

Web3D.org

content
with



Web3D Progress 1997-2024



V 1.0

1994

VRML
V 2.0
Model + hyperlink

1997

2000

X3D Architecture: encodings, bindings

2005

X3D
V 3.0

2007

H|anim
V 1.0

2013

In browser Declarative 3D

x3dom
Instant 3D the HTML way!

2014

JavaScript Implementations

WebGL

2016

VR devices

X3D
V 3.3



2018

H|anim
V 2.0

2019

glTF
Binary, JSON
AR - 3D - VR

2021

HTML5
glTF
3D Print
3D Scanning

WebXR

2024

X3D
X3D4

instantreality

Open-source

X3D
X3DVRML
FreeWRL

Castle Game Engine

Interchange
Tool chain support

Annual Web3D Conference
1995-2024 : our 29th Year!

Web3D 2024
GUIMARÃES - PORTUGAL





X3D: Extensible By Design

- The ISO Standard scene graph pattern is adaptable across :
 - Graphic and data innovations
 - Formats (encodings)
 - Programming languages
 - Rendering libraries
 - Hardware





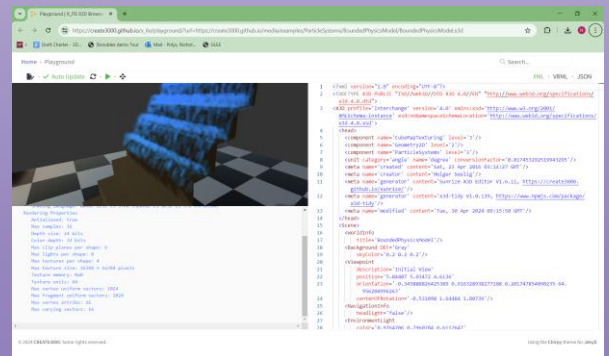
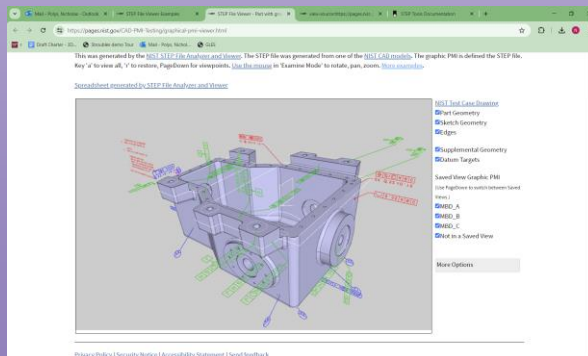
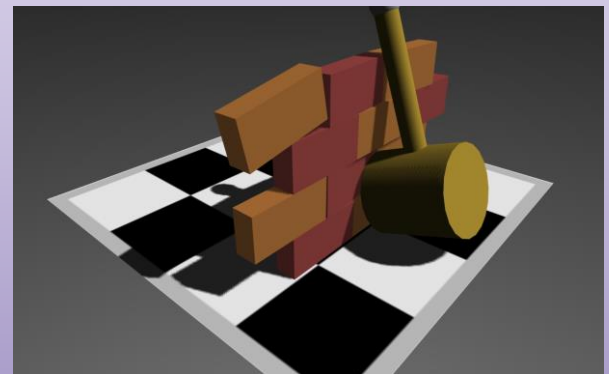
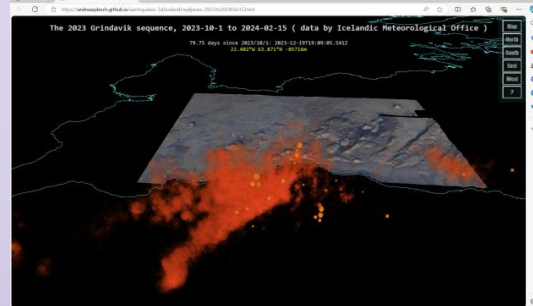
X3D: Extensible for Innovation

- @ 2000 : XML & binary
- @ 200x : Shader programming
- @ 200x : Virtual Reality (CAVEs, Headsets)
- @ 201x : WebGL
- @ 201x : Physically-Based Rendering (PBR, glTF)
- @ 201x : WebVR
- @ 2023 : WebXR
- **@ 2024 : X3D4**



