



CLIMATE VR

VIRTUAL REALITY IN CLIMATE EDUCATION

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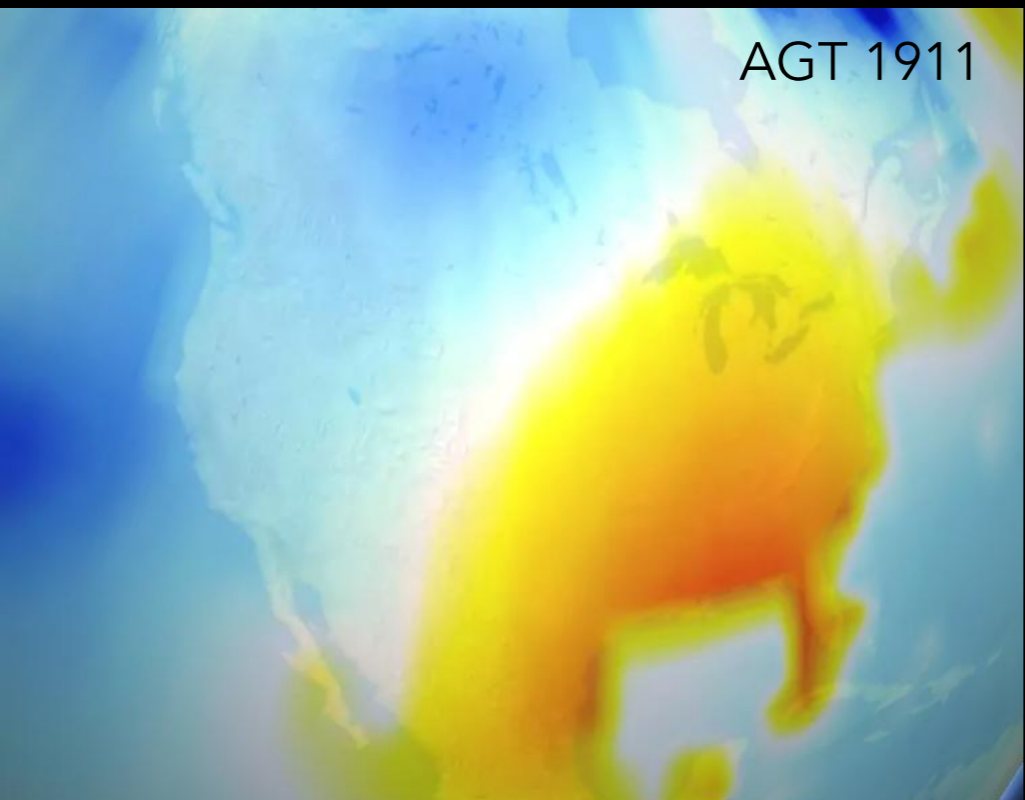
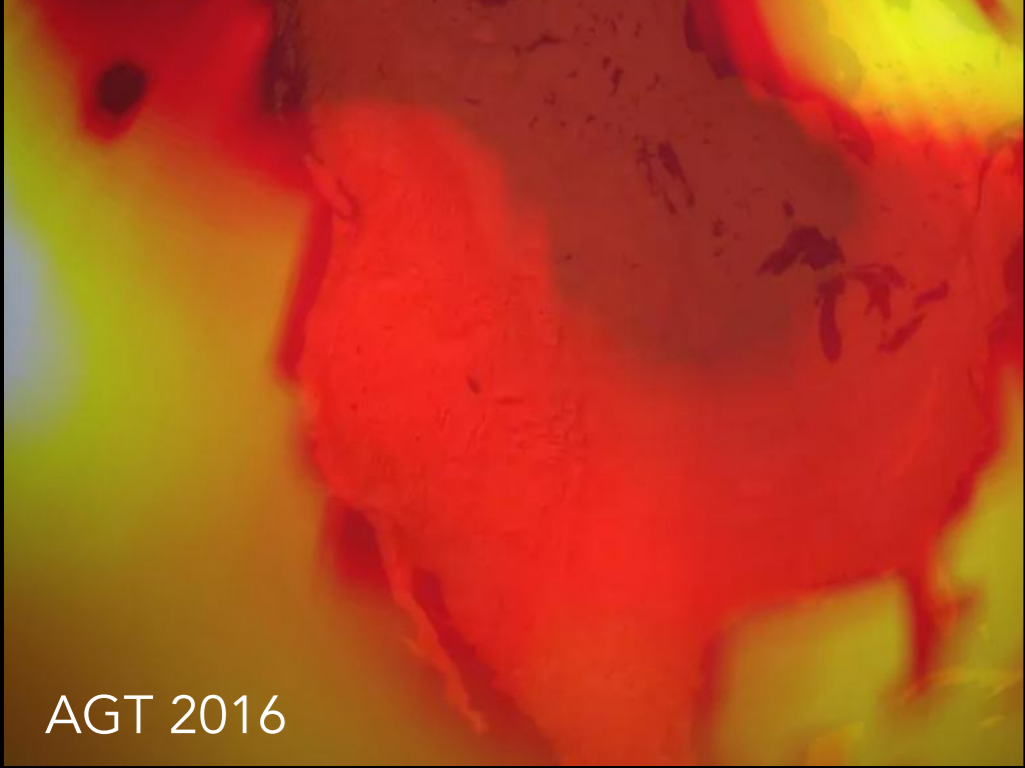
Don Haas

