


Bachelor of Geospatial Science

The University of the South Pacific

Geospatial Science Unit
School of Geography, Earth Science
and Environment

Aleen Elisha Prasad
Inesha Manzini
Semisi Ketenilagi




Geospatial Science at USP

a) Geospatial Developer Stream
“ I am interested in the data, how we capture it, how we assure its quality and in developing the databases and information systems we use to manage, manipulate and deliver it, both the data itself and as maps or visualisations”

b) Geospatial Analyst stream
"I am interested in applying geospatial science and technologies to perform geospatial analyses for problem-solving, capturing data and communicating information through geovisualizations including web-based maps."

c) Major in Geospatial Science
“I am interested in a career outside of geospatial science but I would like a good grounding in geospatial science to complement my chosen career.”



Course	Details
GS100 Techniques and Methods in Geography	Maps, field measurement, survey, social survey, statistics, report writing
IS104 Scientific Computing	Introduction to computer programming for non-computer scientists using Python.
GS101 Geospatial Information Systems	Investigate geographic data with Python, databases, web databases, plotting data. GI Science perspective. OOP, libraries.
GS200 Quantitative Methods in Geospatial Science	Data collection, handling and analysis, spatial statistics, numerical methods
GS201 Geographic Information Systems 1	Core GIS, data models, data collection, map projections, databases, analysis and apps
GS211 Remote Sensing 1	Principles of remote sensing, satellite and airborne imagery, multispectral and hyperspectral, enhancement and analysis
GS231 Geovisualisation and Cartography	Mapping and cartography, geovisualisation, internet map servers, geodatabases
GS302 Field Survey of Pacific Islands	Field surveying, sampling, GPS mapping, geodesy, geodatabases, data analysis
GS301 Geographic Information Systems 2	Vector and raster spatial analysis, geodatabases, Internet and Cloud GIS
GS311 Remote Sensing of Pacific Islands	Enhancement and interpretation of high resolution image data, UAV's, Lidar, Feature extraction, integration with GIS
GS350 Professional Placement Project	Specific Project with Industry attachment

Bachelor in Geospatial Science: Geospatial Developer	
Year 1	
Semester 1	Semester 2
IS104 Scientific Computing	UU114 English for Academic Purposes
GS100 Methods & Techniques in Geography	LM113 Introduction to Geomatics
ST130 Introduction to Statistics	GS101 Geospatial Information Systems
GE101 Physical Geography	GE102 Human Geography
Year 2	
Semester 1	Semester 2
UU200 Ethics and Governance	UU204 Pacific Worlds
GS200 Geospatial Data Analysis	GS211 Remote Sensing 1
GS201 Geographic Information Systems 1	GS231 Geovisualisation and Cartography
IS222 Database Management Systems	IS224 Advanced DB Management Systems
Year 3	
Semester 1	Semester 2
GS300 Pacific Islands Field Techniques and Methods	SC356 Research Skills
GS301 Geographic Information Systems 2	GS350 Geospatial Analytics
GS311 Remote Sensing II	IS323 Info Systems Analysis and Design
IS333 Project Management	IS328 Data Mining

Bachelor in Geospatial Science: Geospatial Analyst	
Year 1	
Semester 1	Semester 2
IS104 Scientific Computing	UU114 English for Academic Purposes
GS100 Methods & Techniques in Geography	LM113 Introduction to Geomatics
ST130 Introduction to Statistics	GS101 Geospatial Information Systems
GE101 Physical Geography	GE102 Human Geography
Year 2	
Semester 1	Semester 2
UU200 Ethics and Governance	UU204 Pacific Worlds
GS200 Geospatial Data Analysis	GS211 Remote Sensing 1
GS201 Geographic Information Systems 1	GS231 Geovisualisation and Cartography
One of GE202, GE205	One of GE201, GE203, GE207, ES203
Year 3	
Semester 1	Semester 2
GS300 Pacific Field Techniques and Methods	SC356 Research Skills
GS301 Geographic Information Systems 2	GS350 Geospatial Analytics
Any two of GS311, GE301, ES301, ES302, ES303, GE303, GE304	Any two of GE302, GE304, GE306, ES301, ES302, ES303



Professional Certification of Graduates

Geospatial Developer Stream & Geospatial Analyst stream

Both satisfy the educational requirements for Professional Certification under the Surveying and Spatial Sciences Institute of Australia (SSSI) GISP (AP) certification guidelines.

Major in Geospatial Science

May satisfy requirements depending on what electives students take






Staffing and Equipment

- Associate Professor – Dr. Nick Rollings
- Senior Lecturer – John Lowry
- Lecturer – Nathan Wales
- Professional Officer – Amrit Raj
- Duplication of GIS Laboratory 2017
- New equipment such as
 - DJI Phantom 4 Drone
 - DJI Phantom 3 Drone with Sequoia Sensor (4 bands)
 - Aerotestra Quadcopter Drone with Hyper spectral Sensor
 - OpenROV underwater drone



Geospatial Science at USP

- **2015** Approx. 70 students enrolled in geospatial awards
- **2016** Approx. 60 New students enrolled in Geospatial Awards

