System of Environmental Economic Accounting

Workshop objectives and overview of virtual training sessions

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Workshop objectives

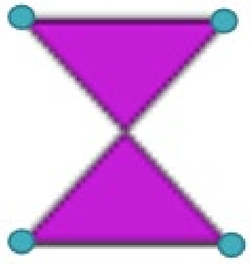
- Support compilation of land accounts for the Philippines for 2015 – 2020
  - > Review conceptual basis for land and ecosystem accounting
  - > Understand how GIS tools and ARIES for SEEA can be used for production of the accounts, particularly moving forward
  - > QGIS: Importance of account-ready data
  - > ARIES for SEEA
    - Integrating currently available data
    - Semantic annotation
    - Future modelling possibilities
- Establish a foundation for the compilation of ecosystem extent accounts
  - > Technically (i.e. ARIES for SEEA)
  - > Practically (available data sources)

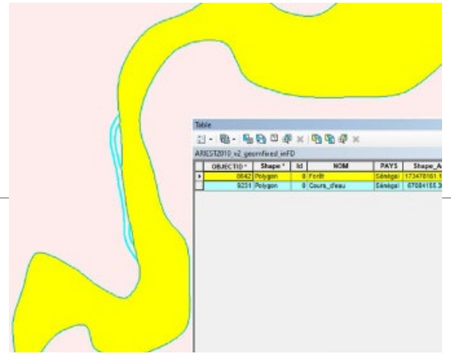
Work done thus far – setting context for virtual training

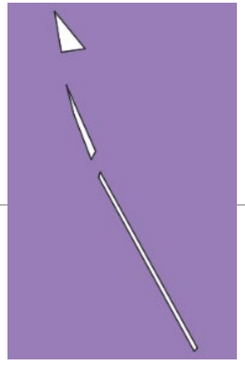
- Comparison of 2010 and 2015
  - > Illogical transitions detected
  - > Raw data and methodology used for maps differed
    - 2010: local data, 10 mt resolution
    - 2015: LandSat data, 30 mt resolution
    - 2010 map's built-up areas were generalized (i.e. other land cover types seen to suddenly "appear" in 2015 in previously urban areas)
  - > Suggest not to directly compare
- Focus on 2015 and 2020

Virtual training

- Focus on CAR region (inland) for 2010 and 2015
- Designed to cover steps needed to create land accounts
- Many preparatory steps to ensure that data is “account-ready”
- Step 1: Preliminary data correction
  - Three areas to check
    - Geometry errors, overlaps and gaps
    - Geometry errors: Invalid polygons (e.g. self-intersecting polygons)
    - Overlap issues: causes issues when vector is converted to raster. Which land cover class is assigned to a pixel?
    - Gaps: Converting from vector to raster can result in pixels with NoData values







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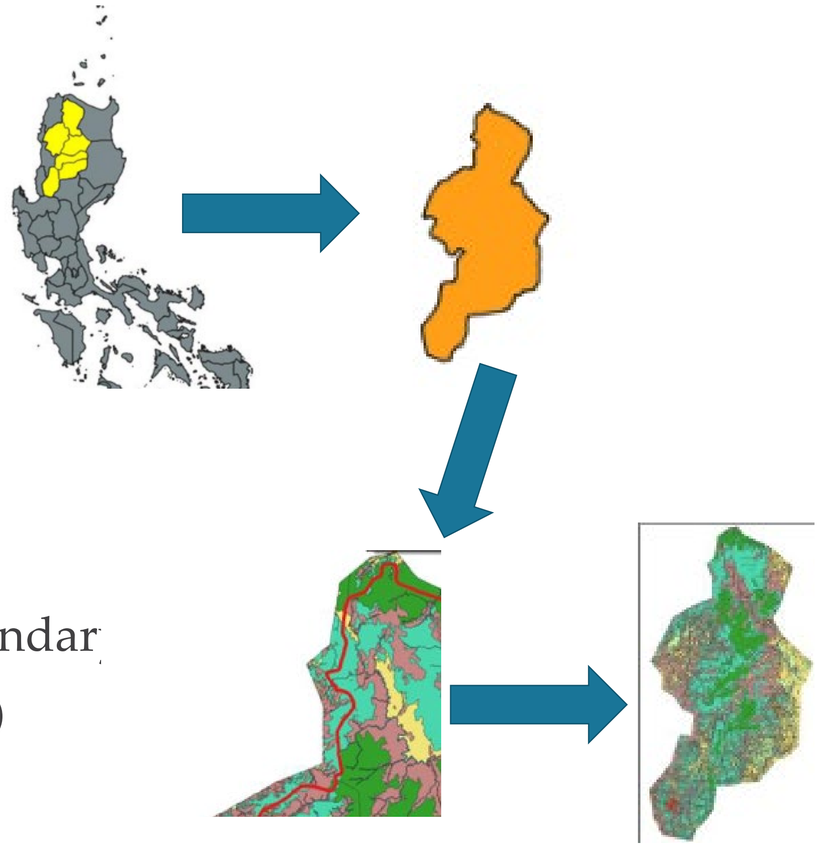
- Step 2: Creating land cover change accounts
  - > Reading in data
    - Add boundary data
    - Select appropriate polygons within boundary
    - Dissolve
    - Added LC data
    - Ensure common projection, clip data to the boundar
    - Rasterize data (requirement to read into ARIES)
    - Create overlay of land cover change maps
    - Create accounts
      - Manually, using QGIS functions (raster calculator—e.g. 4002, change from LC class 4 to class 2)
      - Use of semi-automatic classification plugin (SCP) (homework)



