Forest data and free open-source solutions for Climate Action
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Forest/ Land use Monitoring
Papua New Guinea

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Background

- Papua New Guinea has two systems of reporting under the NFMS with reference to MRV, i.e. Collect Earth and Terra PNG
    - Collect Earth- managed by PNG Forest Authority
    - Terra PNG- managed by the Climate Change Development Authority
- Use of Collect Earth (Point Sampling)
    - Since its inception in 2013
    - 2013-2014: Determination of Land use types in PNG
    - 2014: Randomized selection of NFI clusters (by forest types)
    - 2016: 1st assessment of Forest and Land Use Change Assessment (2000-2015)has contributed in the:
        - Development of PNG's FRL,BUR and NDC with the REDD+ Technical Annex
        - National policy formation such as the National REDD+ Strategy and the Enhanced Nationally Determined Contribution
    - 2019: Published Report on the Forest and Land use Assessment launched (as shown
    - 2020-2021: 2nd assessment of Forest and Land Use Change (2000-2019)
        - Baseline data for FRL2, BUR2 and NDC/BTR
        - Updating of tree canopy and crop cover information
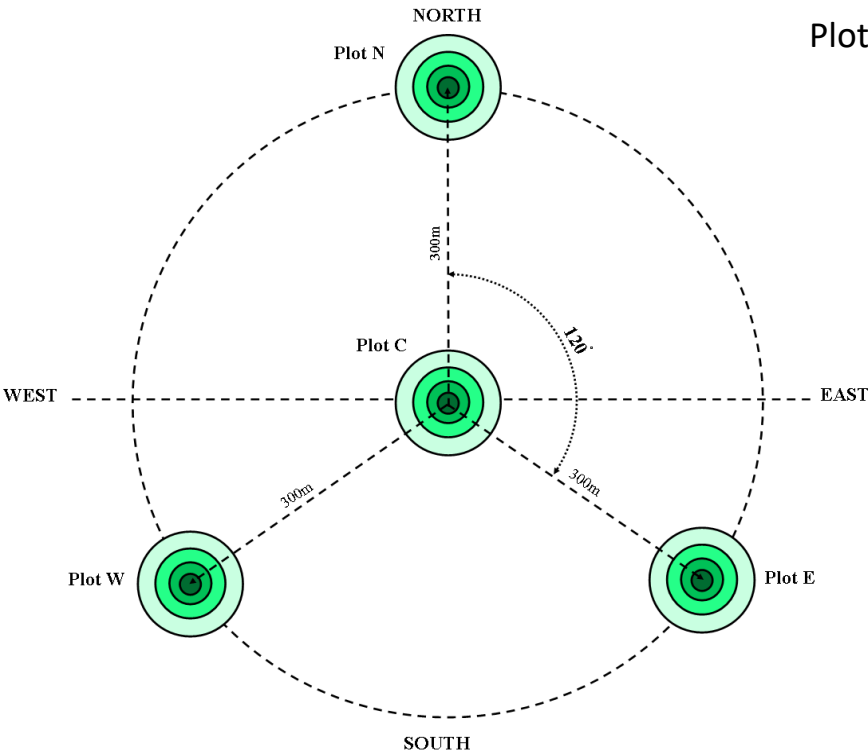   - Forest disturbance in 'forest land' category is updated
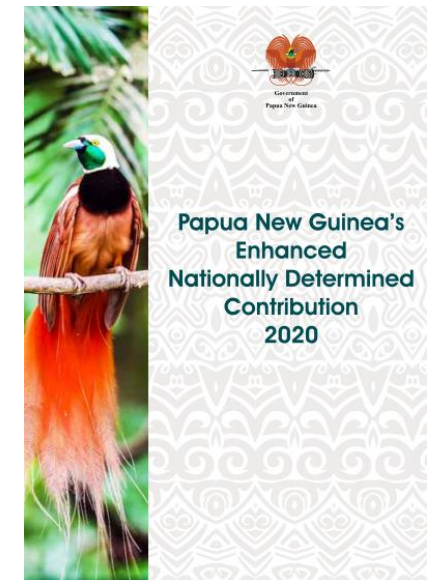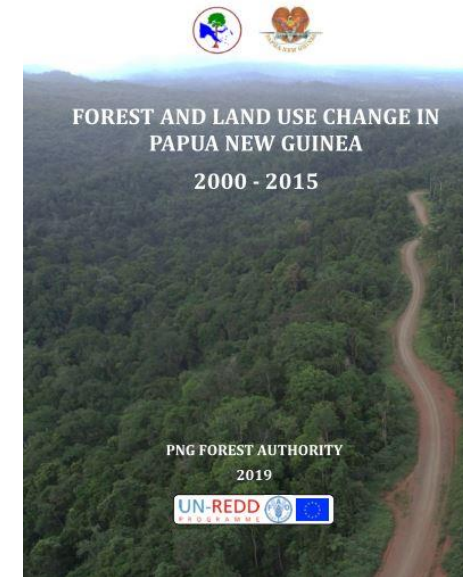
National Forest Inventory