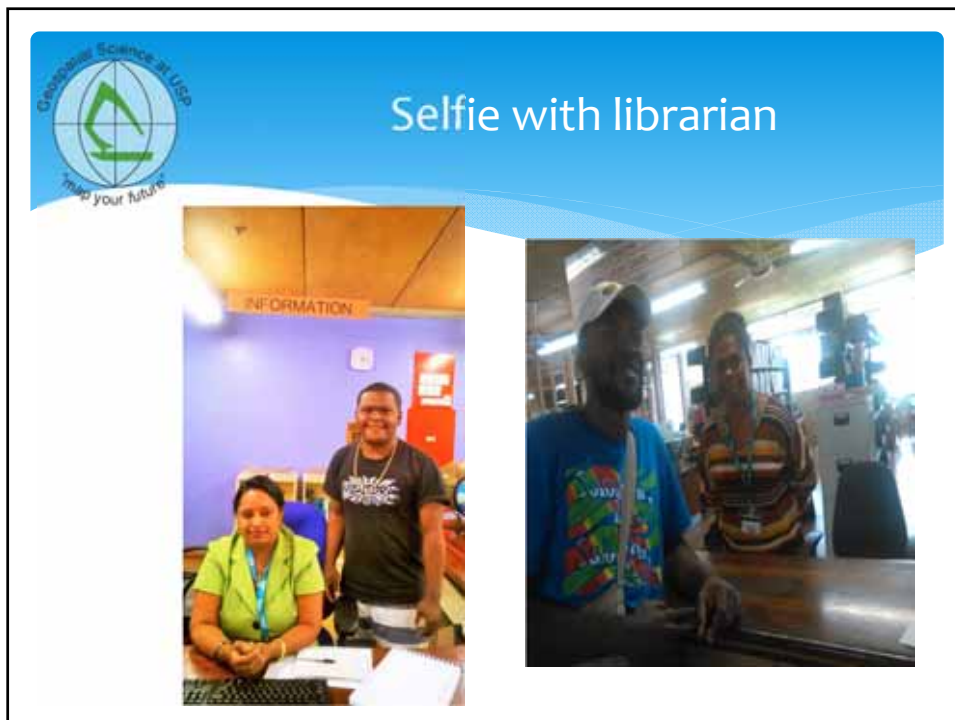
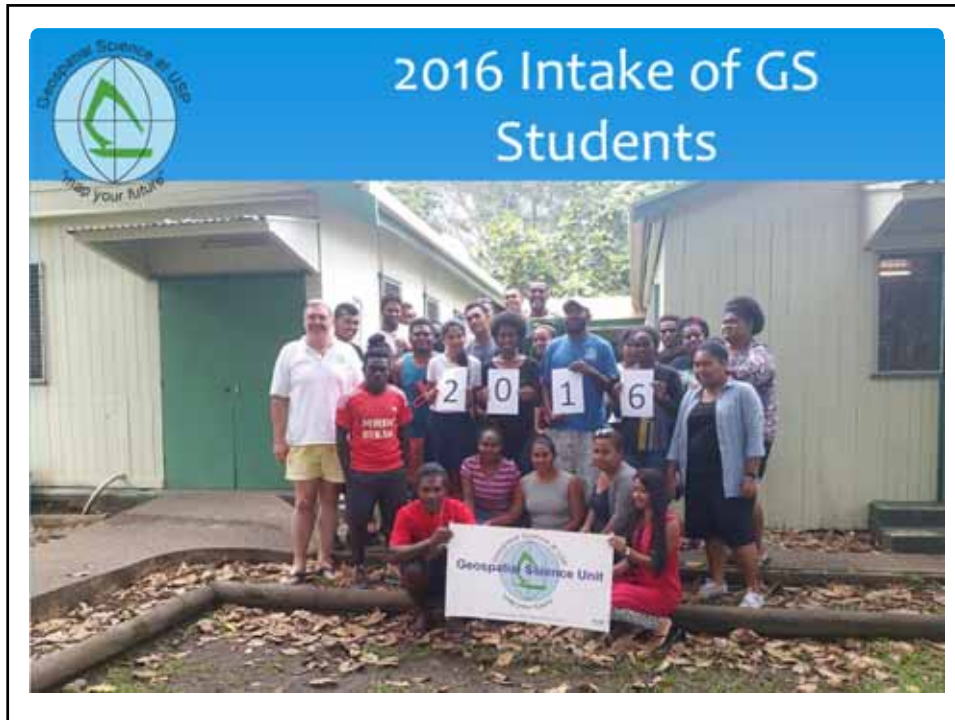
Total of 180 GS students



GS101 100 level units and coverage

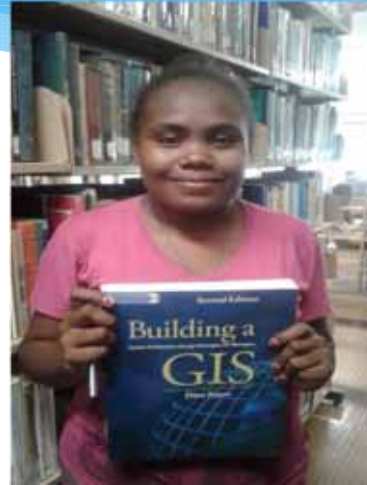
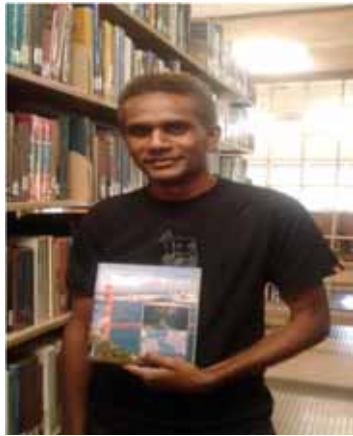
IS104 – Introduction to Python Programming	<ul style="list-style-type: none"> - Data types/Data structures - Functions/Reading in files - Objects & graphics - Loops / Class
GE101/GE102 - Geography	<ul style="list-style-type: none"> - Understanding the earth's surface/landscape and its systems and processes. - Human impacts on the landscape - Field trip at sigatoka dunes
LM113 - Introduction to Geomatics	<ul style="list-style-type: none"> - Levelling (rise and fall method) - Contouring - GPS mapping and Georeferencing

