

Implementing MRV from scratch – some lessons learned in Guyana



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Indufor ...forest intelligence



Guyana - Norway Cooperation

2009
Guyana & Norway
sign a
Memorandum of
Understanding

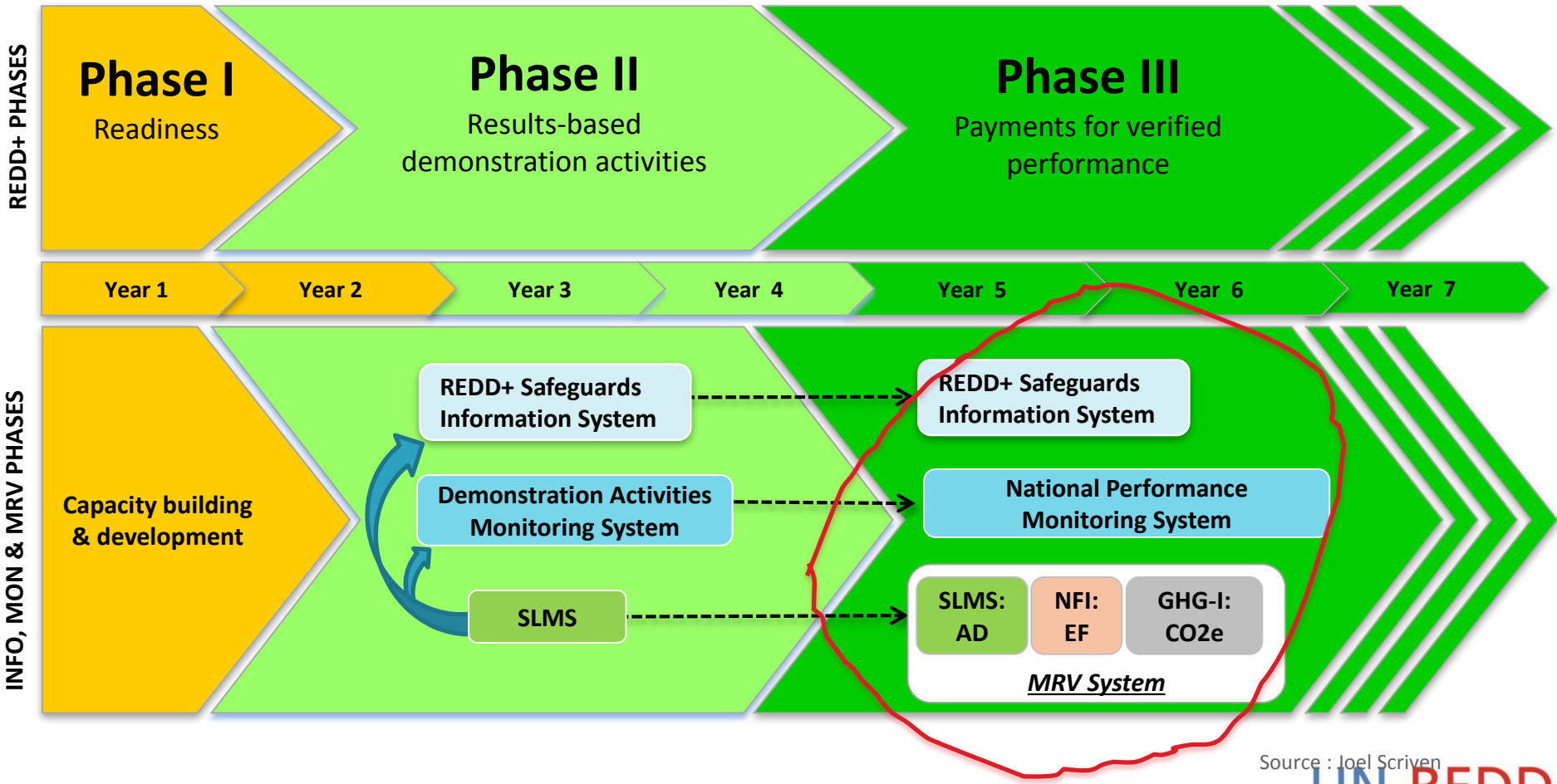
The Joint
Concept Note
(JCN) is the
'action list'
component of
the MoU

