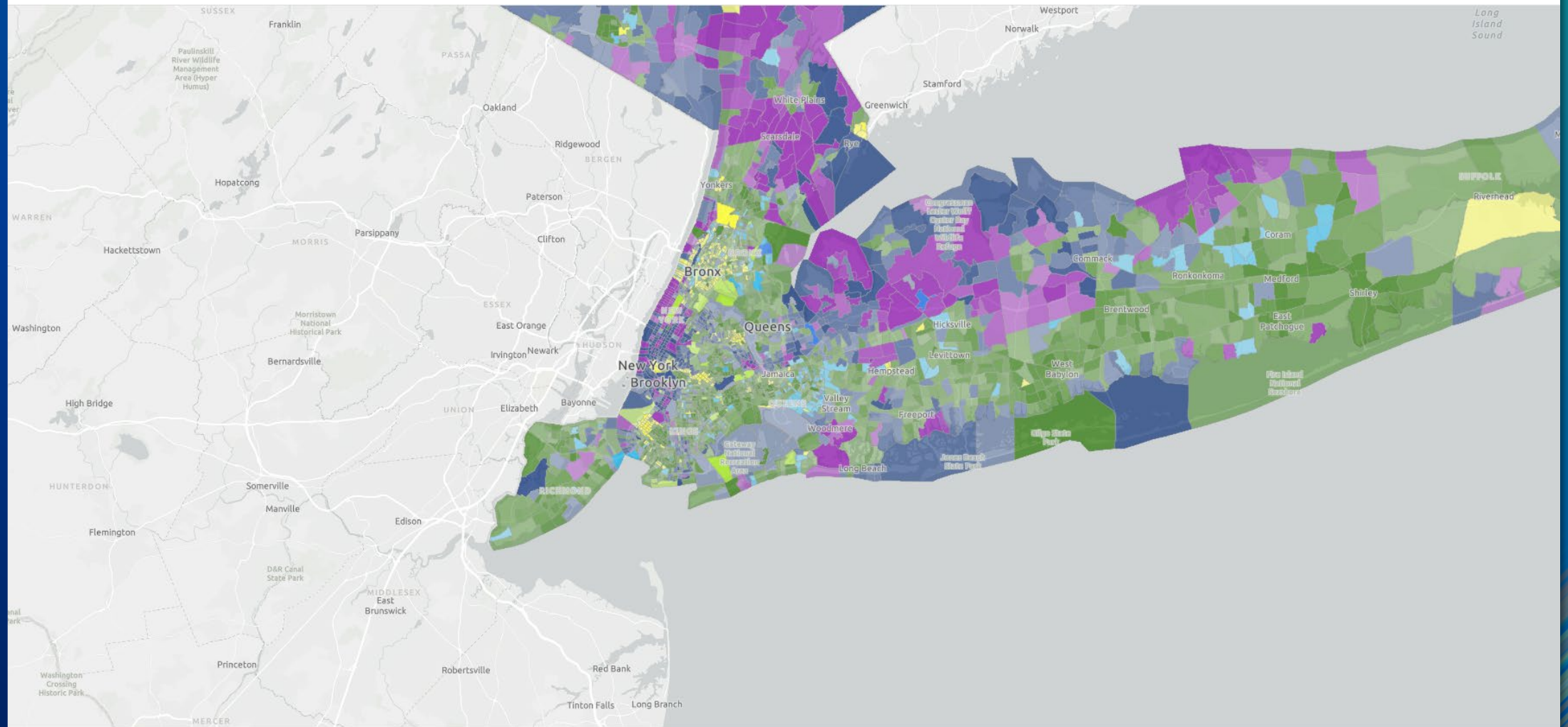
  const mapEl = document.getElementById("mapEl");

  // reactiveUtils to watch for when the popup is opened and closed
  // Resource: https://developers.arcgis.com/javascript/latest/watch-for-changes/#watch-for-changes-in-the-api
  mapEl.addEventListener("arcgisViewReadyChange", () => {
    reactiveUtils.watch(() => mapEl.view.popup.visible, (visible) => {
      if (mapEl.view.popup.visible) {
        mapEl.view.popup.focus();
      } else {
        searchEl.focusSearch();
      }
    }
  });
});

// Initialize the mutation observer
// Resource: https://developers.arcgis.com/javascript/latest/watch-for-changes/#using-a-mutation-observer
const observer = new MutationObserver((mutations, observer) => {
  for (let mutation of mutations) {
    // Set focus on the arcgis-search if the component is expanded
    // Else set focus on the arcgis-expand
    if (mutation.target[mutation.attributeName] == true) {
      searchEl.focusSearch();
    } else {
      const expandEls = document.querySelectorAll(".esri-expand__toggle > calcite-action");
      expandEls[0].setFocus();
    }
  }
});