The Paleontological Research Institution and its
Museum of the Earth & Cayuga Nature Center



Challenges of Climate Education

#1 - Climate systems
are big and complex



Challenges of Climate Education

#2 - Climate change is often slow, broad, and unpredictable



Challenges of Climate Education

#3 - We live in "climate bubbles"

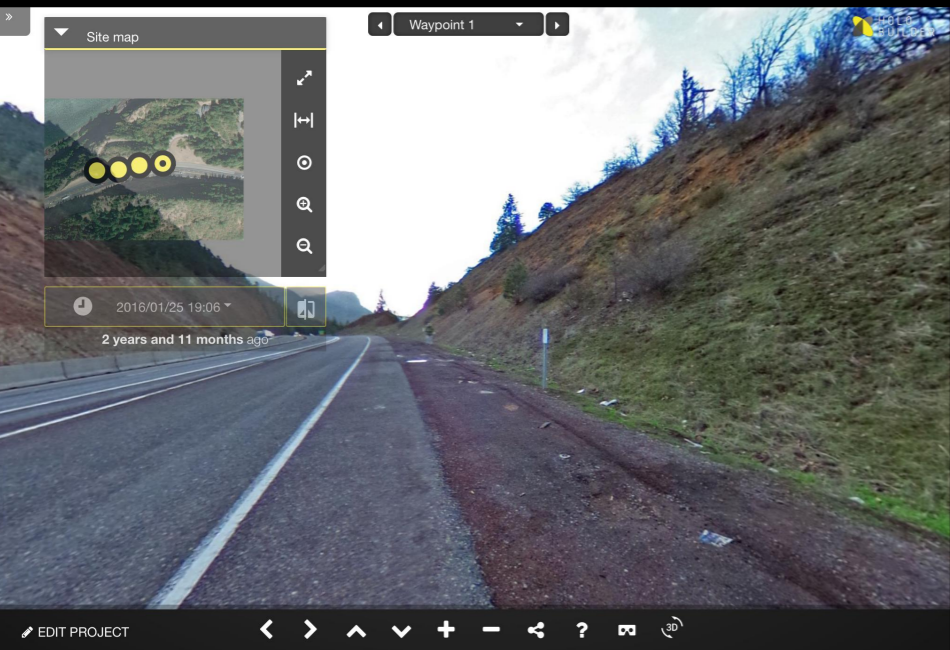


Challenges of Climate Education

#4 - Potential solutions are often hard to visualize and even harder to agree on



