Geospatial and Statistical Integration

Ideas and proposals from recent work at UNESCAP

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8th Plenary Meeting, UN-GGIM-AP
Three key approaches by UN ESCAP

- Research & analysis
- Convening and consensus building
- Technical support and capacity building
1) Disaster risk measurement
2) Urbanisation and population trends
3) Land cover change
4) Oceans sustainability

Geospatial integration work at ESCAP
Importance of GSGF

1. Use of fundamental geospatial infrastructure and geocoding;
2. Geocoded unit record data in a data management environment;
3. Common geographies for the dissemination of statistics;
4. Statistical and geospatial interoperability; and,
5. Accessible and usable geospatially enabled statistics.

Figure 1 Location as a link between society, the economy and the environment
Polygon-based integration
Ocean Accounts Portal – a demonstration

SEEA Pacific Ocean Accounting Portal

DRAFT Prototype Pacific Ocean Account

SEEA Ocean Test Account for the Pacific Ocean

Join the initiative to develop the first ever Pacific Ocean Environmental-economic accounting portal as a sample compilation at the regional scale. The sample tables and analysis can be replicated and adapted at sub-regional and national scales.

https://portal-test-escap.hub.arcgis.com/
Using ARCGIS Online and ESRI Hub Technology:

Statistical inputs

Integration

Outputs

Dashboards | Story Maps | Info-Graphics

...and much more...
The Pacific Ocean Accounts Portal – some challenges

- Integrating data
  - different data types
  - different spatial units
  - different data custodians
  - different nomenclature

- Integrating people
  - Different skills
  - Different tools
  - Different languages
Integrating data
• What are the best practices for integrating across spatial units?
• What are best practices for integrating data types?

Integrating people
• What lessons can be shared from a demonstration project like the Pacific Ocean Accounting Portal?
THANK YOU

For questions or more info: clarke@un.org

Photo cred.: Patrick J. Nagel
Integration for disaggregated analyses of urban landscapes and population
Using remote sensing to describe landscapes
Example outputs of ‘Gaussian field’ Effect
Power of geospatial integration: flexible scales of analysis
Flood exposure for extremely poor households in the Ganges-Brahmaputra river basin.
Geo-referencing of Primary Sampling Units (PSUs)
Overlay PSU locations with EO data to describe the landscapes of PSUs
• Households experiencing extreme poverty are more likely to be exposed to flood hazard than the general population for the GBM region as a whole and in most districts

• How? Compared the estimated rates of exposure to flood hazard for general population and for populations below poverty threshold

Ref.: Methodology for Hazard Exposure and Vulnerability Assessment in the Ganges-Brahmaputra (GBM) River Basin
Dispersed populations

• *def.:* groups of populations with poor (or potentially poor) coverage from remote sensing images or from population census and surveys, or both.

• Aim should be to include such groups better in statistical analysis.
Legend:
- Artificial surfaces
- Herbaceous crops
- Woody crops
- Multiple or layered crops
- Graslands
- Tree-covered areas
- Shrub-covered areas, aquatic or regularly flooded
- Sparsely natural vegetated areas
- Terrestrial barren land
- Inland water bodies

2005-2015 map comparison of Vanuatu showing changes in land use.
# Sample of land cover change statistics

<table>
<thead>
<tr>
<th>land Cover Type</th>
<th>Year 2005</th>
<th>Year 2015</th>
<th>land Cover Change</th>
<th>Percent Change</th>
<th>Percentage of land Cover 2005</th>
<th>Percentage of land Cover 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial surfaces</td>
<td>4.67</td>
<td>18.31</td>
<td>13.64</td>
<td>292.0770878</td>
<td>0.036577533</td>
<td>0.143415048</td>
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<tr>
<td>Herbaceous crops</td>
<td>35.28</td>
<td>18.78</td>
<td>-16.5</td>
<td>-46.76870748</td>
<td>0.276328775</td>
<td>0.147096374</td>
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<tr>
<td>Woody crops</td>
<td>39.29</td>
<td>32.99</td>
<td>-6.3</td>
<td>-16.03461441</td>
<td>0.307736892</td>
<td>0.25839773</td>
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<tr>
<td>Multiple or layered crops</td>
<td>898.47</td>
<td>603.82</td>
<td>-294.65</td>
<td>-32.79463978</td>
<td>7.037219794</td>
<td>4.729485225</td>
</tr>
<tr>
<td>Graslands</td>
<td>0.19</td>
<td>0.19</td>
<td>0</td>
<td>0</td>
<td>0.001488165</td>
<td>0.001488195</td>
</tr>
<tr>
<td>tree-covered areas</td>
<td>11299.85</td>
<td>11608.34</td>
<td>308.49</td>
<td>2.730036239</td>
<td>88.50549055</td>
<td>90.92357411</td>
</tr>
<tr>
<td>Shrubs and/or herbaceous vegetation, aquatic or regularly flooded</td>
<td>221.8</td>
<td>222.94</td>
<td>1.14</td>
<td>0.513976555</td>
<td>1.737237026</td>
<td>1.746201577</td>
</tr>
<tr>
<td>Sparsely natural vegetated areas</td>
<td>7.06</td>
<td>7.06</td>
<td>0</td>
<td>0</td>
<td>0.055297085</td>
<td>0.055298211</td>
</tr>
<tr>
<td>Terrestrial barren land</td>
<td>24.13</td>
<td>24.13</td>
<td>0</td>
<td>0</td>
<td>0.188996977</td>
<td>0.189000826</td>
</tr>
<tr>
<td>Inland water bodies</td>
<td>236.4</td>
<td>230.58</td>
<td>-5.82</td>
<td>-2.461928934</td>
<td>1.85159077</td>
<td>1.8060427</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12767.14</td>
<td>12767.14</td>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
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</tbody>
</table>