// Start observing the arcgis-expand's "expanded" attribute
observer.observe(expandEl, {
  attributeFilter: ["expanded"]
});
});
```

Expand Component Focus Trap Disabled
Esri Developer & Technology Summit 2025



Prefers reduced motion

2.2.2 Pause Stop and Hide and 2.3.3 Seizures and Physical Reactions

- **2.2.2 - For content that moves, blinks or scrolls that starts automatically and lasts more than 5 seconds (A)**
 - Ensure there is a mechanism to pause, stop or hide
 - Flashing/Blinking must be evaluated against 2.3.1 and 2.3.2
- **2.3.3 – Animation from Interactions (AAA)**
 - Motion animation can be disabled *unless essential*

Prefers reduced motion : GoTo Transitions

View, Popup, Bookmarks, Search, Locate and more

- **goTo() Method Update (v4.30)**
 - Respects user preference for reduced motion.
 - Animates by default unless the user prefers reduced motion.
- **Customization Options**
 - Override using `esriConfig.respectPrefersReducedMotion`
 - Or per-call `animate` property.
- Refer to [Implementing Reduced Motion](#) guidelines.

Detect User Preferences

Detect via CSS

```
@media (prefers-reduced-motion: reduce) {  
  #animationControl {  
    display: block;  
  }  
}  
@media (prefers-reduced-motion: no-preference) {  
  #animationControl {  
    display: none;  
  }  
}
```


Detect User Preferences

Detect via JavaScript

```
const mediaQuery = window.matchMedia("(prefers-reduced-motion)");  
mediaQuery.addEventListener("change", (event) => {  
    handleAnimation(event.matches);  
});
```

Prefers reduced motion

Animated Symbols

- Animated symbol support added to [Map Viewer](#)
- Disable Animations
 - Set playAnimation for symbols to false
 - Automatically
 - Provide play/pause controls

