

# Supplementing FOSS4G with Open Hardware in Sri Lanka

Yann Chemin

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TGIS Lectures

Weather Station

Rationale  
Arduino MWS

Road condition

Rationale  
System

Conclusions

Yann Chemin

International Water Management Institute  
University of Moratuwa, Faculty of Architecture



FOSS4G Sri Lanka 2014  
23 February 2014  
SLIIT Malabe Campus  
Sri lanka

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**Wishing You All a  
Very Warm Welcome to  
FOSS4G Sri Lanka !**

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# Sri Lanka inaugurated 2 ICA-Osgeo Labs

OsgeoSLIIT  
[osgeolab.sliit.lk]

Contact [nimalikaf@gmail.com](mailto:nimalikaf@gmail.com)

OsgeoSL  
[www.mrt.ac.lk/tcp/osgeosl.html]  
Contact [toaruna@gmail.com](mailto:toaruna@gmail.com)

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# Invitation to the TGIS Lectures

by

**Soeren Gebbert (GRASS Developer)**

24/25/26<sup>th</sup> February (2.5 days)

University of Moratuwa, OsgeoSL Lab

Open to all, contact [toaruna@gmail.com](mailto:toaruna@gmail.com)

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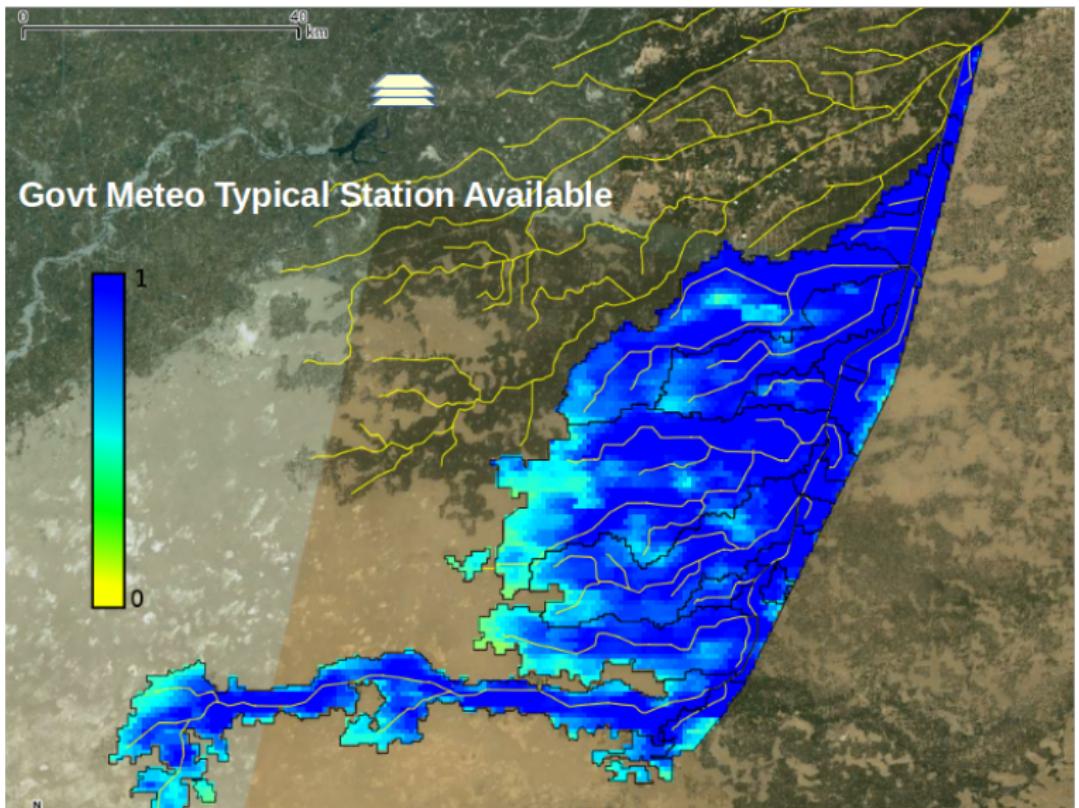
Weather Station