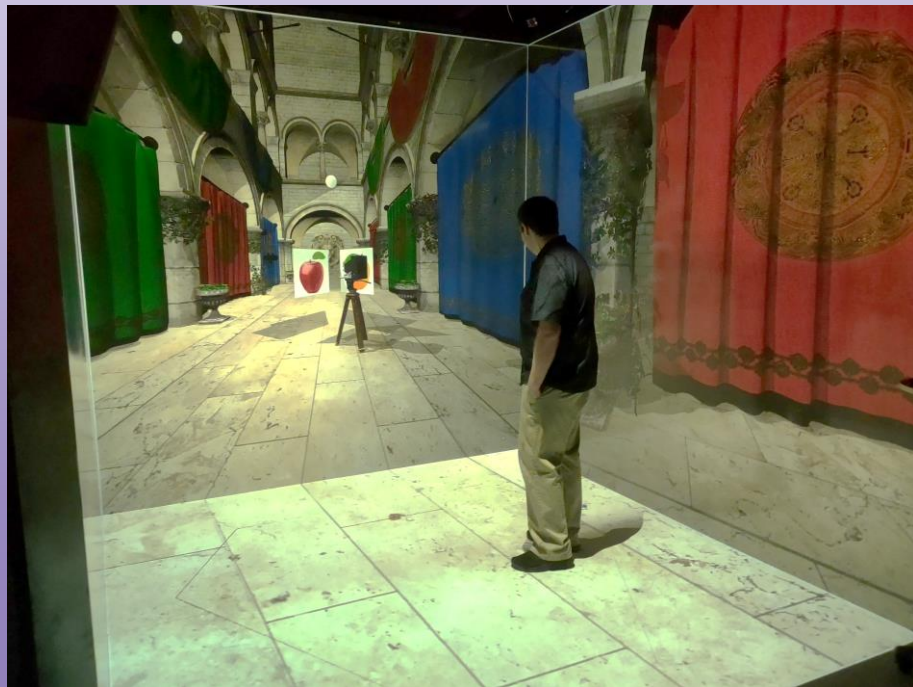
X3D: Extensible Across Applications

- Volume rendering
- Geospatial
- Rigid Body Physics
- HANIM
- Distributed Interactive Simulation (DIS)
- CAD, NURBS
- Particle Systems
- ...



X3D4 (ISO/IEC 2024)

- Specifies harmonization with other standards:
 - *gITF (*)*
 - *WebAudio*
 - *MPEG*
 - *MIDI*
 - *HTML + DOM + TTL, ...*
 - *DICOM*
 - ...



Extensible for Convergence

Web, industry and standards bodies have been collaborating for a foundation for open interoperable enterprise 3D solutions



... and many more!

www.web3D.org/liaisons

Metaverse Standards Forum

3D Web Interoperability WG

- Use Cases -> Requirements
- Standards review & Gap Analysis
- Projects
 - Linked spatial experiences
 - Functional Profiles for Metaverse content
 - 3D UserAgent
 - Consistency of Experience
 - ...



NEW RELEASES!

Four different open-source engines released for SIGGRAPH!

Chock-Full-O-Features and formats ~!



