

Towards national ecosystem accounting

Informing development policy in **Guatemala**

Castañeda, J.P. & Barrios, J.M

WAVES
IARNA-URL

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Outline

1 NCA in Guatemala

- An overview
- Results, some examples

2 Towards ecosystem accounts

- Setting priorities
- Case studies
- Spatial units
- Data management

3 Conclusions

Location



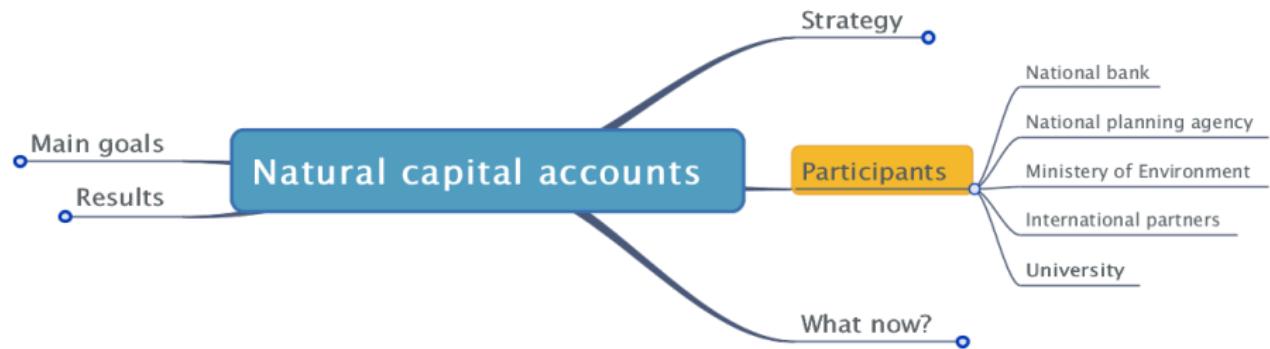
NCA in Guatemala, an overview



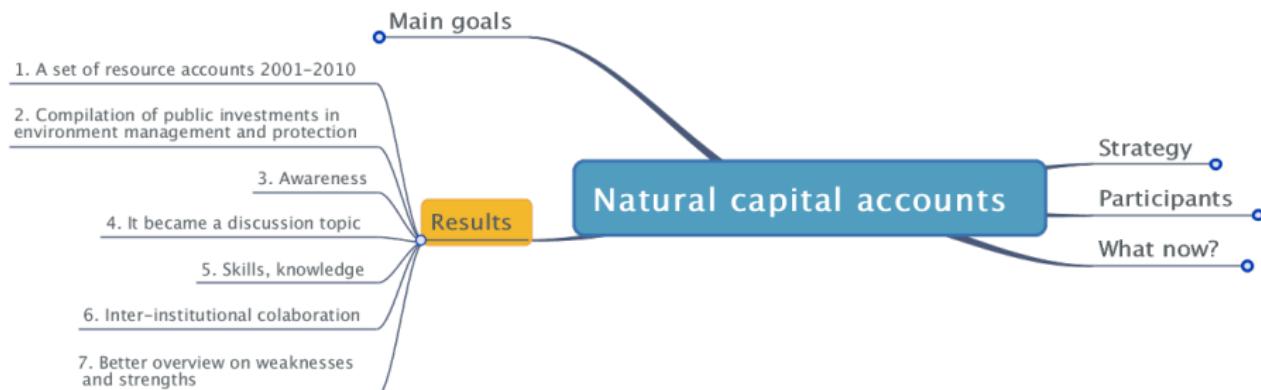
NCA in Guatemala, main goals



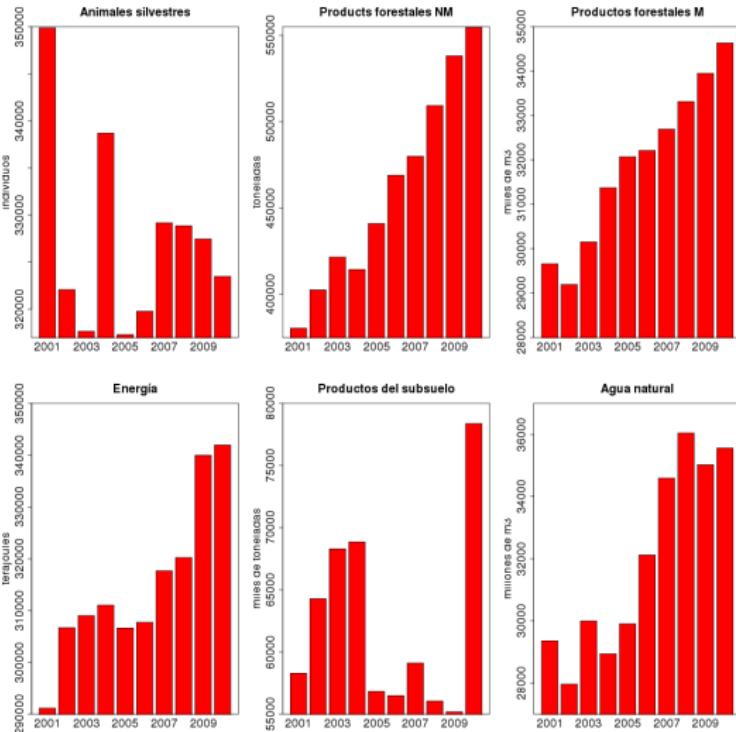
NCA in Guatemala, participants



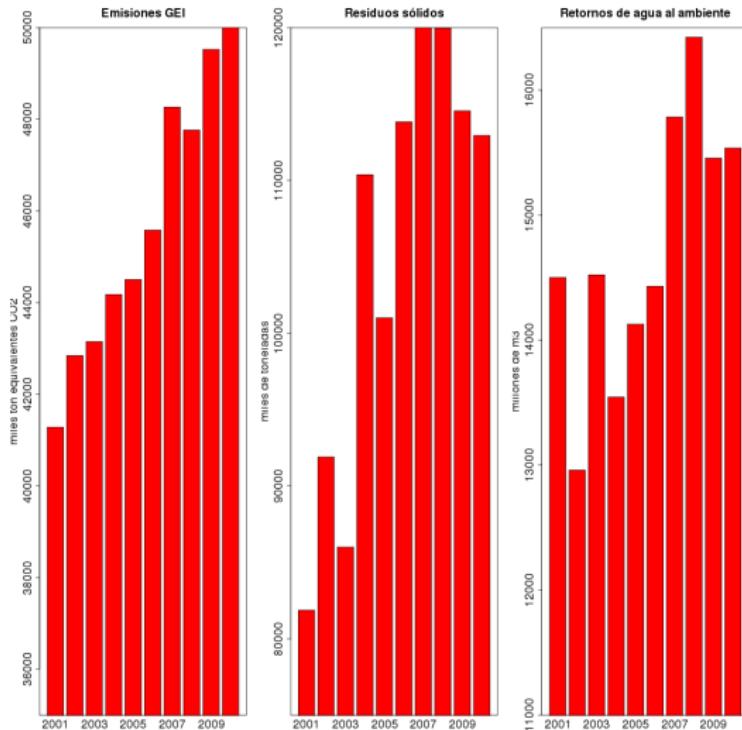
