Report on Two-day Training Programme for the Students of Masters of Public Health, AIIMS – Jodhpur

Applications of Geospatial Technology for Public Health

14 – 15 December 2023. Venue: RRSC – West, NRSC/ISRO, Jodhpur

December 2023

**Regional Remote Sensing Centre – West
National Remote Sensing Centre
Indian Space Research Organisation
Jodhpur**

I.   Dean/Academic Head, School of Public Health, AIIMS Jodhpur requested for a training on the topic of "Applications of Geospatial Technology for Public Health," for the students of the Masters of Public Health (MPH), School of Public Health, AIIMS, Jodhpur. The training programme was conducted during 14 – 15 December 2023 at Regional Remote Sensing Centre – West, Jodhpur. The programme schedule and lab session/workshop details are given below.

Program Schedule

Date/Time	14.12.2023	15.12.2023
09:00 – 09:30 hrs	Registration & Inaugural	--
09:30 – 10:15 hrs	Introduction to Indian Space Program & Satellite Remote Sensing By Dr. A. K. Bera, RC-W	Digital Health Initiatives in India & National Health Resources Repository (NHRR): Brief & Live Demonstration By Dr. A. K. Bera, RC-W & Shri Gaurav Kumar, RC-W
10:15 – 11:00 hrs	Introduction to Basic Digital Image Processing, Open Source Imagery and WMS/ WMTS Services By Shri Sagar S Salunkhe, RC-W	WebGIS Platforms with Special Emphasis on Health Sector By Dr. D. Giri Babu, RC-W
11:00 – 11:15 hrs	Tea Break	
11:15 – 12:00 hrs	Introduction to Geographic Information Systems – I By Shri Rakesh, RC-W	Case Studies/Workshop By Dr. D. Giri Babu, RC-W
12:00 – 13:00 hrs	Introduction to Geographic Information Systems – II By Shri Rakesh, RC-W	Environment, Climate and Public Health: Role of Geospatial Technologies By Dr. M. V. Ramana, ECSA, NRSC (Online)
13:00 – 14:00 hrs	Lunch	
14:00 – 15:45 hrs	Lab Session – I	Lab Session – III
15:45 – 16:00 hrs	Tea Break	Tea Break
16:00 – 17:30 hrs	Lab Session – II	Applications of Geospatial Technologies for Public Health By Dr. Sameer Saran, DGM, RC-N (Online) & Conclusion Session

Figure 1: Programme schedule for the two-day training program to the students of Masters of Public Health, School of Public Health, AIIMS, Jodhpur

Lab Sessions/Workshop

Date / Time	Session	Details of Exercises	Session Focal Point / Supporting Staff

14.12.2023
 	
14:00-15:45 hrs
	Lab Session – I	• Introduction to QGIS - I
		  o Image viewing in QGIS
		  o Visualisation of Imagery through WMS/WMTS
		  o Geo-referencing
		  o 3D data visualisation	

14.12.2023
 	
16:00-17:30 hrs
	Lab Session – II	• Introduction to QGIS - II
		  o Importing CSV data into QGIS
		  o Data creation/editing and attributing coding
		  o GIS functions
		  o GIS Analysis
		  o Map compilation
			Dr. Giribabu D
			Dr. Rakesh Paliwal
			Shri Ashish K. Jain
			Shri Sagar S. Salunkhe
			Shri Rakesh
			Shri Shashikant Sharma
			Shri Manish K. Verma
			Shri Subham Roy
			Shri Koushik Ghosh
			Shri Majahar Shaik
			
			System/Software Support:
			Shri Hansraj Meena
			Shri Vikram Rajput
			Shri Gautam Nath

15.12.2023 14:00-15:45 hrs	Lab Session – III	Case studies/Workshop & Presentations A. Toxic gas release and environmental impact B. Synthesis of road accidents and trauma management (Golden Hour) C. Site suitability analysis for health establishment	

Figure 2: Details about lab session/workshop during the two-day training program to the students of Masters of Public Health, School of Public Health, AIIMS – Jodhpur.