X3DOM.org : Javascript Engine - New Release 1.8.3



X_ITE Javascript Engine - New Release 10.0.5



Castle Game Engine

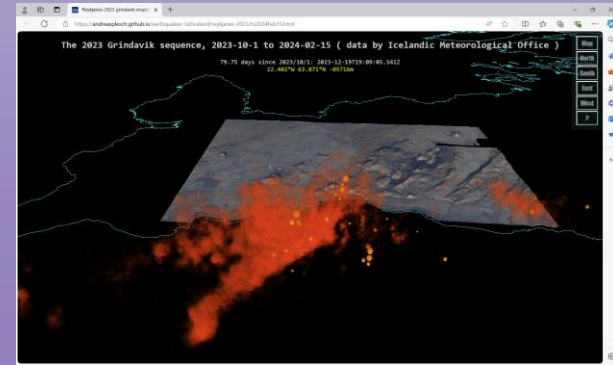
Castle Game Engine



FreeWRL 6.1

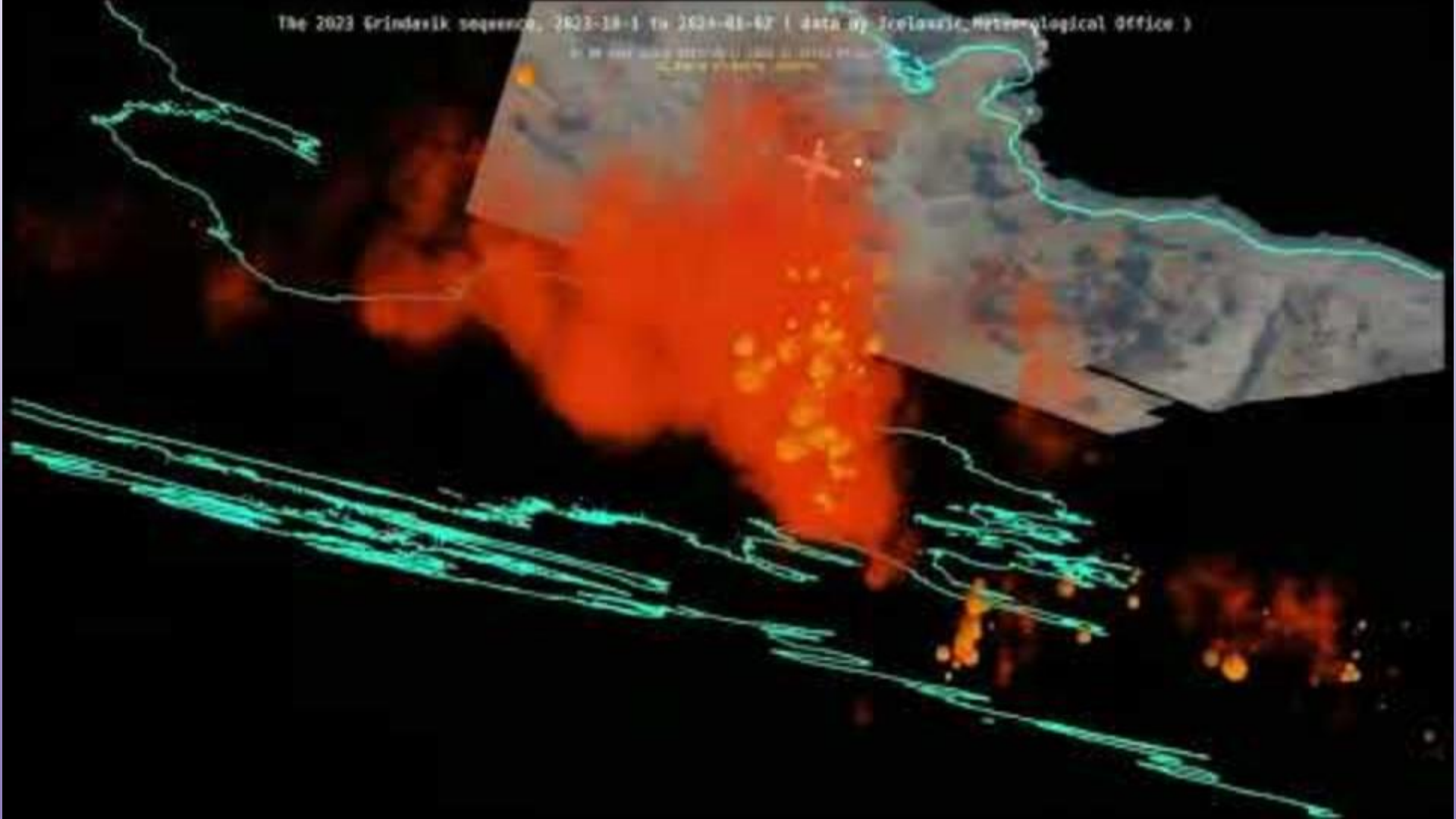
Member Highlights

- Interactive X3DOM mashups for scientific visualization; created by Dr. Andreas Plesch (X3D Geospatial + Volume + D3 + glTF):
 - USGS earthquake Vis – live query Ridgecrest, CA : [demo](#)
 - Grindavik seismicity, 93 days. Oct. 2023 to Jan. 2024 [video](#) ; [demo](#)
 - Grindavik seismicity, last 48 hr query: [demo](#)
 - Mars: Percy Landing location [demo](#)
 - [Data mashup demo](#)