Virtual training

- Step 3: Examining the land cover change matrix
  - Important quality assurance step: check for “illogical” changes
  - Why do we need to take a spatial point of view, and not just a statistical one?
    - Land cover change matrix displays NET changes
  - Prioritize those polygons that show improbable transitions by focusing on those with the largest maximum area
    - Use landcover change raster (2010 and 2015)
    - Polygonize the raster (each polygon provided with a raster of a specific LC change type)
    - Calculate area of each polygon
    - Create table with maximum area of polygons having a particular transition
- Step 4: Further investigate problematic polygons and correct as needed (not completed)
  - Can methodology or metadata explain anything?
  - Ecological experts, regional offices
  - Ground truthing

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- Step 5: ARIES for SEEA
  - Integrate account-ready data using the k.modeler
    - k.modeler allows to you to integrate local data, access ARIES network, develop models, annotate data
    - Web-based explorer only uses global data
    - We are using the data locally, but also possible to use data through geoserver
    - Rasterized maps
    - Need projection that uses Open Geospatial Consortium (OGC) standards
  - Defining context (space, i.e. shape file; resolution/grid; projection; time)
  - Semantic annotation
    - Creating the crosswalk of national classification used, with ARIES land cover ontology (based on ESA CCI, Corrine land cover and National Land Cover Database classes)
    - https://bitbucket.org/integratedmodelling/im/src/master/src/landcover.kim

Virtual training

- Step 5: ARIES for SEEA
  - > Semantic annotation
    - Creating the crosswalk of national classification used, with ARIES land cover ontology (based on ESA CCI and Corrine land cover classes)
    - https://bitbucket.org/integratedmodelling

Table 1. Land Cover Categories Definition based on DENR Memorandum Circular 2005-005

