

Tools explicitly designed for exploring spatiotemporal data can support students with sensemaking and pattern identification.

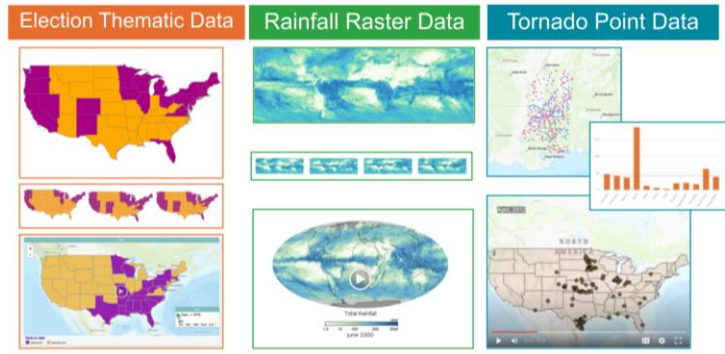


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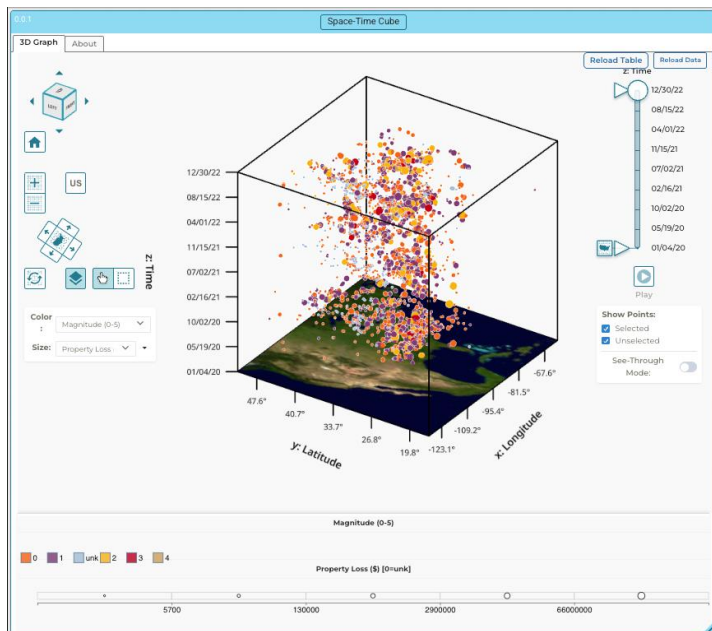
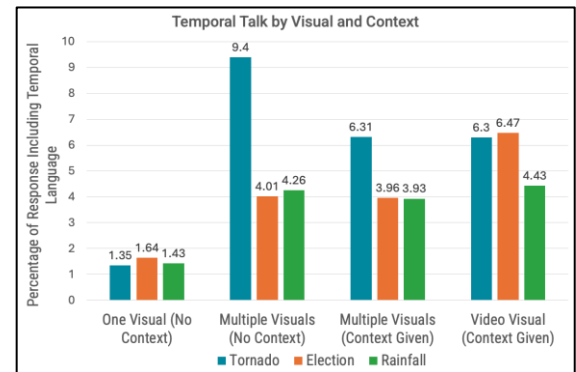
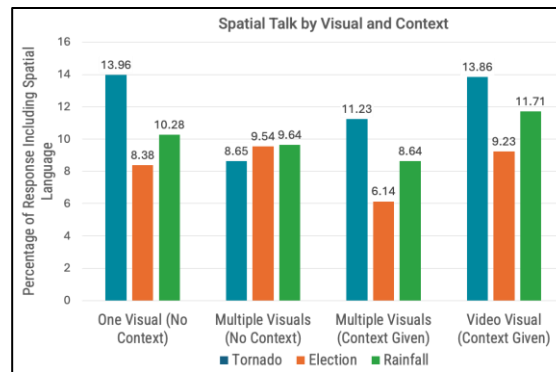
#2201154: Data in Space and Time: Supporting Learners in Understanding and Analyzing Spatiotemporal Data



Strategy & Question Type	Tornado Point Map	Thematic Election Map	Rainfall Raster Map	χ^2	p
Strategies					
Grouping by color	46%	44%	43%	.059	.971
Drawing on prior knowledge	14%	33%	28%	2.91	.234
Comparing across multiple images	5%	27%	18%	4.82	.090
Searching for clusters	32%	18%	10%	4.63	.099
Looking for patterns	23%	4%	28%	8.74	.013
Focusing on small areas	14%	27%	5%	7.55	.023
Focusing on large regions	0%	16%	0%	10.32	.006
Horizontal scanning	5%	16%	18%	2.13	.345
Vertical scanning	14%	2%	10%	3.37	.185
Questions					
What causes these ST patterns?	44%	35%	15%	14.31	.001
Requesting more topical information	16%	17%	0%	12.91	.002
How was the data collected/generated?	19%	23%	38%	7.03	.030

Spatiotemporal data, data that varies in space and time comes in many forms: election data within and across boundaries and years; weather or atmospheric data covering the entire map of the world; event data such as tornadoes which mark a point in space and time, and much more.

Students use different strategies to find patterns in spatiotemporal data, and they describe and interpret different data visualizations using different spatial and temporal language



Dynamic data visualization and analysis tools designed specifically to highlight and deconstruct ST data provide affordances for students' exploration

