

A Report on a Natural Hazard HIGH LEVEL 3

A

The Ongoing Threat

Introduction

Throughout the expanse of time one hazard has loomed over the country of China — the flood. The following report is directed towards the Chinese Government regarding this ongoing threat. Through the extensive research and investigations I have conducted, some mechanisms causing this hazard have been found. Due to China's coastal geographic location, precipitation and a moist climate constitutes a mechanism causing the hazard of flooding. This often occurs in the spring, when precipitation increases and the water table is also higher. That is not to say that this can happen only in spring, only that chances are increased.

Causes of Flooding in the Area

In recent years, the large amounts of precipitation at one time have been attributed to La Nina. The effects of La Nina have been seen all over the world, but one of the worst ones was the flooding in China. One mechanism, a hazard itself, is the tropical storm. It can bring devastating torrential rains and mass flooding to any area it hits, in this case China. As seen in Figure 1, during the 1991 flood, a lot of the flooding occurred along the coast, hitting eighteen of the thirty provinces in China. The flooding of the major rivers in China can be attributed to the deforestation of the embankment. Without the trees in this location, the soil can not hold as much moisture. This occurs because trees regulate the moisture in the soil, without them, the water table becomes very high. The banks become worn down due to hydraulic erosion, increasing the spread of the flood waters.

Preparation – Short Term

In preparation for the possibility of a flood, some short term measures can be taken. The construction of levees, as seen in Figure 2, in the Yangtze, Huai, and Nenjiang rivers and at Tai Lake, for example, greatly lessened the impact and devastation of ordinary floods in the past. To prepare for new floods, the levees need to be strengthened and built higher and new ones may also have to be built. In a body of water, the concentration of water is naturally located downstream, where it can flood over the banks. One way that levees work is by pushing the water upstream where it is lower. This can cause a sort of balancing effect on the body of water. This is an effective measure, but it is only a short term or preliminary action that needs to be accompanied by a long term action.

B

Preparation – Long Term

In the long term, the halting of embankment deforestation needs to occur. Logging has become a major contributor to the devastation of flooding in China. This occurs because trees increase the amount of water that the soil can hold. Without them, very little water can be held in this area. The ability for the soil to hold a reasonable amount of water disappears with the disappearance of the trees. With an increase in precipitation, and mass deforestation, quite a deadly recipe for flooding is in place. See Figure 3 for a visual image of how trees reduce flooding by absorbing water.

The government should also invest in building more reservoirs and large basins in heavy flood areas to hold excess water in times of big floods.

Also, a portion of government funds should be kept annually for shelter preparation and restoration, emergency food supplies, emergency medical supplies and administrators. This would contribute to the effectiveness of the steps that have to be taken after a flood occurs.

Aftermath

The local people of China have encountered many difficulties due to flooding. For instance, eighty to ninety percent of crops in the effected area were destroyed. This in itself affects the local people on more than one level. It takes away much of the country's food supply, by destroying some and taking so much more to feed the flood victims. The livelihood of the people is so badly thwarted by the flooding, it is impossible to make a living. This often recurring hazard forces people out of their homes, inflicts sickness and disease, often makes it impossible to get to safety, and even causes deaths. The flooding of China has devastated the people in those affected areas, so much that they have become vulnerable to future disasters that may come. Emotional impacts can also be seen in the lives of these victims. Hope has been replaced with fear of this unpredictable natural phenomenon.

Some very detailed steps can be taken to deal with the aftermath of a flood. First, the government has to stop the outbreak of disease and sickness before it gets a foothold in the country. Medical treatment and care, if not already available, should be brought in from other areas for the people suffering from illness or disease. Sanitation measures should also be taken to knock out potential diseases and illnesses before they start. Second, the reconstruction of homes and lives has to begin soon with the help of the government. Thirdly, if not implemented previously, short and long term measures should be implemented. These are levees, concentrated efforts in the major water systems, halting of embankment deforestation, needed supplies for future flooding disasters, and a detailed plan of action, with back up for the possibility of a future flood.

