# Natural Hazards and Disaster

Lab 3: Disaster Risk Management And Global Risks
- Probability Density Function of Natural Hazards (Question 1)
- Disaster Risk Governance (Question 2)
- Global Threats (Question 3)
- Risk Governance for Global Threats (Question 4)
- Case Study 1

Q2.1
Discuss the probability density function for century-scale changes in global temperature during the Holocene up to 1900 and compare this to the PDF for changes in the 21st century.
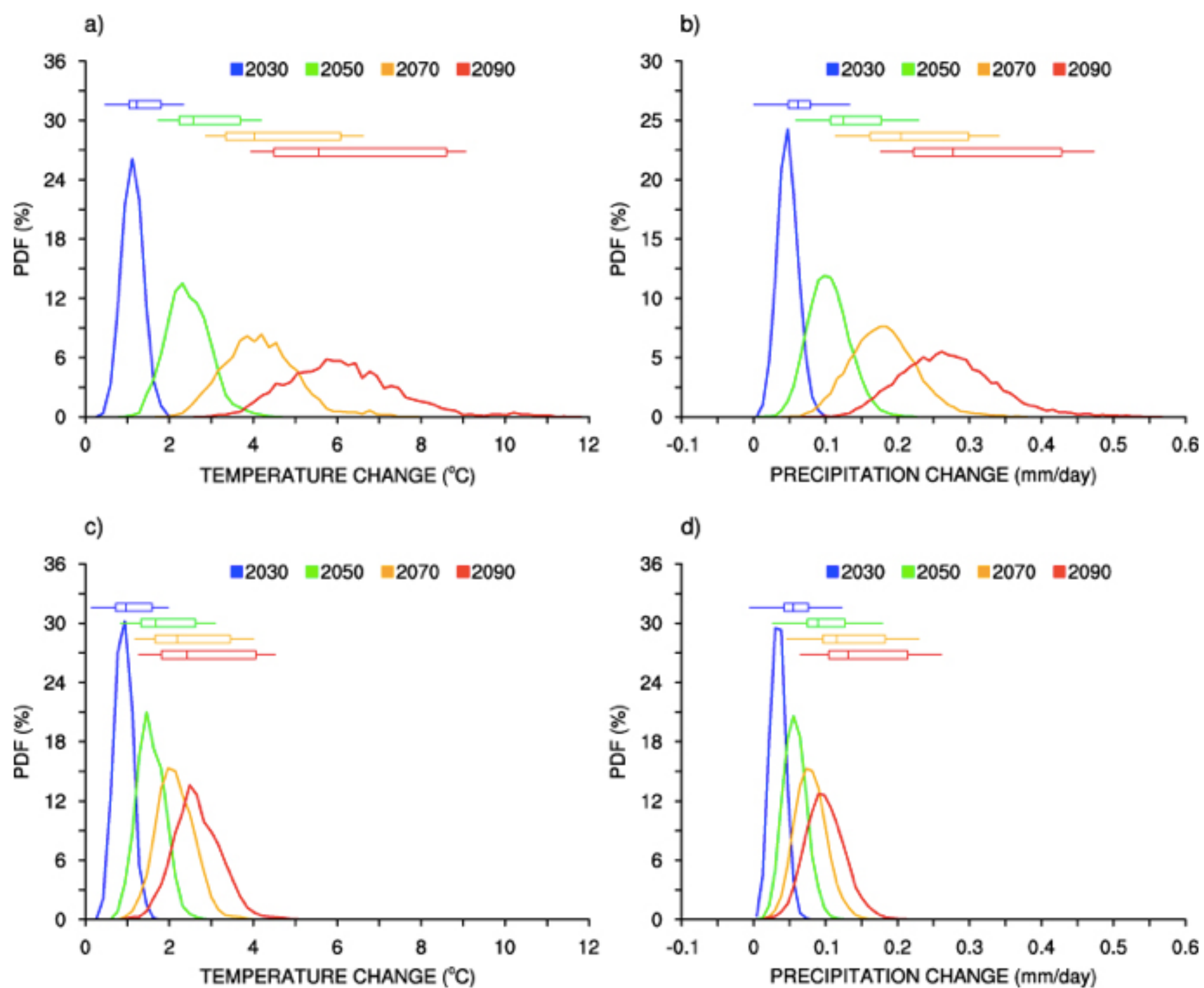
Figure 2. Hybrid frequency distributions (line plots) of changes in NEESPI mean surface air temperature and NEESPI mean total precipitation from the 1991–2010 base period along with the range obtained from the IGSM–CAM simulations (box plots). The box plots represent the changes obtained from the IGSM–CAM 5-member ensemble mean simulations with the low, median and high climate sensitivity while the horizontal line shows the minimum and maximum changes obtained among all individual IGSM–CAM simulations. Changes for different periods are shown with different colors: 2021–2040 mean (blue), 2041–2060 mean (green), 2061–2080 mean (orange) and 2081–2100 mean (red).

