

## Tentative outline of the modules

*\*Participants will be polled on preferences*

### *Week 1 - Day 1: General Session Modules (3 hours)*

- Module 1** Introduction (Bishal Bhardwaj)
- Module 2** Climate change risk and mountain development (Prof. Rajesh K Rai, Ph.D.)
- Module 3a\*** Components of Risk & Reading Maps (Darcy Glenn)
- Discuss the components of risk
    - Hazard
    - Vulnerability
    - Capacity
  - Look at maps that show the 3 components of risk
    - Identify components
    - Talk about what is important on the maps
- Module 3b\*** Introduce What Climate Models Can and Cannot Do (Darcy Glenn)
- Importance of Ensembles
  - Temporal Resolutions
    - If timeframes are too short the results will not be accurate
    - Best to look at data over time
    - 30 years is best
  - Spatial Resolutions
    - Complex landscapes do better with high resolution
    - Mountains are more difficult than flat plains
  - Very good at rates of change
    - Basic methodology-conceptual
- Module 3c\*** Risk and Social Communication (Speaker To Be Decided)
- Module 4** Recap and Q&A (Bishal Bharadwaj, Prof. Rajesh K Rai, Darcy Glenn)
- Homework** **Technical participants ONLY:** Sign up for Google Earth Engine

### *Week 2 - Day 1: Technical Session (2 hours)*

- Module 1** Ensure All Students Able to Log On (Darcy Glenn)
- Module 2** Introduction to Google Earth Engine (Darcy Glenn)
- Upload files from computer & catalogue
  - Basic commands
  - Display data
  - Calculate number of days above 25°C (Demonstration)
    - Students can choose from 25°C, 30°C, 35°C, 40°C, or 45°C
- Module 3** Recap and Q&A (Bishal Bharadwaj, Prof. Rajesh K Rai, Darcy Glenn)
- Homework** Upload daily data before next session
- It may take 1 hour per dataset, there will be 6 datasets, please start early

### *Week 2 - Day 2: Technical Session (2 hours)*

- Module 1a\*** Using daily data: Projecting extreme heat days (Darcy Glenn)  
Importance of Ensembles  
Temporal Resolutions  
Review projection methodology concept  
Wetbulb temperature: Heat & humidity measurement that can be related to health  
Use Google Earth Engine to project days above 28°C wetbulb  
Export data
- Module 1b\*** Using daily data: Projecting extreme rainfall (Darcy Glenn)  
Importance of Ensembles  
Temporal Resolutions
- Module 1c\*** Using daily data: Projecting night temperatures (Darcy Glenn)  
Temporal Resolutions  
Review projection methodology concept  
Minimum temperature: When the nighttime temperature is too high, our bodies can't recover during a heatwave  
Use Google Earth Engine to project changes to heat waves with high nighttime temperatures  
Export data
- Module 1d\*** Using daily data: Who is affected by high temperatures? (Darcy Glenn)  
Maximum temperature: Thresholds as seen in module, but now with daily data  
Import information from Google Earth Engine's Catalogue to see who will be affected  
Export data
- Module 2** Recap and Q&A (Bishal Bharadwaj, Prof. Rajesh K Rai, Darcy Glenn)

*Week 3 - Day 1: Technical Session (2 hours)*

- Module 1** Student led map making
- Module 2** How risk mapping skills can help society (Bishal Bharadwaj, Prof. Rajesh K Rai, Darcy Glenn)
- Module 3** Recap and Q&A (Bishal Bharadwaj, Prof. Rajesh K Rai, Darcy Glenn)

*Week 3 - Day 2: Technical Session (2 hours)*

- Module 1** Presentations
- Module 2** Recap and Q&A (Bishal Bharadwaj, Prof. Rajesh K Rai, Darcy Glenn)