```
const disableAnimations = (obj) => {
  for (const key in obj) {
    if (obj[key] && typeof obj[key] === 'object') {
      disableAnimations(obj[key]);
    }
    if (key === 'playAnimation') {
      obj[key] = false;
    }
  }
};
disableAnimations(renderer);
return renderer;
}
```

Quickly test prefers reduced motion

Chrome Developer Tools > Rendering tab

Emulate CSS media feature prefers-reduced-motion
Forces CSS prefers-reduced-motion media feature

✓ No emulation

prefers-reduced-motion: reduce

Emulate CSS media feature prefers-reduced-motion

Demo: Prefers Reduced Motion

2025 Esri Developer & Technology Summit - Reduced Motion
Reduced Motion

Disable animation

The map displays the state of Alaska and its surrounding waters, including the Bering Sea, Norton Sound, Bristol Bay, and the Gulf of Alaska. The city of Anchorage is marked with a red pin and the number 43. Numerous data points are scattered across the state, represented by white circles with black outlines. A yellow dot is visible near Bristol Bay with the number 5.8. The map interface includes a home button in the top-left corner and a 'Disable animation' toggle in the top-right corner. The text 'Reduced Motion' is displayed in the top-left corner, indicating the current system preference.

STATES
ALASKA
YUKON
Norton Sound
Anchorage
43
Bering Sea
Bristol Bay
5.8
Gulf of Alaska

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USEWS, USGS, Esri
Powered by Esri

Consistent focus

2.4.3 Focus Order and 2.1.1: Keyboard

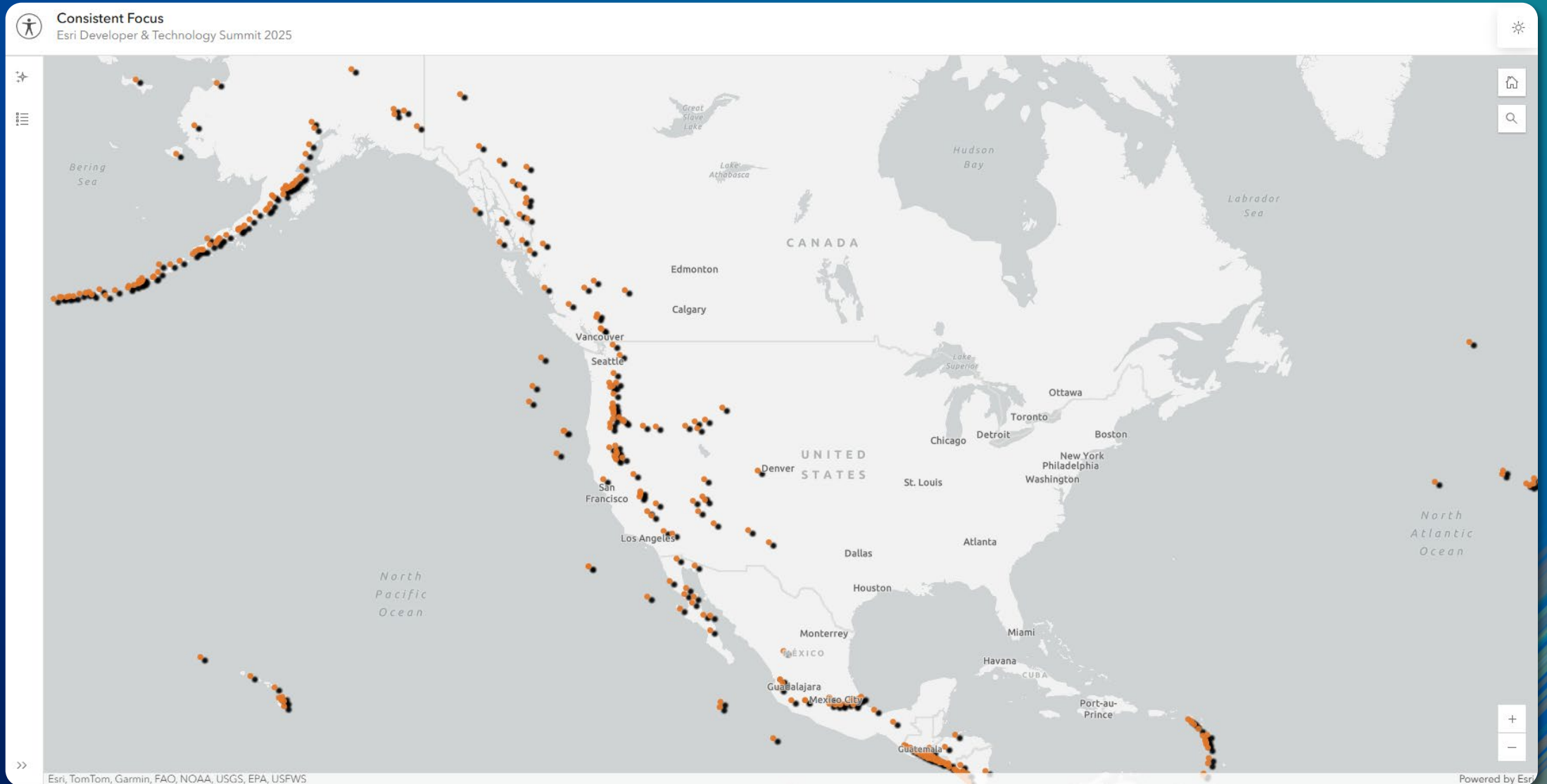
- **2.4.3: Focus Order (Level A)**

- Navigate sequentially to preserve meaning and operability
- Dialogs
 - Shift focus to dialog when open
 - Shift focus back to the previous element when the dialog is closed
- Benefits visual and cognitive impairments

- **2.1.1: Keyboard (Level A)**

- Functionality is operable through a keyboard interface
- Benefits visual, low vision, and mobility impairments

Consistent focus demo



Consistent focus HTML markup

```
<calcite-shell content-behind>
  <calcite-navigation slot="header">
    ...
  </calcite-navigation>
  <calcite-shell-panel slot="panel-start" display-mode="float-content">
    <calcite-action-bar id="custom-action-bar" slot="action-bar">
      <calcite-action data-action-id="layer-effects" icon="effects" text="Layer effects"></calcite-action>
      <calcite-action data-action-id="legend" icon="legend" text="Legend"></calcite-action>
    </calcite-action-bar>
    <!-- Layer effects -->
    <calcite-panel heading="Layer effects" height-scale="l" data-panel-id="layer-effects" closable closed>
      <!-- Bloom effect -->
      <calcite-block open heading="Bloom" description="Apply a neon-like glow">
        ...
      </calcite-block>
      <!-- Drop shadow effect -->
      <calcite-block open heading="Drop shadow" description="Apply a drop shadow">
        ...
      </calcite-block>
    </calcite-panel>
    <!-- Legend Panel -->
    <calcite-panel heading="Legend" height-scale="l" data-panel-id="legend" closable closed>
      <arcgis-legend reference-element="arcgis-map" position="bottom-right"></arcgis-legend>
    </calcite-panel>
  </calcite-shell-panel>