Under the MoU
Guyana is
entitled to
performance
based payments
of up to
US\$250m

This finances
the
implementation
of LCDS &
associated
capacity
building

MRV and REDD+ in 2015+

02.11.2015



Source : Joel Scriven

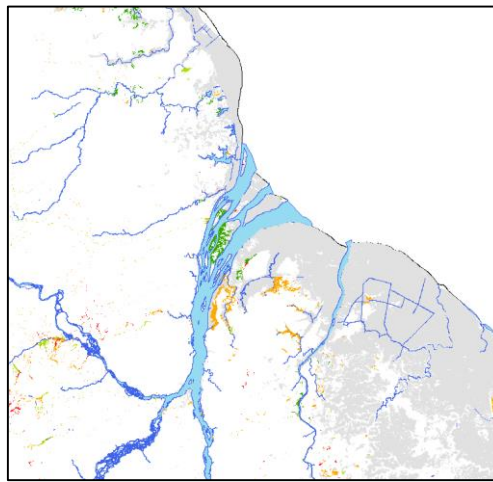


MRV Success Factors - Guyana

1. Clear Institutional Arrangements and Reporting Functions with a implementing agency and strong focal point (GFC)
2. Design of an MRV roadmap that identifies gaps and presents options and sequenced delivery – don't try to do everything at once! Usually and includes assessment of datasets, capacity, infrastructure and likely system costs.
3. Clear timelines and objectives and end goals to meet donor/ market expectations.... A funding stream – in this case Norway
4. Understanding of drivers and the scale and importance of drivers on GHG emissions – what to measure and how much effort?
5. In country buy in with a dedicated team
6. Accurate and defensible datasets and methods that are well documented so it is auditable. An Independent Accuracy Assessment is Key to ensure the audit is trouble-free!

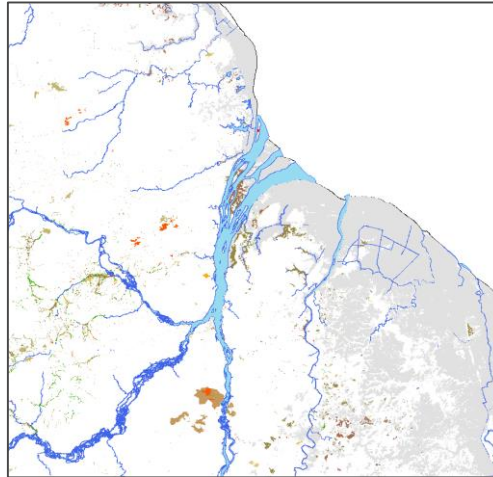


MRVS Development



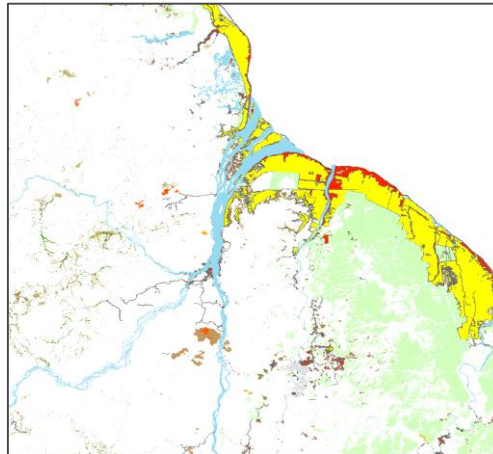
2010- Year 1

- Determining the forested area
- Setting the 1990-2009 Change baseline
- Landsat
- Accuracy of Mapping & Change 97%



2012 – Year 3

- 100% country coverage with RE
- Integration of Shifting cultivation
- Integration of reforestation monitoring
- Base mapping improvements/ processing automation
- Accuracy of Deforestation Mapping & Change 99%



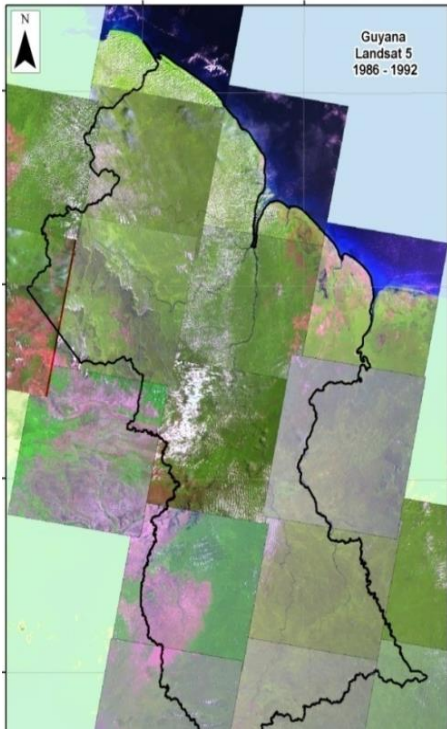
2013 & 14 - Year 4 & 5

- 100% country coverage with RE
- Non-forest sub categorisation based on IPCC categories for full IPCC aligned reporting
- Continued capacity building.
- Mapping team at 7 persons – Limited external Support from Consultants
- Accuracy of Deforestation Mapping & Change 99%

