ADVANCES IN GEOGRAPHICAL RESEARCH

Making the Complex Simple

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eWorkshop with Live Practice On

AN ENSEMBLE OF EVIDENCE BELIEF FUNCTION (EBF) WITH FREQUENCY RATIO (FR) FOR GIS-BASED LANDSLIDE PREDICTION IN ARCGIS

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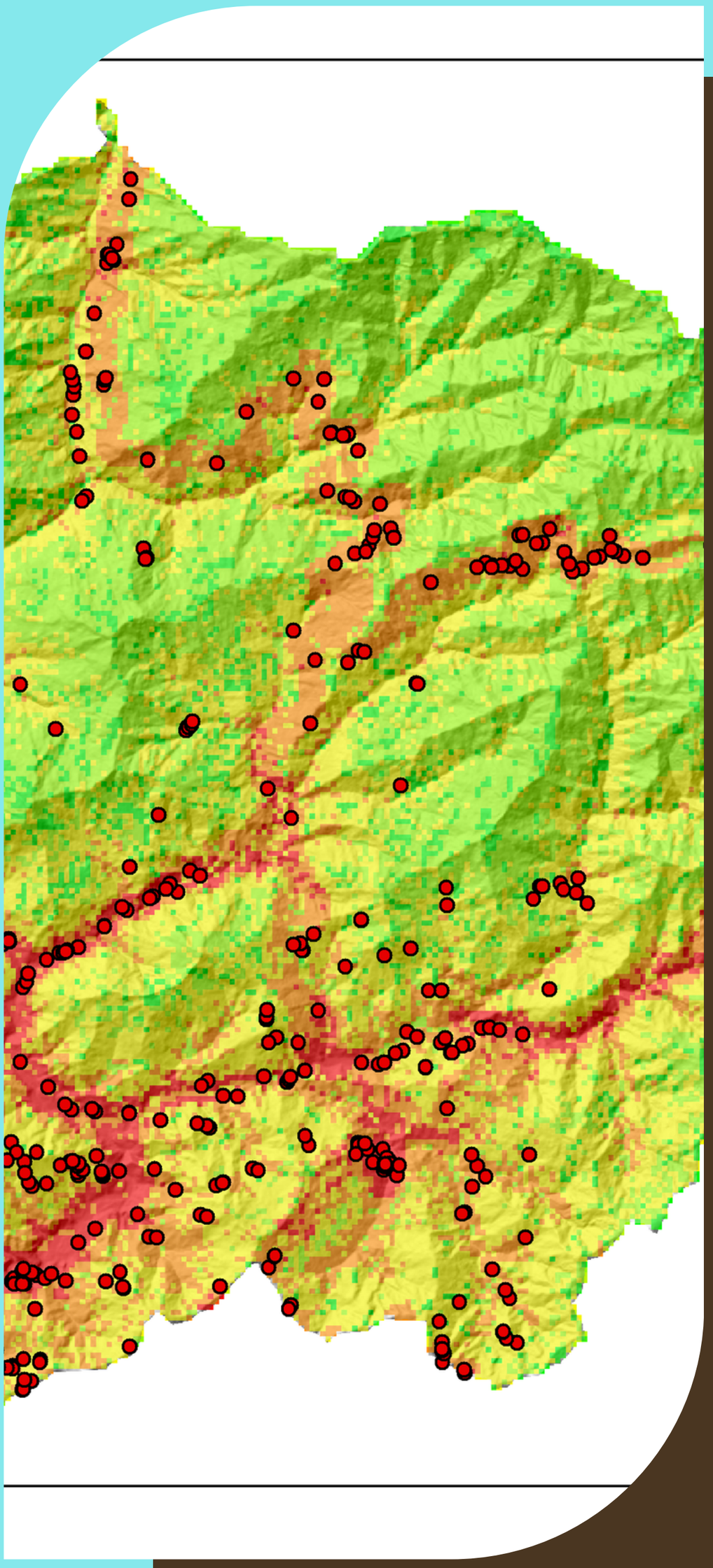
About Workshop

In this online workshop and live practice, you can learn the complete process (A-Z) from scratch to production. How to select parameters and why, download raster and vector data, processing data, images in ArcGIS environment, justification of variables, step by step guide of Dempster-Shafer theory of EBF and FR models, produced prediction map applying combined EBF and FR methods in Landslide prediction zonation using ArcGIS. Moreover, you will also learn validation of the susceptibility map using advanced techniques such as success rate curve and prediction rate curve.