  <arcgis-map item-id="c2a3444863f2466aaad9efa6e65063e1" id="mapEl" basemap="gray">
    <arcgis-home position="top-right"></arcgis-home>
    <arcgis-expand id="expand-el" focus-trap-enabled="false" close-on-esc position="top-right" mode="floating">
      <arcgis-search id="search-el"></arcgis-search>
    </arcgis-expand>
    <arcgis-zoom position="bottom-right"></arcgis-zoom>
  </arcgis-map>
</calcite-shell>
```

Consistent focus functionality

arcgis-expand, arcgis-search, popup

```
// reactiveUtils to watch for when the popup is opened and closed
// Resource: https://developers.arcgis.com/javascript/latest/watch-for-changes/#watch-for-changes-in-the-api
mapEl.addEventListener("arcgisViewReadyChange", () => {
  reactiveUtils.watch(() => mapEl.view.popup.visible, (visible) => {
    if (mapEl.view.popup.visible) {
      mapEl.view.popup.focus();
    } else {
      searchEl.focusSearch();
    }
  }
});
```

```
// Initialize the mutation observer
// Resource: https://developers.arcgis.com/javascript/latest/watch-for-changes/#using-a-mutation-observer
const observer = new MutationObserver((mutations, observer) => {
  for (let mutation of mutations) {
    // Set focus on the arcgis-search if the component is expanded
    // Else set focus on the arcgis-expand
    if (mutation.target[mutation.attributeName] == true) {
      searchEl.focusSearch();
    } else {
      const expandEls = document.querySelectorAll(".esri-expand__toggle > calcite-action");
      expandEls[0].setFocus();
    }
  }
});
```

```
// Start observing the arcgis-expand's "expanded" attribute
observer.observe(expandEl, {
  attributeFilter: ["expanded"]
});
```


Consistent focus functionality continued

calcite-action-bar, calcite-action, calcite-panel

```
const actionBarEl = document.getElementById("custom-action-bar");
let activeWidget = "";

// Active action
const handleActionBarClick = ({ target }) => {
  if (target.tagName !== "CALCITE-ACTION") {
    return;
  }

  if (activeWidget) {
    activeActionEl = document.querySelector(`[data-action-id=${activeWidget}]`).removeAttribute("active");
    activePanelEl = document.querySelector(`[data-panel-id=${activeWidget}]`).closed = true;
  }

  const nextWidget = target.dataset.actionId;
  if (nextWidget !== activeWidget) {
    document.querySelector(`[data-action-id=${nextWidget}]`).active = true;
    document.querySelector(`[data-panel-id=${nextWidget}]`).closed = false;
    activeWidget = nextWidget;
    document.querySelector(`[data-panel-id=${nextWidget}]`).setFocus();
  } else {
    activeWidget = null;
  }
};

actionBarEl.addEventListener("click", handleActionBarClick);