NCA in Guatemala, results



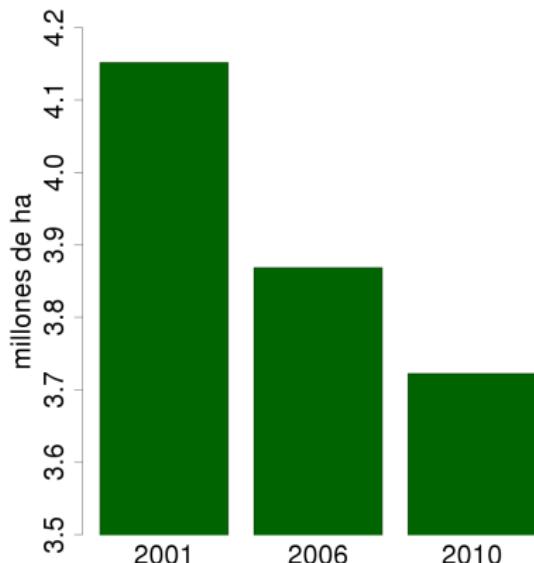
Env → Eco



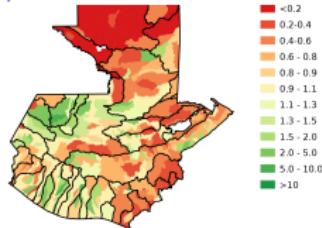
Eco → Env



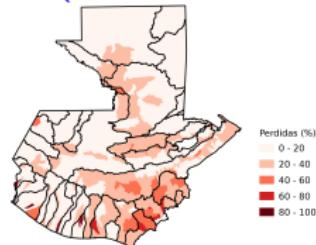
Forest cover 2001-2010



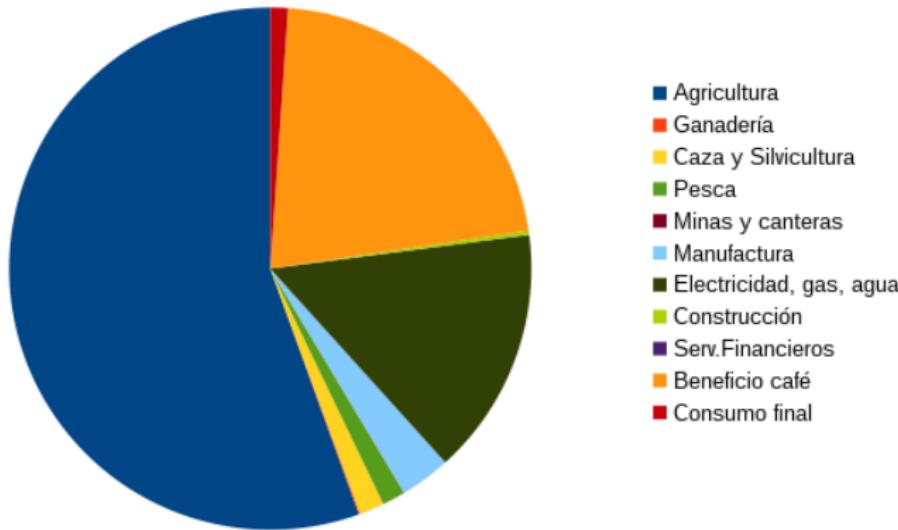
Gain/loss ratio



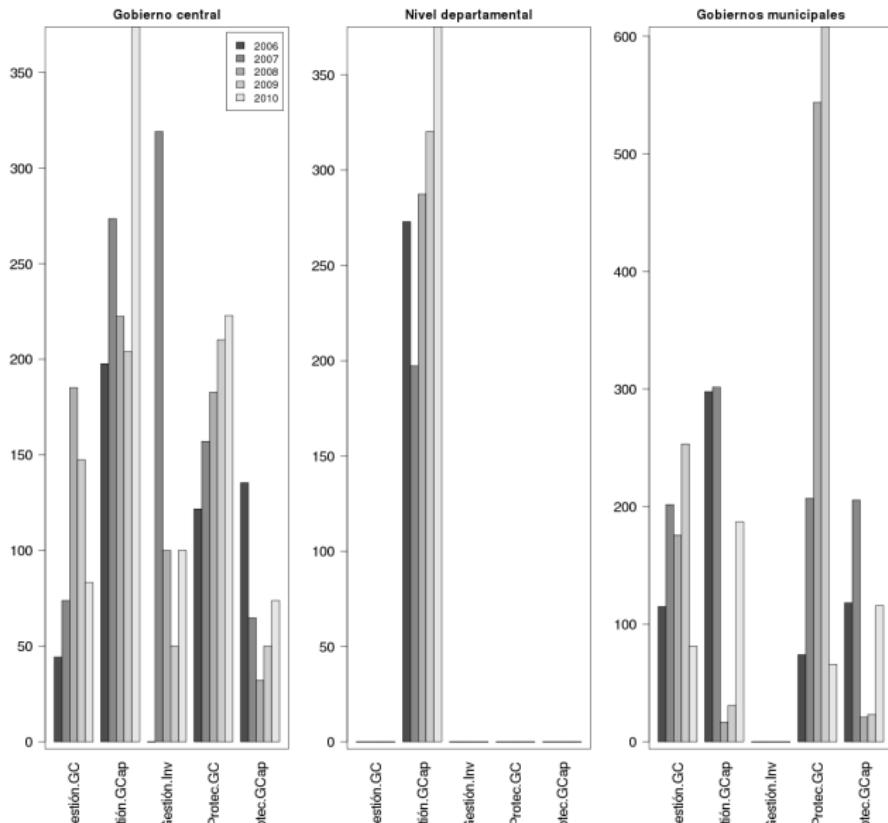
Loss (% of cover 2001)