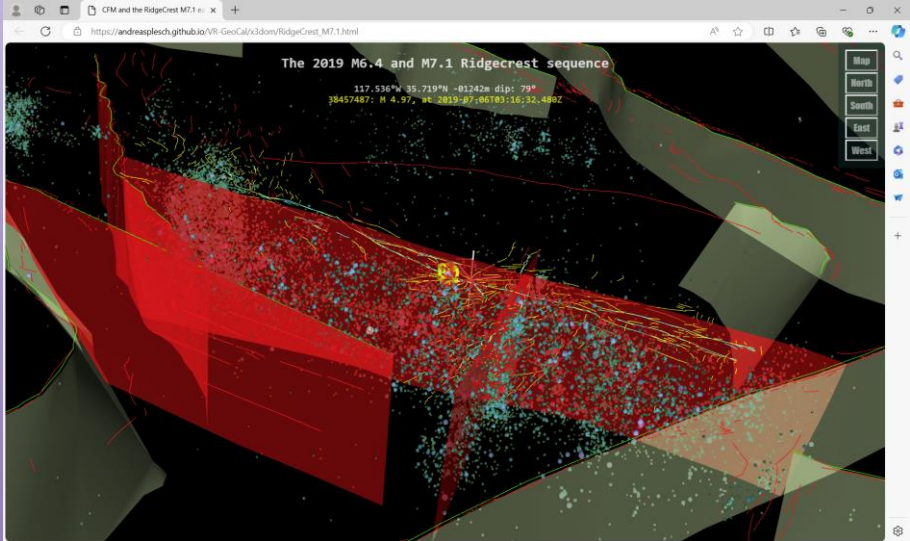
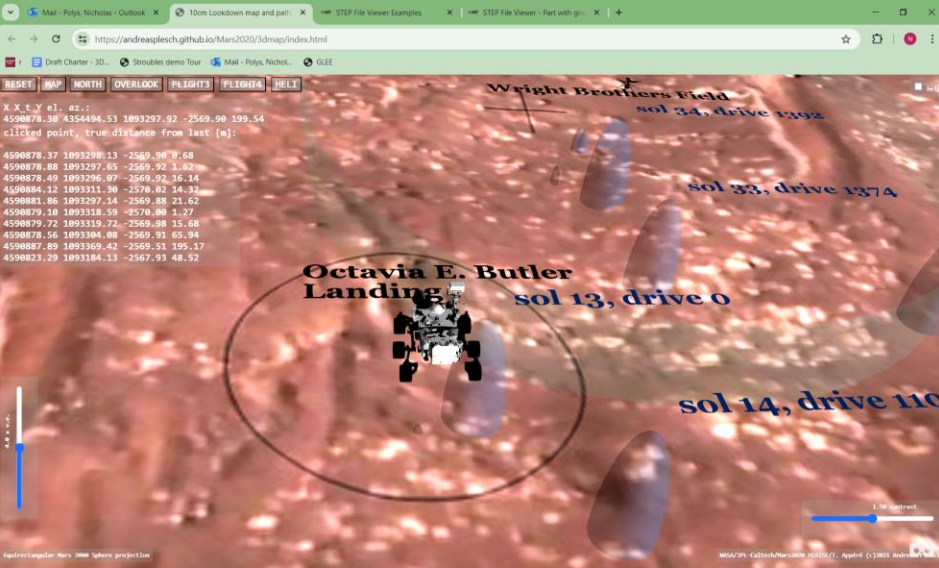
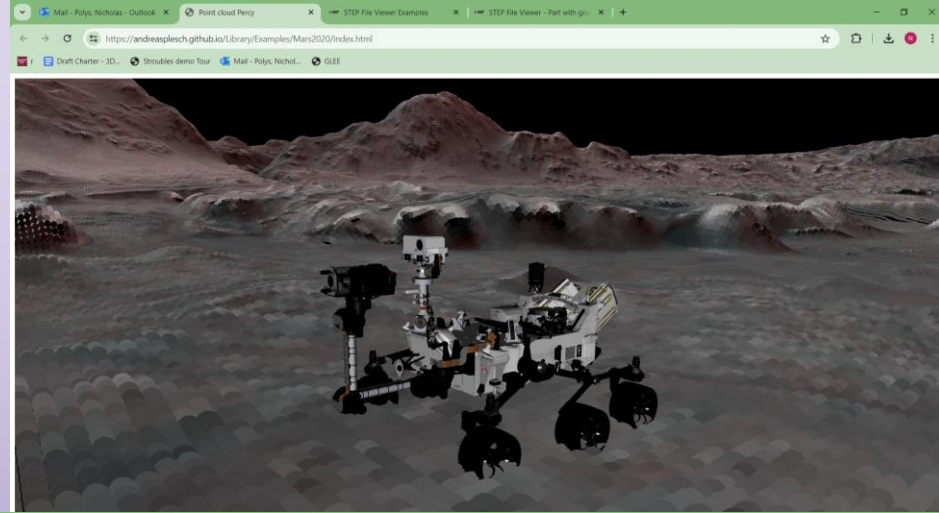


The 2023 Grindavik sequence, 2023-10-1 to 2023-10-12 (data by Icelandic Meteorological Office)

© 2023 Met Office. All rights reserved. [Data provided by Met Office](#)



- X3DOM: X3D Volume rendering + gITF
- Live query of USGS Data
- NASA Perseverance data



Virginia Tech

Nicholas F. Polys, PhD
Immersive Cartography

2023-2024 Highlights :