Evidence Belief Function (EBF)

The Dempster-Shafer theory is a mathematical-based model with a bivariate statistical methodology. This theory is known as the theory of belief functions. The Dempster-Shafer theory has been used in landslide susceptibility mapping by several. There are four basic evidential belief functions used: Bel (degree of belief), Dis (degree of disbelief), Unc (degree of uncertainty) and Pls (degree of plausibility). Bel and Pls indicate the lower and upper bounds of the probability; Dis is the belief of the proposition being false on given evidence; Unc means the difference between the belief and the plausibility. During this e-workshop, you can learn how to prepare these four maps and their relevance in landslide prediction.



Frequency ratio (FR)

Frequency ratio (FR) is one of the statistical methods frequently used and adopted for the present study to produce LSZ map using multi−class spatial data sets. This method is a simple and understandable probabilistic method. FR is defined as the ratio of the area where landslides occurred to the total study area. It is the ratio of the probabilities of a landslide occurrence to a non−occurrence for a given landslide conditioning sub−class. The FR of each factor's sub−classes are calculated from their relationship with landslide events. During this workshop the landslide susceptibility index for the FR model will be calculated by the addition of FR values for each sub−class's landslide conditioning factors.

After completing this course, you will be efficiently able to process, predict, and validate any data related to hazard, vulnerability, risk, and suitability assessment using the **EBF** and **FR** models.

Keywords:

- Landslide
- Excel
- ArcGIS
- EBF
- FR
- Dempster-Shafer theory,
- Mapping
- Prediction

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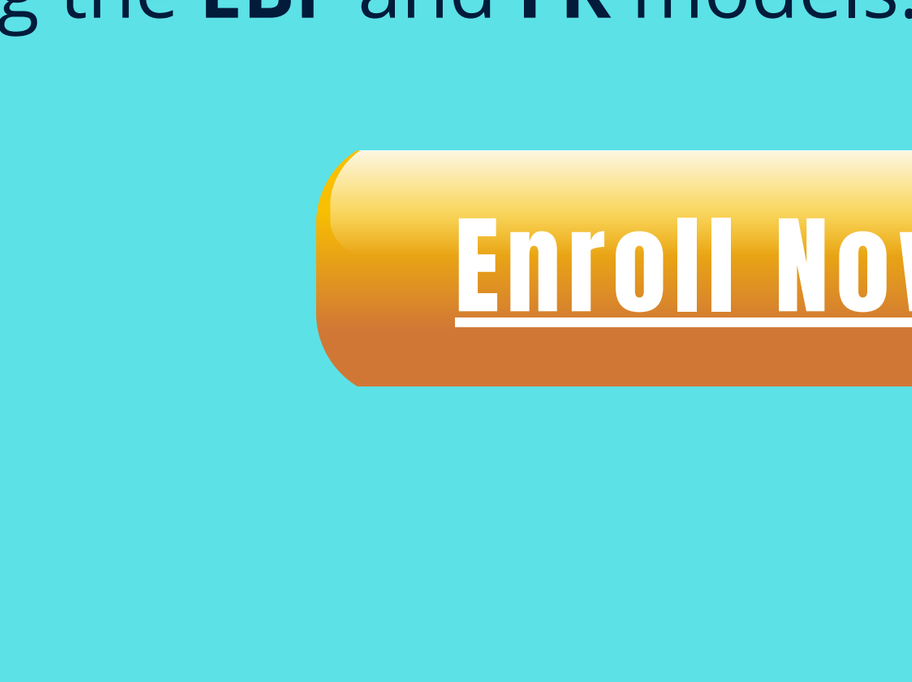