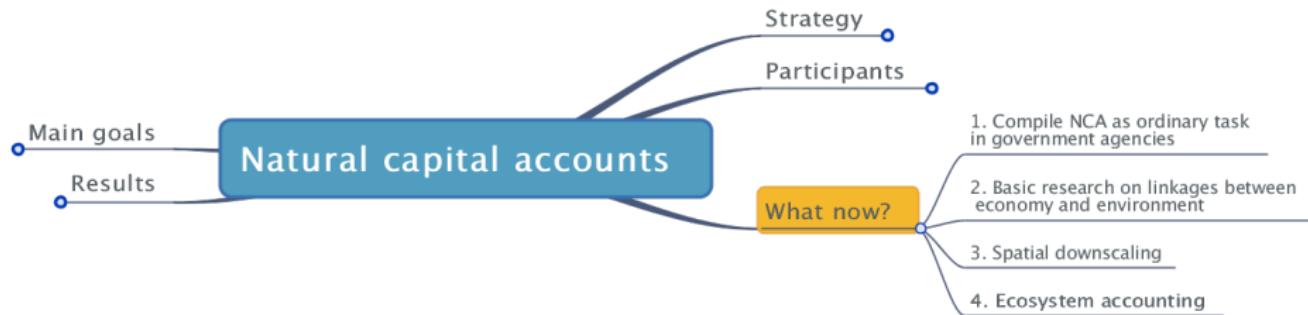
Water use - Top 10



Expenses/investments by gov.

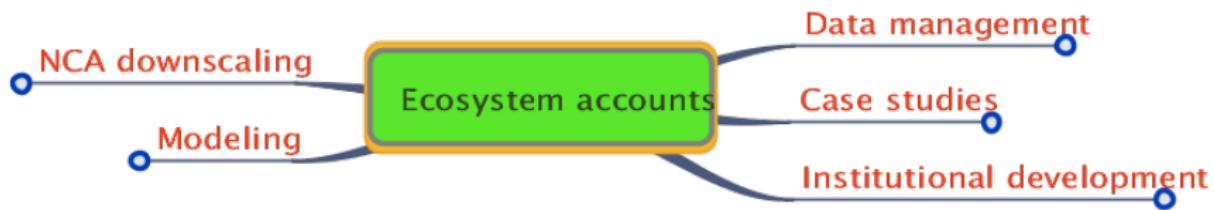


NCA in Guatemala, what now?