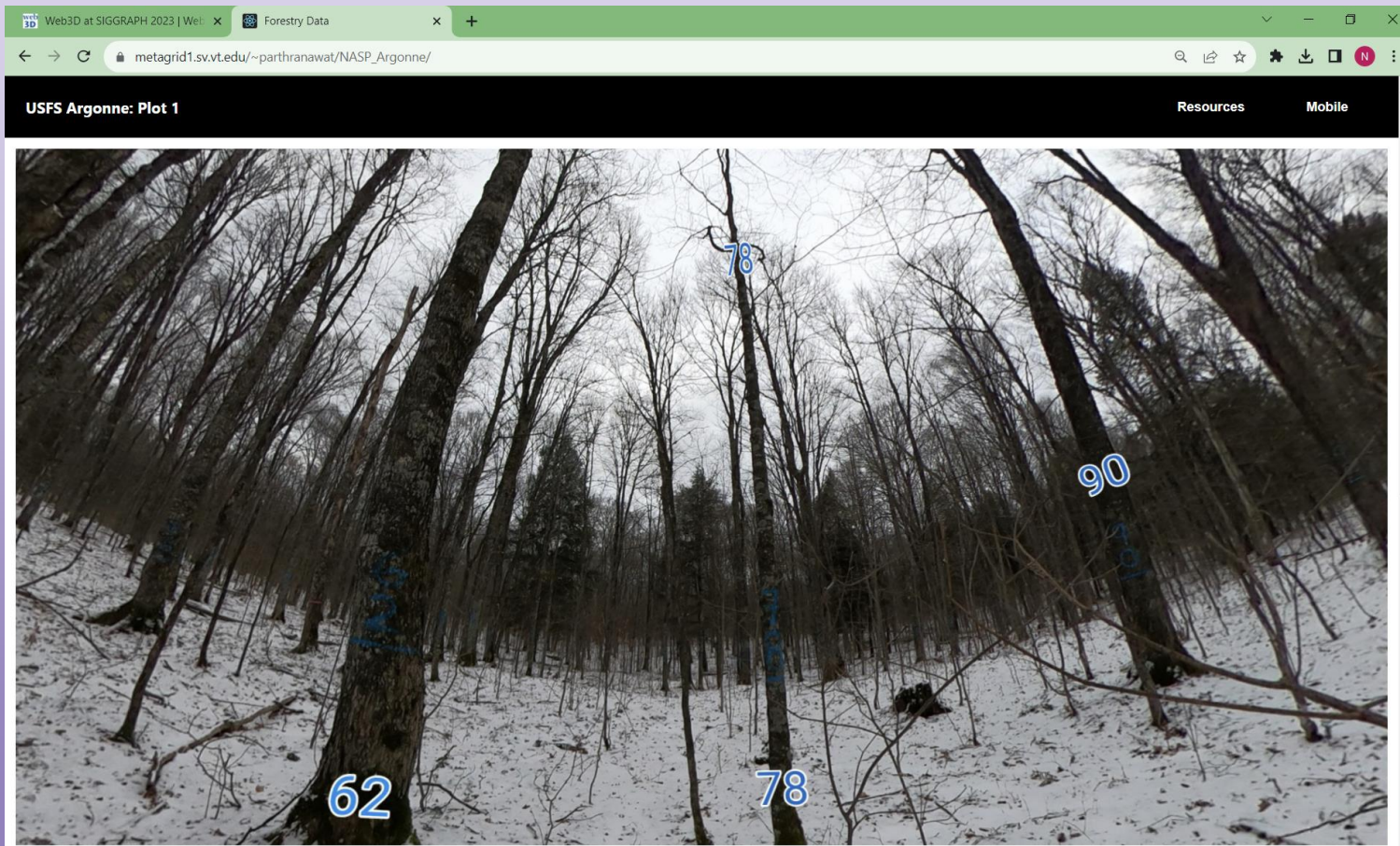
Virtual Field Trips:

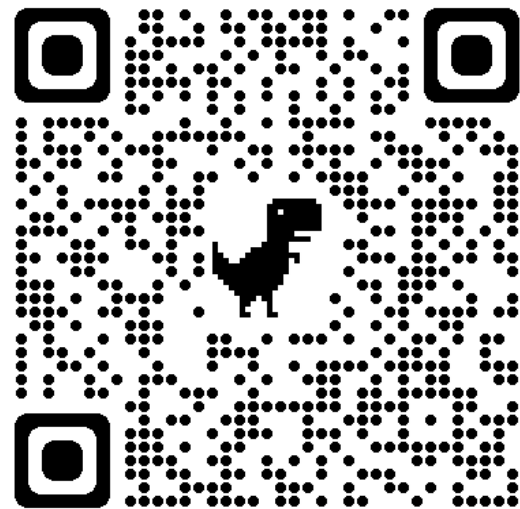
- USDA Professional Forestry Training
- Construction Safety and Liability Management