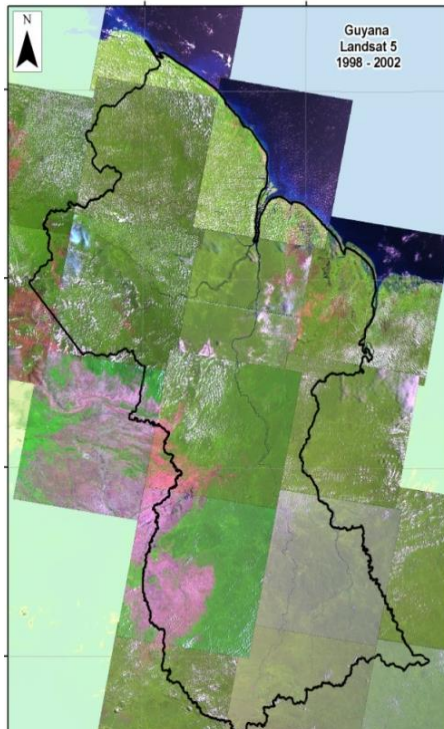
Historical Assessment

- Full historical assessment created 2009 Benchmark map.
- Landsat 5 data used (30m).
- Established 1990 non-forest and time series to account for landuse change.
- Best months for image acquisition is between September - November