II. The inaugural function was attended by the following participants.

- General Manager and all the scientific/admin staff of RC-W, NRSC/ISRO, Jodhpur.
- Students of MPH and Professors/Doctors from AIIMS, Jodhpur.

Figure 2: General Manager, RRSC-W gives welcome remarks to student of AIIMS, Jodhpur.

III. During the inaugural speech, Dr. Srikanth Srinivasan, Professor/Doctor, AIIMS, Jodhpur emphasized the importance of ISRO's support for various health projects. Dr. Gautam Mohanan, also from AIIMS, Jodhpur, stressed the utility of space sciences in tracking vector-borne diseases. He suggested that geospatial technology could similarly be beneficial in addressing lifestyle diseases.

A total of 18 doctors from the School of Public Health, AIIMS – Jodhpur participated in a training program. After completing the Masters in Public Health (MPH) degree, they will focus on addressing widespread medical issues at the community level. Their contributions will span areas such as community health, environmental and occupational health, behavioural and social sciences, human health management, geo-toxicology, biostatistics, epidemiology, and healthcare administration. A foundational understanding of geospatial technologies will equip them to conduct health analytics in the geospatial domain. See Annexure – I/II for the request letter written by Academic Head, AIIMS, Jodhpur and list of participants.

Figure 3: (Top and below) - Participants in the classroom session during the training. The advanced state of art class room has enabled the participants to see the audio-video enabled lectures.

Figure 4: Online digital content presentation during the training program.

IV. The following scientific staff members have delivered lectures on various topics during the tenure of this two day training program.

- Dr. A.K. Bera, RC-W
- Shri Sagar S Salukhe, RC-W
- Shri Rakesh, RC-W
- Shri. Gaurav Kumar, RC-W
- Dr. D. Giribabu, RC-W
- Dr. M. V. Ramana, ECSA, NRSC
- Dr. Sameer Saran, DGM, RC-N

Lab sessions/workshops have been conducted by following staff members of RC-W.

- Dr. Giribabu D
- Dr. Rakesh Paliwal
- Shri Ashish K. Jain
- Shri Sagar S. Salunkhe
- Shri Rakesh
- Shri Shashikant Sharma
- Shri Manish K. Verma
- Shri Subham Roy
- Shri Koushik Ghosh
- Shri Majahar Shaik

Systems/Software support was provided by the following staff members of RC-W

- Shri Hansraj Meena
- Shri Vikram Rajput
- Shri Gautam Nath

Figure 5: Glimpse of participants of during the training session.

V. The topics covered in the course were determined by the dignitary members of School of Public Health, All India Institute of Medical Science(AIIMS) in consultation with the scientists of ISRO who closely work with Public Health. Officials noted that the School of Public Health, a department under the prestigious Postgraduate Institute of Medical Education and Research (PGIMER) in Chandigarh, India, is currently offering various diploma level courses in GIS. AIIMS, Jodhpur emphasized the importance of integrating natural resources data and space-derived climate and environmental variables into public health. The course content was designed to familiarize participants with techniques for integrating socio-economic data, climate, and environmental data with the health sector in the spatial domain. The mentioned faculty members conducted the following lectures.

- Introduction to Indian Space Program & Satellite Remote Sensing
- Introduction to Basic Digital Image Processing, Open-Source Imagery and WMS/ WMTS Services
- Introduction to Geographic Information System – I
- Introduction to Geographic Information System – II
- Digital Health Initiatives in India & National Health Resources Repository (NHRR): Brief & Live Demonstration

- WebGIS Platforms with Special Emphasis on Health Sector
- Environment, Climate and Public Health: Role of Geospatial Technologies
- Applications of Geospatial Technologies for Public Health

