

Training workshop on Western Ghats Biodiversity using
Free and Open Source Geospatial (FOSS4G) Tools

Organised by **Karnataka State Council for Science and Technology (KSCST), Indian Institute of Science Campus, Bengaluru** (<http://kscst.org.in>)
Jointly with Sir M.Visvesvaraya. Geospatial Chair, I.I.Sc.,DST OSGEO –India (<http://www.osgeo.in>)
Energy and Wetlands Research Group, Centre for Ecological Sciences, Indian Institute of Science, <http://ces.iisc.ernet.in/energy>

Dates: 24-28th February 2014

Venue: KSCST Lecture Hall, KSCST, Indian Institute of Science Campus, Bengaluru

The Western Ghats of Karnataka, along with the contiguous Sahyadri range in Goa, Maharashtra and Gujarat in north and Tamil Nadu and Kerala, to the south, have of late been in focus of wide ranging public and government debates on nature and extent of potential ecological sensitive areas. The two committees of GOI ,viz.,WGEEP and HLWG, have strongly recommended a geospatial approach for inventorying, mapping, assessing and monitoring the biodiversity of Western Ghats. Among the five Western Ghat states, Karnataka is perhaps one of the most intensively studied, and researched area for more than three decades. Despite this advances, an acute lack of widespread effort to capture, analyse and disseminate location specific data and info is lacking>One of the major reasons for this failure is exclusive dependence on use of proprietary geospatial tools for both desktop and web GIS applications which will necessarily restrict the participation of most stakeholders. An enabling environment to fill the gap therefore, is by adopting open source geospatial (FOSS4G) tools and were shown to hold tremendous opportunity to multiple stakeholders. For example the Kerala Biodiversity Board has very extensively put to operational use for inland wetlands and most recently by the Western Ghats Ecology Expert Panel (WGEEP) among others. Therefore the present workshop aims to build such capacities by raising awareness to users.

The workshop plan

The plan for 4 days GIS workshop using Free and Open Source Software (FOSS) tools at KSCST is as under

Last date for submission of the course registration form: 5th February 2014

24 th February 2014	<p>Inauguration: Lecture on introduction to Free and Open Source Geospatial tools Basics of GIS and Remote Sensing, Database Management Systems NRDMS Portal - Karnataka</p>
25 th February 2014	<p>Desktop-GIS Paper map to Digital Map</p> <ul style="list-style-type: none"> • Scanning/Digitizing • Field data collection (GPS, etc.) and Data Ingest • Topology Building • Geo-referencing (Warping), Attribute Creation
26 th February 2014	<p>Map Visualization to Map Layout making</p> <ul style="list-style-type: none"> • View data/Making Legends • Labeling/ Symbology/ Thematic mapping • Multi-layer/ Overlay/Legends • Export as SVG/JPEG • Making map layout <p>Spatial Analysis</p> <ul style="list-style-type: none"> • Single Layer Queries (Simple queries/Attribute queries) • Multi-layer queries (Spatial queries) • Intersection/Clipping/Point to surface interpolation • Generating new layers using queries
27 th February 2014	<p>Raster Analysis</p> <ul style="list-style-type: none"> • Raster Clipping using vector polygon • Raster to Vector • Reclassification and Resampling <p>Database</p> <ul style="list-style-type: none"> • How to design DB • Populate GeoDB from Desktop GIS • Query GeoDB from Desktop GIS <p>Web-GIS</p> <ul style="list-style-type: none"> • Overview of Web-GIS
28 th February 2014	<p>Hands on training for Select volunteers on data capture and storage in web/hand held device environment</p> <p>Queries and Feedback</p>
<p>Software: Desktop GIS: OpenJUMP/ QGIS, Database: PostgreSQL/PostGIS</p>	

Advisor: Dr. A. Perumal, Sir M.V. Geospatial Chair Professor, KSCST, Bangalore

Resource persons:

1. Dr. A. Perumal, I.I.Sc./KSCST
2. Dr. M. Prithviraj. , KSCST, Bangalore
3. Dr. T.V. Ramachandra (CES/CST/CiSTUP, IISc)
4. Dr. S.N. Prasad (Secretary, OSGeo-India Chapter)
5. Dr. K.S. Rajan (Treasurer, OSGeo-India and Head, Lab for Spatial Informatics, IIT)
6. Dr. R. C. Prasad (Faculty, Lab for Spatial Informatics,
7. Mr. H Hemanth Kumar, KSCST
8. Mr. Bharath H.Aithal
9. Mr. Bharath Settur
10. Mr. Vinay S.

