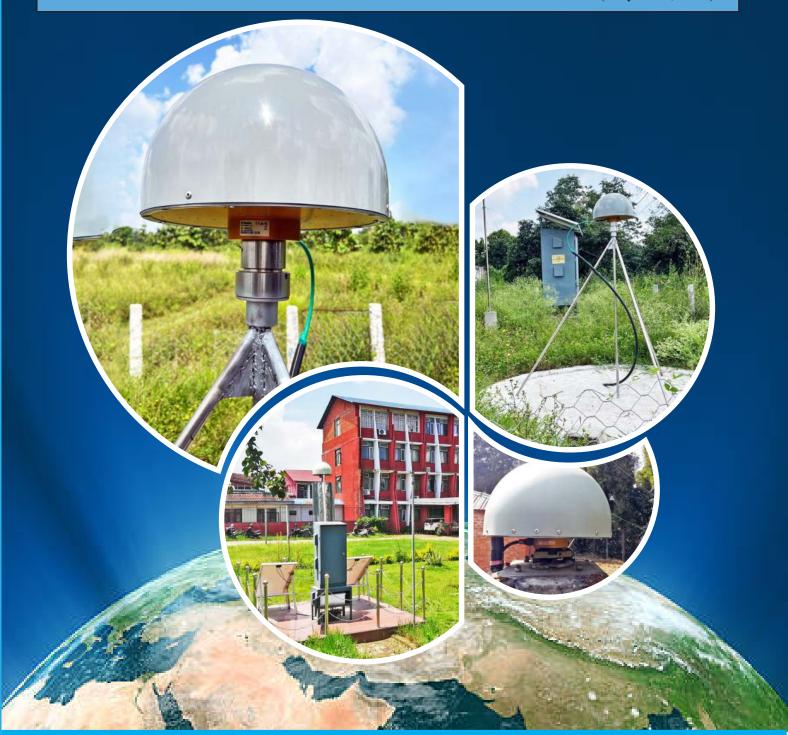
# JOURNAL ON GEOINFORMATICS

Nepal

Number: 23

**Jestha 2081 (May/June, 2024)** 



# Journal on Geoinformatics Nepal

Number: 23

Jestha 2081 BS May/June 2024 AD

Annual publication of Survey Department, Government of Nepal

The content and the ideas of the articles are solely of authors.

#### **Published by:**

Government of Nepal
Ministry of Land Management, Cooperatives & Poverty Alleviation
Survey Department
Min Bhawan, Kathmandu
Nepal

No. of copies: 500

### **FOREWORDS**



Survey Department, National Mapping Agency of Nepal provides user focused, cost effective, reliable and high quality geospatial data, and information to meet the needs of national security, sustainable national development, and geo information in the field of surveying and mapping activities for innovative market. In addition to the technical responsibility, department also support the academia in sharing and disseminate knowledge and information through its annual publication the 23rd issue of "Journal on Geoinformatics, Nepal". It gives me great pleasure to congratulate the Editorial Board and express my gratitude to all the contributor for their invaluable assistance in shaping this journal.

Survey Department continuously contributes Land Administration services to the citizens through its district level offices adopting with modern advanced system. Besides this service, department provides the technical support in international boundary, generating geo-information services, strengthening geodetic network control, and conducting pertinent need-based surveying and mapping activities to assist the planners and scientists in the field of land resource management. Department also supports in the field of Surveying, Mapping, Geo-information Science and Earth Observation that is very crucial for the planned development of hitherto under developed areas in the country.

Currently, fifty-five district survey offices have implemented the Nepal Land Information System (NeLIS) and "MeroKitta" as web based modern land administration service system. Based on these systems, Citizens can receive the service of map print, field book print and plot register print after online revenue payment and obtain the digital copy of map/document in hand without visiting the survey office. The system has been implemented with the objective of decentralization concept of the government according to the constitution. The Department is planning to rollout the system in all district level offices in near future. Besides this turning point system, department is also conducting the LiDAR survey which generates a very high-resolution DEM useful for different development activities and disaster mitigation planning. Department is also planning to continue the LiDAR survey to cover the whole country. Updating of the topographical base maps. Establishment of CORS and defining the spatial reference frame are some other major activities that the department is conducting. I believe that this journal has been the platform for sharing the activities and products of Survey Department from history to present status and also from varied research fields.

Further, I like to express my sincere appreciation to the fellow colleagues, the members of Advisory Council and the Editorial Board for their invaluable contribution in this issue. The team deserves special thanks for their tireless efforts in bringing this issue in the stipulated time. More importantly, I extend sincere gratitude to all the authors for their resourceful professional contribution. I like to request for such kind of support and professional contribution in the upcoming issues too.