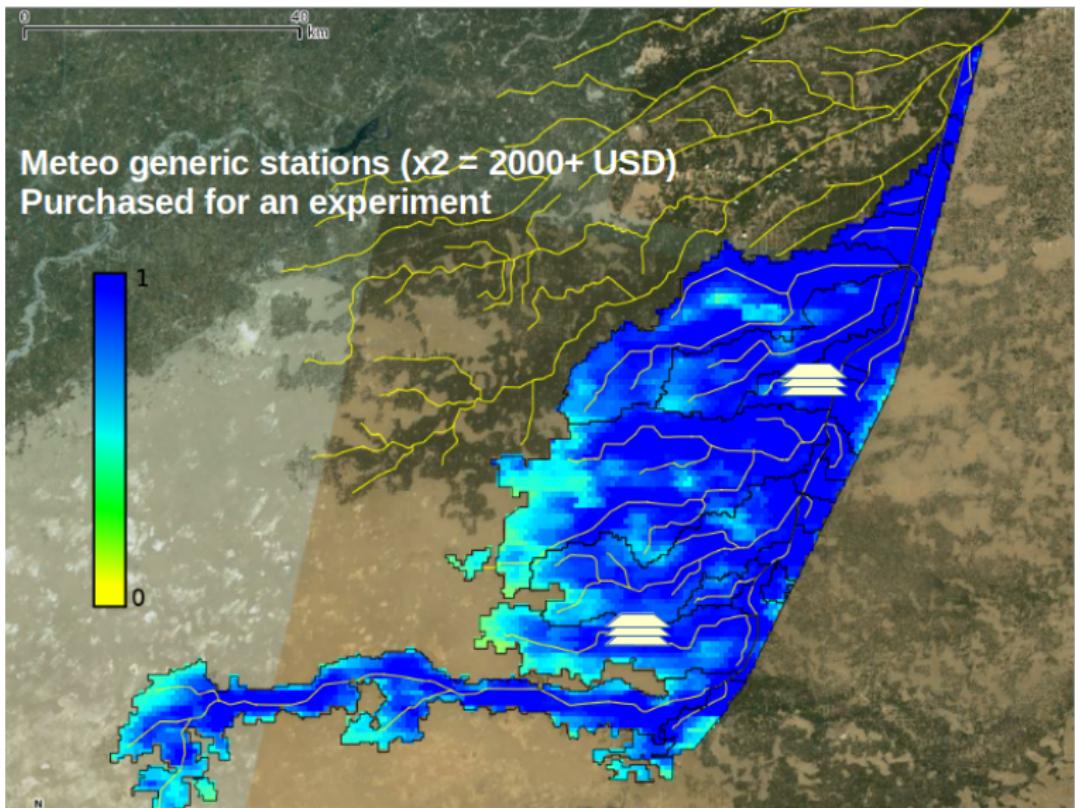
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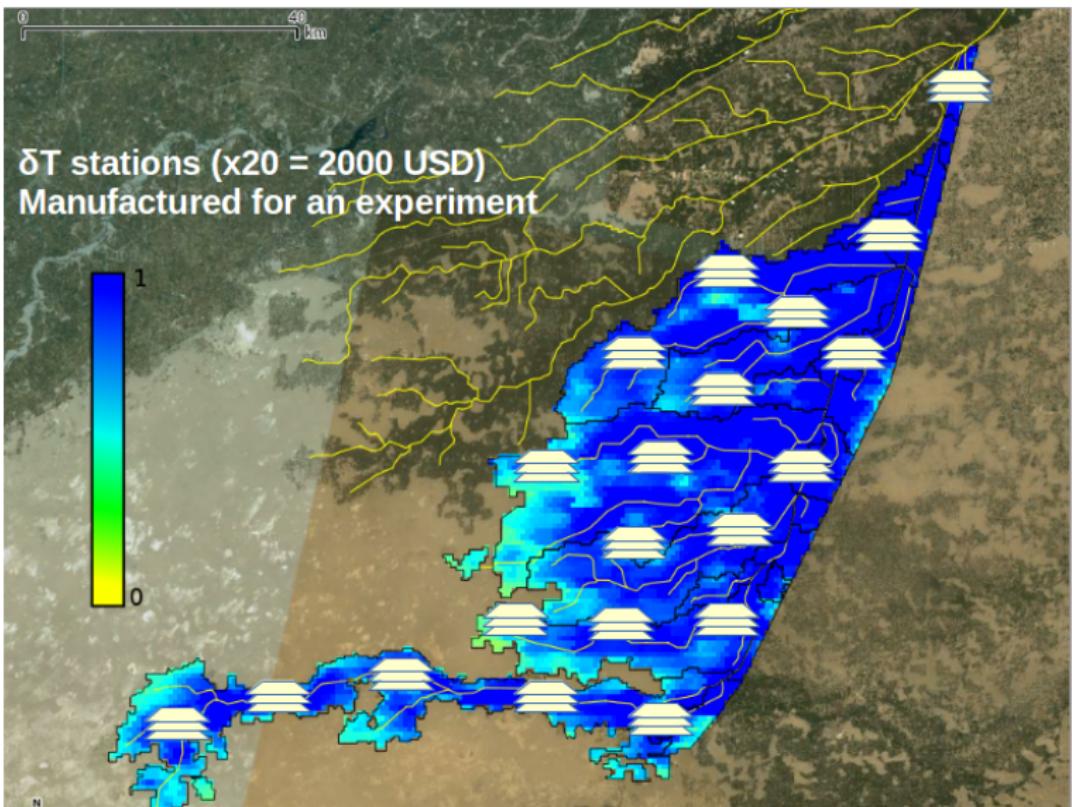
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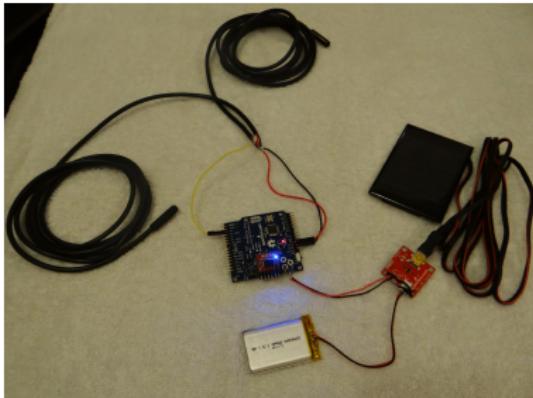
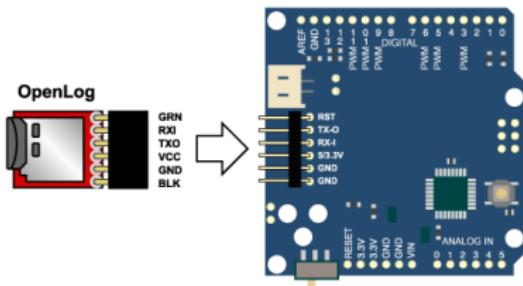
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# OpenLog + Arduino Pro (Cost < 100 USD)