http://iopscience.iop.org/article/10.1088/1748-9326/8/4/045008/meta

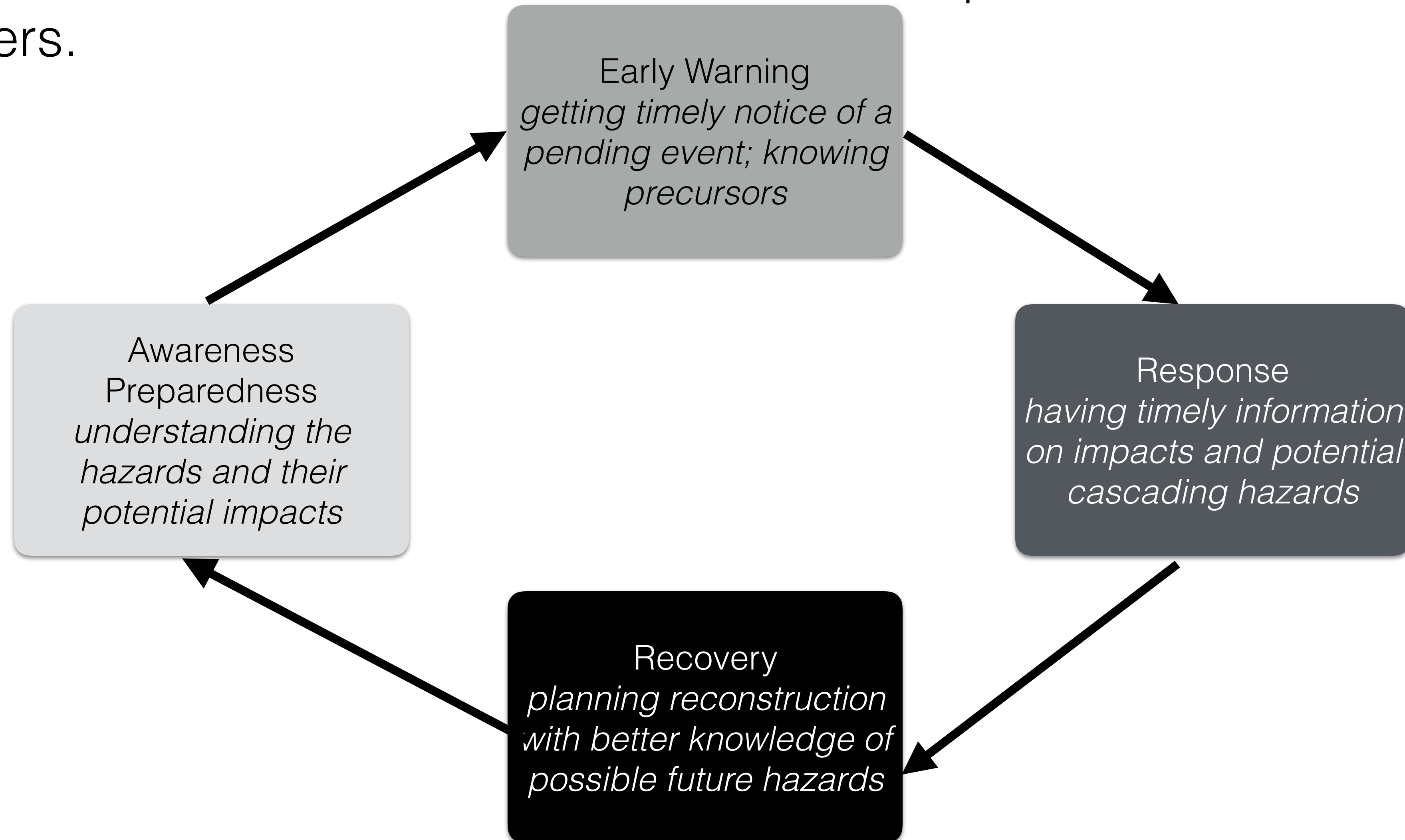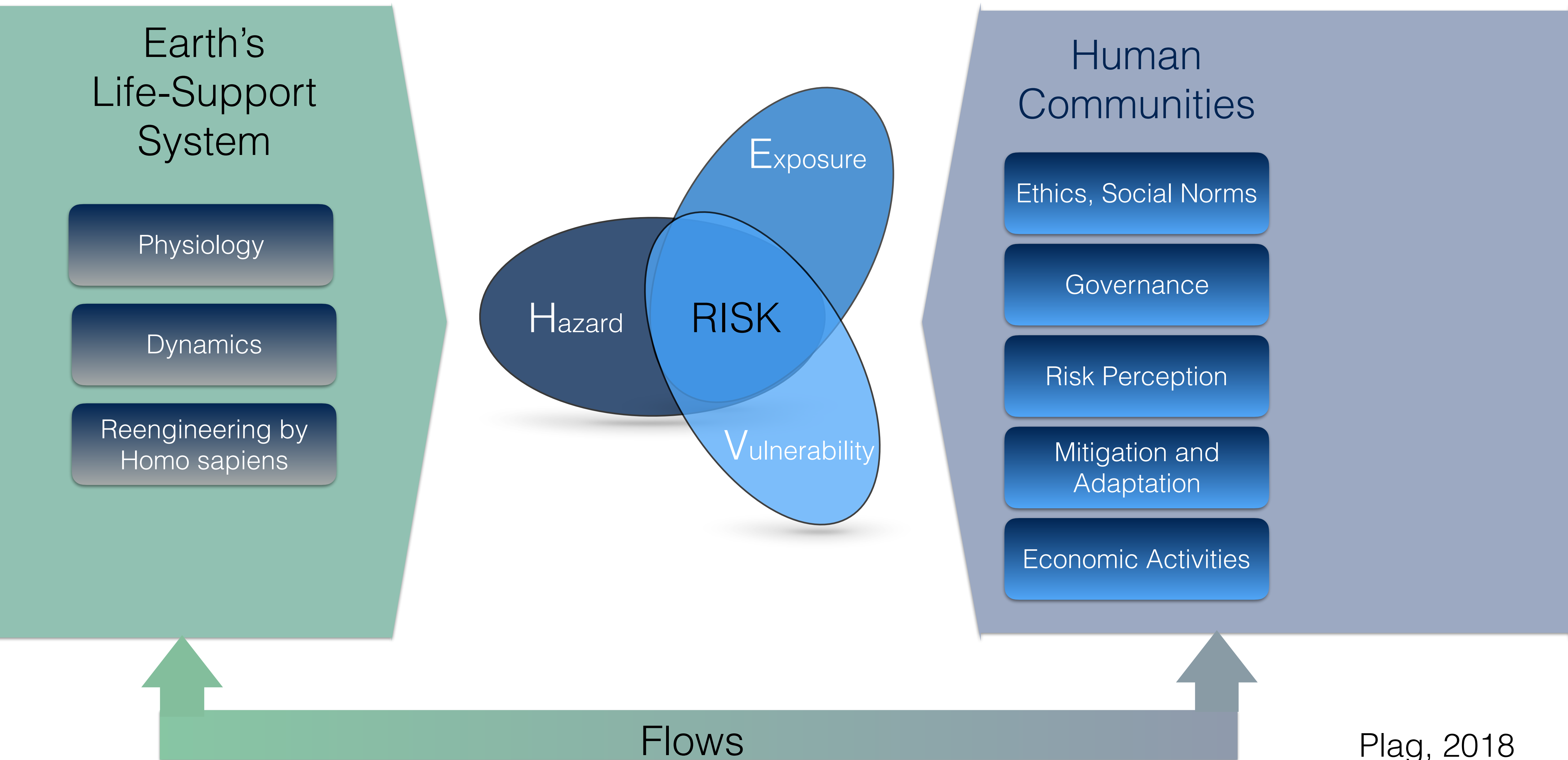# Natural Hazards and Disaster

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Q2.2
Discuss the different phases of the Disaster Risk Governance cycle and relate these to hazards, vulnerabilities, disasters, and the processes that link hazards and disasters.