C

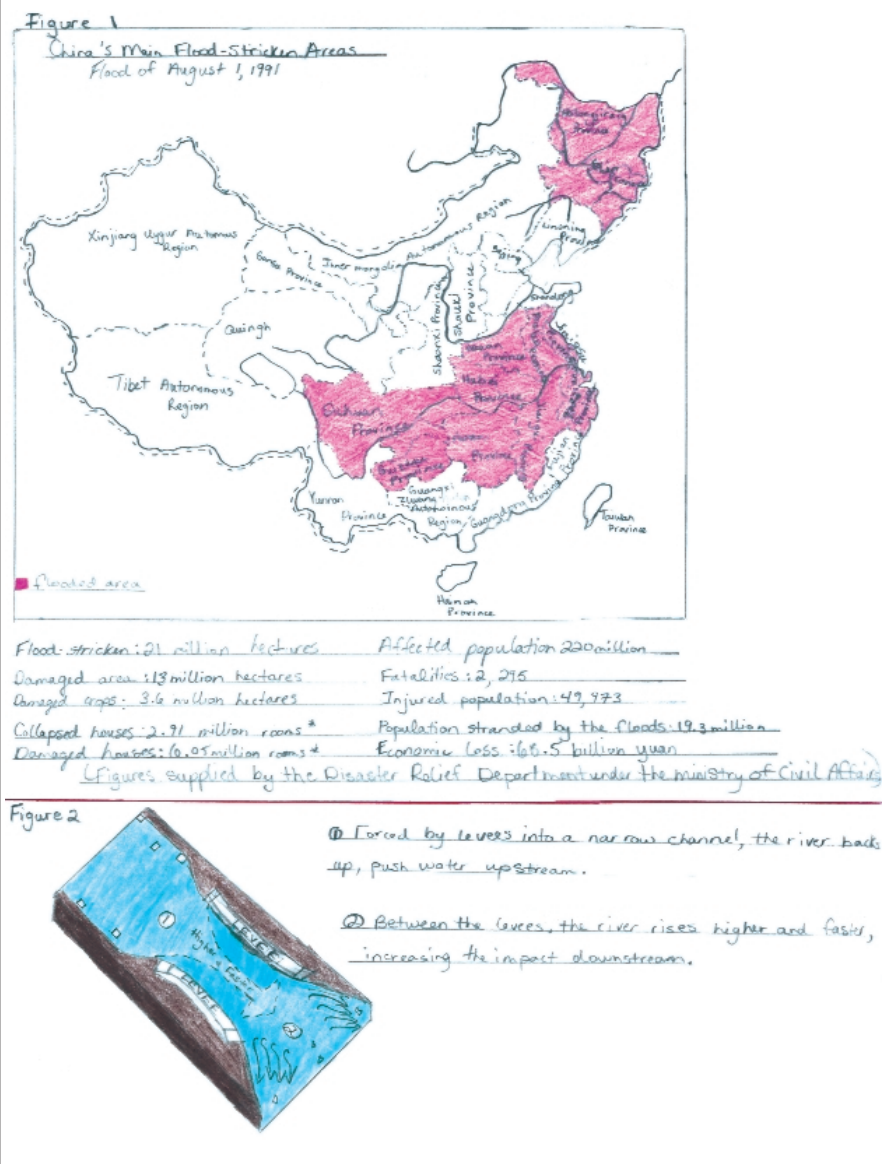
Conclusion

By reconstructing the homes and lives of people, hope will return and a healthy spirit as well. This can contribute to the stopping out of disease by decreasing crowdedness in the public relief facilities. Medical treatment of the population will ensure the ability to stop diseases such as malaria and hepatitis before they spread into epidemic proportions. By implementing the long term measures listed above, a disaster of magnitude is unlikely to happen again. The threat of this devastating hazard may never leave the people of China, but a reassurance will be present, for genuine planning and action have been taken, and a brighter future is awaiting them. This report was produced at the request of the Chinese government, in order to offer an effective defence against this natural hazard.