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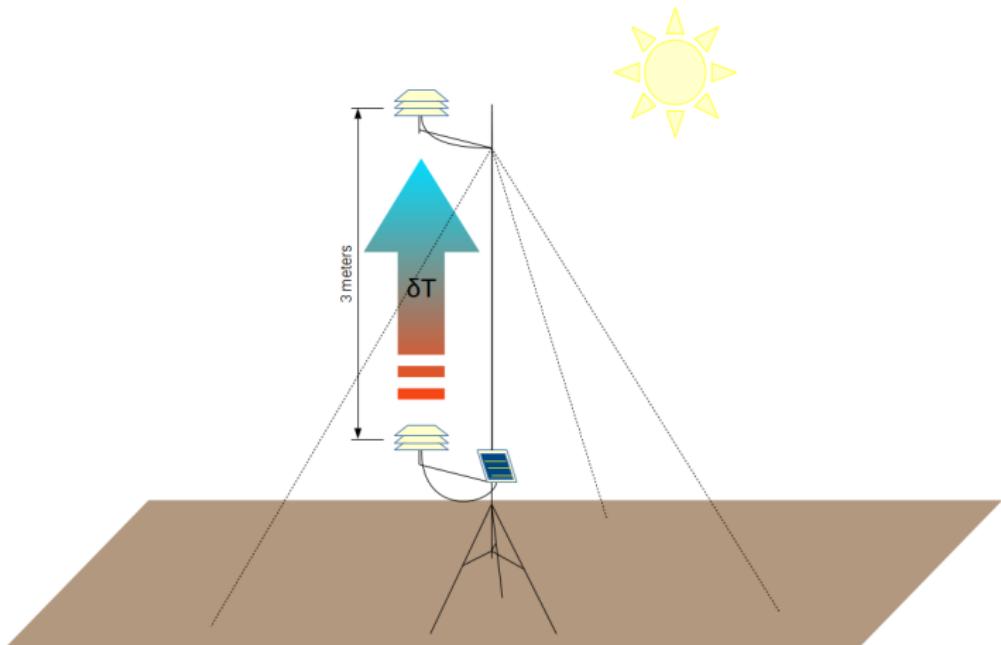
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# University of Moratuwa, OsgeoSL