Early Warning
getting timely notice of a pending event; knowing precursors

Response
having timely information on impacts and potential cascading hazards

Recovery
planning reconstruction with better knowledge of possible future hazards

Awareness
Preparedness
understanding the hazards and their potential impacts

Disaster Risk Governance

Earth's Life-Support System

- Physiology
- Dynamics
- Reengineering by Homo sapiens

Hazard

RISK

Exposure

Vulnerability

Human Communities

- Ethics, Social Norms
- Governance
- Risk Perception
- Mitigation and Adaptation
- Economic Activities

Flows

Plag, 2018

Disaster Risk Governance

THE DISASTER RISK MANAGEMENT CYCLE

KEY: Emergency or Disaster, Media Focus

Risk Assessment
Mitigation/Prevention
Preparedness
PRE-DISASTER
Warning/Evacuation
RESPONSE
Saving People
Providing Immediate Assistance
Assessing Damage
Ongoing Assistance
POST-DISASTER
Restoration of Infrastructural Services
Reconstruction (Resettlement/Relocation)
Economic & Social Recovery
Ongoing Development Activities
Risk Assessment Mitigation/Prevention

DISASTER RISK MANAGEMENT CYCLE (DRMC) DIAGRAM

Definitions:
Mitigation/Prevention: Activities which eliminate or reduce the chance of occurrence or the effects of a disaster.
Preparedness: Planning on how to respond to disasters should they occur. This includes the provision of legislation, trained personnel and resources.

3 stages of DRMC

PRE-DISASTER
• Risk Assessment
• Mitigation/Prevention
• Preparedness

DISASTER RESPONSE
• Warning/Evacuation
• Saving People
• Providing Immediate Assistance
• Assessing Damage

POST-DISASTER
• Ongoing Assistance
• Restoration of Infrastructural Services
• Reconstruction (Resettlement /Relocation)
• Economic & Social Recovery
• Ongoing Development Activities
• Risk Assessment Mitigation/Prevention

Disaster
Emergency Response
Preparedness
Rehabilitation Reconstruction
Prevention Mitigation

RISK MANAGEMENT

Preparedness
Mitigation and prevention
Prediction and early warning
Protection
Disaster
Recovery
Reconstruction
Impact assessment
Recovery
Response

CRISIS MANAGEMENT

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Q2.3
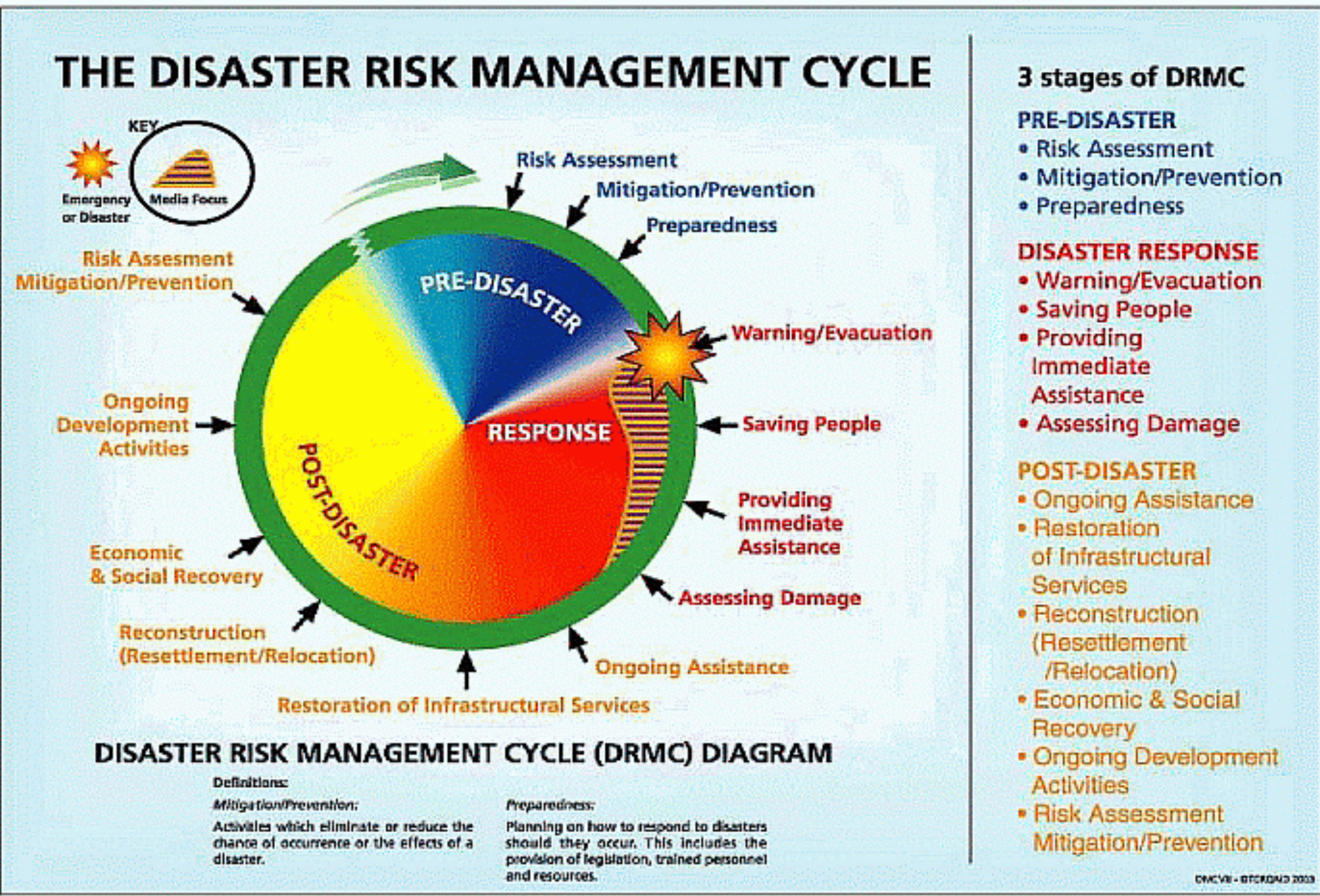Comment on the major threats humanity is exposed to. How does the risk associated with extreme natural hazards compare to extreme anthropogenic hazards? In your assessment, are non-human threats more severe than human-caused threats? Again, your answer to this question will help me to assess at what level future questions should be.