- **USDA Professional Forestry Training:**

Plot data
360photos
X3DOM
Maps
Videos
+ React





- Construction Safety and Liability Management



Scene 3 Fog

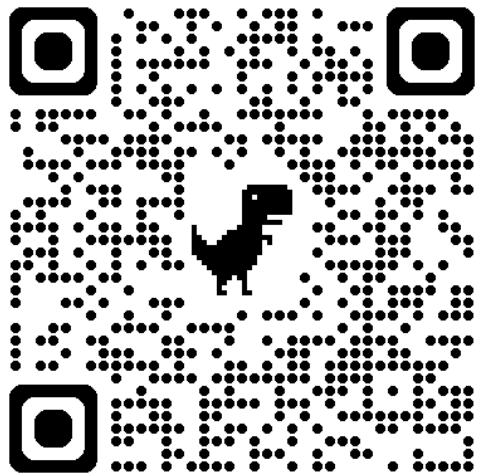
View Scene

Mobile



*Paper in
ACM SIGGRAPH
Web3D 2023!*

*360 videos
X3D
X3DOM
+ React*



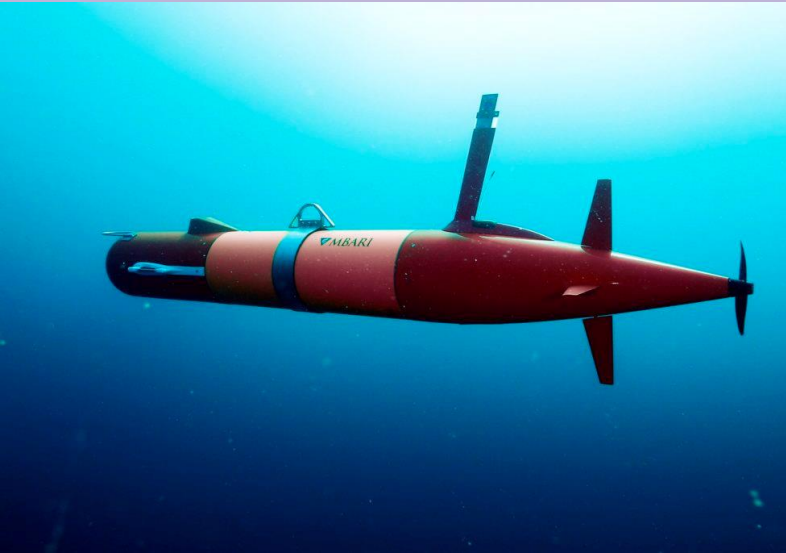
MBARI – Mike McCann

Monterey Bay Aquarium Research Institute

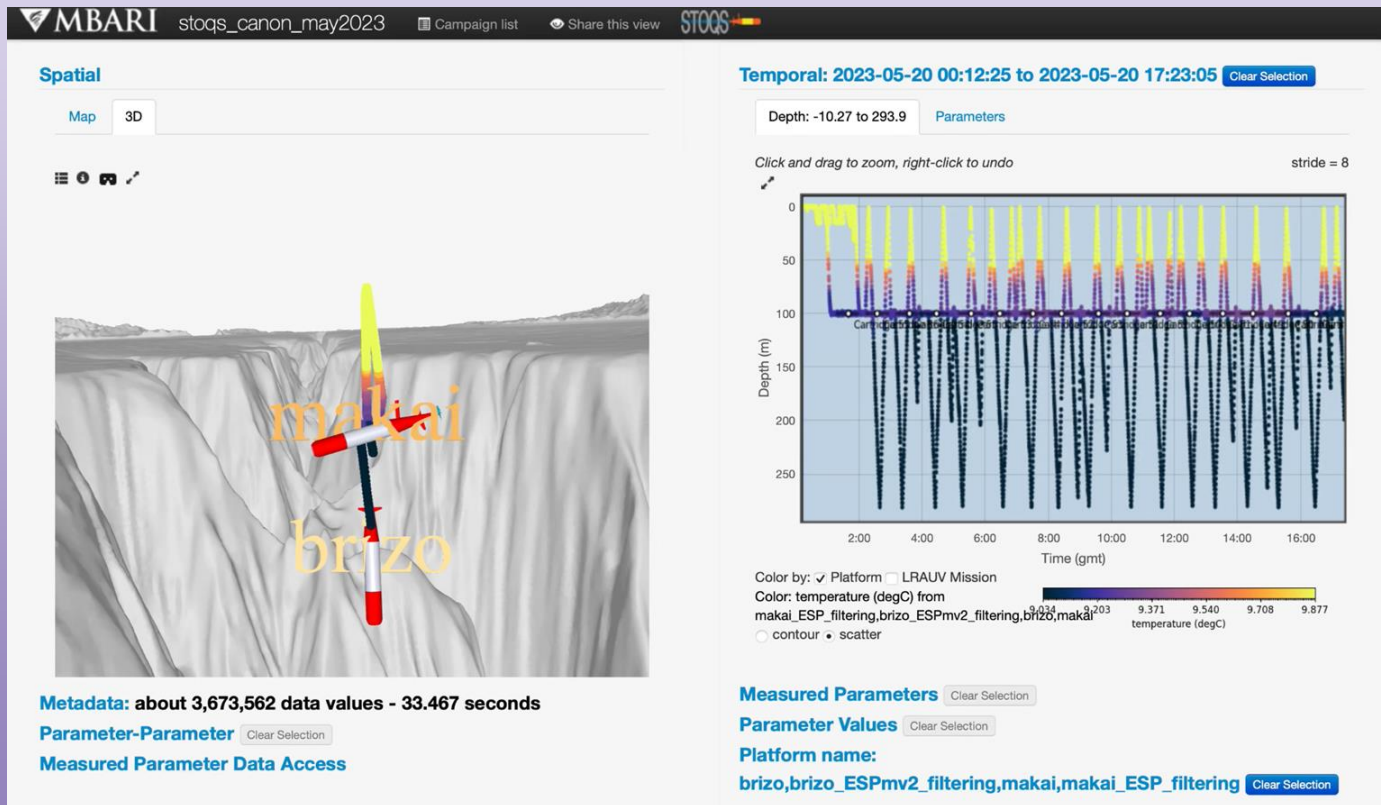
3D Oceanographic Data Visualization with

