

# **GIS&RS User Meeting held on 23/06/14 at Water Conference Room SPC-SOPAC**

## **1 Updates:**

### **Lukemine Enterprises:**

- Part of the taxes are reduced for purchasing MapInfo

### **GeoSystems:**

- Trimble company group is restructuring

### **Wildlife Conservation Society:**

- Currently no major updates

### **National Trust of Fiji:**

- Attended the Fiji soil training provided by SPC-LRD
- Mapping Fiji Hydrography for Viti Levu Central

### **IUCN:**

- Data collection activities in marine and coastal biodiversity project

### **USP:**

- New geospatial science course, see presentation

### **Suva City Council:**

- Created 4 wards
- Rectifying road boundaries
- Road alignment
- Amending the zones

### **Forestry Department:**

- Creating forest cover layer at 1:10,000 scale from VHR satellite data

### **SPC**

- Farm mapping under USAID funding.
- Present land use biophysical survey will be carried out to mark and determine activities in the Forest Reserve areas
- Nadi flood modelling and mapping work completed. Applications for urban planning, infrastructure design, land use planning.
- Urban resilience component of the Pacific Catastrophe Risk Assessment and Financing Initiative underway for Apia and Nadi. Aim is to develop tools for urban planners in using risk information to support decision making

- Post disaster technical assessments in Tonga on Tropical Cyclone Ian and Solomon Islands flooding.
- Training courses by GIS&RS Unit: WAF, iTLTB, Forestry Department, Methodist Church of Fiji. In house training for Ministry of Agriculture's Landuse Unit, Forestry Department.
- Forest GIS training for inventory in Santo Island
- Spatial data storage and inventory.

#### **Agriculture Department:**

- Creating agriculture layer at 1:10,000 scale from VHR satellite data

#### **Water Authority Fiji:**

- Capturing meter positions
- Mapping new waste water connections

#### **Methodist Church in Fiji:**

- Establishing GIS for GPS mapping of church land parcels

#### **Lands Department**

- National Land Use Development Plan
- Bus stop survey: All coastal, town & city boundaries bus stops have been captured for Viti Levu and Ovalau, mainly focusing on tar sealed roads
- National Land Register 79% as of 13/06/14 of Freehold Linking has been completed.

## **2 Presentations:**

### **2.1 Jonas**

#### **“Forest Density Stratification through eCognition with Worldview-2 Imagery for Fiji”**,

The ministry of forestry of Fiji requires a stratification of Fiji in the FAO-defined forest density classes of non-forest (<10% canopy cover), open forest (10-40% canopy cover) and closed forest (>40% canopy cover). This classification is done through Worldview-2 very high resolution satellite data and with the use of object-based image analysis software eCognition. To get from satellite data to forest strata the image is first classified into canopy and non-canopy, after which the other classes are derived with the help of geostatistical analysis like buffers and area size, which are based on the definitions that were defined by the FAO for forest. The result of such a map can be complimented by other forest types like mangrove forest. The current research is finalised by doing an accuracy and transferability assessment to determine the quality of the canopy classification and the expected quality when applied to the whole of Fiji. With the results of this work the Ministry of Forestry can automatically classify a Worldview-2 satellite image into a forest density map.

### **2.2 Nick Rollings:**

#### **“Developments at USP - the “Bachelor of Geospatial Science”**

The presentation explained the new Bachelor of Geospatial Science Degree at USP. The new award will satisfy the educational requirement for SSSI certification as a GIS Professional (Asia Pacific). The degree will have two prescribed programs and Major option. (i) Geospatial Developer Stream - A student taking this stream would say, " I am interested in the data, how we capture it, quality assure it and the information systems and technology we use to deliver it, both the data itself and as maps"; (ii) Geospatial Analyst stream – A student taking this stream would say, " I am interested in the analysis of geospatial data and how we can apply it to everyday problem solving"; (iii) Provision for a Major in Geospatial Science – A student taking this option would say, "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."

The new degree will be offered as of semester 1, 2015

### **2.3 Philipp Schmeling & Marco Gampe: "Discrepancy and Corruption of the Fiji Soil Map"**

The presentation described some problems: (i) Loss of 4000 polygons in different datasets from 1998 to 2010 which is nearly a third; for these missing polygons the soil cannot be indicated correctly on the map; (ii) Shift in lookup tables of the soil series which means that the soil description does not match the correct area, (iii) some further mix up between polygons and description e.g. soil types only recorded in outer islands appear in Viti Levu.

The resulting product of the Fiji soil map: the soil suitability classification must have serious errors as well.

### **2.4 Wolf Forstreuter: "UAV Assistance in Post-Disaster Mapping in Solomon Islands"**

The copter type UAV (Unmanned Aerial Vehicle), which was demonstrated during the last GIS&RS User Meeting in Fiji, was utilised for post disaster mapping in Honiara. Within four days it was possible to: (i) map the flooded area of the Mataniko River where the most severe damage was reported; (ii) map and produce a 3D model of the proposed re-settlement area; (iii) create a 3D model of a dam overflow of a lake with potential poison chemical in the water and (iv) document a left over mining camp through extremely high resolution images. Most of these products would have been difficult to create with a fixed wing UAV.

#### **"Test of UAV Assistance for Coconut Resource Mapping"**

For coconut resource inventories the number of palms per hectare can be counted from VHR satellite images, however, only for scattered and semi-dense stands. In dense stands the canopy does not allow to see the small palms. The UAV was tested to record images in oblique view from low altitude in extreme high resolution. Creating virtual 3D image space it was possible to also count small palms. Details will be reported by Teja Kattenborn during the GIS&RS User Conference last week of November.

## **3 Discussion**

During the discussion it was explained that the GIS&RS User Conference will be different this year due to the ESRI User Conference on Monday before the main conference and

through several interesting workshops on the Friday after. Details of the workshops will be soon on the conference website.

The discussion covered to large extent the advantages and disadvantages of copter type UAV compared with fixed wing UAVs, where both type have their field of application. For the presented tasks the copter type had more advantages.

Another long discussion was stimulated through the presentation of Philipp Schmeling & Marco Gampe. They stated that they had intensive conversation with all parts involved in Fiji soil mapping from New Zealand as well as SPC-LRD and Fiji Agriculture Department. During the discussion the source of the problems could not be localised.