PNG's First Multipurpose NFI was based on Double Sampling Approach

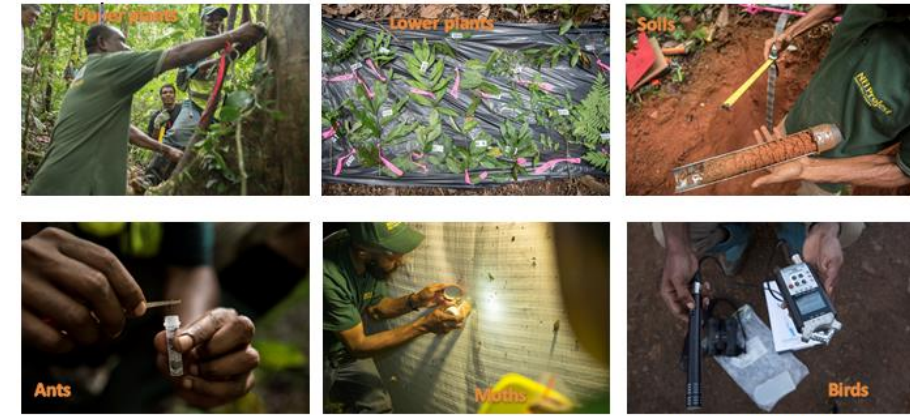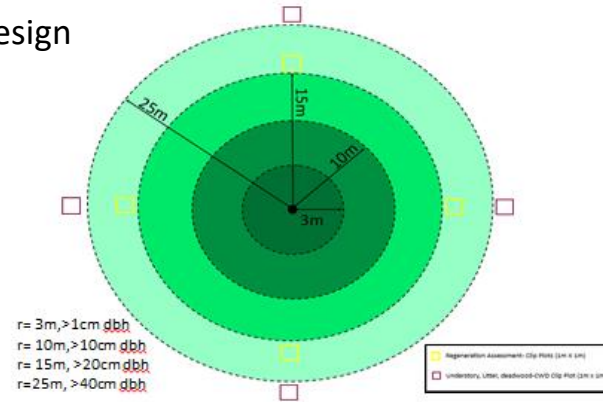Phase 1: Based on RS data analysis & Collect Earth

