



# Disaster risk reduction for a resilient world

An online transdisciplinary course to enhance global awareness in training and education

Solmaz Mohadjer<sup>1</sup> and Joel Gill<sup>2</sup>, Tom Schürmann<sup>1,3</sup> and Tina Stengele<sup>1</sup>

<sup>1</sup>Global Awareness Education, University of Tübingen, Germany

<sup>2</sup>School of Earth and Environmental Science, Cardiff University, UK

<sup>3</sup>Department of Geosciences, University of Tübingen, Germany

**Contact:** [solmaz.mohadjer@uni-tuebingen.de](mailto:solmaz.mohadjer@uni-tuebingen.de)



BY

# Motivation

How can researchers contribute to building resilient societies?

➤ Seven recommendations made by Gill et al. (2021) - *Nat. Hazards Earth Syst. Sci.*

1. Characterize multi-hazard environment
2. Prioritize long-term partnership
3. Listen to your stakeholders
4. Understand the cultural setting
5. Ensure access to hazard information
6. Promote people-centered DRR
7. Connect DRR with Sustainable Development



<https://tinyurl.com/NHESS2021>

# Motivation

The screenshot shows the OpenLearn Create website interface. At the top, there is a navigation bar with the logo 'OpenLearn Create' and the tagline 'Hosting resources for creators and learners'. A search bar is located to the right of the logo. Below the navigation bar, there are links for 'Home', 'Get started', 'Create a course', 'Free courses', and 'Collections'. A 'Sign up / Sign in' button is also present. The main content area features a large banner for the course 'Building Sustainable and Resilient Communities: Actions for Natural Hazard Scientists'. The banner includes a blue sidebar with the course title, a central image of a city at night with a snow-capped mountain in the background, and a logo for the European Geosciences Union (EGU) with the text 'Funding provided by:'. Below the banner, there is a section for contact information: 'Contact Dr. Solmaz Mohadjer (solmaz.mohadjer@uni-tuebingen.de) for the enrolment key for this pilot course. Please register an account or use your existing Open University account to login to OpenLearn Create if you already have an account. Once you have been given the enrolment key, login to OpenLearn Create, then use the enrolment key when you enrol on the course.' To the right of this text is a 'Share this collection' section with social media icons for Facebook, Twitter, LinkedIn, Google+, and Email, and a Creative Commons license icon. At the bottom, there is a small course card with the title 'Building Sustainable and Resilient Communities: Actions for Natural Hazard...' and a '10 hrs' duration indicator.

- Free, open-access & self-led
- 7 learning modules (10 hrs study)
- Diverse & inclusive examples
- Active-learning strategies



<https://tinyurl.com/DRRLesson>

# Roadmap



*Aim:* To adapt the online training course, originally developed for natural hazard researchers (and students) and make it accessible to students from all disciplines.

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1. Online course
2. Course evaluation
3. Lessons learned

# Online Course

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## 7 Learning Modules for Flipped Learning

### **Disaster risk reduction for a resilient world**

- Offered by Global Awareness Education (a part of the Transdisciplinary Course Program)
- 3 credit online course
- Piloted in Winter semester 2023/24
- 13 weeks, 1 x 90 mins session/week

**Participants:** 9 undergraduate students from different disciplines

# Course Structure

Modules:

1. Characterize multi-hazard environments

2. Prioritize effective partnership

3. Understand your stakeholders

4. Understand the cultural setting

5. Ensure access to hazard information

6. Champion people-centered DRR

7. Connect DRR with Sustainable Development

Pre-Module  
Self-Evaluation



Post-Module  
Self-Evaluation



# Course Structure

## Modules used for flipped learning:

Total: 13 weeks

## Additional topics

1. Characterize multi-hazard environments	3 lectures*	Compound & Cascading risk
2. Prioritize effective partnership	2 lectures*	
3. Understand your stakeholders	2 lectures*	Theory of change
4. Understand the cultural setting	3 lectures	Positionality Indigenous knowledge
5. Ensure access to hazard information	1 lecture	
6. Champion people-centered DRR	1 lecture	
7. Connect DRR with Sustainable Development	1 lecture	

# Module Example

## 1. Characterise (Multi-)Hazard Environments

Many communities around the world are exposed to multiple, interrelated natural hazards – yet disaster risk reduction and management is dominated by approaches that either focus on single natural hazards or treat multiple hazards as discrete or independent.