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Q2.4
How are societies preparing for major risks and do you think that these
preparations are sufficient and well justified?

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See **guidelines** at http://www.mari-odu.org/academics/2018f_disasters/index.php?file=case_study1

Select **one case** of an extraterrestrial hazard that has happened or could happen in the future.
The choice of the case is up to you, but you should select a case for which evidence is available.

Lab hour on September 24, 2018 available for work on case study
Draft: September 26, 2018 (optional)
Comments: September 30, 2018
Final paper: October 3, 2018

Length: 1,500 words minimum, 2,000 words of text maximum.
            Figure captions and reference citations are not included in the word count.

Readership: Non-expert audience.

Format: Typed, please. One-and-a-half line spacing preferred.
            Start with the title of your Case Study.
            Write you name and the class identifier below the title.

Contents: The paper should have five sections:

1 Introduction:

- Which type of hazard, which event, where and when. For a hypothetical event, who assessed the possibility of such an event?
- Why did you select the event? Is an event of the type and size you selected frequent or of very low probability?
- What are the potential impacts of such an event?

2 The hazard

- Describe the hazard, it's type, origin, physical/chemical characteristics, as well as the spatial and temporal extent and severity.
- If there is a scale to measure the severity, explain this scale and provide the rating of the event.
- Give details of the event (time, duration, location, etc.).
- For a hypothetical event, provide information on possible locations and probability

3 The resulting disaster

- What are the main direct impacts and losses?
- What losses occurred subsequently or indirectly?

4 Risk Management

- How was pre-event awareness and preparedness, risk perception?
- Were there any early warnings and did they have effects?
- Did the response made the disaster worse or less pronounced.
- How was recovery?

5 Concluding Remarks

- How is preparedness for a similar event in another region?
- What are the main impacts that could occur in this region?
- What is the awareness for such hazards there?
- Are there published plans to improve awareness and preparedness it in future?

References

Figures, Diagrams, Tables:

- Include at least one picture relevant to the hazard and/or the disaster caused by the hazard.
- For a hypothetical event, include a figure that is relevant to understand the potential disaster.
- Cite the source of any pictures and include a short captions explaining the figure.
- Place the caption below the figure.
- The caption is not included in the word count.
- If you use a table, place a caption above the table.
- Refer to the figures/tables in the text.

Sources and Citations:

- Use at least three different peer-reviewed sources for your research!
- Avoid citing web pages without authors/dates. If you use Wikipedia pages, go to the original data sources wherever possible.
- If you use newspaper articles, try to locate the scientific papers they often refer to.
- Cite the sources in the text.
- Avoid quotations (unless you quote an eye-witness). If you quote, use quotation marks and cite the source. No more than 30 words in a quote!
- Included in the list of references only sources that were cited in the text.
- Use the Council of Scientific Editors (CSE style) for citations and references.

Send questions to me by email.
If you want to discuss "your" event, send the proposed event to me asap.