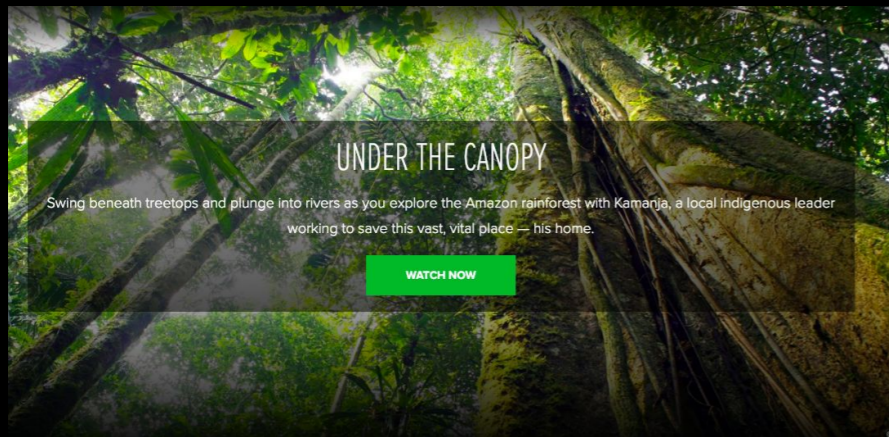
Virtual Reality Basics



VR is digital media that provides the user with a sense of "being there"



Climate VR Examples



- UNVR project
- Conservation International VR
- This is Climate Change
- Wildpoldsried Walkabout
- Four Seasons at Zenger Farm



Take it away Don



DIY VR

~~Do It Yourself Virtual Reality~~

Why?

Because it provides a unique and compelling way to ...

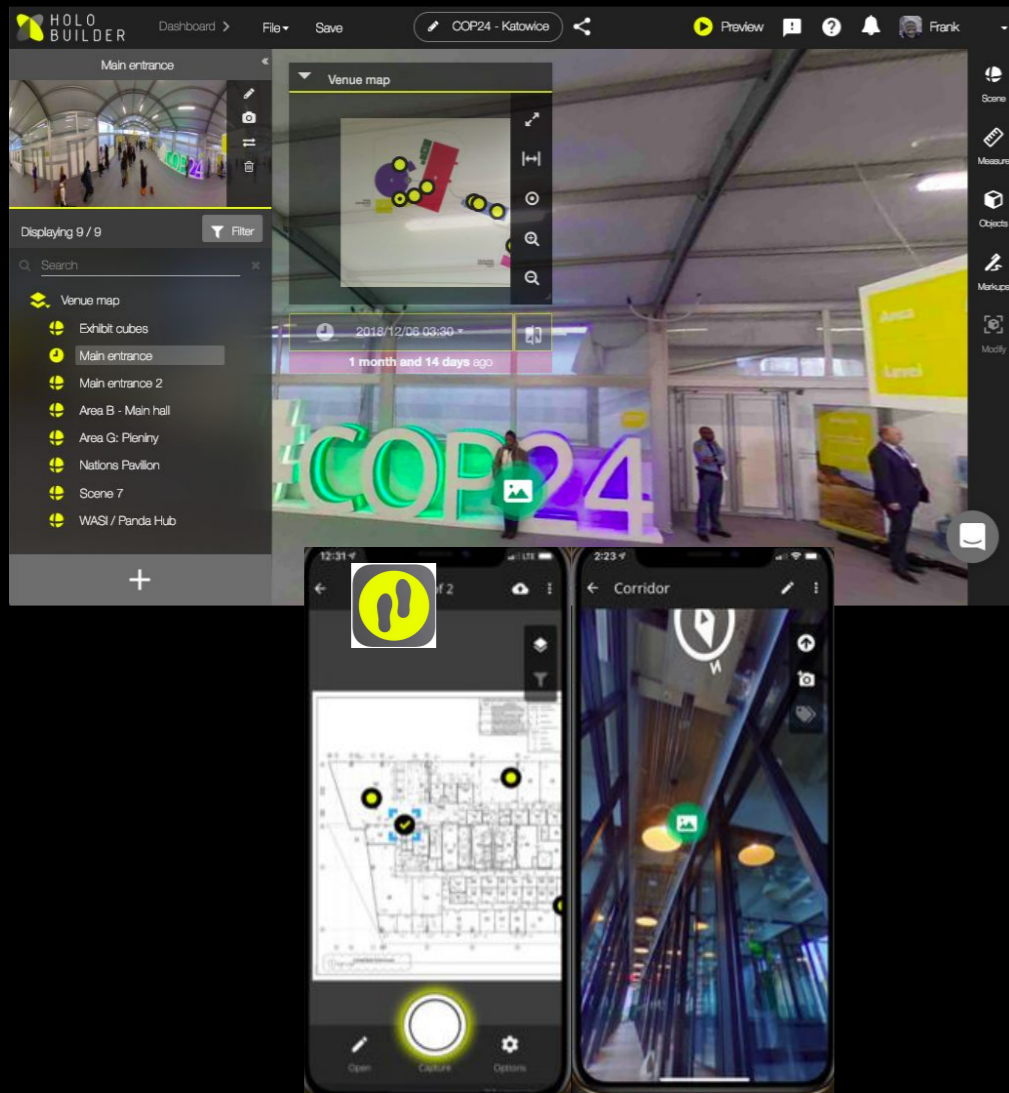
- tell our stories
- record progress
- engage students in fieldwork





