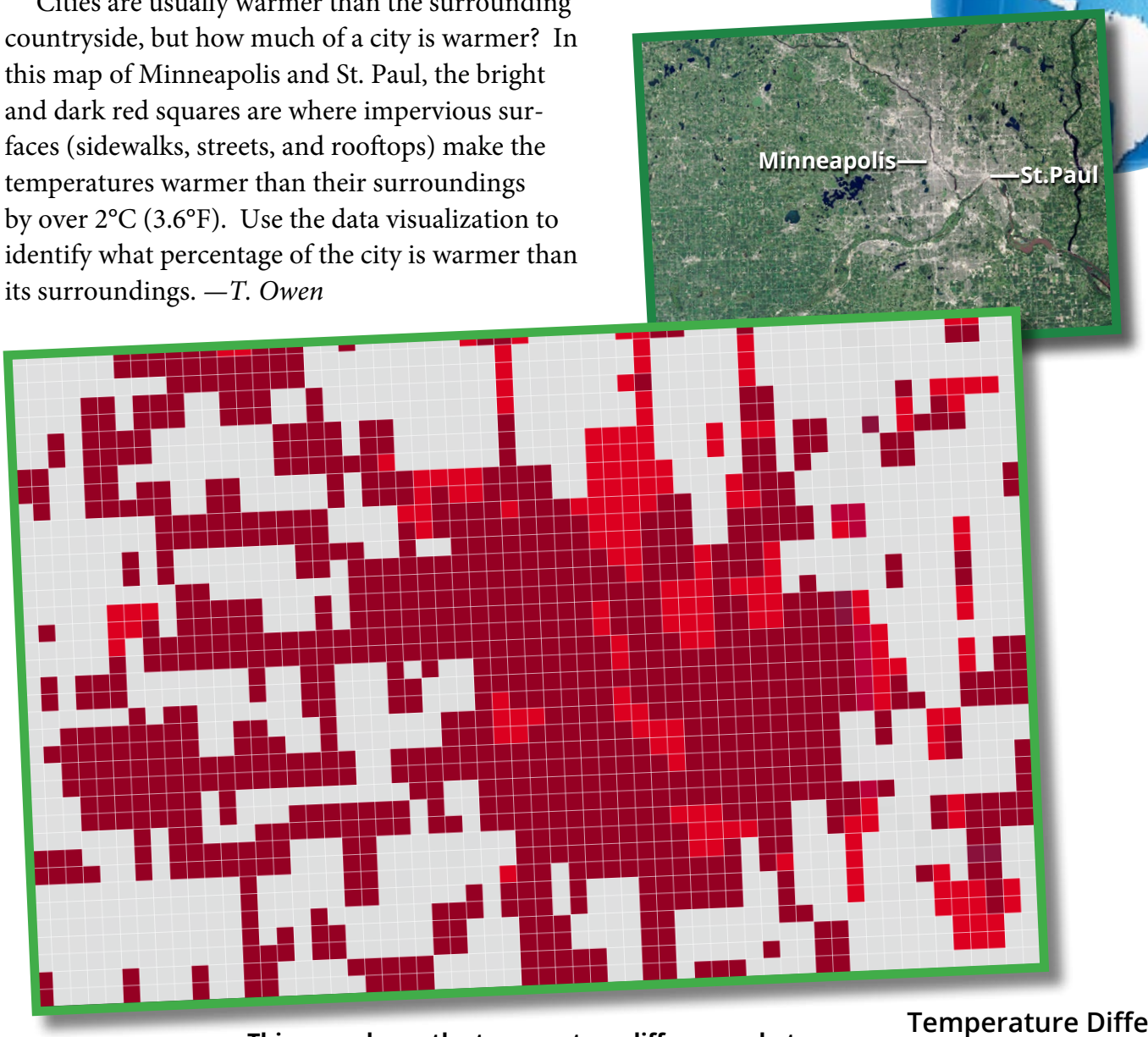
Data Viz Percent Paved?

Cities are usually warmer than the surrounding countryside, but how much of a city is warmer? In this map of Minneapolis and St. Paul, the bright and dark red squares are where impervious surfaces (sidewalks, streets, and rooftops) make the temperatures warmer than their surroundings by over 2°C (3.6°F). Use the data visualization to identify what percentage of the city is warmer than its surroundings. —*T. Owen*



This map shows the temperature differences between impervious surfaces (red) and vegetated (gray) areas around the Twin Cities.

1. What is the total area of the satellite image? (hint: 1 square = 9.6 kilometers^2)
2. How many square kilometers have temperatures more than 2°C (3.6°F) warmer than their surroundings?
3. What percentage of this image is warmer than its surroundings because of impervious surfaces? (hint: red squares ÷ total squares × 100 = percent)
4. If less than 35% of a city is covered in impervious surfaces, temperatures don't change too drastically. Above that level, temperatures will rise abruptly. Given your results, are the temperatures in Minneapolis affected by sidewalks, streets, and rooftops?

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