



Proceedings of the first DGPS training for the Bangladesh Forest Inventory



Bangladesh Forest Department
10 - 11 April 2017



The Forest Department of Bangladesh leads actions to improve forest management and conservation, adopting forward thinking, innovative approaches in its management of approximately 1.55 million hectares of land across the country.

In 2015, the Forest Department began a process to establish a National Forest Inventory and Satellite Land Monitoring System for improved forest and natural resource management. The process supports national objectives related to climate change mitigation and provides information in support of the UN-REDD programme aimed at Reducing Emissions from Deforestation and Forest Degradation (REDD+). The process also addresses domestic information needs and supports national policy processes related to forests and the multitude of interconnected human and environmental systems that forests support.

The activities implemented under the Bangladesh Forest Inventory process are collaboration between several national and international institutions and stakeholders. National partners from multiple government departments and agencies assist in providing a nationally coordinated approach to land management. International partners, including the United States Agency for International Development (USAID) and the Food and Agriculture Organization of the United Nations (FAO) are supporting the development of technical and financial resources that will assist in institutionalizing the process.

The results will allow the Forest Department to provide regular, updated information about the status of trees and forests for a multitude of purposes including for assessment of role of trees for firewood, medicines, timber, and climate change mitigation.

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Disclaimer

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Executive summery

The Forest Department in association with FAO organized a two-day training program on using Differential Global Positioning System (DGPS) for the forest department officials. The training took place from 10th April to 11th April, 2017 at Forest Department, Agargaon.

The training was conducted by Data Experts (Pvt.) Limited (DaTEX). It was formatted into theoretical and practical portions. In total, twelve participants from the Forest Department, FAO and DATEX including ten males and two females attended the training.

The objectives of the training were to get introduced with the functionality of DGPS, survey methods and to increase the knowledge and skill of surveyors of Differential Global Positioning System (DGPS) team. Under Bangladesh Forest Inventory the existing inventory plots will re-measure in future to know the changes of forest trend. For that re measurement purpose the BFI plots have to be permanent, so that we can trace the centre of those plots in other times. DGPS is going to be used for the permanent establishment of BFI plot locations. This training was based on those requirements what the DGPS team need to record and process data for the establishment of plots. In this training Trimble R8s GNSS Receivers were used for demonstration.

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1 INTRODUCTION

Currently Bangladesh forest inventory data collection is going on throughout the country. In total the field teams will collect 1858 plots data distributed into 5 zones. Field teams are using hand-held GPS to locate the plot centers. So the possibility of some distortion is always there. However, these plot locations need to be fixed because In future those plots will be revisited. DGPS has been procured for locating and establishing plot centers identified by the field teams so that the plots can be fixed and re-measured. One team formulated with the selected forest department officials to use the DGPS for establishing permanent plot locations. A two days DGPS training planned for the team to demonstrate the operation and use of DGPS for the plot location collection.

To develop the capacity of the DGPS team members this training was organized by forest department with the technical support from FAO and the financial support from USAID. Data Experts (Pvt.) Limited (DaTEX) has conducted the training. The training organized at Forest Department, Agargaon.

In total 12 persons from Forest department, FAO and DATEX attended the training. The training was inaugurated by Mr. Matieu Henry, Chief Technical Advisor of FAO.

2 OBJECTIVES

1. To learn functionalities of Trimble R8s GNSS Receivers and controllers in static survey method
2. To learn the post processing method using Trimble Business Center
3. To find out the requirements for DGPS field team operations

3 ACTIVITIES

The training was formatted into two parts-

- 1) Theoretical part and
- 2) Practical part

In the theoretical part, the following topics contents covered:

- GNSS based survey techniques and introduction of basic useful terms
- Benefits from the use of GNSS Survey over traditional survey
- Types of GPS and GPS receivers
- Introduction to hardware and software of GNSS Receivers, controllers.
- Application of GNSS in the context of establishment of permanent plot locations