// Panel interaction
const panelEls = document.querySelectorAll("calcite-panel");
for (let i = 0; i < panelEls.length; i++) {
  panelEls[i].addEventListener("calcitePanelClose", () => {
    document.querySelector(`[data-action-id=${activeWidget}]`).closed = true;
    document.querySelector(`[data-action-id=${activeWidget}]`).active = false;
    document.querySelector(`[data-action-id=${activeWidget}]`).setFocus();
    activeWidget = null;
  });
}
```



Testing, Tools and Resources



Accessibility testing

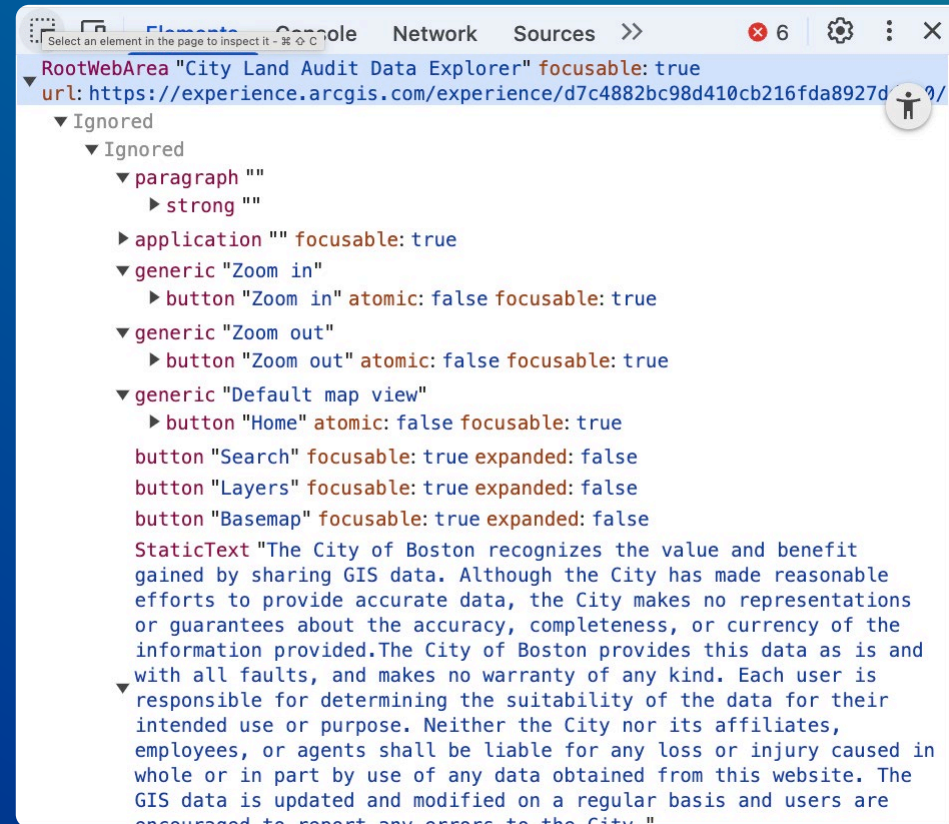
1. **User acceptance testing** (e.g., real-world performance)
2. **Manual testing** (e.g., Screen readers – JAWS, NVDA, VoiceOver)
3. **Automated testing** (e.g., Browser extensions)
 - Third party browser extensions cannot guarantee accessibility
 - Approximately 30% of accessibility concerns are evaluated with automated tests
 - The best way to test accessibility is with a human, but automated tests can provide general guidance
 - As browsers and extensions update, conflicts can arise and trigger unrelated errors without warning



Browser testing tool: Accessibility tree

Representation of HTML elements that are relevant for assistive technology

- Chrome & Firefox developer tools
 - Firefox: Right-click > Inspect accessibility properties
 - Chrome: Right-click > Inspect > click accessibility icon in upper corner
- Used by assistive technology to interpret the site content



Invalid accessibility bugs #1

calcite-button and labels

- Label mismatch, where `label/aria-label` differ from visible text
- Matching text is suggested, and some automated testing tools flag as an issue
 - No criterion mentions matching
 - Recommendation for visible text into label
- 2.5.3: Label in Name

```
<calcite-button label="Select: Funding">  
  Select  
</calcite-button>
```

Invalid accessibility bugs #2

calcite-input

- Input's `clearable` button is not accessible via keyboard
- Why it's invalid
 - Follows native input behavior
 - The `value` can be cleared with “esc”, “backspace” and “delete” keys or selecting the text and clearing the value
 - Calcite's [research and design considerations](#)
 - Follows [2.1: Keyboard](#)

```
<calcite-input clearable></calcite-input>
```

 ×

Invalid accessibility bugs #3

Missing content

- Language missing or invalid
- Missing or uninformative page title
- Why it might be invalid
 - Value is set dynamically