GS100/ST130	<ul style="list-style-type: none"> - Introduction to Geography Techniques - Data Collection, Field Measurement, Topographic Mapping, Cartography and Field Mapping, Statistics
GS101 – Geography Meets Python	<ul style="list-style-type: none"> - Collecting field data and process in python and output data <ul style="list-style-type: none"> • Traverse data • Student details (eye height and pacing) • Tree Height Calculation data • GPS data • Mimosa data (Class project)





Selfie with a GIS book



Collecting Traverse/Tree height data



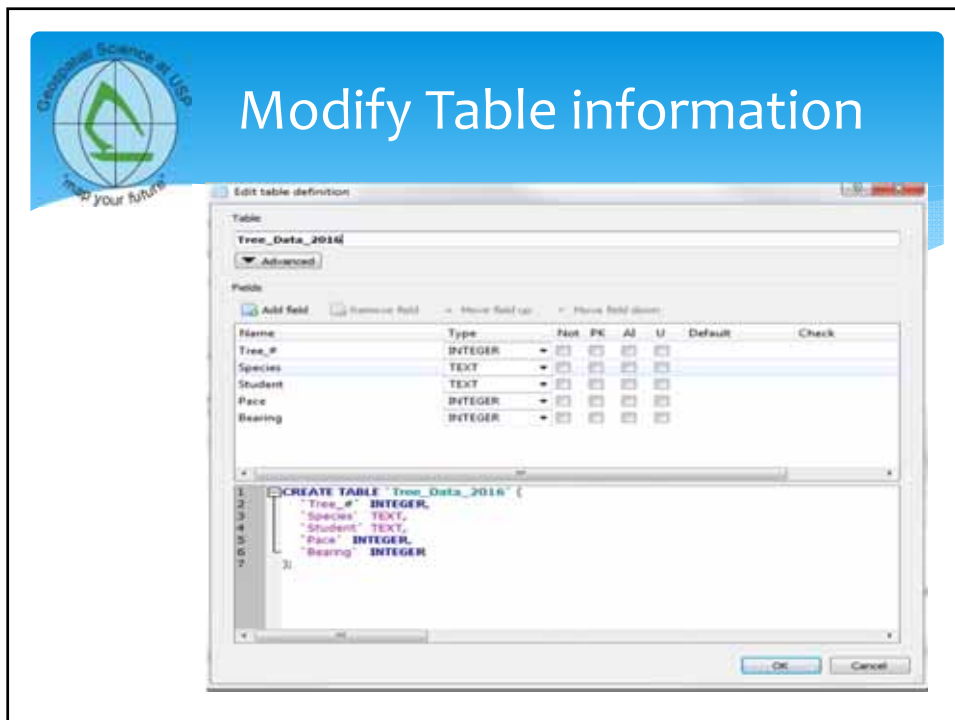
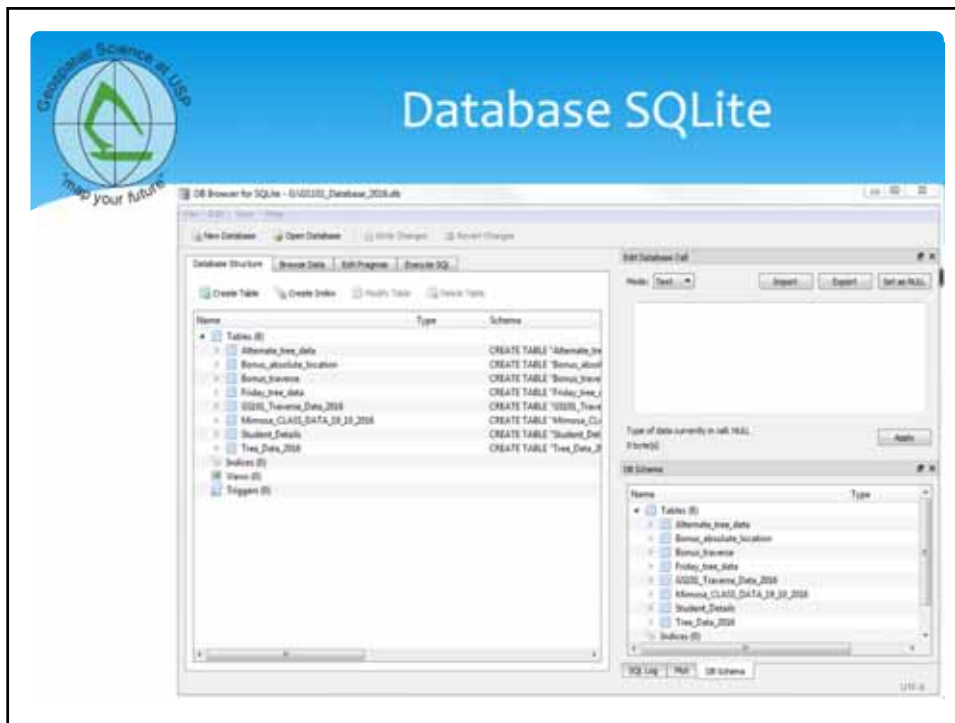