- ▶ **Road condition:** chronic issue in Sri Lanka
- ▶ **RDA:** few IMU Vehicles (V. Expensive)
- ▶ **Challenge:** OSHW+FOSS4G < 100 USD/vehicle
- ▶ **Solution:** GDAL/OGR + RaspberryPI

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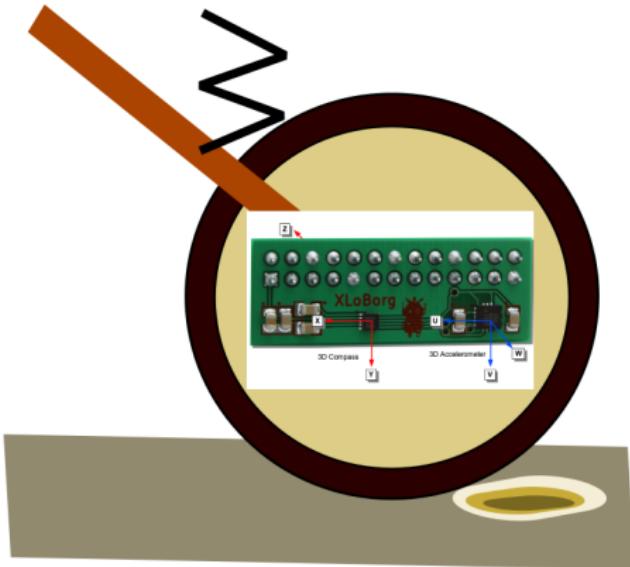
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# Python-OGR reporting Z-axis anomalies into road Shapefiles by integrating Xloborg and GPS data



```
X = -0.0156 G, Y = +0.0000 G, Z = -1.0000 G
nx = -0.0077, ny = -00015, nz = +00378
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nx = -00378, ny = -00015, nz = +00305
X = -0.0156 G, Y = -0.0156 G, Z = -1.0000 G
nx = -0.0077, ny = +00015, nz = -00378
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nx = +0.0077, ny = +00015, nz = +00378
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nx = -0.0077, ny = -00015, nz = +00380
X = +0.0156 G, Y = +0.0000 G, Z = +1.0000 G
nx = +0.0077, ny = +00015, nz = -00380
X = -0.0156 G, Y = -0.0000 G, Z = -1.0000 G
nx = -0.0077, ny = +00015, nz = +00380
X = +0.0156 G, Y = -0.0000 G, Z = +1.0000 G
nx = +0.0077, ny = -00015, nz = +00380
X = -0.0156 G, Y = +0.0156 G, Z = -1.0000 G
nx = -0.0077, ny = -00015, nz = +00377
X = +0.0156 G, Y = +0.0156 G, Z = +1.0000 G
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## FOSS4G natural extension is Open Source Hardware

- ▶ **RaspberryPI:** Small PC (ARM v8, Linux)
- ▶ **Arduino:** Micro-controller
- ▶ **OpenLog:** Data Logger
- ▶ **GDAL/OGR:** Flexible sensor raw data manipulation
- ▶ **GRASS GIS:** Mobile FOSS4G powerhouse
- ▶ **PyWPS:** Online GRASS GIS processing
- ▶ **Together:** Flexible all-in-one sensor-to-map solutions

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