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WHAT YOU WILL LEARN

- Step-by-step procedure from data download, handling, selection, produce prediction map to validation
- Comprehensive understanding of **EBF** and **FR models** and its Interface with Various Decision-Making Interfaces
- Instructors continuous support, taking your hand step-by-step to develop high-quality prediction maps using real data

BENEFITS FOR YOU

- During this workshop, participants can prepare, process, predict and validate any data related to hazard, vulnerability, risk, and suitability assessment using these models.
- Live WhatsApp Chatting
- e-Certificate will be provided
- Publication support from SCOPUS Index Journal
- 1:1 sessions with expert
- Provide supporting resources like ppt, code, research articles
- Access recorded class videos any times
- Easy Payment Gateway such as Debit card, credit card, UPI etc. (international payment also acceptable)

COURSE CONTENT

Section 1: Introduction

1. Introduction to EBF and FR models
2. Literature Review
3. Understanding of landslide
4. Understanding of Landslide Susceptibility Zonation
5. Selection of relevant Criteria

Section 2: Selection of study Area

1. How to select study area
2. How to prepare location map of the study area
3. Landslide inventory map
4. How to prepare a methodological flow diagram

Section 3: Data acquisition and thematic layers preparation in ArcGIS

1. Download Satellite data
2. Download Vector data
3. Preparation of topographic indices
4. Preparation of remote sensing indices
5. Preparation of Climatic indices