This module will help you to:

1. Define the term 'multi-hazard' and understand how natural hazards may interrelate.
2. Describe how characterising a multi-hazard environment can inform actions contributing to disaster risk reduction
3. Reflect on approaches to data collection, in the context of characterising (multi-)hazard environments.

This section will take about 1 hour to complete, plus time for readings.



Photo credit: Giovanni Randazzo (distributed via immagine.egu.eu)

☰ Pre-Module Self-Evaluation

📖 Module 1: Characterise (Multi-)Hazard Environments

☰ Post-Module Self-Evaluation

📄 Further Reading, Resources, Activities

## Characterise Multi-Hazard Environments

### Lesson Description Learning Objectives

Pre-Module Self-Evaluation  
Module 1: Characterize Multi-Hazard Environments  
Post-Module Self-Evaluation  
Further Reading, Resources, Activities



# Module Example

**1. Characterise (Multi-)Hazard Environments** ^

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- ☰ Pre-Module Self-Evaluation
- 🔗 Module 1: Characterise (Multi-)Hazard Environments** ●
- ☰ Post-Module Self-Evaluation
- 📄 Further Reading, Resources, Activities

## Characterise Multi-Hazard Environments

### Lesson Description Learning Objectives

### Pre-Module Self-Evaluation Module 1: Characterize Multi-Hazard Environments Post-Module Self-Evaluation Further Reading, Resources, Activities

# Module Example

## Lesson menu

- Pre-Module Self-Evaluation
- Introduction
- Multi-Hazard Terms and Concepts
- Activity 1 - Answers and Feedback
- Multi-Hazard Scenarios and Dynamic Risk
- Activity 2 - Answers and Feedback
- From Multi-Hazards Knowledge to Risk Reduction
- Summary and Recommendations
- Post-Module Self-Evaluation

The screenshot shows the OpenLearn Create interface. At the top, it says 'OpenLearn Create | Hosting resources for creators and learners'. Below that is a navigation bar with 'Home', 'Get started', 'Create a course', 'Free courses', and 'Collections'. A search bar is on the right. The main content area is titled 'My courses > Building Sustainable and Resilient Communities: Actions for Natural Hazard Scientists > 1. Characterise (Multi-)Hazard Environments > Module 1: Characterise (Multi-)Hazard Environments'. On the left, there is a 'LESSON MENU' sidebar with a list of lessons, including 'Pre-Module Self-Evaluation', 'Introduction', 'Multi-Hazard Terms and Concepts', 'Activity 1 - Answers and Feedback', 'Multi-Hazard Scenarios and Dynamic Risk', 'Activity 2 - Answers and Feedback', 'From Multi-Hazards Knowledge to Risk Reduction', 'Summary and Recommendations', and 'Post-Module Self-Evaluation'. Below the menu is a 'Rate and Review' section with a star rating and 'Read reviews' link. The main content area features a video player for 'Introduction to Multi-Hazard Research' with a play button. Above the video, there is a section titled 'Multi-Hazard Terms & Concepts' with text defining the term and a list of two points. Below the video, there is a section titled '1. Characterising (Multi-)Hazard Environments' with a sub-section 'Introduction to Multi-Hazard Research'. A progress bar at the top right shows '20%' completion.