LAND COVER CATEGORIES	DEFINITION
1. Closed Forest	Formations where trees in the various storeys and the undergrowth cover a high proportion (>40 percent) of the ground and do not have a continuous dense grass layer (cf. The following definition). They are either managed or unmanaged forests, primary or in advanced state of reconstitution and may have been logged-over one or more times, having kept their characteristics of forest sands, possibly with modified structure and composition.
2. Open Forest	Formations with discontinuous tree layer with a coverage of at least 10 percent and less than 40 percent. They are either managed or unmanaged forests, in initial state of succession.

```
model 'local:alessio.bulckaen:un.seea.aries.psa:lc_4326_5
      'local:alessio.bulckaen:un.seea.aries.psa:lc_4326_5
      as landcover:LandCoverType classified into
        landcover:NonIrrigatedArableLandHerbaceous if 1,
        landcover:OpenMixedForest if 2,
        landcover:Shrubland if 3,
        landcover:InlandWaterBody if 4,
        landcover:ClosedMixedForest if 5,
        landcover:Grassland if 6,
        landcover:BareArea if 7,
        landcover:ArtificialSurface if 8,
        landcover:InlandSwamp if 9,
        landcover:WaterBody  if 10,
        landcover:PermanentCropland if 11,
        landcover:Wetland if 12;
//      landcover:SeaAndOcean if 13;
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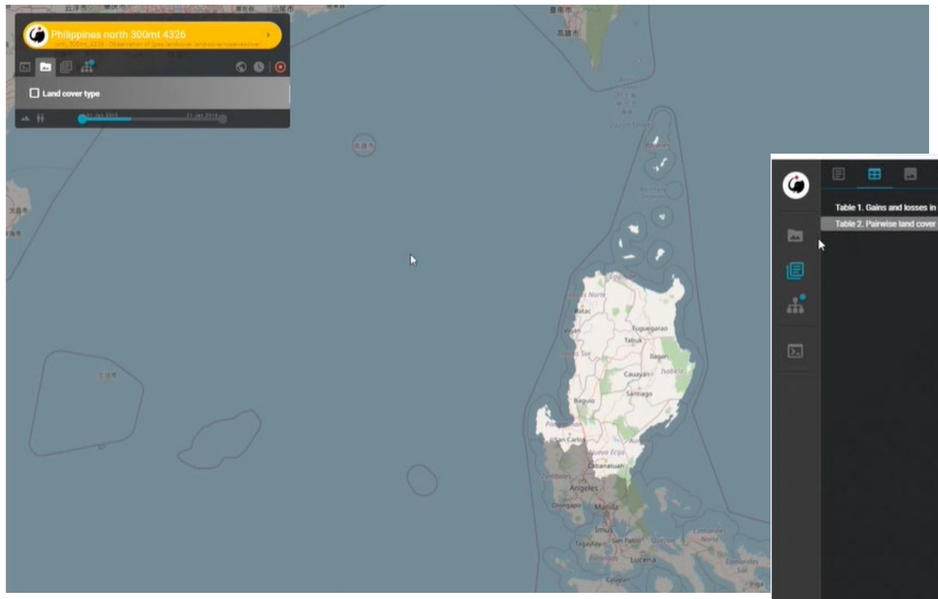
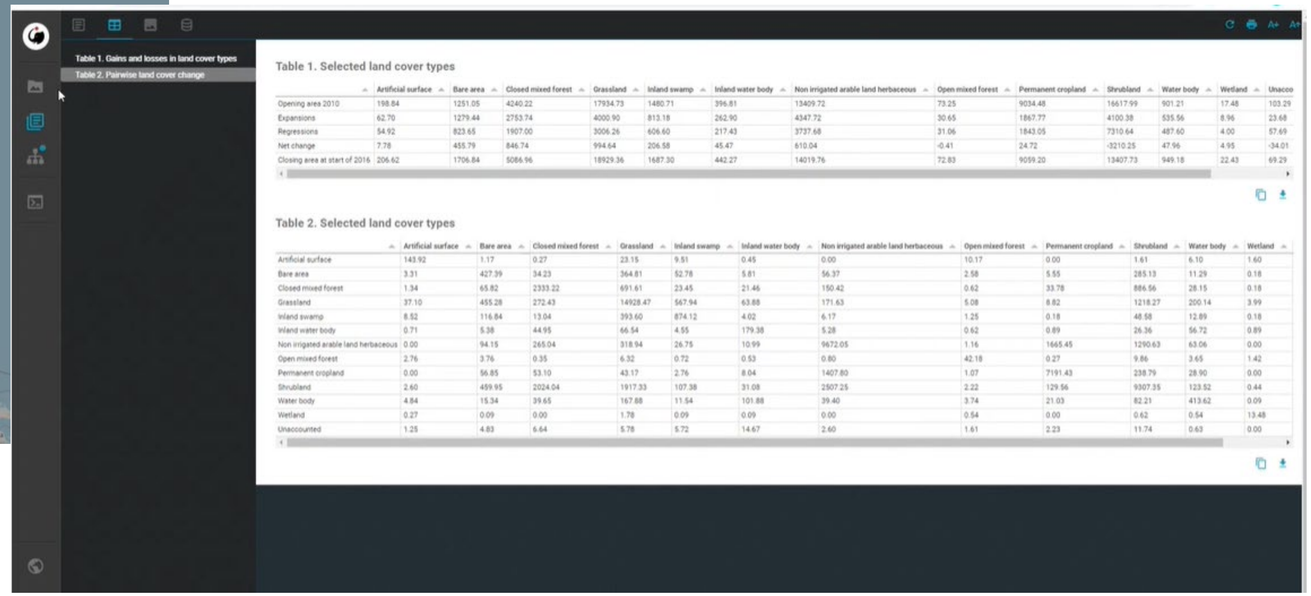
- Step 5: ARIES for SEEA
  - > Run the model
    - Drag and drop the context into the Explorer





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Training workshop

- Small group -> please feel free to ask questions
- At the end of the training, have some results
- Next steps? -> follow up on illogical changes with relevant experts as needed
- Replicate with other regions to compile national level accounts

Your inputs?

- What are your expectations for the workshop?
- We would like to hear from you: What is the best way to collaborate going forward? What can we do to help to ensure that this exercise is carried forward sustainably?