```
<html class="hydrated" lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <style data-styles>...</style>
    <!-- Responsive -->
    <meta name="viewport" content="width=device
    <meta name="mobile-web-app-capable" conten
    <meta name="apple-mobile-web-app-capable"
    <meta name="apple-mobile-web-app-status-ba
    <title>Zone Lookup</title> == $0
```

- ✓ ✗ 2 Errors
 - ✓ 1 X Missing or uninformative page title
 - ✗ T ⓘ
 - ✓ 1 X Language missing or invalid
 - ✗ 🌐 ⓘ

Accessibility tools

- [Color ramps by Esri](#)
- [Contrast Grid by Eightshapes](#)
- [Browser extensions](#)
 - [Colorblindly](#)
 - [axe](#) by Deque
 - [WAVE](#) by WebAIM
 - [Accessibility Insights](#) by Microsoft
 - [Accessibility Checker](#) by Silktide

The screenshot displays the 'Choosing a color ramp' tool on the ArcGIS Maps SDK for JavaScript website. The interface includes a navigation menu on the left, a search bar, and a main content area with the following sections:

- 1. Color scheme (tags):** A grid of color scheme tags including 'blues', 'bright', 'browns', 'categorical', 'centered-on', 'dark', 'diverging', 'esri-brand', 'extremes', 'grays', 'greens', 'heatmap', 'light', 'lines', 'oranges', 'pinks', 'point-cloud', 'purples', 'reds', 'sequential', 'subdued', and 'yellows'. The 'blues' tag is selected.