Similarly, Lab sessions have covered the below topics

- Brief introduction to QGIS
- Satellite Imagery download from Bhuvan portal
- Layer stacking, sub setting and mosaicking of imagery
- Visualisation of satellite imagery in QGIS
- Raster operation in QGIS
- Adding and visualisation of imagery through WMS in QGIS
    - Bhuvan WMS Services
    - Google Earth Imagery
    - Open Street Map
- Adding DEM in QGIS and visualisation of 3D Data
- Image Registration in QGIS
- Fishnet/grid generation in QGIS
- Heatmap generation in QGIS
- Interpolation (IDW) in QGIS
- Data creation and Attributing coding in QGIS
    - Polygon layer
    - Point layer
    - Line layer
- Importing CSV into QGIS
- GIS Analysis in QGIS
    - Clipping
    - Buffering
    - Union
    - Joining
    - Intersection
- Querying in QGIS
- Map making in QGIS

As a part of workshop, three case studies listed as below are given to the participants

- Toxic gas release and emergency rescue management
- Road accidents and network analysis to analysis the segements in the national highway for reaching the trauma centre with in the Golden Hour.
- Site suitability analysis to establish health establishment

Figure 6: Participants during the class-room sesison.

Figure 7: Participants during the hands-on session in the training room.

Figure 8: Participants interacting with scientists during the training program.

VI.   All lectures took place in the 100-seat meeting room on the first floor of RRSC-W, equipped with audio-video capabilities. Hands-on sessions were conducted in a training room with 55 networked systems. Participants engaged in an interactive manner throughout all the lectures.

VII.   Dr. M. V. Ramana, Group Director, ECSA, NRSC has taken a lecture titled "Environment, Climate and Public Health: Role of Geospatial Technologies" through online mode

VIII.   Dr. Sameer Saran, DGM, RC-N has taken a lecture titled "Applications of Geospatial Technologies for Public Health" through online mode

IX.   During the feedback session the participants have mentioned that the space technology (majorly GIS and geoportals) was highly useful for their nature of work. The participants mentioned the below points

- Most of the participants were not aware about the remote sensing/GIS before attending this course
- The session was very engaging, especially the lab sessions.
- Learn about how to utilize and harness GIS in the area of public health

- It was mentioned by the course participants that GIS,GPS, and Geoportals were of high versatile in nature such that they are of high potential to combat the vulnerability in public health sector.

- Most of the participants are now willing to do projects on Geospatial technology.

- Doctors mentioned that now they will opt of taking geospatial technology as elective paper during their course.

- Doctors mentioned that this training program can be extended to five days, out of which two days for lectures and three days for the hands-on session.

- Major quorum of Doctors clearly mentioned that currently there are no specialized people in AIIMS (all over India) to teach the subject that are specified in this training. Representatives from AIIMS has requested for MoU between ISRO and AIIMS (all over India) for capacity building in the area of Geospatial technology.

Figure 9: Group photo of participants, officials of AIIMS, Jodhpur and staff of RRSC-W.

School of Public Health
AIIMS Jodhpur

अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर
All India Institute of Medical Sciences, Jodhpur

स्कूल ऑफ़ पब्लिक हेल्थ
School of Public Health
Basni Phase-2, Jodhpur, Rajasthan-342005
Website : www.aiimsjodhpur.edu.in
Phone : 0291-2740741 Extn. 3203
E-mail/ई-मेल : sph@aiimsjodhpur.edu.in,
aiimsjdh.sph@gmail.com,

Ref. No. AIIMS/JDH/SPH/2023/ 980   Date:24/11/2023

To,

The General Manager
Regional Remote Sensing Centre (RRSC) -West
Indian Space Research Organisation
Jodhpur Rajasthan.

Subject: Request for a two-day training program for MPH scholars, School of Public Health AIIMS Jodhpur at Regional Remote Sensing Centre (RRSC) -West Indian Space Research Organization Jodhpur.

Dear Sir,

This is in reference to the subject cited above. The Master of Public Health (MPH) program at the School of Public Health AIIMS Jodhpur provides professionals with critical multidisciplinary training to help tackle public health issues and achieve leadership positions.