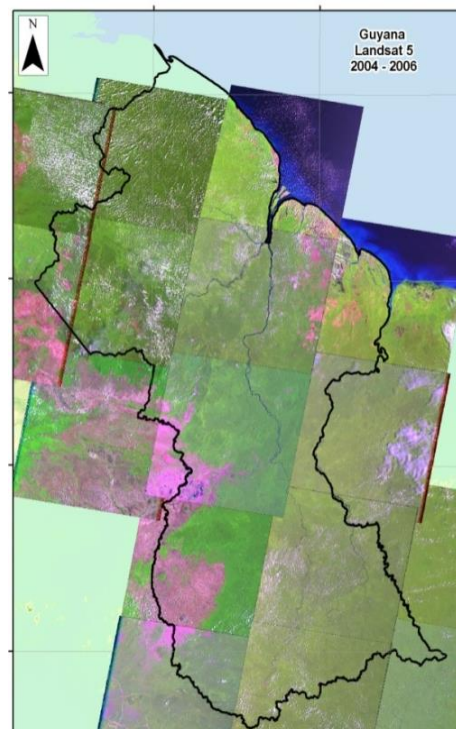
1990



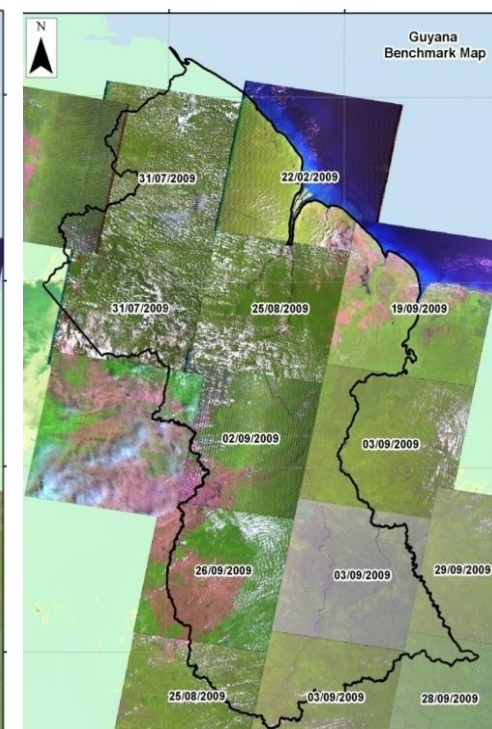
2000



2005

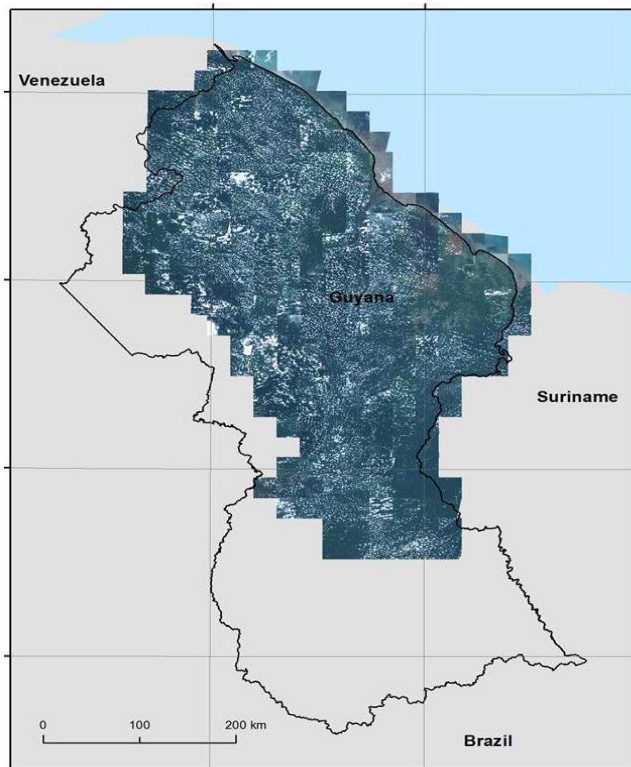


2009

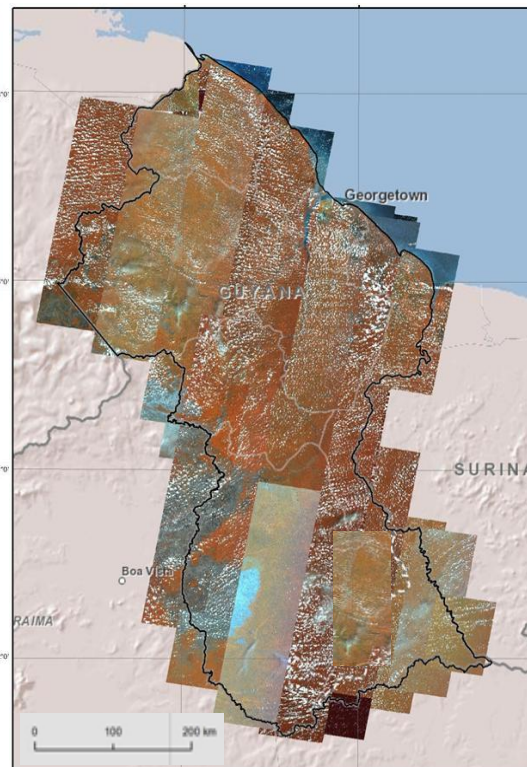


Switch to 5 m High Resolution imagery

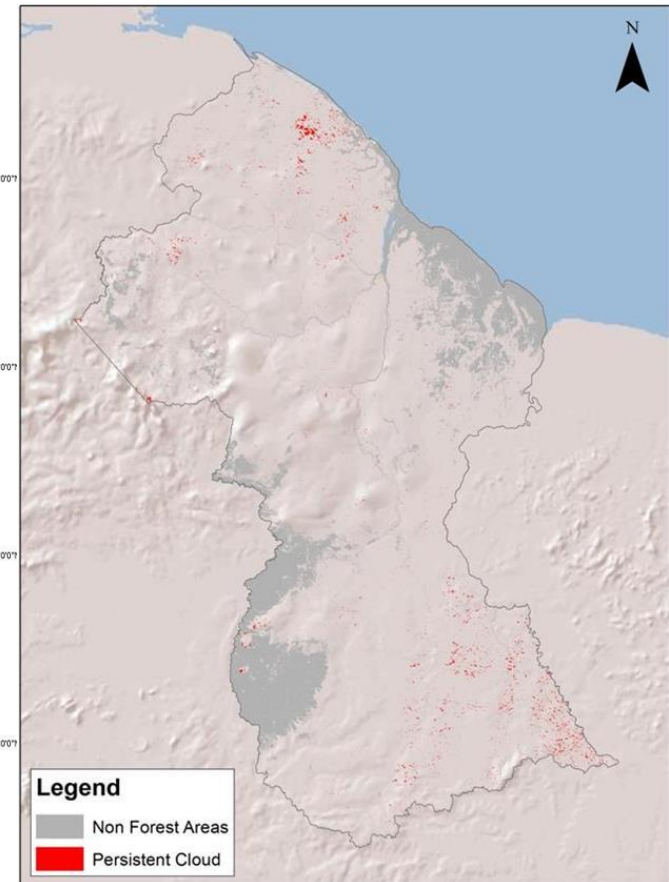
- Primary monitoring data source: 5 m
- Multiple scenes over same footprint area.
- Processed to a cloud-free state



2011



2012 Full Coverage



2013 Full Coverage

Why high Resolution?

Guyana, as with most REDD+ Countries, used Landsat data to establish the historic rate of forest loss and to determine the initial forest area.