- 2. Number of Colors:** Radio buttons for selecting the number of colors, with '7' selected.
- 3. Colorblind friendly:** A toggle switch that is currently turned on.
- 4. Filter by hexadecimal (optional):** A text input field containing the hexadecimal values: '#b5c2d9, b5c2d9 or #ffcd4, #b1cdc2, #629eb0, #38627a, #0d2644'.
- 5. Search criteria (more strict):** A toggle switch that is currently turned off.

A 'Search' button is located below the search criteria. Below the search results, it indicates '1562 color ramps' and displays four color ramp examples:

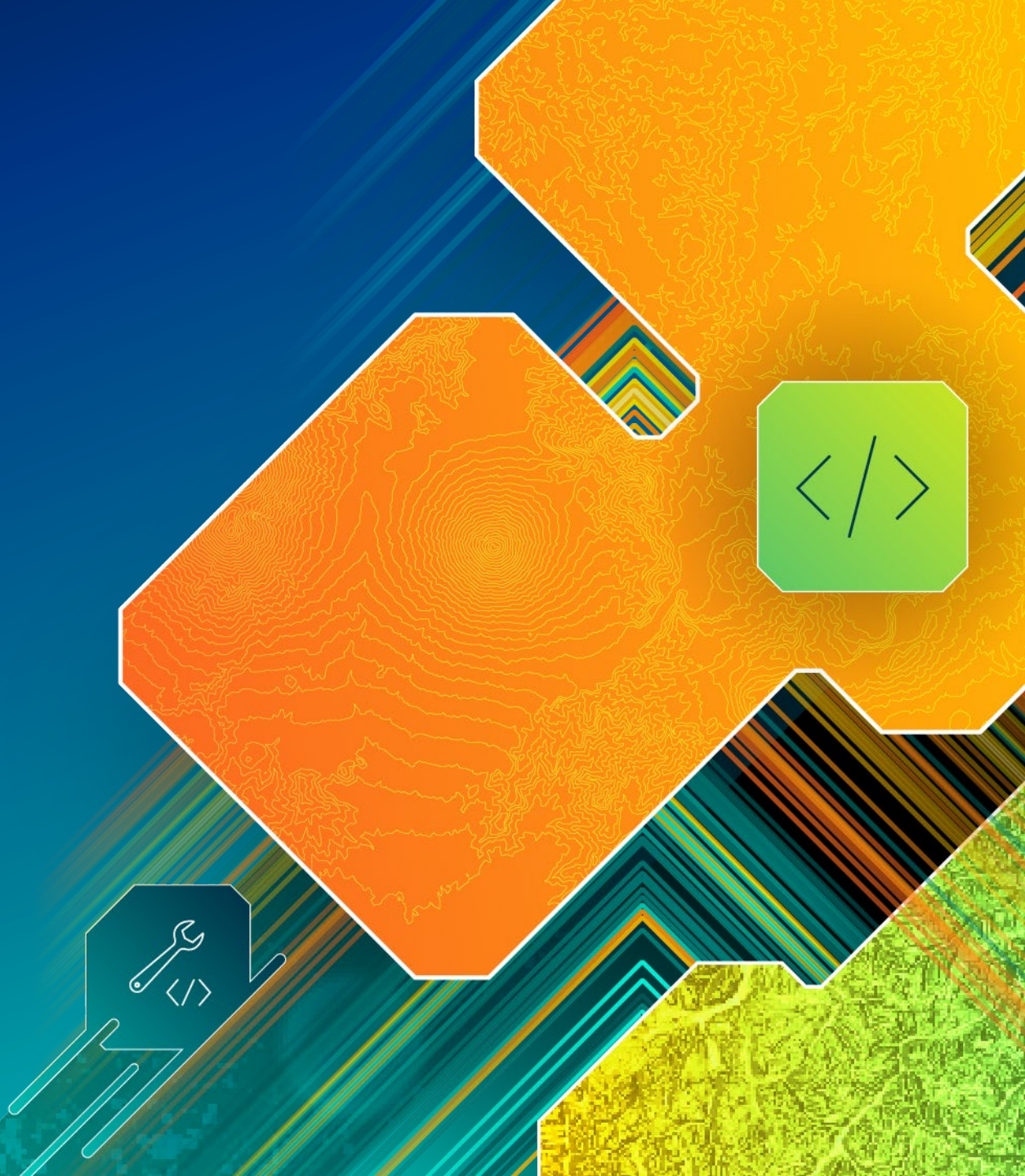
- Blue 17:** A vertical bar with three segments of blue. Hex values: #392699ff, #432db3ff, #4c33ccff.
- Blue 18:** A vertical bar with three segments of blue. Hex values: #2b2e80ff, #2e349bff, #3039b7ff.
- Blue 19:** A vertical bar with three segments of blue. Hex values: #0049cfff, #005592ff, #0062a8ff.
- Blue 2:** A vertical bar with three segments of blue. Hex values: #e6eecfff, #b4d2c6ff, #82b6bcff.