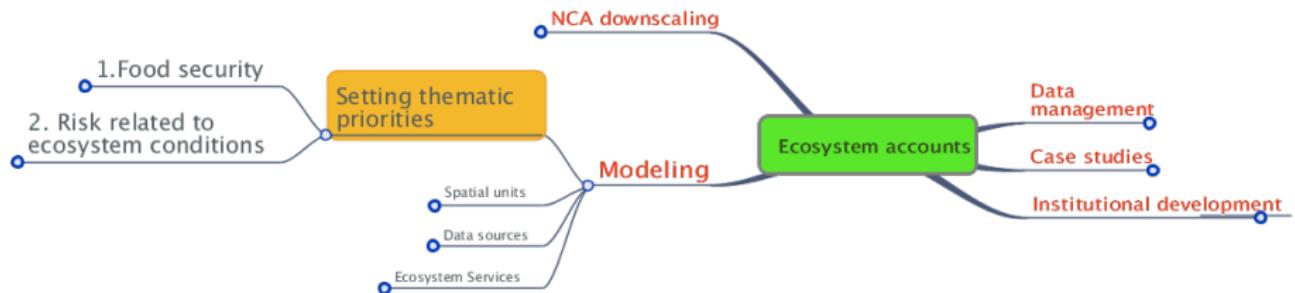


Towards ecosystem accounts

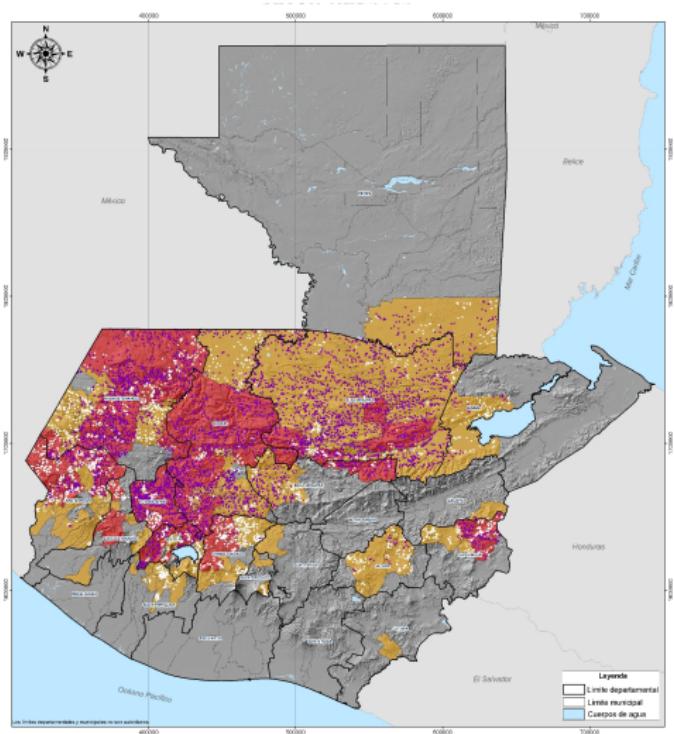
Important aspects:



Setting priorities



Food security



High rates of malnutrition



Source: SESAN

Risk

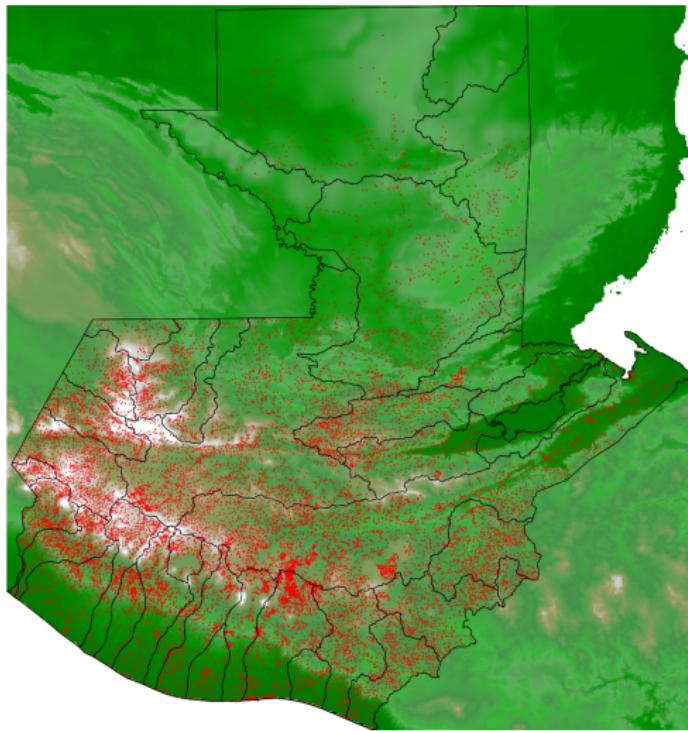
Guatemala: Position 169 in a list of 172 countries in the World Risk Index