In the practical part, the following topics contents covered:

- Introduction to Trimble R8s GNSS Receivers, controllers and software for post processing
- Step-by-step process of static survey
- Data collection with an android application
- Step-by-step process of post processing using Trimble Business Center(TBC)

3.1 1st Day of the training

Session -1

The training began with the announcement of the 1st DGPS training by Mr. Matieu Henry, CTA of FAO and Mr. Zaheer Iqbal, DCF, Forest Department. Mr. Md. Rafiqul Islam, Director Technical of DaTEX started the theoretical session with a presentation accompanied by Mr. Masud Hasan Chowdhury, Director GIS of DaTEX.

Participants received a detail introduction if the GNSS Based Survey Techniques on which Trimble R8s equipment are based on. The contents of the presentation covered the topics related with the GNSS techniques

Session-2

The later session was a continuation of the theoretical presentation. The trainers described the basic ides of DGPS and tried to make a clear concept for the participants.

The 1st day of training mainly focused on the theory based knowledge and everyone received a clear idea of the whole from the presentation.

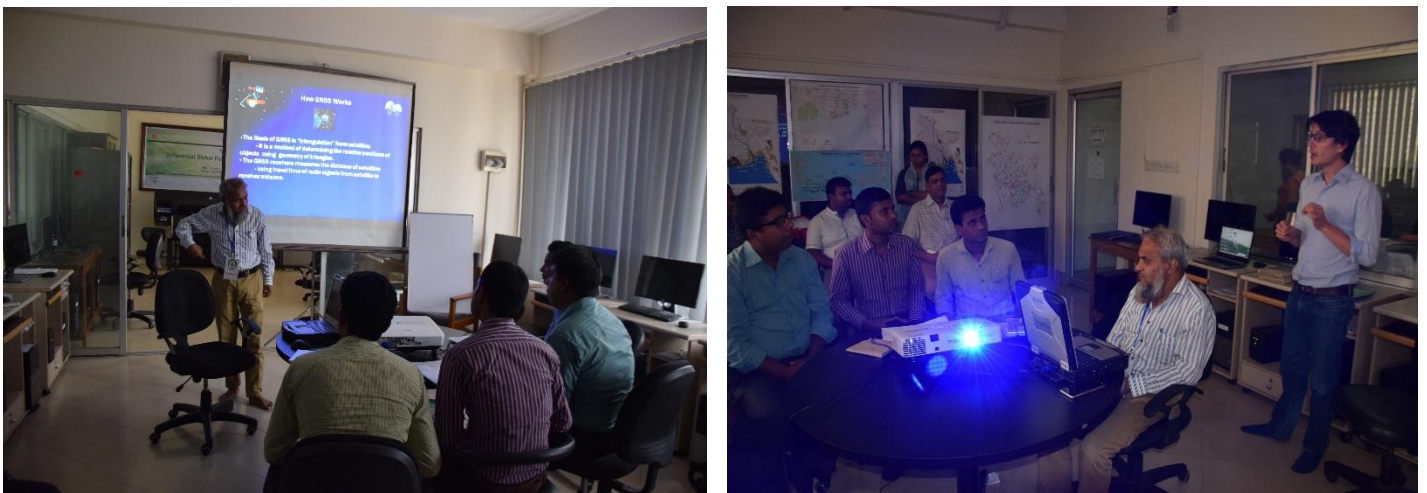


Fig1: 1st day of the DGPS training

3.2 2nd Day of the training

Session -1

The 2nd day of the training started with the introduction to the Trimble R8s equipment. Participants got familiar with the set of equipment and a demo of static survey was planned for the practical session in the forest department premises.

The set of equipment consisting of the following item:

- 2 GNSS R8s Receivers
- 2 Trimble Rugged Handheld Computers (operated by Juno)
- One license of Trimble Business Center(TBC) software

- Tripods and carrying bags

During the device checking it was found that the controllers couldn't pair with the receivers. Due to this problem, an android mobile application developed by Trimble was used for data collection.