Health informatics is an integral part of the MPH curriculum at SPH AIIMS Jodhpur. Therefore, you are requested to organize a two-day workshop on "Application of GIS in Public Health" in the second week of December 2023 for 18 MPH Scholars of batch 2022.

Once again we thank you for providing similar training to our previous MPH batches.

Dr. Pankaj Bhardwaj
शैक्षणिक प्रमुख
Academic Head
स्कूल ऑफ़ पब्लिक हेल्थ
School of Public Health
अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर
All India Institute of Medical Sciences, Jodhpur

Copy for information:
1. Director, AIIMS Jodhpur
2. Dean (Academic), AIIMS Jodhpur

Sl. No.	Student/Faculty ID	Name
Faculty#1	AIIMS/F/2019/06/000003	Dr. Srikanth Srinivasan
Faculty#2	AIIMS/R/2022/11/000040	Dr. Gautam Mohanan
1	AIIMS/MPH/2022/06/000002	Arbaj Khan
2	AIIMS/MPH/2022/06/000003	Bhagyashree Rout
3	AIIMS/MPH/2022/06/000004	Garima Kumar
4	AIIMS/MPH/2022/06/000005	Harsha
5	AIIMS/MPH/2022/06/000006	Hetal Vasara
6	AIIMS/MPH/2022/06/000007	Jyoti Jethwani
7	AIIMS/MPH/2022/06/000008	Khulood Shakeel
8	AIIMS/MPH/2022/06/000009	Kirti Siroya
9	AIIMS/MPH/2022/06/000010	Kratika Singh
10	AIIMS/MPH/2022/06/000011	Pragyapti Malav
11	AIIMS/MPH/2022/06/000012	Praveen Upadhyay
12	AIIMS/MPH/2022/06/000013	Purva Madnani
13	AIIMS/MPH/2022/06/000014	Ridhi Jain
14	AIIMS/MPH/2022/06/000015	Sita Ram
15	AIIMS/MPH/2022/06/000016	Sonika Sharma
16	AIIMS/MPH/2022/06/000017	Tanisha Garg
17	AIIMS/MPH/2022/06/000018	Tharini M K
18	AIIMS/MPH/2022/06/000019	Vinod Kumar Vashisht

Distribution of e-Certificates to Student Doctors of AIIMS, Jodhpur

Feedback Forms

FEEDBACK ON TRAINING FOR GEOSPATIAL TECHNOLOGIES FOR PUBLIC HEALTH.

The training session conducted on application of geospatial Technologies for Public health was very informative and interactive especially the lab sessions in which hands-on experience was gained and made thing a lot more easier and understandable.

I would suggest to ~~make~~ give more time for lab sessions or incorporation of theory part within lab sessions.

I really enjoyed the training session and I am eager to apply the knowledge gained to real life scenarios.

— Pragyapti Malav
MPH Batch 2022
AIIMS JODHPUR

feedback

15.12.23.

I Dr. Hetel Vasava, MPH Scholar of AIIMS Jodhpur Batch 2022- 2024 would like to thank to Regional Remote Sensing Centre - West, Rajasthan for giving us for such an great opportunity to learn about "QGIS" by various great scientist

The lecture of Lab Session which were conducted during the session were very insightful for us. I gain very much information from this workshop.

Special thank you to sir, Giribapu and all the Members who's continuous support during the session of Lab. Session.

Sd.(Rer.)

- The session was very engaging
- Especially the lab session
- Learning QHIS was fun.
→ learn about how to utilize this software in public Health.

→ lectures were also very informative and related to public Health.

→ Overall workshop was very fruitful for public health scholar.

Thank You

Dr. Gautam
Moharan
Senior Resident
School of Public
Health
15/12/23

- The session was gracefully split between theory and practical sessions.

- The theory sessions were crisp, encompassing all the core and essential concepts of need of GIS in public health.

- The various softwares, pitfalls encountered in various studies/field were beautifully explained.

- The lab sessions were a important and wonderfull sessions.

- It provided an insightfull and good hands on experience for me.

- Many new techniques of GIS software uses, methods of presentation was easily explained in language easily understandable.