

Additional Activity by Blessing Igbokwe

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Tracking the Effects of Natural Disasters

On December 26 2004, a 9.2 magnitude earthquake triggered a tsunami that killed about 285,000 people, devastated more than 8 countries, rendered millions of people homeless, and generated worldwide interest. In addition, on March 11, 2011, another tsunami struck Japan and triggered a series of nuclear meltdowns.

Natural Disasters are a common occurrence. In this activity, the task is to study before and after photographs of disaster areas and use them to analyse the extent of the devastations caused by a tsunami. Using the materials provided, you will carry out required calculations and analysis necessary to determine the extent of the damages caused by natural disasters.

Grade Level: This activity is suitable for grades 9-12

Background Knowledge

It is assumed that students are competent in interpreting basic elements of aerial photographs such as:

- ❖ Delineating boundaries of areas on an aerial photo.
- ❖ Change detection when given chronological photographs,
- ❖ Calculating areas using grid transparencies,
- ❖ Recognising various land use patterns on an aerial photograph,
- ❖ Overlaying transparencies to determine change over time,
- ❖ Plotting graphs of all kinds e.g., bar graphs, pie charts, pictographs e.t.c manually.
- ❖ Basic map reading skills.

Materials Needed

Aerial imagery of the affected areas (a before and after imagery), 1cm grid transparencies, graph papers, magnifying glass, a set of erasable markers (various colours) and a light table if available (otherwise, teacher can provide a makeshift glass table with lamp stands underneath or a data projector).

Analysis Steps:

- a. Label the provided before and after imageries of the disaster areas as Plate 1 and Plate 2.
- b. Create a table like the one below for recording all calculations (HINT: Total area for Plate one and two should be the same).

Table 1. Sample table for recording calculations

IMAGES	Plate 1 (Before)	Plate 2 (After)
TOTAL AREA		
DAMAGED AREA		
% OF DAMAGED AREA		

- c. Using one of the provided grid transparency, overlay it on Plate 1 – the before tsunami image (see figure 2 below), using one of the coloured markers, map out the boundary of the whole area.

Calculate the total area in cm^2 (assume that each square in the grid is 1cm^2). Record the result in the above table under plates 1 and 2 total area.

- d. Using Plate 2 (the after tsunami image), map out all the areas that have been flooded. It should be relatively easy to determine flooded/damaged areas, use magnifying glass if areas look blurred. Calculate the area in cm^2 , this area is the “damaged or affected area” and answer should be recorded in the table under plat 2 damaged areas.
- e. Calculate the percentage of the damaged area (*HINT: $\text{damaged area} / \text{Total area} \times 100$*) = *percentage of damaged area*) and record the result in the table.
- f. Write out a report and answer any accompanying questions using the result from the analysis. Questions to include might be: What percentage area was destroyed? What land use area suffered the greatest devastation, farm land, residential or commercial areas?

Variation: Most natural disasters in any area are suitable for this particular task.

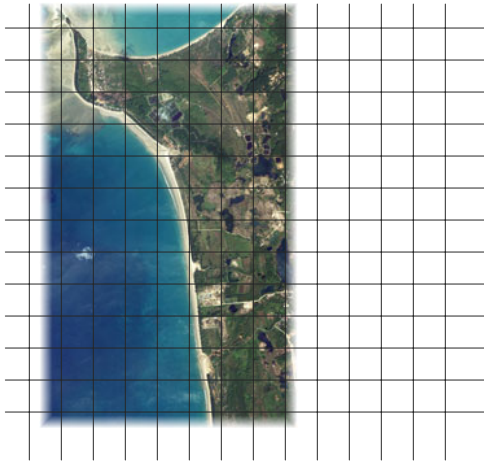


Figure 2: Grid over aerial imagery

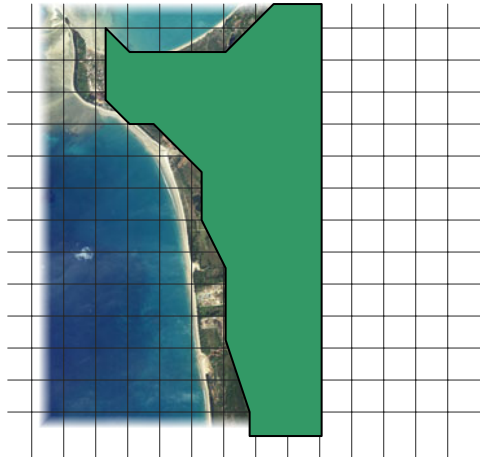


Figure 3: Image area traced out on a grid for area calculation