Number of trainees: 25

At the end of workshop, the trainees will have learnt not only the fundamentals but application of GIS tools. In addition, the trainees will have a very good grounding on open source databases and their use. The practical integrated workshops will further enhance the capacities in use of GIS. The trainees will also have a very good understanding of the concepts of web GIS. The trainees will have each a copy of the illustrated and customized manual, plus the software.

Registration fee:

- Rs. 500 for student participants and fresh graduates
- Rs 1000 for KSCST stakeholder organizations
- Rs 2000 for faculty from colleges and universities
- Rs 5000 nominees from the government agencies and NGO's
- Rs. 10000 for participants from industries, etc.

Interested participants are required to send the duly filled in registration form with the registration fee by demand draft drawn in favour of “Karnataka State Council for Science and Technology, **Bangalore**” to **Prof. A. Perumal**, Sir M.V. Geospatial Chair Professor, Karnataka State Council for Science and Technology, Indian Institute of Science, Bangalore 560012, Please write on the envelope **“Workshop on Free and Open Source Geospatial (FOSS4G) tools”** and **duly filled in application form with the course fee should reach** on or before 31st January 2014.

Accommodation: Outstation participants would be accommodated on campus.

Travel Reimbursements: Select Outstation student participants will be given to and fro travel support (by bus or train by shortest route). These candidates will be chosen (for travel grant) based on the write-up (Highlighting the prospects and challenges of open source geospatial tools in India) along with the registration form.

Workshop on Free and Open Source Geospatial (FOSS4G) tools

Karnataka State Council for Science and Technology, Indian Institute of Science, Bangalore 560012

Jointly with Sir M.V. Geospatial Chair, DST

OSGEO –India (<http://www.osgeo.in>)

Energy and Wetlands Research Group, Centre for Ecological Sciences, Indian Institute of Science,

<http://ces.iisc.ernet.in/energy>

REGISTRATION FORM

(Please mail to reach before **5th February 2014**)

Name: _____

Office Address: _____

Permanent Address _____

PASTE
YOUR

Photograph
(latest)

E Mail: _____

Tele (+ STD Code):

Fax (+ STD code):

Date of Birth:

Sex : Male / Female

Highest Academic Qualification and subject (with proof) _____

Professional Experience: _____

Teaching / Research Interest: _____

Accommodation required: YES / NO

Registration fee

Rs. 500 for student participants and fresh graduates

Rs 2000 for faculty from colleges and universities

Rs 5000 for participants nominated from the Government agencies and NGO's

Rs. 10000 for participants from industries, etc.

Demand Draft No: _____ Rs. _____

dated: _____ Bank: _____

I agree to abide by the rules of the KSCST workshop. If selected I shall participate in the workshop for the entire duration.

Date

Place

Signature

Name:

(Photocopy of this form may be used).

Through **Head of the Organization**

OSGeo-India & IIIT-H

Open source Geospatial Foundation, started in 2008 as a *not-for-profit Society* with a pan India focus working with Governments, Academia and Research Institutions and Industry. The goal of the Society is to provide support and help in building up of open source tools and applications related to the field of geospatial technologies and its allied sciences in this part of the world. It is working towards developing a community of both the users of such products and the developers who can contribute in developing high quality open source software. The Society and its activities are tuned towards achieving these goals, both in the context of software development, e-governance, localization (Indian language support) and building of awareness & outreach of such software systems.

OSGeo-India has been contributing in capacity building. As part of propagating the awareness of open source geospatial tools, the organization conducted several *training programmes* in conference, workshops, summer school organised by different institutes and universities. To list a few in various institutes/universities – Symbiosis, IIRS – CSSTEAP, EDUSAT, Gandhigram Rural University, IISM/SoI, IISc, BVIEER (Pune) and others; coorganized tutorials with INCA, ISRS, FSMI/SWECHA; developed thematic based training programmes for UNDP/CapNet, Ratapani wild life sanctuary etc.