Phase 2: Based on field plot clusters on a random restricted sampling design

Plot design

r= 3m, >1cm dbh
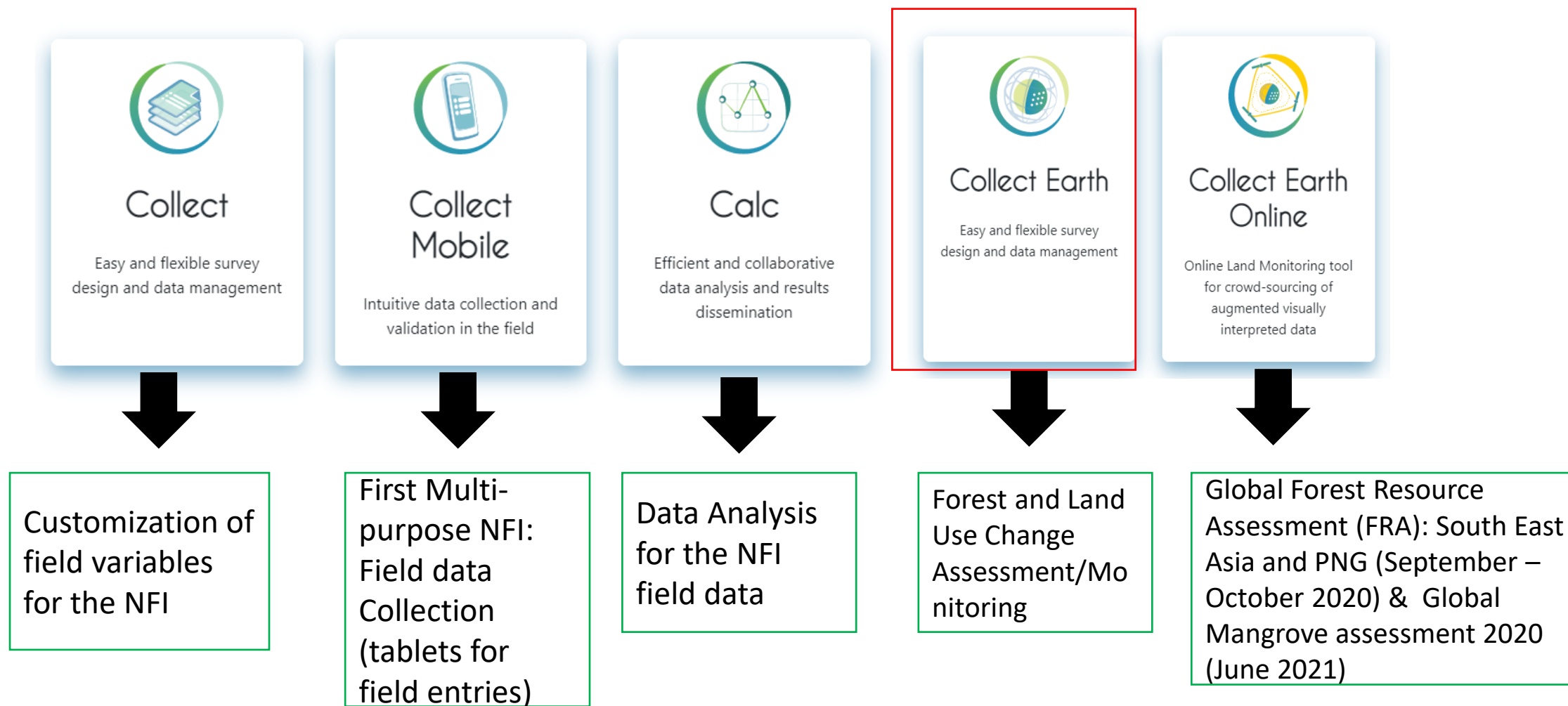r= 10m, >10cm dbh
r= 15m, >20cm dbh
r= 25m, >40cm dbh

PC: Cory Wright, UNREDD

NFI Cluster Design

Field manuals

Current Status:
- On-going activity for PNGFA to complete its NFI
- 42 clusters~166 plots completed

Open Foris tools used (so far)

Collect
Easy and flexible survey design and data management

Collect Mobile
Intuitive data collection and validation in the field

Calc
Efficient and collaborative data analysis and results dissemination

Collect Earth
Easy and flexible survey design and data management

Collect Earth Online
Online Land Monitoring tool for crowd-sourcing of augmented visually interpreted data

Customization of field variables for the NFI

First Multi-purpose NFI: Field data Collection (tablets for field entries)