STOQS, an open source web application using X3DOM

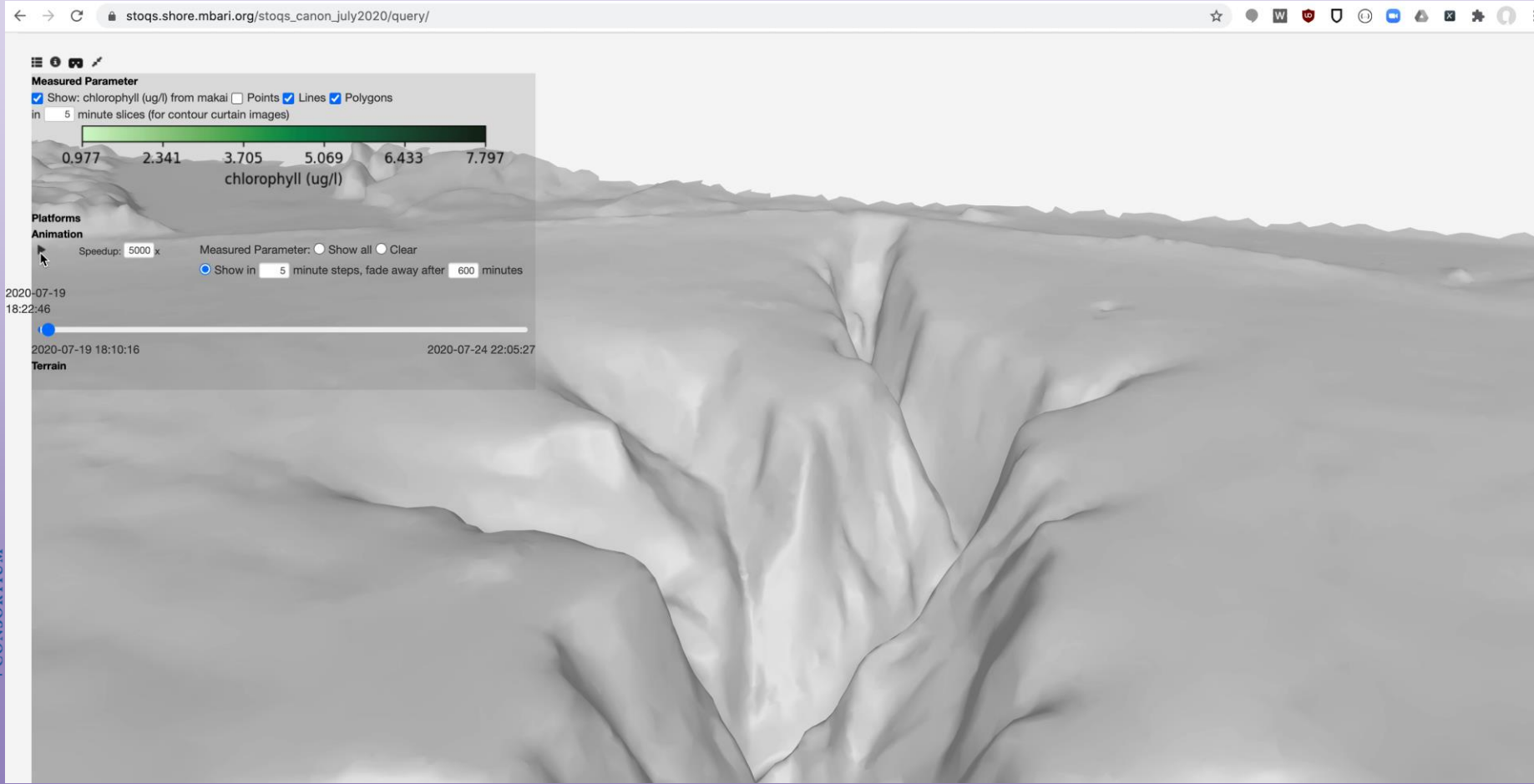
Robots collect a lot of data...



Humans need to understand it...



3 Dimensional moving fluid with life growing in it...



Web 3D Community 🎉

A variety of groups to connect you with others around the world

- Geospatial, Medical, 3D Printing and Scanning, UserExperience
- Plus listerves and git

Future work

- NEW!
 - Open Special Interest Group: X3D Ecosystem
- ... (what are your needs?)

Versar – Casey Gomez

USNA X3D Annapolis Resilience Plan

- Web browsers
- Navy and Army
- Disparate Data Sources
- LiDAR, Imagery, GIS, CAD
- Georeferencing
- Survey Controls
- Geo & Local Transformation
- Tiling, Optimization
- UI Controls



Current 5-Year Storm Water Level: 3.7 feet



Projected 5-Year Storm Water Level: 5.6 feet



Projected 5-Year Storm Water Level: 6.3 feet



Projected 5-Year Storm Water Level: 8.1 feet

- Numerous interventions
- Numerous project phases



Versar

X3D Gulfport, MS

- Web browsers
- Navy and Marine Corps
- Data Collection
- Training Data
- LiDAR,
- Photogrammetry
- Survey Controls
- Geo Wrap
- Water Level
- Measuring Tool
- Movable Features
- UI Controls





X3D Annapolis & X3D Gulfport

OBS capture of live Web browser

US Naval Academy
Annapolis, Maryland
11 February, 2022

Elevation and Imagery

North Severn

- North Severn Features
- North Severn Buildings
- North Severn Vegetation

Lower Yard

- Lower Yard Features
- Lower Yard Buildings
- Lower Yard Vegetation
- Lower Yard Tunnels

Upper Yard

- Upper Yard Features
- Upper Yard Buildings
- Upper Yard Vegetation

Sea Level Scenario (*)

Today | 2035 | 2050 | 2065 | 2100

- Show Nuisance Flooding
- Show 100-year Storm Water Level
- 2065 Sea Level Scenario with Adaptations

(*) Water levels shown in Mean Higher High Water

Project Phases

- Today
- Short-Term (2023-2027)
- Mid-Term (2027-2037)
- Long-Term (2037-2065)



Project Portfolio Details +

Debug: Stats Log

More BOFs this week

[Metaverse Standards Forum: The Road to an Open Metaverse BOF](#) -

Discussing the evolving landscape of real-time, interactive content creation.