On the right side of the page, there is a section titled 'On this page' with links for 'Choosing a color ramp' and 'Related samples and resources'. Below that, there is a 'Was this page helpful?' section with 'Yes' and 'No' buttons.

Accessibility resources

- GitHub demos and code: <https://esriurl.com/a11y-ds-2025>
- Resources and tools: <https://esriurl.com/a11y-resources>
- Esri Community: <https://esriurl.com/a11y-community>
- Developer guides
 - <https://esriurl.com/js-a11y>
 - <https://esriurl.com/calcite-a11y>

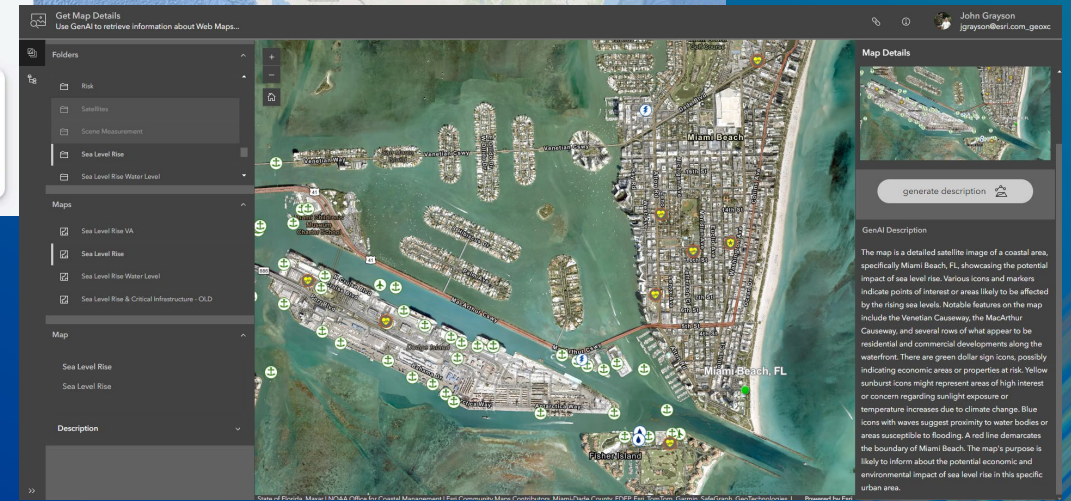
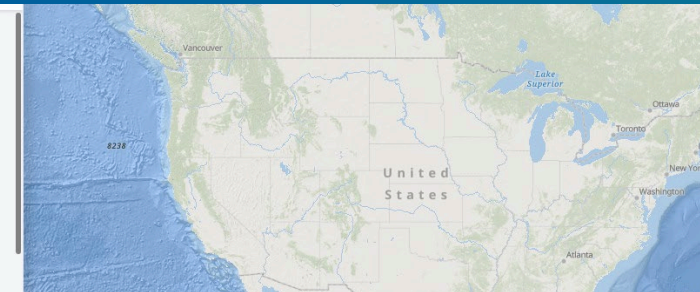
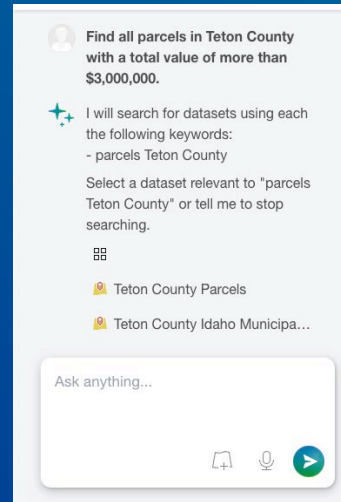
Road Ahead



Artificial Intelligence

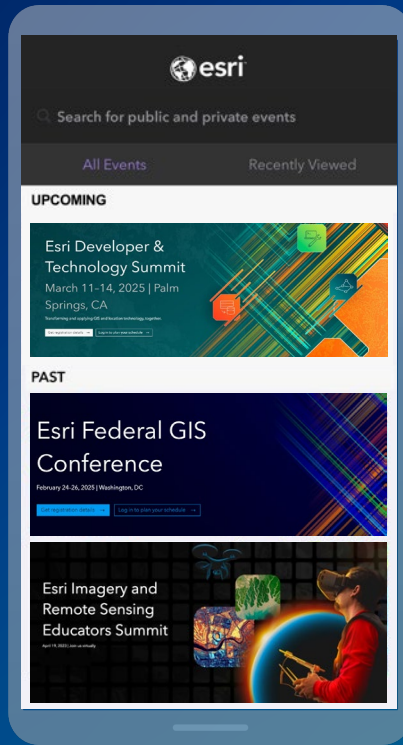
Research areas

- Enhance apps with chat option
 - Voice or text based interactions
- Automated descriptions
 - Not always accurate with maps
 - Good for images

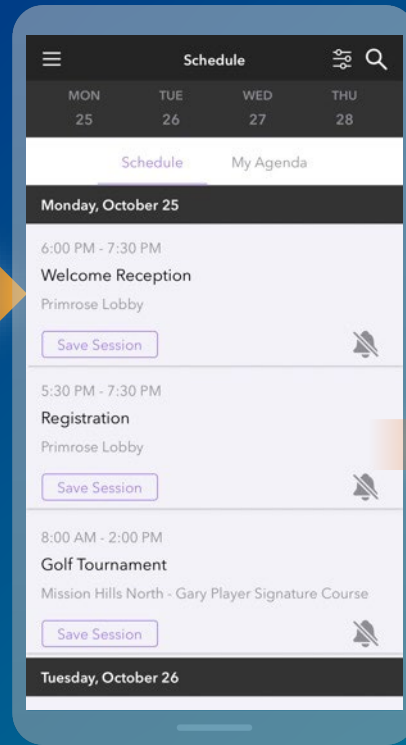


Please share your feedback in the app

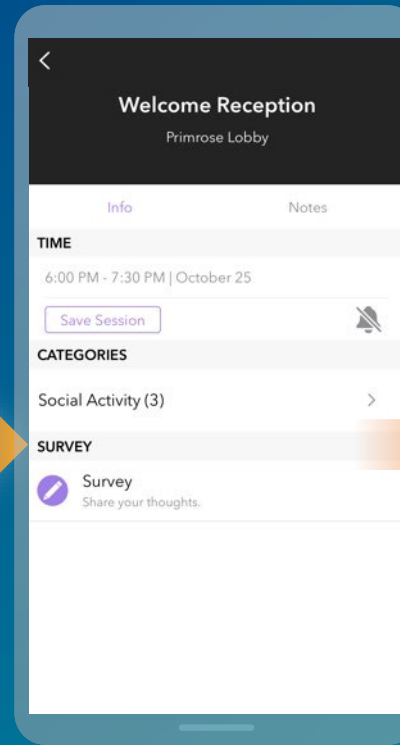
Download the Esri Events app and find your event



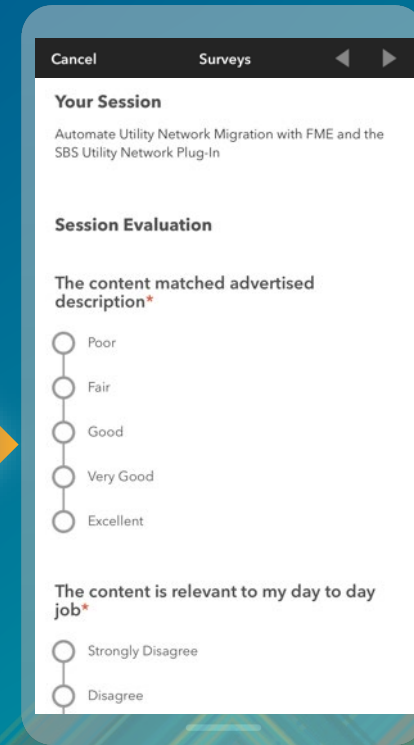
Select the session that you attended



Scroll down to "Survey"



Log in to access the survey





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