Bibliography

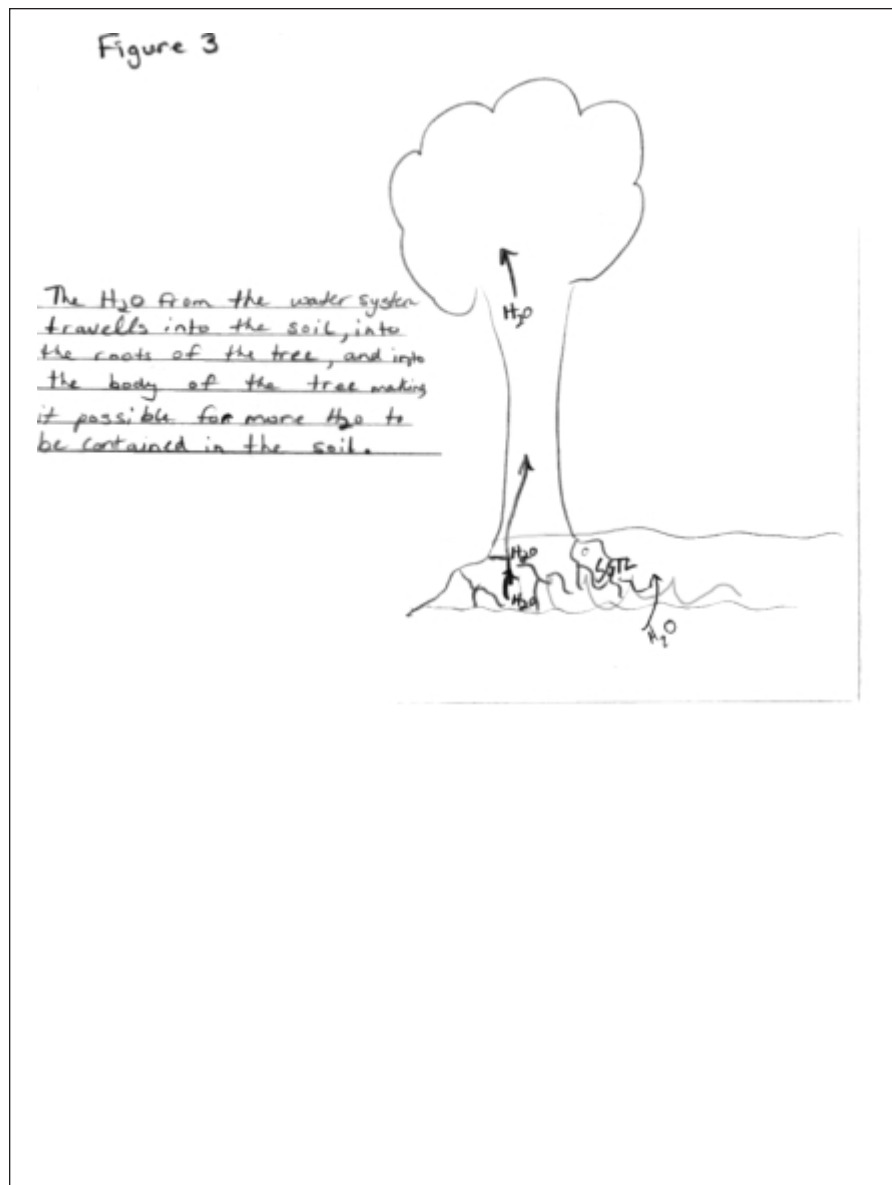
1. <http://lwf.ncdc.noaa.gov/oa/reports/chinaflooding>
2. <http://ccrs.nrcan.gc.ca/ccrs/tckr>
3. <http://www.usc.edu/dept/tsuramis/vidc>
4. <http://geography.state.gov/htmls/oldn>
5. <http://www.naturalhazards.org/>
6. Jian, Zhong. "Fighting the Floods." *China Today*. October 1991: 26-28.