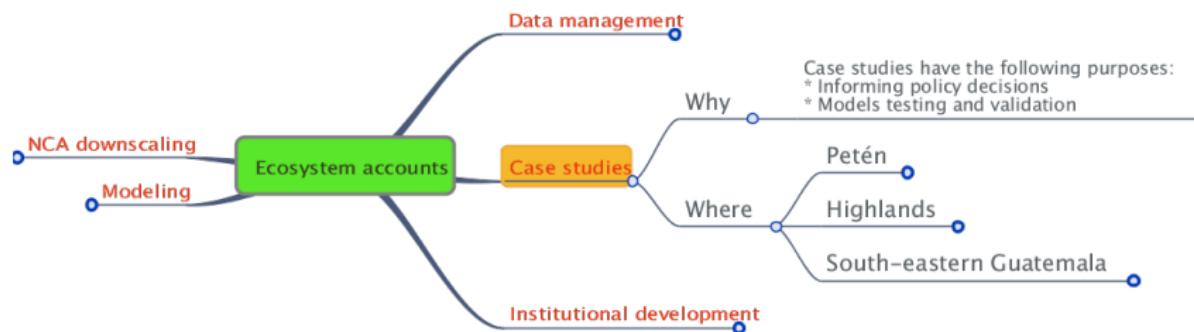
Foto: STRINGER / REUTERS

October 1st, 2015
El Cambray, Guatemala