Data Analysis for the NFI field data

Forest and Land Use Change Assessment/Monitoring

Global Forest Resource Assessment (FRA): South East Asia and PNG (September – October 2020) & Global Mangrove assessment 2020 (June 2021)
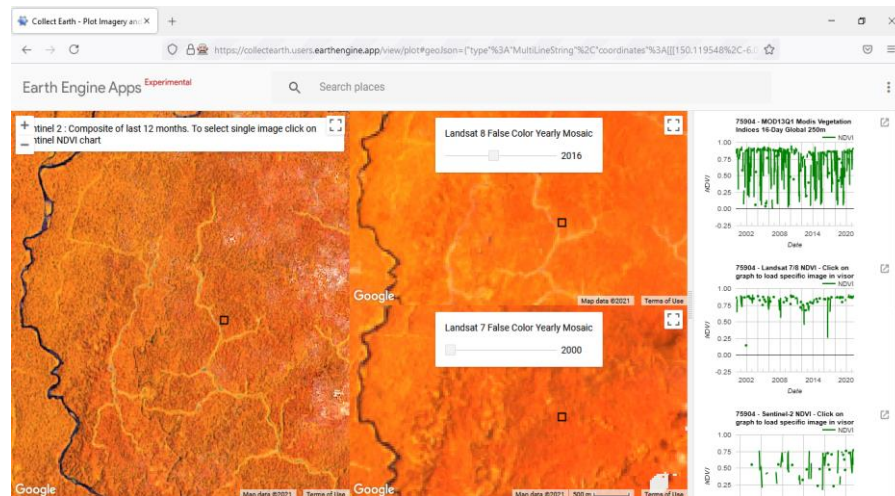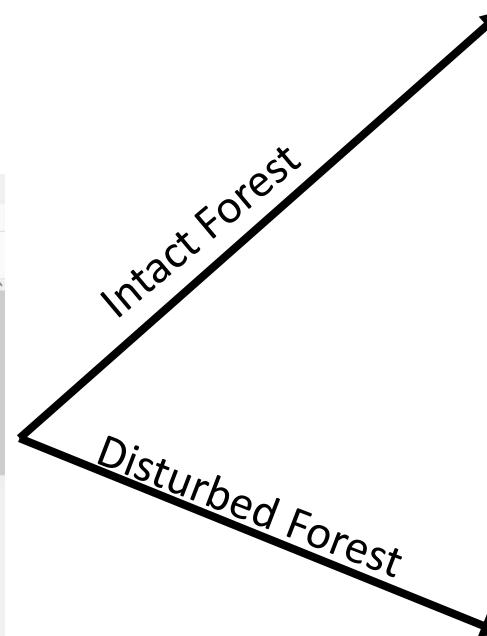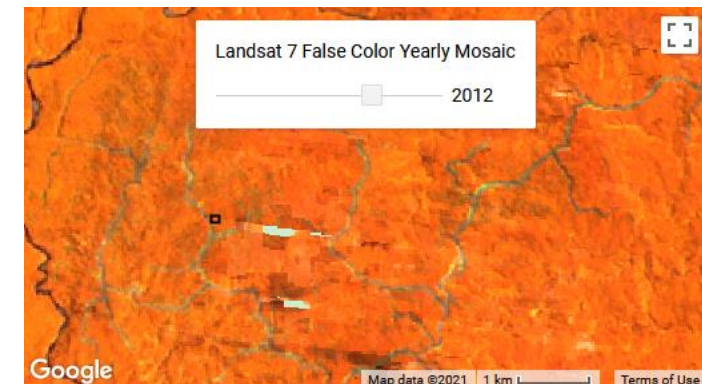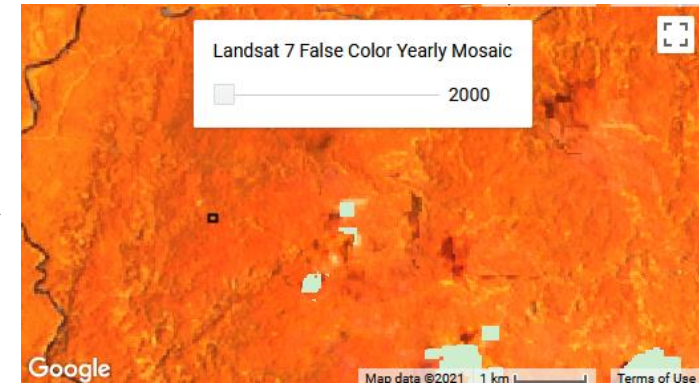
Forest Monitoring