Section 4: Calculation of EBF

1. Understanding EBF
2. Data partition: training and testing
3. Data Processing
4. Calculation of EBF

Section 5: Calculation of FR

1. Understanding FR
2. Data partition: training and testing
3. Data Processing
4. Calculation of FR

Section 6: Preparation of EBF model

1. Model runs in ArcGIS
2. Area Calculation of each class
3. Export maps

Section 7: Preparation of FR model

1. Model runs in ArcGIS
2. Area Calculation of each class
3. Export maps

Section 8: Ensemble of EBF-FR models

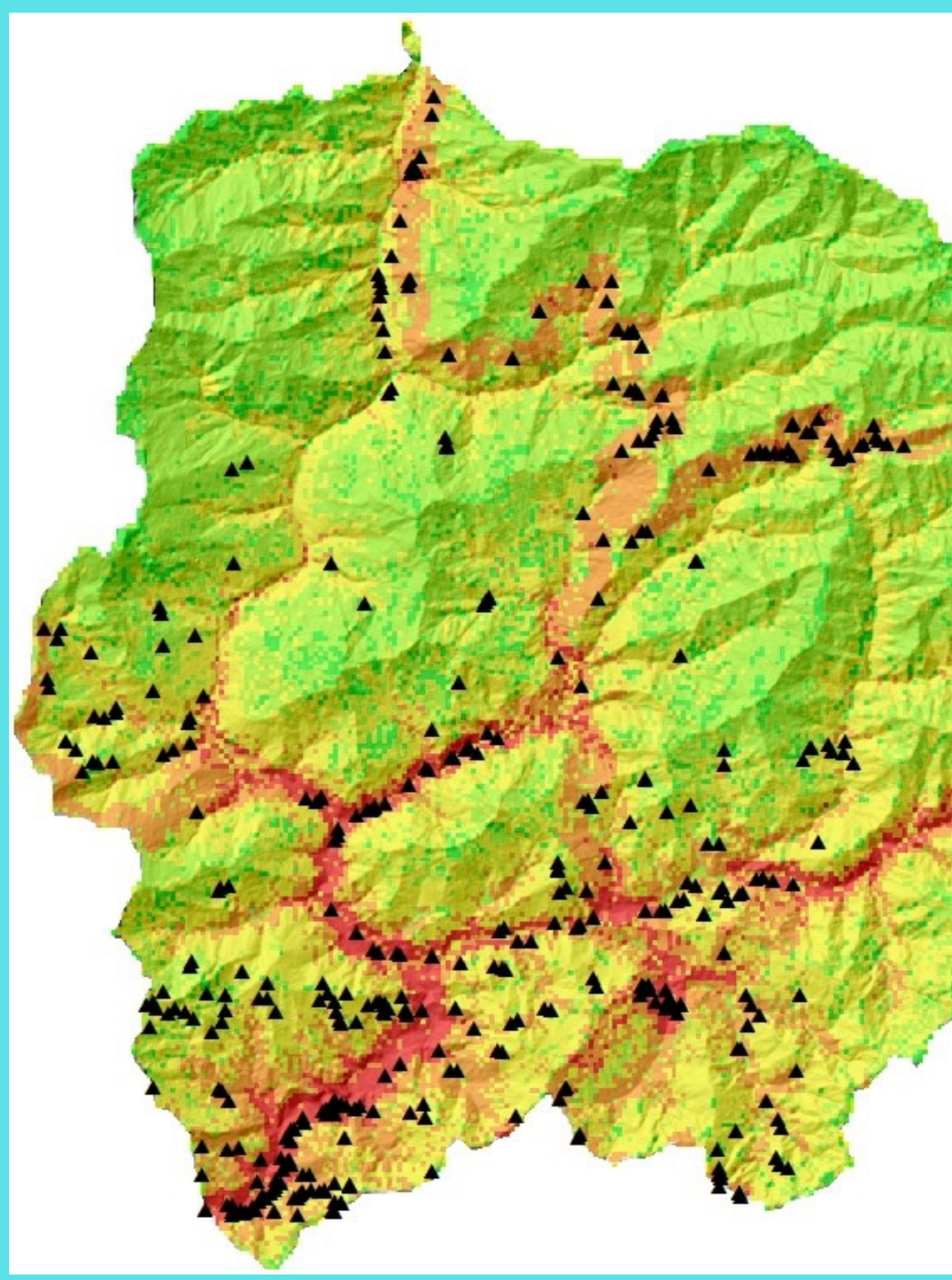
1. Model runs in ArcGIS
2. Area Calculation of each class
3. Export maps

Section 9: Model Validation

1. Prepare success rate curve
2. Prepare prediction rate curve

Section 10: Final preparation for publication

1. Preparation of Tables
2. Preparation of Figures
3. Preparation of final layout



WHO THIS COURSE IS FOR:

1. Students, researchers and professionals of Natural hazards, Environmental Science, Ecology, Engineer and Geography
2. Students, researchers and professionals who interested in multicriteria decision-making analysis using GIS Data
3. Students, researchers and professionals who work on any MCDM model like Landslide prediction, Hazards, vulnerability and risk [flooding, landslides, drought], susceptibility [Groundwater potentiality, Stress zonation, vulnerability] and Suitability [Agricultural suitability, Irrigation suitability]
4. Anyone interested in learning Structured Decision-Making Using Step by Step Approach

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ARE THERE ANY COURSE REQUIREMENTS OR PREREQUISITES?

1. Basic Knowledge of Microsoft Excel
2. No statistical background needed
3. Basics knowledge in ArcGIS software and QGIS is optional
4. Interest in GIS prediction maps using real-life Data

REGISTRATION

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Registration is compulsory for all the participants using website
Registration Fee Structure

Standard Registration fee

India: 10,000 INR Other countries: 150 USD

IEarly bird Registration fee

India: 8500 INR Other countries: 125 USD

IMPORTANT DATES

Early Bird Registration	Closes 7th July, 2022
Standard Registration	Within 15th July, 2022
Workshop start	16th July, 2022
Workshop End	27th August, 2022
Time	6- 8 pm (+5:30 GMT)
Date	2 days a Week

ABOUT US

Advances in Geographical Research (AIGR) provides certified professional training, development opportunities and assured innovative research ideas for the next generation of researchers, such as programs and courses in research methodology, Remote sensing, Geo-Informatics and GIS courses, as well as mentoring.

Our motto is making the complex simple. Led by some of the world's leading researchers, who provide key insights from their experience, our training programs support career development and encourage our researchers to excel in their field.

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