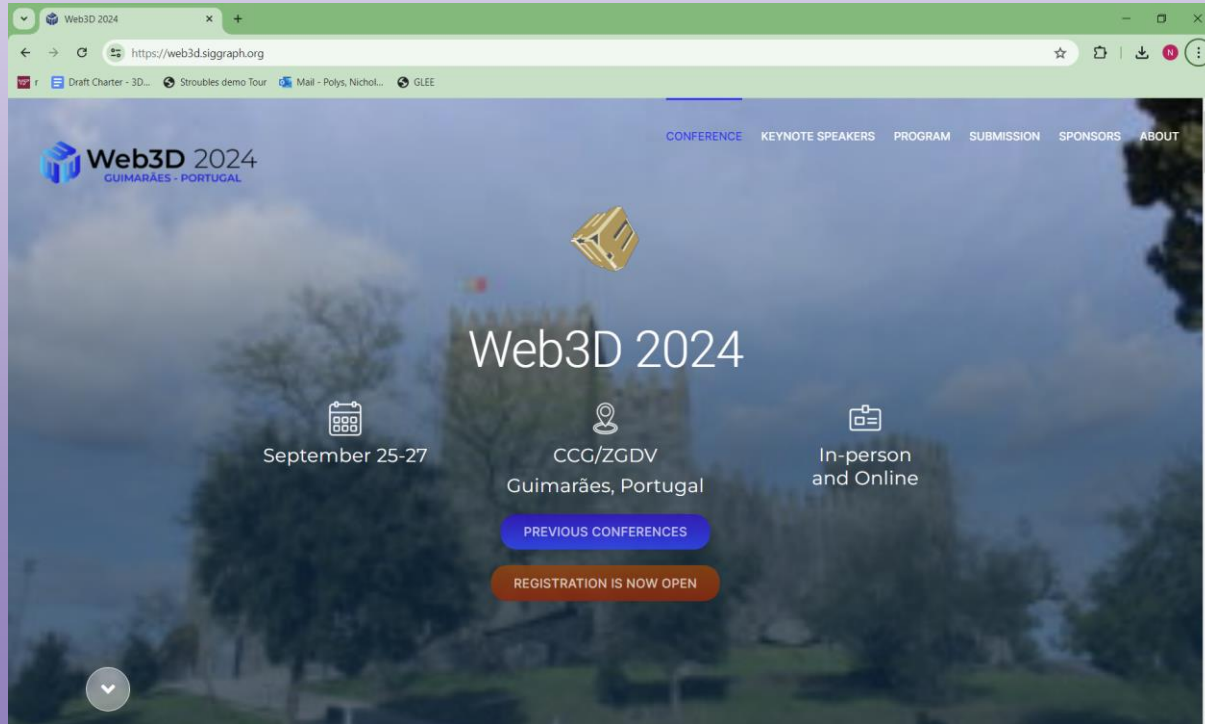
Tuesday, July 30, 1:00 - 2:30 PM MDT.

[World Wide Webiverse](#): Focused on Interoperability for immersive and connected experiences.

Tuesday, July 30, 2:30-4:00 PM MDT.

Web3D 2024

Web3D.SIGGRAPH.org



Join Our Global Community: Web3D.org !

The screenshot shows the homepage of the Web3D Consortium website. The browser address bar displays "web3d.org". The page features the "web 3D CONSORTIUM" logo on the left, a globe image in the center, and a "Log in" button with a search bar on the right. Below the logo is the tagline "Open Standards for Real-Time 3D Communication". A navigation menu includes "HOME", "NEWS & EVENTS", "CREATE X3D", "PARTICIPATE", "STANDARDS", and "ABOUT". The main content area contains a diagram illustrating the X3D workflow: various 3D software packages (Blender, SketchUp, Unity, 3DS MAX, and others) feed into a "CONVERT" process, which outputs X3D files. These files are then rendered on multiple devices (laptop, tablet, smartphone) across different operating systems (Windows, Linux, Android, iOS) and browsers (Chrome, Firefox, Safari, Edge). The text "X3D Means 3D Anywhere" is displayed on the right side of the diagram.

web 3D CONSORTIUM

Open Standards for Real-Time 3D Communication

Log in

HOME NEWS & EVENTS CREATE X3D PARTICIPATE STANDARDS ABOUT

blender SketchUp unity 3DS MAX others

glTF

X3D

X3D Means 3D Anywhere