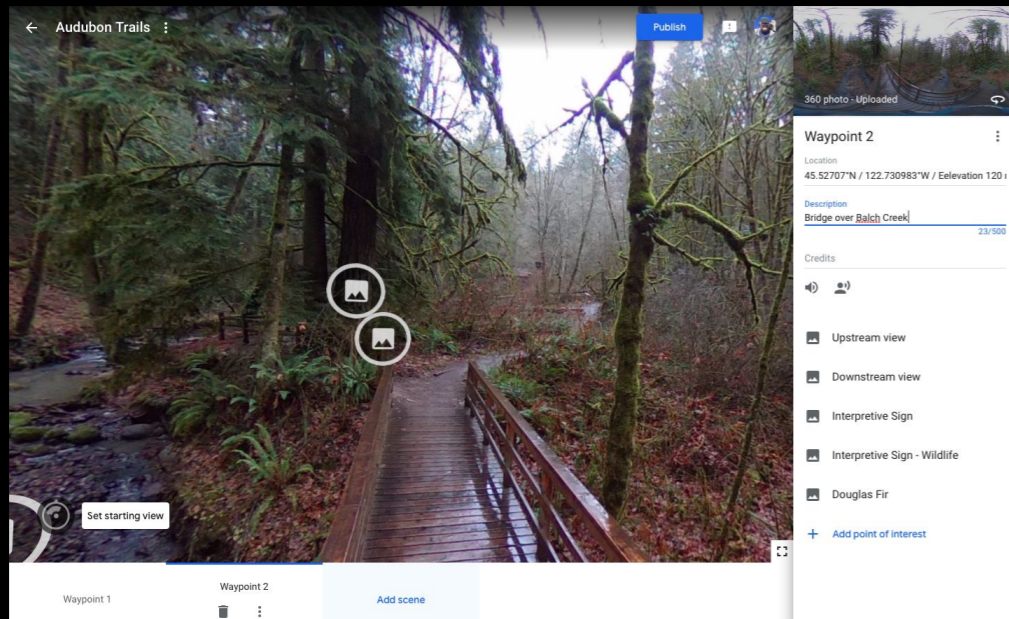
DIY VR Tools - Cameras

- Panoramic cameras
- Mobile devices
- Tripods and monopods



DIY VR Tools - Software

- Holobuilder Suite
- Tour Builder - Google VR
- ArcGIS Online - Story Map



Resources for Creating Virtual Field Environments

Frank D. Granshaw
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A virtual field environment, or VFE, is an interactive virtual reality environment based on a real field site. In addition to providing students with access to places that may be inaccessible to them, a well crafted VFE can be a useful tool for engaging student in actual fieldwork. Besides being a vehicle for preparing them to work in the field or reviewing their work, having them build a VFE can be a compelling activity that teaches a wide variety of field skills in some rather unique and holistic ways.