To perform the demo survey the rooftop of forest department building was chosen as survey area. Trainers gave demonstration of the survey starting from data collection by following static survey method and post-processing in TBC software to generate report from collected data. Steps of the static survey can be listed as below:

- Connect the receivers with the data collecting apps and declare one receiver as base and one as rover.
- Place the receiver at a suitable place under open sky as much as possible to ensure the better connection with the satellites and declare as base.
- Take points from desired locations with the receiver which one is declared as Rover. Time for data collection from each point will depend on the circumstances and possibility to connect with the satellite to get coordinates with minimum error. Minimum 10-15min is essential to get an error-free coordinate.
- Collected coordinates will be saved by using the mobile app for post-processing.
- The saved data will be downloaded or will be collected from the app and by using TBS software a report will be produced.



Fig 2: 2nd day of the DGPS training

Session-2:

In the second session participants perform the survey from static survey to post-processing by their own. Their performance was very satisfactory. Everyone understood the process clearly and despite of the malfunctioning issue the enthusiastic participation of the participants the training ended up well which worth appreciation.



Fig 3: Practical session performed by participants

4 RECOMMENDATION FOR NEXT STEPS

After this DGPS training some recommendations are appeared to ensure proper field activities by the DGPS teams, as follows-

- Identify the reasons behind the malfunction of the controller to make it operational.
- Necessity of a second DGPS training need to be planned.

5 CONCLUSION

DGPS itself is a very costly and highly advanced technology and Trimble R8s is a new device which offers the latest features and benefits of that technology. To ensure the permanent field plot location it is very important to make sure the complete use of the technology that this DGPS is offering. This training can be considered as a nice initiative for the capacity building of the forest department. For the successful implementation of the BFI is depending on a well-equipped and well trained DGPS team.

Appendix 1. Equipment List

Equipment	Number
Receiver	2
Tripod	1
Pole	2
Handheld GPS	1
Controller	2
Bipod	1
Bracket	2
30 m Tape	2
Laptop (with charger and others)	1

Appendix 2. Agenda

Date	Session	Time	Resource Person
10/04/2017	Inauguration and objective of the training	10.00-10.30	Matieu Henry
	Break	10.30-10.50	
	Introduction to GNSS technology through a presentation	10.50-12.00	Md. Rafiqul Islam/ Masud Hasan Chowdhury
	Second part of the presentation	12.00-4:00	Md. Rafiqul Islam / Syed Nazmul Ahsan
11/04/2017	Introduction to the Trimble R8s	9.00-10.30	Md. Rafiqul Islam / Syed Nazmul Ahsan
	Break	10.30-11.00	
	Demonstration of Field survey and Data processing and report generation	11.00-2.00	Md. Rafiqul Islam / Syed Nazmul Ahsan
	Break	2.00-2.30	
	Practice session	2.30-3.00	Performed by participants

Appendix 3. List of Participants

Name	Gender	Organization	Designation
Md. Shahansha Nooshad	M	Forest Department	Forester
Md. Saiful Islam Dewan	M	Forest Department	Forester
Md. Mahabub Ferdous	M	Forest Department	Forest Guard
Md. Delowar Hossain	M	Forest Department	Forest Guard
Ms. Asma	F	Forest Department	Draftsman
Md. Rafiqul Islam	M	Data Experts (Pvt.) Limited	Director Technical
Masud Hasan Chowdhury	M	Data Experts (Pvt.) Limited	Director GIS
Matieu Henry	M	FAO	CTA
Zaheer Iqbal	M	Forest Department	DCF, RIMS
Mondal Falgoonee Kumar	M	FAO	Consultant
Nandini Sarker	F	FAO	Consultant
Babuzzaman	M	Forest Department	Forester