## Course Progress & Lesson Menu

## A short video lecture Links to UN documents

# Module Example

## Lesson menu

- Pre-Module Self-Evaluation
- Introduction
- Multi-Hazard Terms and Concepts
- Activity 1 - Answers and Feedback
- Multi-Hazard Scenarios and Dynamic Risk
- Activity 2 - Answers and Feedback
- From Multi-Hazards Knowledge to Risk Reduction
- Summary and Recommendations
- Post-Module Self-Evaluation

The screenshot displays the OpenLearn Create interface. At the top, the navigation bar includes 'Home', 'Get started', 'Create a course', 'Free courses', and 'Collections'. The main content area is titled 'YOU ARE IN THIS COURSE' and shows the course title 'Building Sustainable and Resilient Communities: Actions for Natural Hazard Scientists'. A progress bar indicates 30% completion. Below this, the 'Module 1: Characterise (Multi-)Hazard Environments' section is visible. It features a text prompt: 'Having watched the video (introducing different types of multi-hazard environments), we'd like you to use the image below. This photograph is of a village on the slope of a hill in Guatemala. You can also use Google StreetView to get another perspective on this hazard landscape, and to view it at different scales.' An image of a village on a hillside is shown. Below the image, there are instructions: 'Using the image and Google StreetView, reflect on the following:' followed by three bullet points: 1. 'What different single natural hazard types could occur in this region?', 2. 'How might these natural hazards themselves generate multi-hazard events (remember to think about possible synergies, amplification, and cascaded hazard relationships)?', and 3. 'What anthropogenic activities may trigger the natural hazards you consider relevant in this region?'. A 'Your answer:' text area with a rich text editor is provided for the user's response.

## Course Progress & Lesson Menu

Activity 1: Use the image to answer a few questions

## Response Submission Form

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# Pre- & Post-Course Self-Evaluation

**1** On a scale from 1 (lowest) to 5 (highest), please rate your knowledge, confidence and skills about characterizing multi-hazard environments.

		1	2	3	4	5
1. How familiar are you with the "multi-hazard" concept?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. To what extent do you feel you have the skills to characterize multi-hazard environments?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. How important do you think building knowledge and skills related to characterizing multi-hazard environments is to disaster research?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**2** On a scale of 1 (lowest) to 5 (highest), please rate your level of agreement with the following statements about characterizing multi-hazard environments.

		1	2	3	4	5
1. The need to characterize multi-hazard environments is embedded into international strategies for disaster risk reduction.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Characterizing multi-hazard environments requires the use of quantitative approaches.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Characterizing multi-hazard environments can help explore how risk may change over time.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**3** What actions (if any) do you plan to take as a result of completing this module? Please tick all that apply:

- Complete further reading/study on this theme.
- Embed content in teaching (undergraduate level).
- Embed content in teaching (postgraduate level).
- Embed content in other learning forums (e.g., continued professional development).
- Discuss the content with colleagues / other collaborators.
- Advocate for the importance of this topic (e.g., to peers, professional and learned societies, relevant policy communities).
- Revise existing tasks / projects to take into account learning from this module.
- Develop new tasks / projects to take into account learning from this module.

[Submit questionnaire](#)

Rate your knowledge, confidence and skills

Indicate your level of agreement with these statements

What actions do you plan to take because of completing this module (Post-module only)

# Self-Evaluation – Results

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- Increase in knowledge, confidence, and skills across all modules
  - **Highest:** Connecting DRR with Sustainable Development, Promoting people-centered DRR
  - **Lowest:** Characterizing multi-hazard environments
- Important topics: Connecting DRR with Sustainable Development, Promoting people-centered DRR
- **Actions to take because of completing this course**
  - Complete further reading/studying on this theme
  - Discuss the content with colleagues /collaborators

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# Lessons Learned



- Topics related to disaster risk appeal to everyone
- Many DRR tools have applications outside of geosciences (e.g., theory of change, stakeholder mapping, partnership spectrum)

## Challenges

- Technical difficulties with accessing the online course
- Students' unfamiliarity with UN documents and DRR frameworks
- Difficulty in relating some of the concepts to their studies, personal and professional experiences

# What you can do

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Access course:

<https://tinyurl.com/DRRLesson>



Share feedback:

<https://tinyurl.com/DRRTraining>

Contact: [solmaz.mohadjer@gmail.com](mailto:solmaz.mohadjer@gmail.com)