In 2011 Guyana's MRVs moved from using 30 m Landsat imagery to using 5 m Satellite imagery....

Why?

Requirement for Repeat timely Coverage

Annual reporting requirements meant there is a need for guaranteed imagery, so this was tasked.

There is too much risk associated with relying on infrequent coverage offered by other satellites ("GFC 2014")

Why 5 m resolution imagery?

The reporting requirements required additional detail that could not be easily provided by 30 m imagery.

The resolution required to monitor degradation in Guyana is about 5 m. At this resolution degradation from mining, shifting cultivation and roads can be mapped*.

*detection accuracy of degradation approx. 78% (source UoD 2014)

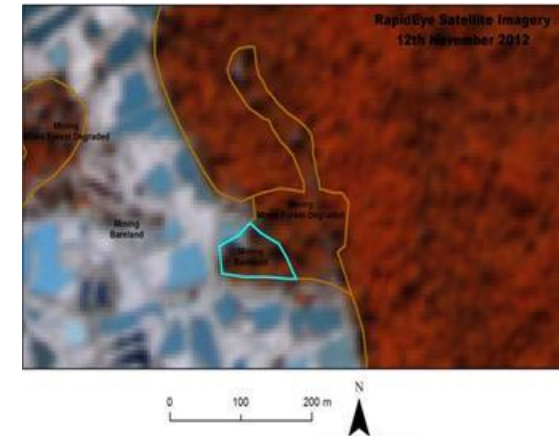


Mapping Forest Degradation

'Wall of forest' typical around perimeter of mining sites.

What we now know...

- Vegetative damage to perimeter vegetation is limited.
- Degraded forest areas are either in a state of transition to deforestation or regenerating forest.

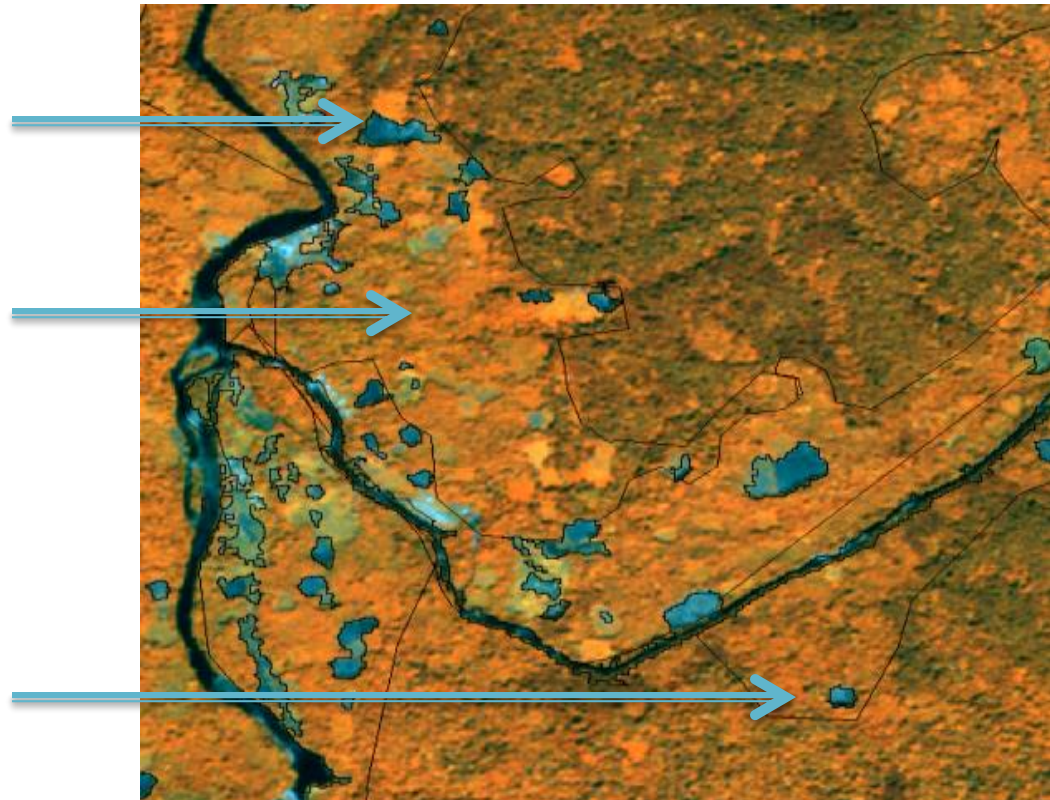


Mapping Shifting Cultivation

What we know...