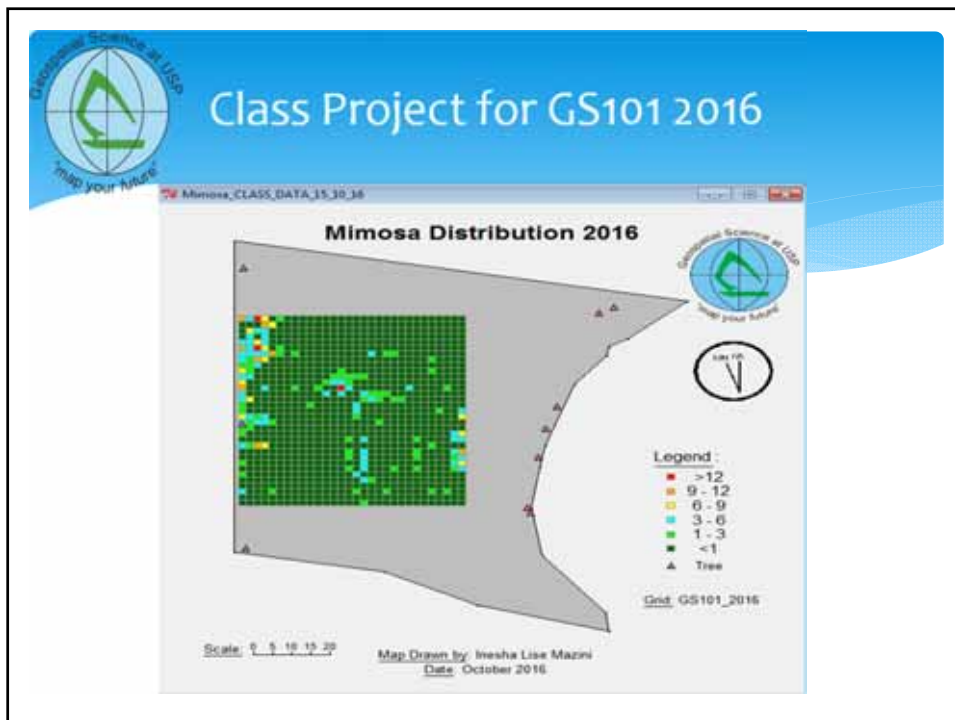
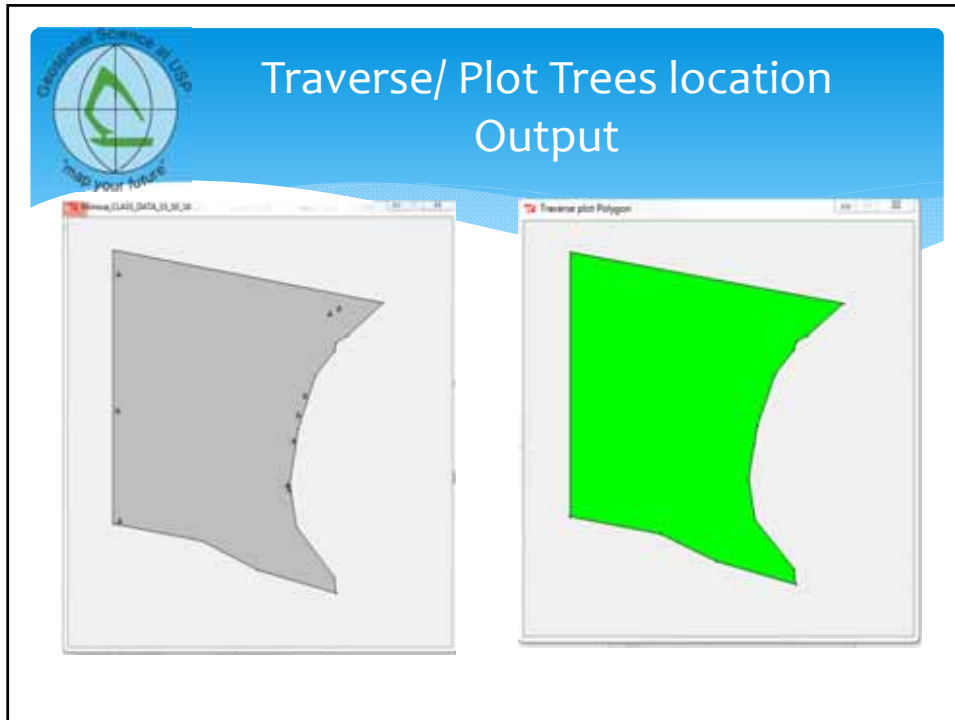
Field work – Counting mimosa plant



