Active Projects

Air Quality Modeling: Using satellite data on global emission of NOx and other pollutants, the DVS provided the platform conduct computationally intensive modeling projects that helps to describe the impact of air quality on cities around the globe. The results of the work helps to describe how changes in national polices on air quality can alter global transport of pollutants. We have combined these satellite-based perspectives with local, ground-based air quality assessments, including the visualization of air quality in neighborhoods. These ground-based assessments are nascent, though seem highly promising for engaging communities with 'smart city' sensor applications.

Glaciation Processes in Antartica: As part of a National Science Foundation sponsored project, we used the Data Visualization Studio to identify the physical process that changed the continent of Antartica. Using highly resolved Light Detection and Ranging (LiDaR) dataset of Antartica, the scientists were able to resolve questions in basic science specific to glacial formation and disturbances. The use of the high definition screens provided resolution about ice melt and catastrophic failure of ice shelves that changed the surface of Antartica.

Visualizing Wildfire: Together with the US Forest Service, we examined the implications of an increase in wildfire frequency in the Pacific Northwest of the US. As you know, we've had a deadly season of wildfires in the US, and understanding how fires spread, the communities impacted, and what strategies may help can be essential for managing landscapes as the climate changes. The screens provided visual descriptions of simulations of different fire management regimes, and those involved were able to identify trade-offs among the varying scenarios.

Management of Urban Natural Hazards: With a group of decision makers from 11 bureaus in the City of Portland, we used the Data Visualization Studio to evaluate the implications of large floods and a 9.0 earthquake. Surprisingly, none of the decision makers had been brought together to evaluate how to respond to these environmental hazards (short, medium and long-term), and more importantly, the places where response teams would be needed immediately (photo included). The DVS was instrumental in generating a discussion that has now lead to individual bureaus developing hazard resiliency plans that will be coordinated across the City.

Urban Forestry: The application of LiDaR has also been instrumental in the visualization about improving the quality of urban forests in the City of Portland. Through the use of applications like canopy analytics (link), community groups, neighborhood associations, city staff, and others have been able to visualization and evaluate the role of urban trees in improving the quality of life. With the use of the DVS, we have been able to work with urban forestry decision makers to identify how to manage a changing urban landscape.