Three distinct land uses within the Shifting Cultivation land use pattern. All newly burnt areas are under 1ha (MMU)

1. Newly burnt areas within historical rotational area
2. Historical degraded forest in transitional state
3. Pioneer areas that have transitioned from high forest



Mapping Reforestation/Afforestation – the possible +?

What we know...We can map it with fieldwork to determine carbon stock values.



1990

2000

2010+

Forest/Non-Forest



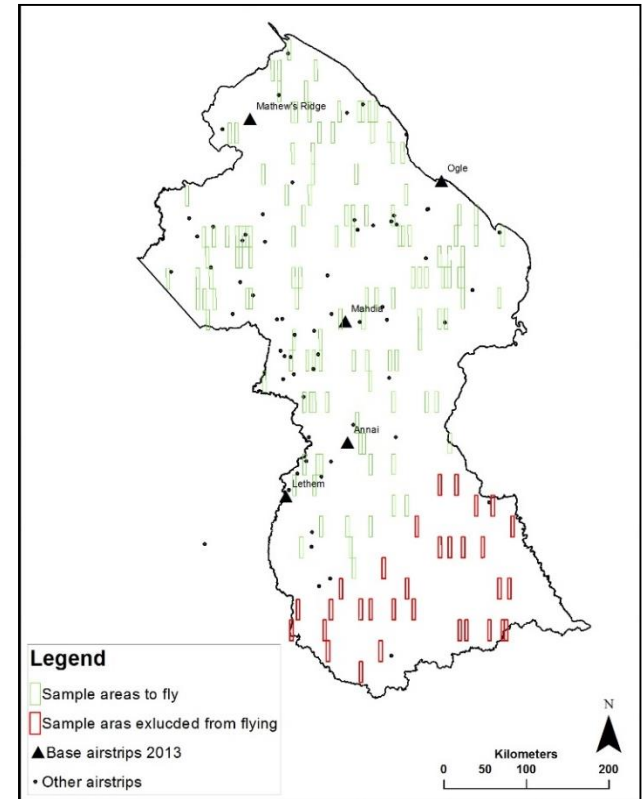
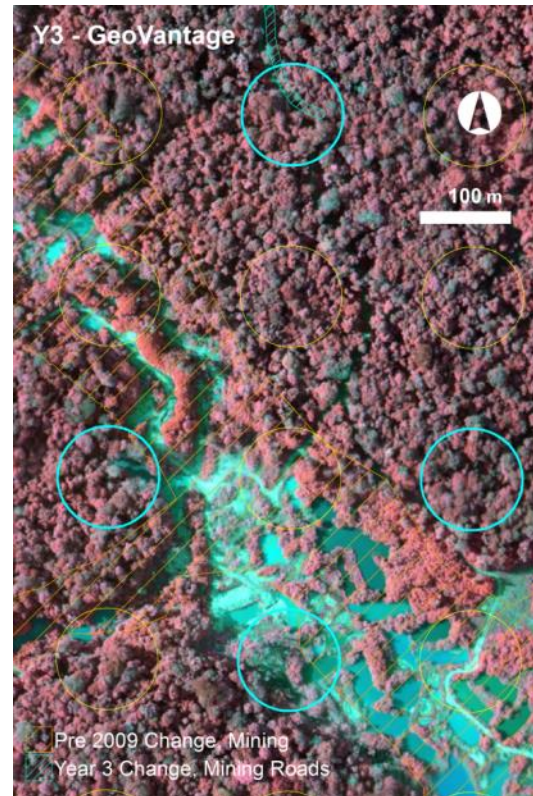
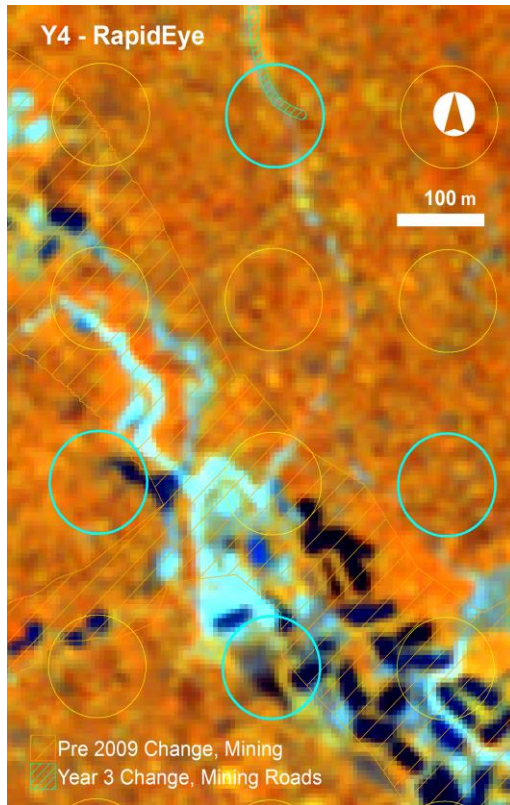
- I. Forest Land (managed and unmanaged)
- II. Cropland
- III. Grassland (managed and unmanaged)
- IV. Wetlands
- V. Settlements
- VI. Other Land (rock, bareland)