Processing data in the lab



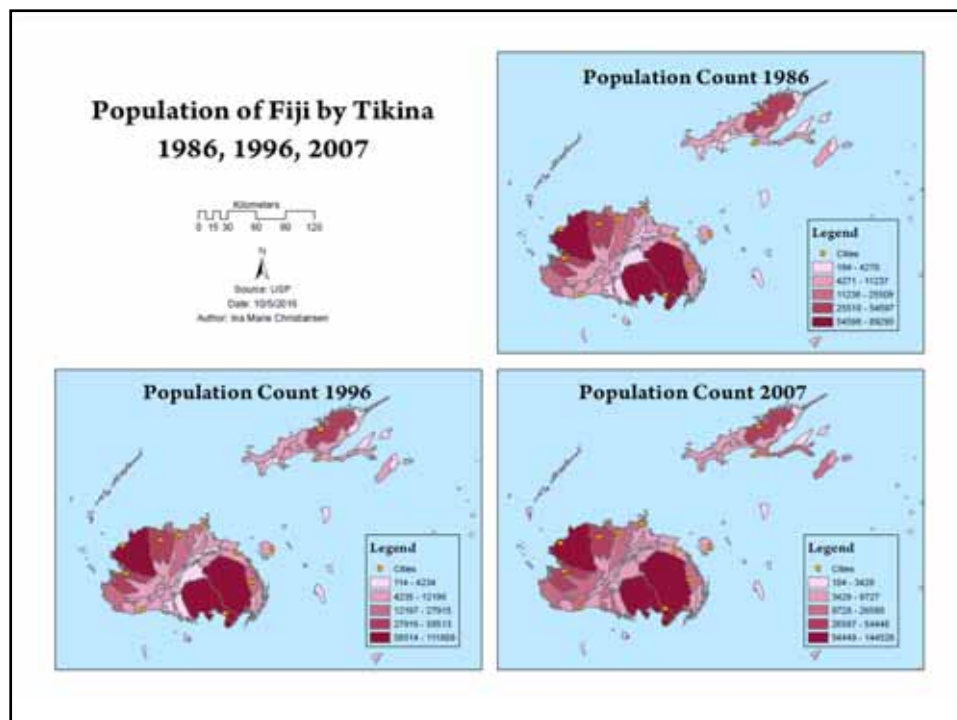


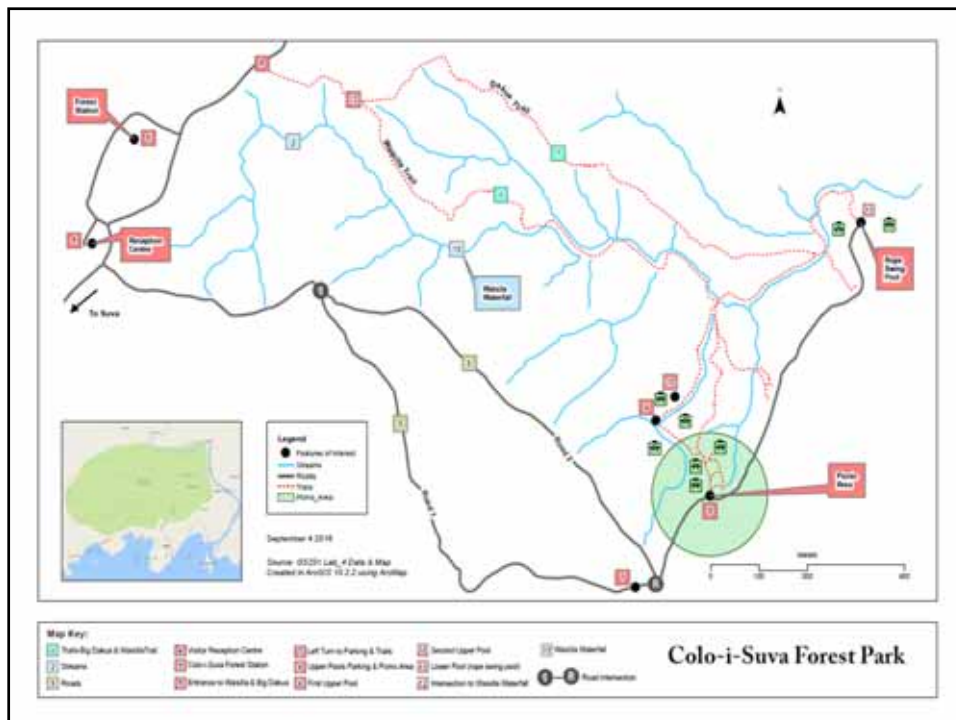
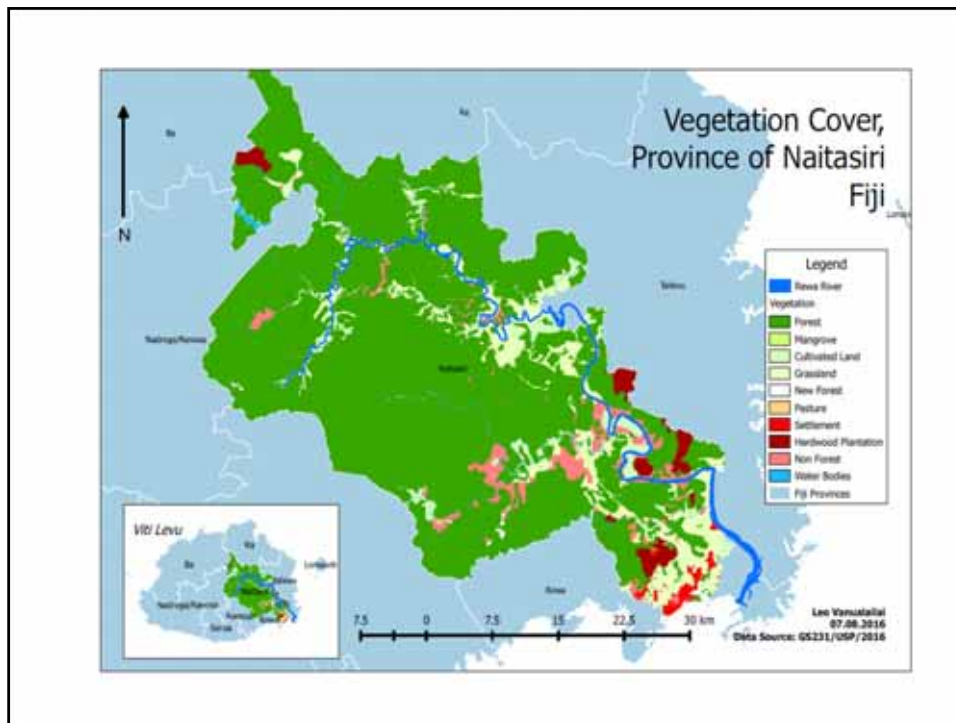