D



HIGH LEVEL 3

E

**Teacher's Notes****Knowledge/Understanding**

- The student identifies and describes the mechanisms of change as they apply to flooding in China with considerable accuracy (e.g., refers to the effects of La Nina, with its heavy rains, and the effects of deforestation and erosion). However, the student tends to present the information as a string of facts that are not sufficiently well linked to create an entirely cohesive explanation of the hazard (e.g., “One mechanism ... is the tropical storm. ... The flooding ... can be attributed to the deforestation of the embankment ...”).

Thinking/Inquiry

- The student provides advice on short-term preparation that is of considerable effectiveness. The student's advice focuses on the need to strengthen and increase the height of existing levees, which have “greatly lessened the impact and devastation of ordinary floods”, and to build new ones. The student also provides a helpful, but only partial, explanation of how levees work. However, no mention is made of other possible ways to prepare in the short term.
- The student provides advice on long-term preparation that is of considerable effectiveness. The student outlines and effectively justifies a number of practical steps that would lessen the impact of future floods (e.g., constructing more reservoirs and basins, halting deforestation, planning to address health concerns, planning shelters for evacuees).
- The student provides steps for dealing with the aftermath of a flood that are highly useful (e.g., providing medical care promptly, implementing “sanitation measures”, reconstructing homes). The student provides a sound justification for each step (e.g., “reconstructing the homes ... of people ... can contribute to the stamping out of disease by decreasing crowdedness in the public relief facilities”).

Communication

- The student writes a report that has a considerable degree of clarity and logical organization. Although most subtopics are covered in some depth, information and ideas could be somewhat better organized (e.g., some measures for short- and long-term preparation are needlessly reiterated under the heading “Aftermath”, and some statements relating to steps for dealing with the aftermath are included under the heading “Conclusion”). There is an occasional lack of clarity in the student’s wordings and explanations (e.g., “The banks become worn down . . . increasing the spread of the flood waters”; “concentrated efforts in the major water systems”).
- The student uses a voice and language that are highly appropriate. The student specifies the intended audience (e.g., “The following report is directed towards the Chinese Government regarding this ongoing threat.”) and adopts a formal tone appropriate to that audience. Technical terminology is used throughout the report (e.g., “erosion”, “embankment deforestation”, “levee”, “reservoir”).
- The student provides visuals that support and enhance the written information to a considerable degree. Each of the three visuals supports and extends the discussion of an important element in the text, and each is appropriately referenced in the text. However, some of the captions lack clarity.

Application

- The student evaluates the impact of the hazard on the local population with a high degree of effectiveness (e.g., describes destruction of crops, loss of livelihood, homelessness, increase in disease, fatalities, and the emotional impact of floods).

Comments

This work is representative of a high level-3 performance. The student demonstrates a considerable degree of achievement of the expectations in the Knowledge/Understanding category of knowledge and skills, as well as in two of the criteria in each of the Thinking/Inquiry and Communication categories. However, in the Application category and in one of the criteria in each of the Thinking/ Inquiry and Communication categories, the student demonstrates a high degree of achievement – i.e., achievement that is more characteristic of level 4.

The result is an effective report on flooding in China.

Next Steps

In order to improve his or her performance, the student should:

- focus the report on a specific region of China (e.g., a coastal region or river system) and on a specific occurrence of the hazard (e.g., the floods of 1998);
- conduct more research in order to provide a more comprehensive explanation of the mechanisms involved (e.g., how does La Nina contribute to flooding in China?), and to provide more detailed advice on short-term preparation;
- proofread to correct errors in grammar, including punctuation and sentence structure.