Cropland

Settlements

Waterways

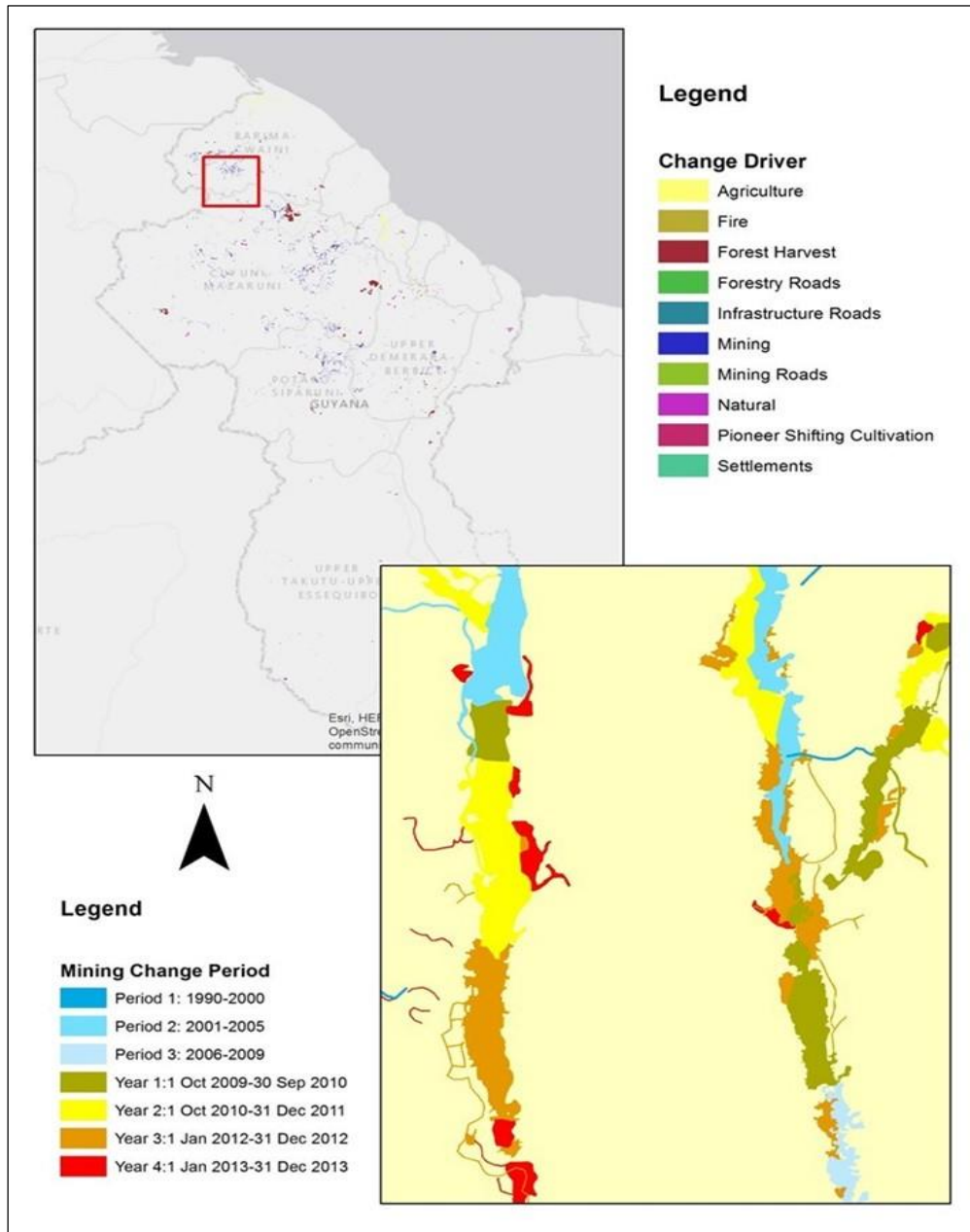
Assessing Map Accuracy



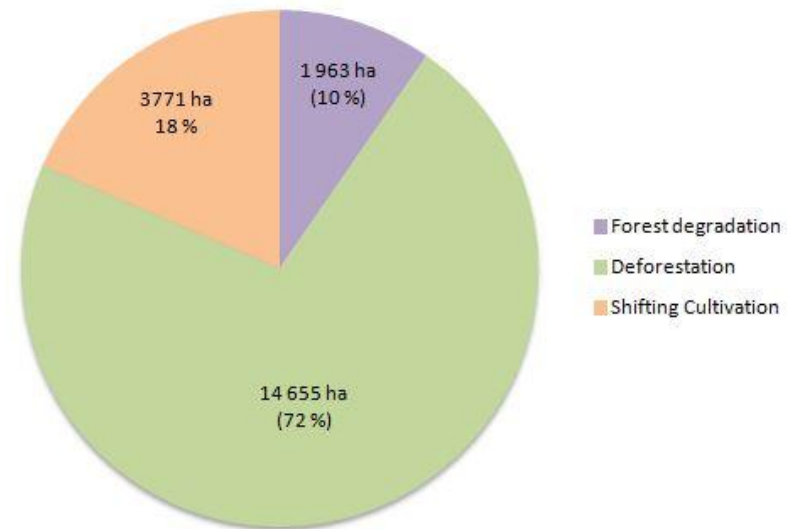
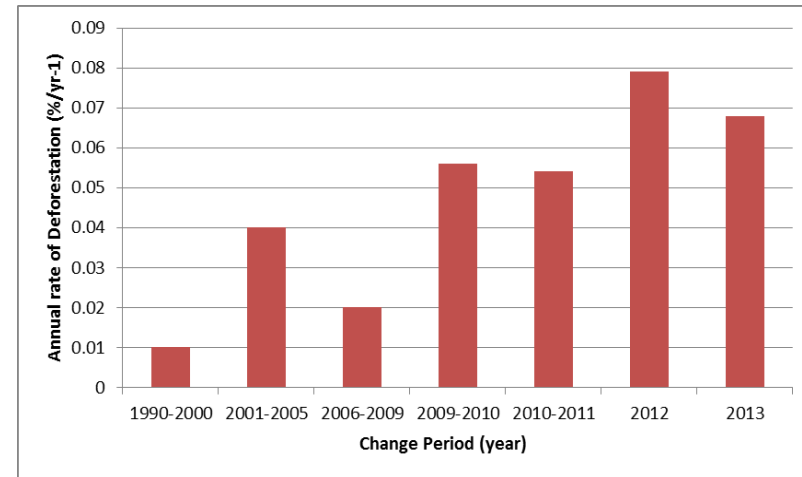
RapidEye

Airborne Imagery

Situation Today



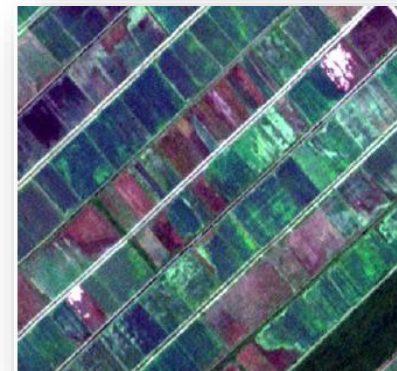
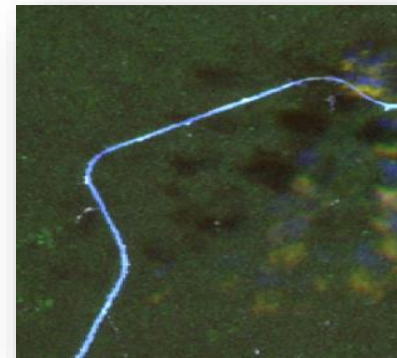
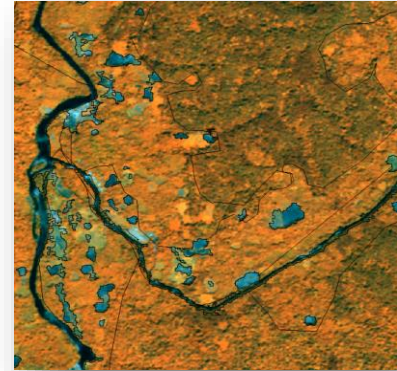
Reference Levels




Identifying major change drivers

Future Developments: - Adding further Value

- Evaluate integration of UMd change maps
- Integrate other datasets i.e. Planet Labs & Sentinel and radar
- Collaborate with FAO. Implementation of the SDMS/SEPAL in Guyana.
- Develop cloud-free composite from RE imagery.
- Forest typing/classification using RE and elevation models.
- Publish the MRV work and related studies in peer-review journals.





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Thank you