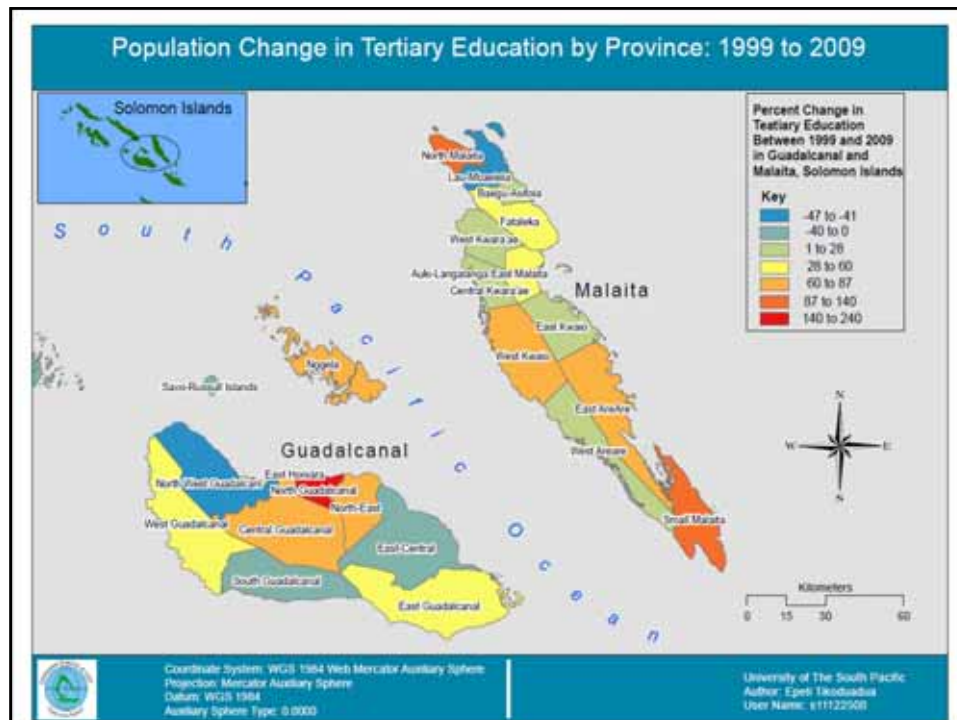



GS231 – Cartography and Geovisualisation

- NEW COURSE
- In this unit we learnt Modern Professional map making skills , fundamental principles of map design such as map layout, typography, generalization and projection and mapping skills
- Skills acquired in critiquing other maps

