

[3D Scientific Visualization \(Terrain Mapping\)](#)
[for ecological and environmental research and outreach.](#)

Session 5, Tuesday, September 1, 4-6pm

Organizers: Susan Stafford, Judy Cushing, Theresa Valentine

LTER/ASM 2015: *From Long-Term Data to Understanding: Towards a Predictive Ecology*

The 2015 ASM was an excellent venue for our working group: *3D Scientific Visualization (Terrain Mapping) for ecological and environmental research and outreach*. Our working group coordinated well with both Ned Gardiner's Plenary Talk *Data Visualization: A Language for Scientists and Society* and Theresa Valentine's, Jamie Hollingsworth's and Ned's working group *Visualization of LTER Data that Engage, Educate, and Entertain*. and furthered the overall ASM 2015 theme of communicating science to society.

Our working group attracted 39 participants including the presenters. A list of participants, along with all supporting documents, can be found at: <http://blogs.evergreen.edu/vistas/asm3dvis>

Our intent was to articulate the potential of 3-D VIZ with topography. Pro's and Con's of the software available were identified along with a discussion of the power and limitations of the software. "Gaps" in the software currently available were also identified.

Initial desired outcomes for the Working Group included, but were not limited to, the following:

1. Practical advice for participants:
 - a. For those who already do 3D visualizations, ideas for improving the visualizations they are already creating, either via improvements to the visual design or other software
 - b. For those who do not do 3D visualizations, but think they might like to, practical advice on how to get started with creating 3D visualizations, including how to download or acquire and learn how to use the software presented
2. An updated list of *visualization resources* for ecologists
3. A community of researchers and informatics professionals interested in sharing information about visualization and maintaining a *visualization resources* list
4. A jointly-authored paper comparing current approaches to 3D scientific visualization for ecology.

There was enthusiastic participation for the duration of the session, extending well beyond the two hour timeframe. We, organizers of this session, found three **Take Home Messages**:

1. While the overall level of interest in using 3D VIZ was quite high, the level of experience and expertise was low. Few participants had used 3D VIZ, although many wanted to but didn't know where to start. There was not much understanding of what 3D VIZ was and what it could be used for. There was also little understanding of what other ecologists were doing with 3D VIZ.

2. Participants reported that they could afford only a little time working with 3D VIZ without understanding what payback would likely incur. They want some software that would quickly produce an initial visualization (even if a simple one with no animation). Understandably, they do not want to go down any blind alleys! If an initial result were interesting and helpful, they indicated they'd be willing to invest more time "to play and explore". Some participants also emphasized that they do not want to use "one-trick pony" software; rather, they would like software that extends what they are already using such as Excel, Google Earth/Maps, Python, or R.
3. When asked if their thinking about 3D VIZ changed as a result of this working group, the majority of participants responded: YES!

Based on what we learned from the 3D Vis Working Group, we see the following four **Desirable Outcomes**:

1. A "Gallery" of representative 3D Visualizations for ecology—with short descriptions for each, e.g., functions, data input formats—would be useful and fill a current need. Interested researchers would "click" on an image that they find intriguing or potentially useful, then drill down for more detail.
2. An expanded Resource List of 3D Visualization Examples, Information and Software.
3. Future collaboration with organizers and participants in the Wednesday ASM 3D visualization working group.
4. Finally, an ongoing working group of ecologists interested in 3D VIZ. Ideally, this group would be created and maintained in collaboration with the LTER Communications Office.

Overall, we were pleased with the outcomes achieved from our Working Group. We anticipate: writing a short paper that highlights what we found, creating a resource list and including a summary of basic advice for the novice user of 3D VIZ (Terrain Mapping).

We will also follow through with Theresa Valentine, Jamie Hollingsworth and Ned Gardner to coordinate outcomes from our two related working groups.