This page is dedicated to giving students and their instructors the tools for engaging in this activity.

Examples

The following is a short list of collections of VR tours and movies used for education and outreach. Some of these are professional efforts, others are the result of student work. Taken as a whole they provide just a few examples of what is possible with the tools listed further down on this page.

- [Conservation in Virtual Reality](#) - A collection of short VR movies produced by the folks at Conservation International that include an immersive look at the Amazon rain forest, an African savanna, and a South Pacific coral reef.
- [United National Virtual Reality](#) - A project implemented by the UN SDG Action campaign. UNVR has produced a number of VR films highlighting various humanitarian crises around the globe. Their films are a visceral way of bringing home these crises by giving viewers (like policy makers) an immersive, on the ground view of those places.
- [Virtual Field Trips: Seeking answers through Exploration](#) - On-line virtual field trips developed by Arizona State University that range from Panamanian rain forests to the surface of Mars. Set up to be used as student labs in life and earth science courses, as well as anthropology.
- [VR Glaciers and Glaciated Landscapes](#) - VFEs of a number of glaciers in Europe and North America complete with related curriculum. Produced by Derek McDougall (University of Worcester, U.K.) in collaboration the Center for Watershed Studies at University California Davis.
- [Virtual Northwest](#) - A collection of VFEs produced by the author often in cooperation with student groups. Because this is an evolving collection many of the projects are still under construction. This web site includes a regional collection (VFEs of field sites in the Pacific Northwest) and special projects which includes sites of sustainable development and habitat restoration, as well as VFEs of glacier in Washington state USA on which climate related research is taking place.

Tools

Most of the tools listed here I use extensively. That being said the list is hardly exhaustive and I am always open to hearing from readers about other tools you think are useful.

- [Holobuilder](#) - Holobuilder consists of both a tablet app for taking and processing VR photography in the field and a web-based editor for refining the VR tours.
- [Ricoh Theta](#) - A simple to use and flexible camera that produces both panoramic stills and video. It is also quite portable and uses both cell phones and tablets as a remote. It is one of the numerous cameras that works with [JobWalk](#) (the tablet / phone based component of the Holobuilder suite)
- [Story Map](#) - A component of ESRI's ArcGIS Online useful for creating geospatial viewers that can be used as gateways for virtual tours. Story Map and Holobuilder work very well together.
- [Tour Creator - Google VR](#) - Though I almost no experience with Tour Creator I am listing it here because it is a Google product making it readily accessible to schools and the general public.

How to Videos

This section is under construction and will include video tutorials for how to do the following...

- Setting up a Ricoh Theta Camera for panoramic photography
- Taking panoramic stills with a Ricoh Theta.
- Taking panoramic video with a Ricoh Theta.
- Taking underwater panoramic stills and video with a Ricoh Theta.
- Using Holobuilder in conjunction with a Ricoh Theta.
- Using the on-line editor for Holobuilder
- Creating simple geospatial gateways with Story Map.
- Linking VR tours created with Holobuilder to Story Map generated gateways.

Questions and contacts

This page was created by Frank Granshaw at Portland State University. Questions or comments should be directed to < fgransha@pdx.edu >

On-line Resource

http://vfeprojects.research.pdx.edu/VFE_Resources

- Are there specific parts of your work where you could use VR?
- If so how?
- What would be the benefits of doing so?
- What do you see as the problems of doing so?
- What might be the obstacles to doing so?
- What would you need to overcome those obstacles?

Q&A / Brainstorm