

# GOKUL ANAND

Remote Sensing Geology, Hydrology, Plate tectonics, Structural geology

[in linkedin.com/in/gokulanand](https://www.linkedin.com/in/gokulanand)

[github.com/GokulGeo](https://github.com/GokulGeo)

+91 9447722936

<https://gokulgeo.github.io/AboutMe>

@gokulanand03@gmail.com

North Eastern Space Applications Centre, Dept. of Space, Shillong, 793103

DOB:30/04/1992



I am a dedicated, organized and methodical individual. I possess good interpersonal skills, and am an excellent team worker. I am very enthusiastic to learn and enhance skills. In my activities I always apply my skills to bring out quality output.

## EDUCATION

- 2014-2016 | **M.Sc Applied Geology,**  
**University of Mysore, Mysore, Karnataka**  
**CGPA- 7.092/10, First Class**  
Focus in Advanced Mineralogy, Petrology, Palaeontology, Geomorphology, Geotectonics, Geochemistry, Stratigraphy, Hydrology, Applications of Remote sensing and GIS, Geostatistics and computer applications, Structural Geology
- 2011-2014 | **B.Sc Geology,**  
**SN College, University of Kerala, Varkala, Trivandrum**  
**CGPA- 2.70/4, Grade:B**  
Focus in Mineralogy, Petrology, Stratigraphy, Palaeontology, Hydrology, Structural geology, Chemistry and Mathematics(sub)
- 2009-2011 | **Higher Secondary**  
**SNDPHSS, Adimaly, Idukki**  
**Percentage of Marks:76**  
Physics, Chemistry, Biology, Mathematics

## PROFESSIONAL EXPERIENCE

- July 2020— | **Junior Research Fellow | Flood Early Warning System (FLEWS) | North Eastern Space Applications Centre(NESAC), Dept.of Space, Govt.of India, Shillong**
- > Support for dissemination of Flood Early Warning
  - > Landslide damming monitoring over Himalayas
  - > Embankment breach identification using Sentinel-1, Saocom-1A, TerraSAR-X, KOMPSAT-5 etc.
  - > Flood extent mapping using Microwave Images
  - > Flood maps preparation for International Charter for Space and Natural Disasters activations
  - > Hydrometeorological data collection
  - > Development of Google Earth Engine Apps
  - > Giving lectures on RS and GIS applications in Water Resources
- [SNAP](#) [HEC-HMS](#) [QGIS](#) [ARCGIS](#) [Geemap](#) [Matlab](#) [HPC](#)
- June 2019 | **Senior Research Fellow | River Atlas of Assam | North Eastern Space Applications Centre(NESAC), Dept.of Space, Govt.of India, Shillong**
- July 2020
- > Preparation of research publications in reputed journals.
  - > Involved in compiling river atlas web-gis portal.
  - > Compiling maps for reports and atlas publication support.
  - > Making 3D models and flythrough for NE terrains.
  - > Attending project interim review meetings.
- [SNAP](#) [HEC-HMS](#) [QGIS](#) [ARCGIS](#) [GEE](#) [HPC](#) [R](#) [Blender3D](#)

- April 2017 | Junior Research Fellow | River Atlas of Assam | North Eastern Space Applications Centre(NESAC), Dept.of Space, Govt.of India, Shillong
- June 2019
- > 1:5000 river mapping using high resolution imageries.
  - > LULC classification using multispectral images.
  - > Involved in the design and development of cartographic maps.
  - > Watershed delineation using Digital Elevation Models.
  - > Undertaken organized distribution of satellite images for team members.
  - > Project progress reporting and quality checking of shapefiles.
  - > Making maps for field identification for the process of finding river names to add attributes.
- SNAP HEC-HMS QGIS ARCGIS GEE HPC

- February 2016 | Dissertation | Petrology and Fluid Inclusion studies of Ladakh Himalayas | Wadia Institute of Himalayan Geology, Dehradun
- March 2016
- > Identifying the petrology and petrography of the metamorphic rock samples from Ladakh
  - > Implications on the tectonism from the study area
  - > Carry out EPMA and Raman Spectroscopy on the rock specimens
  - > Preparation of geological map of the study area.
- ARCGIS Google Earth Pro Matlab

## CERTIFICATES AND AWARDS

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- > Certification on 'Programming for Geospatial Hydrological applications' training course jointly conducted by UNESCO-IHE Delft Institute of Water Education
- > Winner in the IITB-ISRO-AICTE Mapathon 2020, an initiative of the FOSSEE(Free/Libre and Open Source Software in Education) Project, IIT Bombay in association with ISRO(Indian Space Research Organisation) and AICTE(All India Council for Technical Education)
- > Certification on Qgis training conducted by Qgis certified trainer Ujaval Gandhi sponsored by NESAC
- > NASA's Applied Remote Sensing Training Program (ARSET) certification on training program 'Introduction to Population Grids and their Integration with Remote Sensing Data for Sustainable Development and Disaster Management
- > NASA's Applied Remote Sensing Training Program (ARSET) certification on training 'SAR for Landcover Applications'
- > NASA's Applied Remote Sensing Training Program (ARSET) certification on training 'SAR for Disasters and Hydrological Applications'
- > Certificate on 'Remote Sensing and Digital Image Analysis' - OFF- Campus Outreach certificate Programme conducted by Indian Institute of Remote Sensing /ISRO/Department of space, Govt.of India, In NESAC, Shillong, Meghalaya.
- > Certificate on 'UAV Remote Sensing and Applications'- OFF-Campus Outreach certificate Programme conducted by Indian Institute of Remote Sensing /ISRO/Department of space, Govt.of India, In NESAC, Shillong, Meghalaya.