**Enjoy Reading!** Thank you!

Prakash Joshi Director General lightjoshiji@gmail.com

## **EDITORIAL**

Survey Department, The National Mapping Organization of Nepal is conducting many different activities in the field of Surveying and Mapping. Besides the technical activities in this field, department is also contributing in academic sector of this field by publishing journal on different research and findings about geoinformatics through "Journal on Geoinformatics, Nepal", the annual publication of the department. Editorial board is happy to share the 23<sup>rd</sup> issues of this journal. The journal has been a platform for sharing information on geoinformation and its wide range of application for the researchers and professionals working in this field from wide range of community including government, non-government, international organization as well as universities. Editorial board believes that this has also supported in professional development through knowledge sharing in the field of surveying, mapping and geospatial technologies.

Driving from the first issue since 2002 till this 23<sup>rd</sup> issues, the journal has covered from the history of the surveying and mapping to the latest technologies in this field. The editorial board like to thank sincerely to all those authors who contributed in making the successful publication of the issues and also to the advisor board and the editorial for making this happen. This issue is also the continuous product of the previous efforts. This issue also as in previous one, includes interesting and worth reading papers related to geospatial technologies and its applications and findings.

I am also thankful to Survey Department for providing me the responsibility of the Editorin-Chief for this 23rd issue of the journal. With the continuous guidance and critical comments from the advisory board have been able to bring this issue of the journal for readers. On behalf of all the members of the Editorial Board, I would like to express sincere thanks to all contributing authors, paper reviewers, members of Advisory Board and all other persons who have contributed for the publication of 23<sup>rd</sup> issue of the journal.

At last, on the behalf of Editorial Board, let me humbly request all of you to contribute your valuable articles, research papers, review papers for the upcoming issue of this journal.

#### Karuna K.C.

Editor-in Chief, Jestha, 2081 (May 2024)

# **Advisory Council**



Prakash Joshi Chairperson



Karuna K.C. Member



Amir Prasad Neupane Member



Susheel Dangol Member



Krishna Prasad Sapkota Member

# **Editorial Board**



Karuna K.C. Editor-in-Chief



Bikash Kumar Karna (Ph.D.) Member



Damodar Dhakal Member



Er. Harisharan Nepal Member

Journal on GEOINFORMATICS Nepal	Features	Contents
Jestha 2081, May 2024 Number 23		
Product Price Maps Page 8  Control Points Page 8  CORS Station Data Page 8  Geoid Data Page 8  Price of Aerial Photograph Page 34  Land Use Digital Data Page 34  Price of Printed Maps Page 34  Digital Orthophoto Image Data Page 34  Digital Topogrphical Data	Articles  1  2	Assessing the Impact of Urban Expansion on Forest Cover using LULC Maps, NDVI, and NDBI: A Case Study of Kathmandu District.  Arun Kumar Bhomi, Rabina Poudyal, Suraj Kumar Tolange, Susmita Chaudhary Page 1  Cadastre in Nepal: Need for 3D and Way Towards 4D Pravesh Yagol, Susheel Dangol, Prakash Joshi Page 9  Climate Change and Flood Vulnerability Analysis in the Narayani River of Nepal Kiran Maharjan & Susheel Dangol
Page 34 <b>LiDAR Data</b> Page 34		Page 19  Comparison of the Direct
Obituary Page 18  List of Paper Reviewer Susheel Dangol Bikash Kumar Karna (Ph. D.) Ram Kumar Sapkota Ajit Kuwar Sudip Shrestha Prashant Ghimire Harisharan Nepal		Supervised Classification and Segment Mean Shift Classification: A Case Study of Hetauda Sub- Metropolitan City of Nepal Menaka Hamal, Dr. Shahnawaz Page 35

Sanjeeban Shrestha

Establishment of CORS Station

**Cover Concept** 

#### **Contents**

**Nepal Remote** Sensing and Photogrammetric Society Page 80

Professional Organization Pages

**Nepal Surveyor's** Association (NESA)

Page 95

**Nepal Geomatics Engineering Society** (NGES) Page 96

**Forewords** 

Page iii

Regular Column

**Editorial** 

Page v

Calender of **International Events** 

Page 48

**Call for Papers** 

Page 62

**Instruction and Guidelines for Authors Regarding** Manuscript

Informations

**Preparation** Page 62

#### **Contents**

Integration of GNSS, Total Station, and Grid Controls: An **Analysis of Combined Effect of Elevation of Topography and Map Projection Distortion to Solve the Distance Discrepancy** 

Shanker KC, Suresh Shrestha, Sandesh Upadhyaya, Stallin Bhandari

Page 49

**Landslide Susceptibility Analysis** and Hazard Zonation in Nuwakot District, Nepal

Bikash Kumar Karna (Ph.D.) Page 63

**Mapping and Analysing Suicide Locations of Lalitpur, Nepal** 

Dinesh Khatri, Dashrath Ghimire, Poshan Niraula

Page 71

**Modified One-Point-and-Area** Algorithm for Sub-division of **Irregular Parcels** 

Amrit Karmacharya, Janak Parajuli, Shrisha Makaju Shrestha

Page 81