Mapping Flood Risk

Compare a past flood with present-day risk

USH.P.2.3.B "Compare and analyze complex maps and mapping technologies to analyze spatial patterns of human and physical environments, explaining relationships between the environment and events, past and present."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the two main maps being compared, circle two physical features, and number two places where a physical pattern affects people or travel. Use your marks to compare what the maps can show.

The Mississippi Valley, Then and Now

1. In 1927, the Mississippi River flooded large parts of the lower Mississippi Valley after months of heavy rain and levee failures. Hundreds of thousands of people left their homes. To study where the flood spread, a historian might use a paper map made from reports collected during the disaster. Its shaded areas show places reported underwater; dots mark towns, and lines mark railroads. The shading clusters beside the river and its tributaries, while some marked towns sit within flooded areas. This map links the physical setting to the disruption of travel and settlement, but missing reports could leave gaps in the shading.

2. A present-day researcher could use a digital flood-risk map for the same valley. One layer shows low ground near rivers; another shows areas identified as having flood risk; other layers mark current roads and neighborhoods. Turning layers on and off helps the researcher see where built areas overlap low ground and mapped risk zones. Unlike a map of the 1927 flood, a flood-risk map models possible future flooding rather than recording one event. A satellite image taken during an actual flood could show water at that moment, but it would not by itself show the full range of future risk.

3. Comparing the maps can reveal both continuity and change. Low ground beside the river remains vulnerable, but new roads or neighborhoods may now occupy places that the older map shows as flooded. A road crossing a risk zone could be cut off during a future flood, just as flooded rail lines disrupted travel in 1927. Still, the two maps cannot prove that today's buildings would flood as they did in 1927: levees, drainage, land use, and storms have changed. Researchers should check each map's date, sources, and purpose before treating a similar-looking pattern as the same event.

2 ANSWER WITH EVIDENCE

Use the passage

1. How do the 1927 paper map and the present-day digital map differ in what they tell a researcher about flooding?

2. What pattern on the 1927 map connects the river system to the flood's effects on people?

3. If a current road overlaps low ground and a mapped risk zone, what might that mean for travel? Why is the overlap not proof that the road will flood?

4. How could a satellite image taken during a flood add to the digital flood-risk map? What could it not show by itself?

3 YOUR TURN

Your own words

Imagine a coastal town choosing a site for a new emergency shelter. Compare a map of flooding from a past hurricane with a current digital map of roads and elevations. Explain one spatial pattern you would look for, how it could guide the choice, and one limit of your conclusion.

ANSWER KEY

Mapping Flood Risk

HIGH SCHOOL · USH.P.2.3.B

PART 1 · READ AND MARK

Underline the two main maps being compared, circle two physical features, and number two places where a physical pattern affects people or travel. Use your marks to compare what the maps can show. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How do the 1927 paper map and the present-day digital map differ in what they tell a researcher about flooding?	**The paper map shows places reported underwater during the 1927 flood. The digital map shows areas at risk of possible future flooding, along with current roads and neighborhoods.**
2	What pattern on the 1927 map connects the river system to the flood's effects on people?	**Reported flooding clusters beside the river and its tributaries, and some towns lie within the shaded flooded areas.**
3	If a current road overlaps low ground and a mapped risk zone, what might that mean for travel? Why is the overlap not proof that the road will flood?	**The road could be cut off during a future flood. The risk map shows possible flooding, not what will happen in a particular storm.**
4	How could a satellite image taken during a flood add to the digital flood-risk map? What could it not show by itself?	**The satellite image could show where water is during that flood. By itself, it could not show the full range of future flood risk.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would look for current roads on high ground that connect the town to places outside the area flooded by the past hurricane. A shelter near one of those roads might be easier to reach when low-lying streets flood. The two maps could show whether routes available today avoid places flooded in the past. They cannot guarantee a safe route because a future hurricane could bring different flooding.

Accept other supported comparisons of past flooding and present-day risk. For Part 3, look for a specific overlap or separation between mapped features, a shelter decision based on it, and a stated limit.