Recently Lab for Spatial Informatics, IIIT-H, a founder member of OSGeo-India has also joined ICA-OSGeo Labs Network to promote FOSS4G tools in Education. Lab for Spatial Informatics (LSI) was established in 2006 as one of the research centres of IIIT-Hyderabad, and has evolved as a premier centre in the country which works towards enhancing the understanding of the concepts in geomatics and geospatial technologies, which are then applied over different application areas. LSI has not only been successful in creating state of the art technologies in areas of satellite image processing, GIS data handling and algorithms; but has also taken a lead in providing quality education and research opportunities in these fields. In addition to developing new algorithms, techniques, and solutions in GI Systems and Science for a wide variety of scientific and commercial applications – LSI also recently released two Open Source tools - LSIViewer and VRGeo.in, a first in this field from India.

Karnataka State Council for Science and Technology (KSCST) was established in the year 1975. It is one of the first State S&T Councils to be set up in the country. KSCST is an autonomous S&T organization under Department of Science & Technology, Government of Karnataka. Details are available at <http://kscst.org.in>

Sir.M.Visvesvaraya Geospatial Technology Chair: The Chair was established by Department of Science and Technology, Govt. Of India at Indian Institute of Science (IISc.) to popularise the Geospatial technology among the Student community, Teachers from the Schools and colleges, NGOs, Grass root level Government officials etc. This will help to use the modern spatial technology for various developmental activities of the country.

The Energy and Wetlands Research Group at the Centre for Ecological Sciences (CES), is actively involved in studies and training on issues related to environment, water resources, energy, ecology, wetlands, geographic information systems, environmental impact assessment and natural resource management. The information about research activities is available at <http://ces.iisc.ernet.in/energy>

Open Source software Kiosk – <http://wgbis.ces.iisc.ernet.in/foss>

A brief on Raster and Vector open source software

ILWIS (Integrated Land and water Information system)

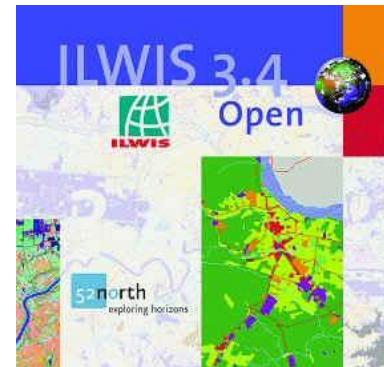
Description of Software: Developed basically for raster (satellite) data processing and analysis.

As a GIS and Remote Sensing package, ILWIS allows you to input, manage, analyze and present geo-graphical data. From the data you can generate information on the spatial and temporal patterns and processes on the earth surface.

ILWIS for Windows is a Windows-based, integrated GIS and Remote Sensing application consisting of:

- Display of raster and multiple vector maps in map windows
- Display of tables in table windows
- Interactive retrieval of attribute information
- Image processing facilities*
- Manipulation of maps in a Map Calculator
- Manipulation of tables in a Table Calculator
- GIS analysis tools
- Script language to perform 'batch' jobs

*This software has capabilities of performing various image enhancement operations like filtering, stretching etc, simple method of geometric corrections / map georeferencing, digital image classification using different algorithms of unsupervised and supervised techniques, producing ratio images etc., Also supports 3D digitization and hydrological processing. This is user friendly software supporting all the major image processing operations (to the max) on par with licensed software.



OPENJUMP (Vector GIS)

Description of software: OpenJUMP is a **Geographical Information System (GIS)**, which has been developed originally by the two Canadian companies **Vivid Solutions** and **Refractions Research** under the name **JUMP**. The name JUMP is an abbreviation for Unified Mapping Platform. The „J“ points to the used programming language „Java“. „Open“ is for „Open Source“, which means that the source code is accessible for everybody



A GIS software that runs on Java Platform. Open stands for free (with source code) and **Jump - Java Unified Mapping Platform**). Basically this software handles major operations that are usually required to complete a project in vector format. User can use this software to visualize the vector data base (with different symbology set up), add and edit attribute information, make aesthetic map composition for better understanding and interpreting. Software can be used for vector database creation producing various thematic features – point, line and polygon layers with various digitization tools and further their editing and topology building. This software also have capabilities of vector geo-referencing by the technique of warping. Further software allows for different spatial queries and GIS operations like union, buffer, intersection etc to perform spatial analysis.