Application of CE in monitoring in this case for logging activity to ensure that the operation is within the permitted boundary (concession). The tool will benefit the Provincial Forest Officers especially if the activity is outside of the permitted boundary then they can verify on site (project sites).
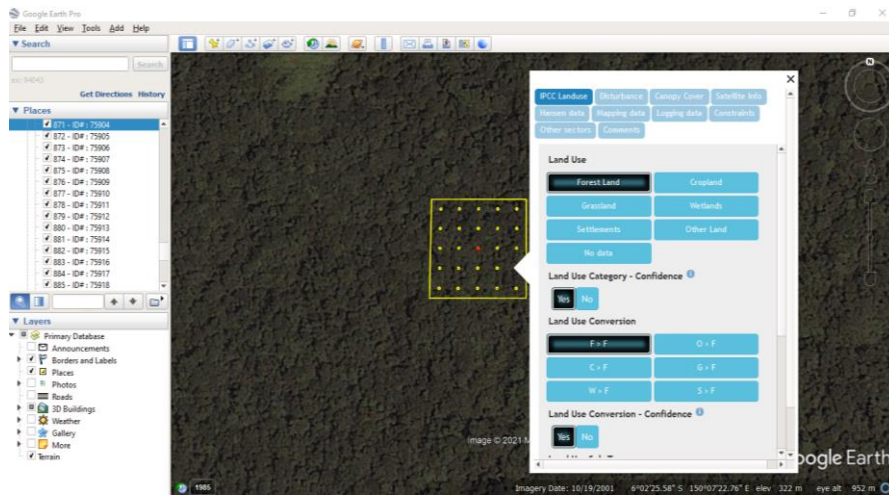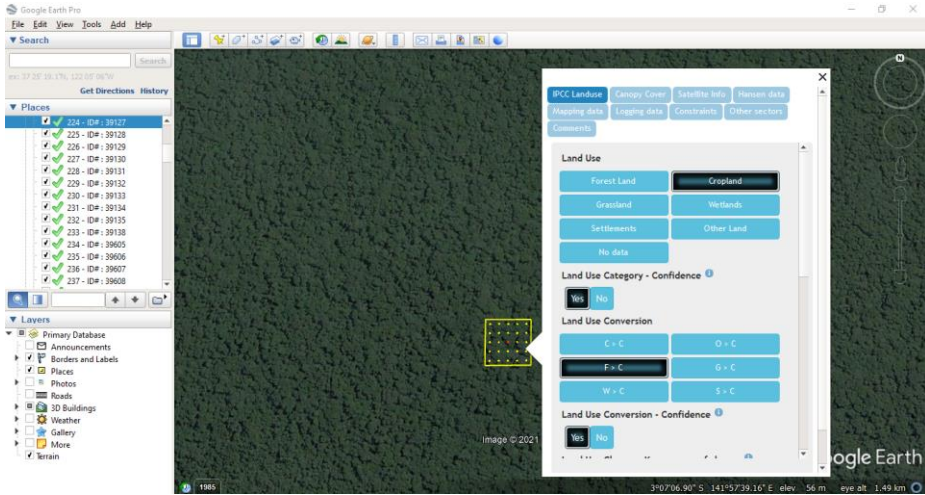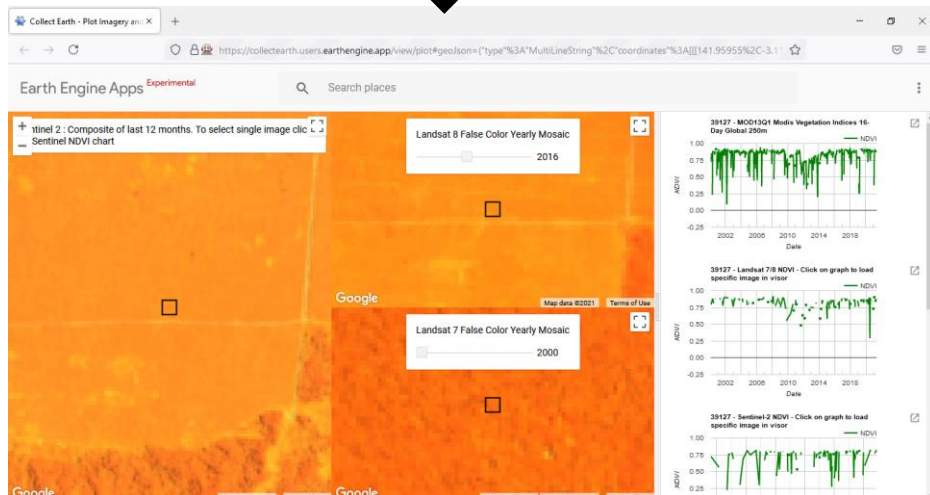