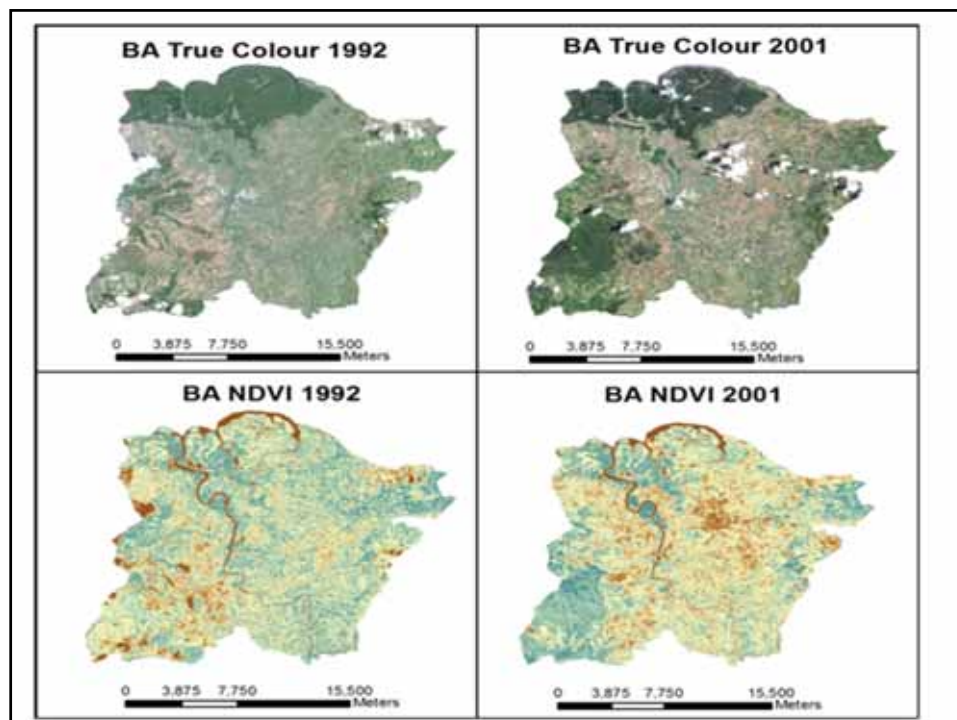






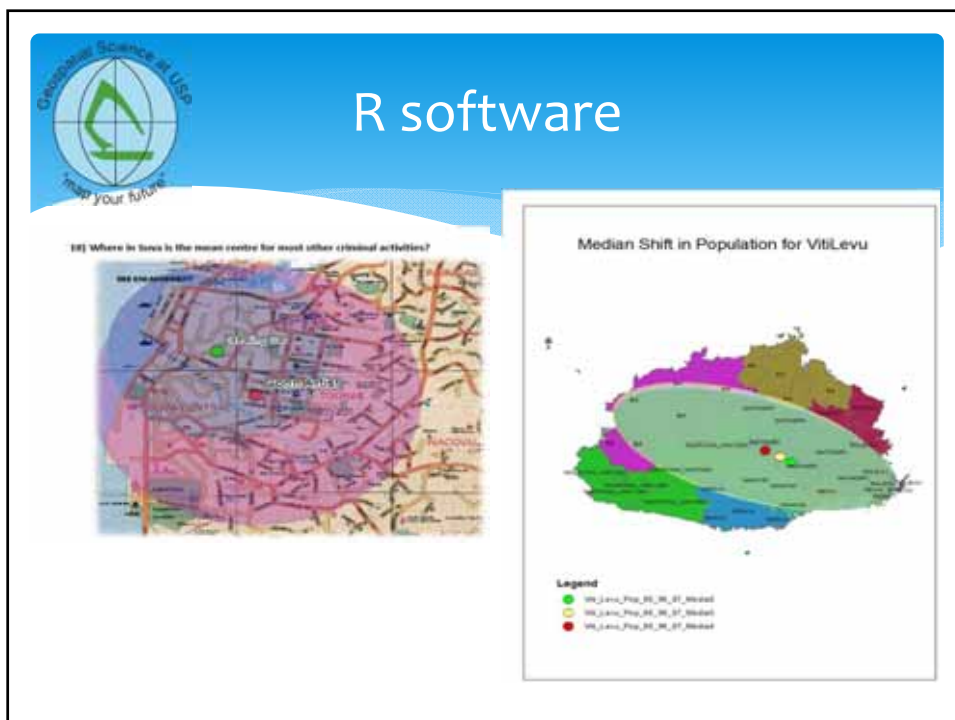
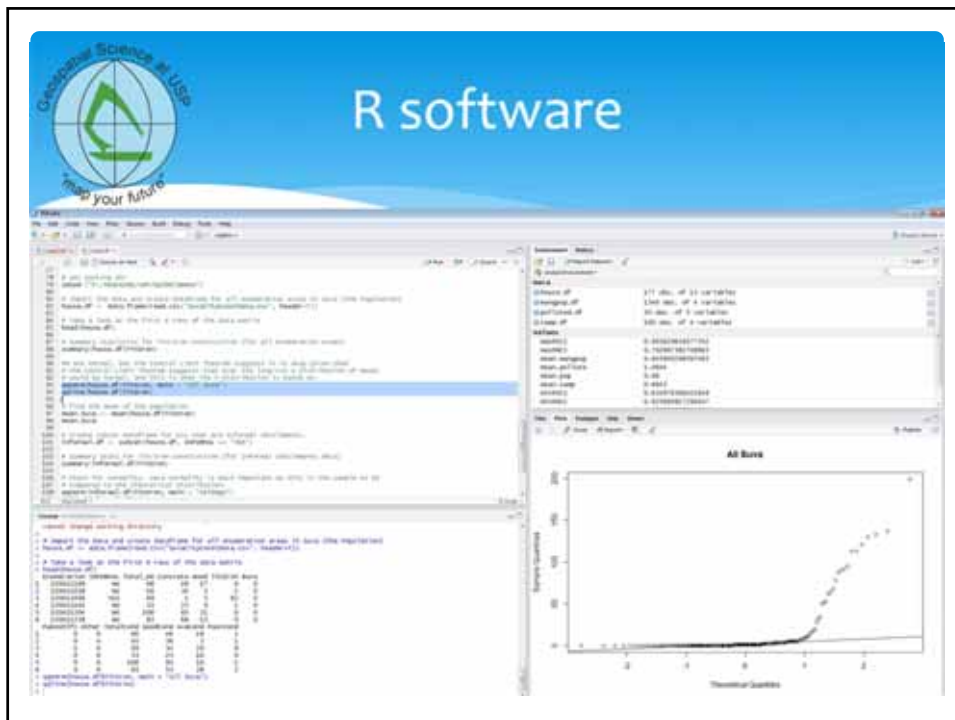
 **GS211 : Remote Sensing 1**

- Provides students with a foundation of basic remote sensing of the environment. Topics covered were satellite image and aerial photo acquisition, principles of electromagnetic radiation, aerial photography and photogrammetry, geometric and atmospheric correction, image enhancement with band ratio's and digital image processing and classification.
- Students acquired a hands on learning experience through a variety of exercise conducted in the GIS lab



GS200 : Quantitative Methods

- **New Course**
- GS200 provides students with a foundation in numerical data analysis and problem-solving specific to quantitative research in geography and related disciplines. Building on classical descriptive and inferential statistics the course introduces the student to statistical data analysis in the geographic context