## SKILLS

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- > Languages known: Javascript, HTML, Python, C++,R, MATLAB
- > GIS softwares: QGIS, ArcMap, SNAP, HEC-HMS, PIX4D Mapper, ERDAS Imagine, WhiteboxTools, Topotoolbox
- > Other softwares: Blender3D, Inkscape, DaVinci Resolve, Photoshop, Premiere Pro
- > Instruments:GPS

## AREA OF INTEREST

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- > Disaster monitoring
- > Cartography
- > 3D terrain mapping
- > Web-GIS
- > Data Visualization
- > Tectonics
- > Automation

## LANGUAGES

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English, Malayalam, Hindi, Tamil, Kannada

### > FLEWS 2020- <https://flews.nerdr.gov.in/>

The Flood Early Warning System project was taken up by NESAC to mitigate the flood disaster in the state of Assam. The entire state of Assam is monitored using Rainfall-runoff models at spatial and temporal scale using semi or quasi-distributed, and distributed hydrologic models. The forecasted precipitation dataset (9x9 sq.km) using numerical prediction Weather Research and Forecasting (WRF) model is the main input into the hydrological model for computation of flood discharges. These indirect techniques for computing flood runoff discharges serve as the backbone for FLEWS flood forecasting system and thereby giving reliable forecast to mitigate flood based disasters. FLEWS work includes working with hydrological models and monitoring the water level given by Assam Water Resource Management Institute (AWRMI). The precipitation is analysed using various resources such as RAPID portal provided by IMD, JAXA Global Rainfall Watch and HIMAWARI provided by JMA. Further precipitation analysis is done by various satellite products such as NASA GPM dataset.

In addition to forecasting, actively engaged with disaster monitoring activations provided by International Charter for Space and Major Disasters which is an initiation of ESA and CNES. Charter work includes crisis mapping and disaster assessment using high-resolution optical as well as microwave images. For analysing the flood effect the data provided by Charter is used to delineate flood products over state of Assam primarily over Kaziranga National Park.

#### Meetings attended:

1. Attended meeting for enhancing current workflow model to WRF-Hydro model

### > River Atlas of Assam 2017 - 2020 <https://riveratlas.nesdr.gov.in/>

The river atlas preparation for Assam started during the year 2017. In this project, a finer mapping at the scale of 1:5000 the river features includes the left and right bank sediment deposits, embankments, hydrometeorological observatories, sluice gates, PRD bunds, major locations, roads, railway lines etc are mapped using high resolution satellite imageries. The KOMPSAT imagery provided by NRSC is used to map these features. As a supplementary product LULC map for all the districts has been created with a defined buffer along the river banks. For detailed hydrological understanding catchment maps are prepared to estimate the complete extent of the rivers respective to the district boundary. In order to delineate catchments high resolution DEM CartoDEM (10m) is used. In addition to all this a web-portal is developed and hosted in the NESDR server by including all the layers generated in this project.

#### Meetings attended:

1. Attended four interim meetings held in ASDMA and AWRMI headquarters for River Atlas project.
2. Attended River atlas project presentation held in front of Honourable CM Sarbananda Sonowal at Secretariat Assam on 11/01/2018.

## PUBLICATIONS

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- > Swakhangha Ghosh, Thota Sivasankar, **Gokul Anand**, Performance Evaluation of Multi-parametric Synthetic Aperture Radar data for Geological Lineament Extraction, *Int. J. Remote Sens.*, vol. 42, no. 7, pp. 2574-2593, 2020.

## REFERENCES

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**Shri. P.L.N Raju,**  
Director,  
North Eastern Space Applications Centre,  
Department of Space, Government of India,  
Shillong, Meghalaya.  
+91 9436160902  
plnraju@gmail.com

**Prof. A Balasubramanian,**  
M.Sc, Ph.D, F.G.S, F.M.S,  
Dept. Of Studies in Earth Science,  
University of Mysore,  
Manasagangotri, Mysore,  
Karnataka.  
+91 9483522665  
emmc1@gmail.com

**Dr. Barun Kumar Mukherjee,**  
Scientist-D, Wadia Institute of Himalayan Geology,  
Govt. of India,  
Gen Mahadeo Singh Road,  
Dehradun  
barunmukherjee10@gmail.com