Google Earth: Forest

GEE: Sentinel2 and Landsat 7/8

Intact Forest

Disturbed Forest
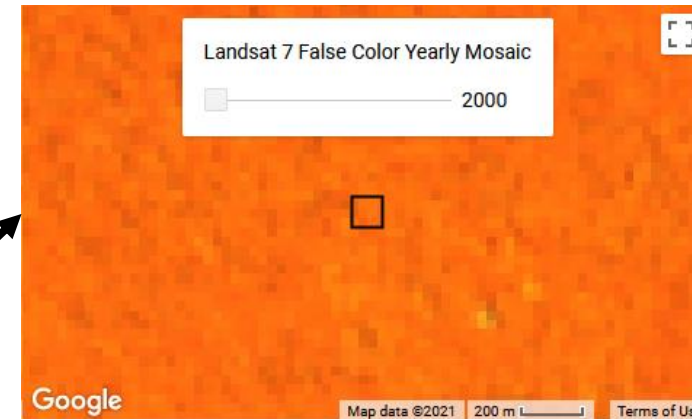
Land use Monitoring
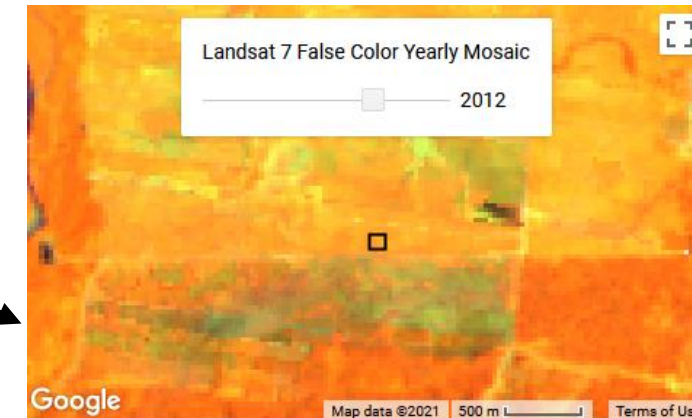

Google Earth: Forestland

GEE: Sentinel2 and Landsat 7/8

Application of CE in monitoring in this case, Forestland converted to Cropland (F>C); commercial agriculture activity i.e. palm oil plantation. This information or data can assist other sectors in this case, agriculture.

Intact Forest

Converted Land

Lessons Learnt

- Open Foris tools (CE)has been beneficial in the updating of forest and land use information
    - The option of customization has greatly helped with the country specific forest and land use types (forest types, sub-land use categories)
    - It has built the clear understanding of forest and land use
    - Capacity built in the use of these tools (CE, CM, CEO)
    - The availability of latest satellite images that has greatly assisted in the interpretation of the forest, land use and land use change

- Future Improvements
    - The ability to develop and design the various surveys for the different tools
    - Documentation (general processes involved; approaches/methodologies)