GS 302 : Field survey of Pacific Islands

- New Course offered 2017
- Environments unique to the Pacific
- P3DM (Participatory 3-Dimensional Modelling)
- Pre and post disaster Mapping
- Coastal Profiling
- GNSS Mapping
- Mangroves, Forest, Plantations and sampling strategies
- Geodesy – dynamic datum, projections and vertical datum



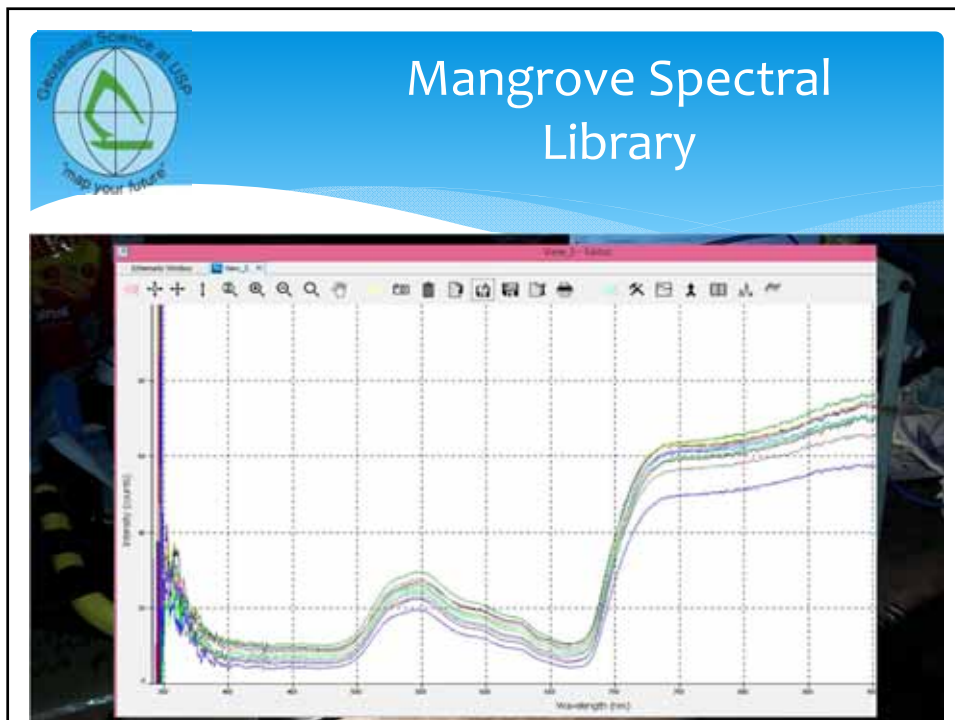
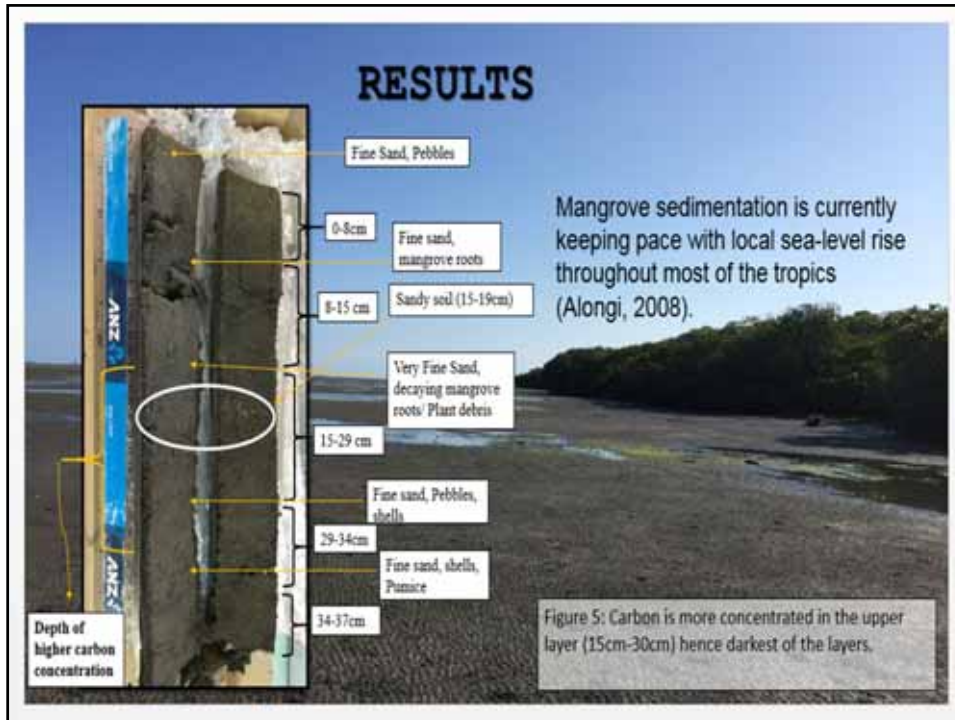
GS 311: Remote Sensing of Pacific Islands

- New Course
- High Resolution Imagery
 - Satellite Imagery , UAV, Aerial Photography
- * On screen 3D Interpretation
- * Object Orientated Classification
- * 3D Point Cloud
- * Hyperspectral Imaging



Mangrove Coring for Carbon Estimation





 USP Open Day

Recruiting the next generation of Geospatial Science



 Thank You





Please Don't forget to Vote for

Best Map

Best Poster