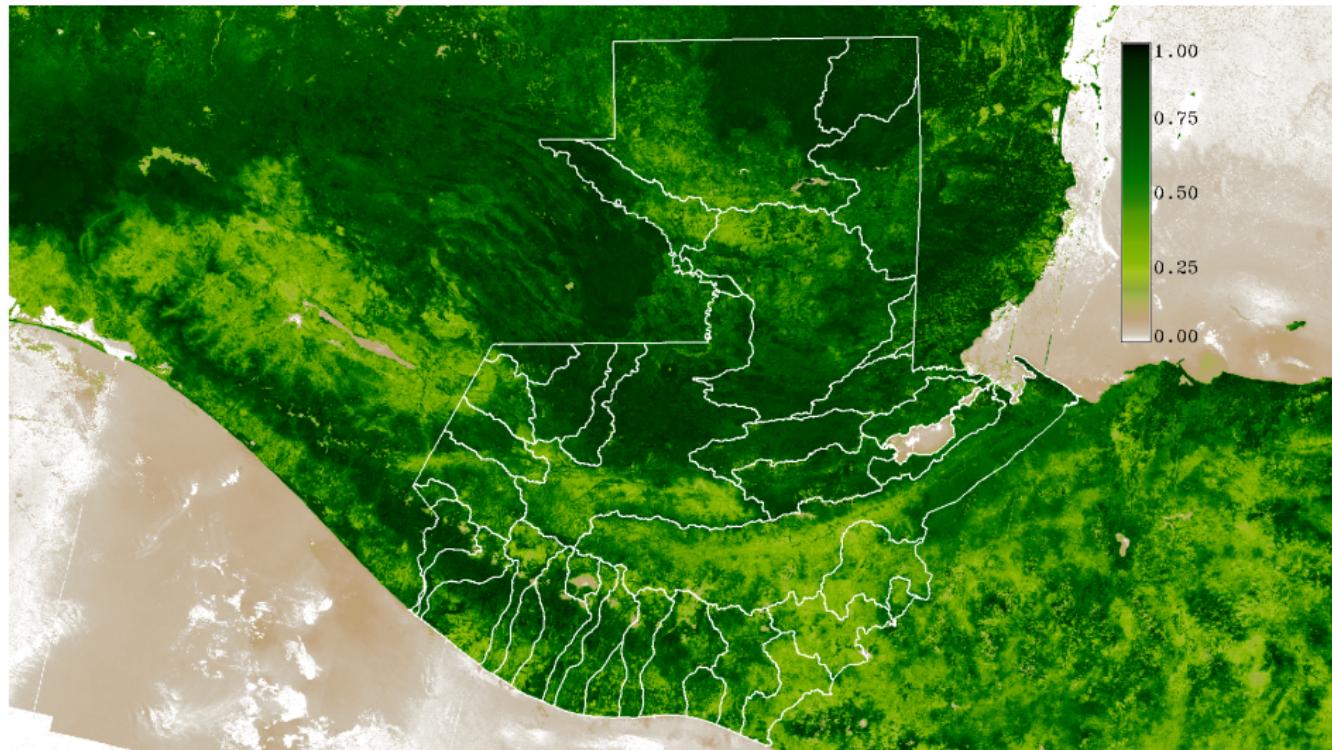
Population density vs. water catchments



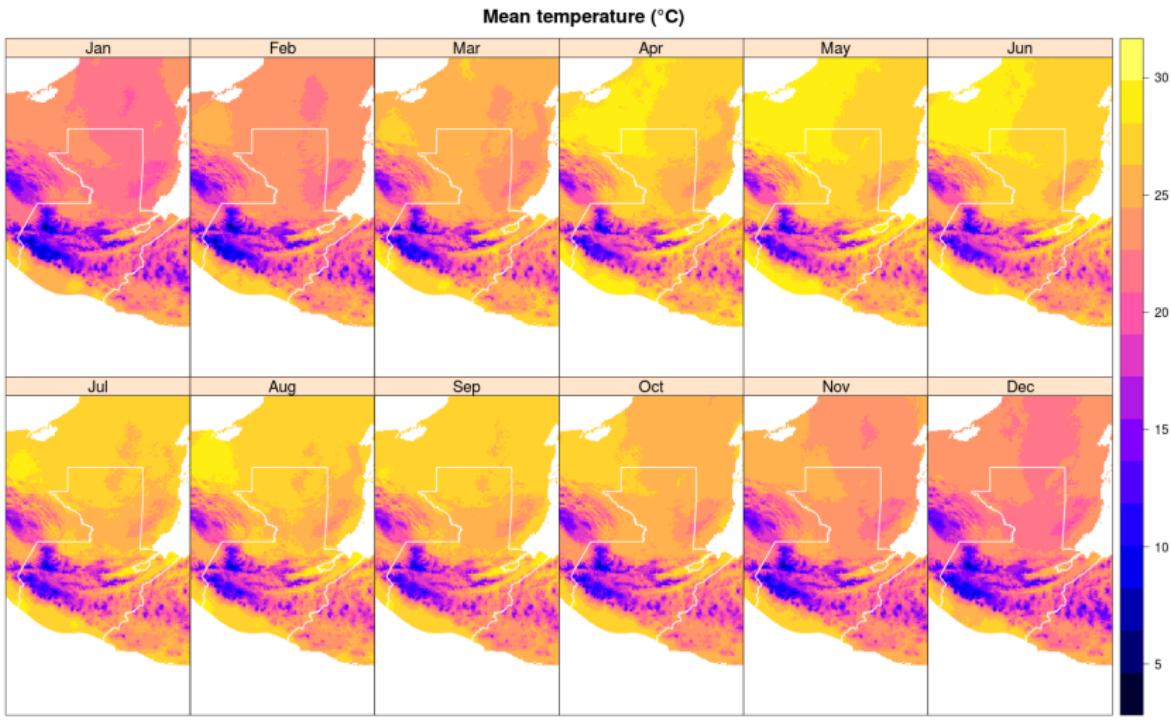
Case studies



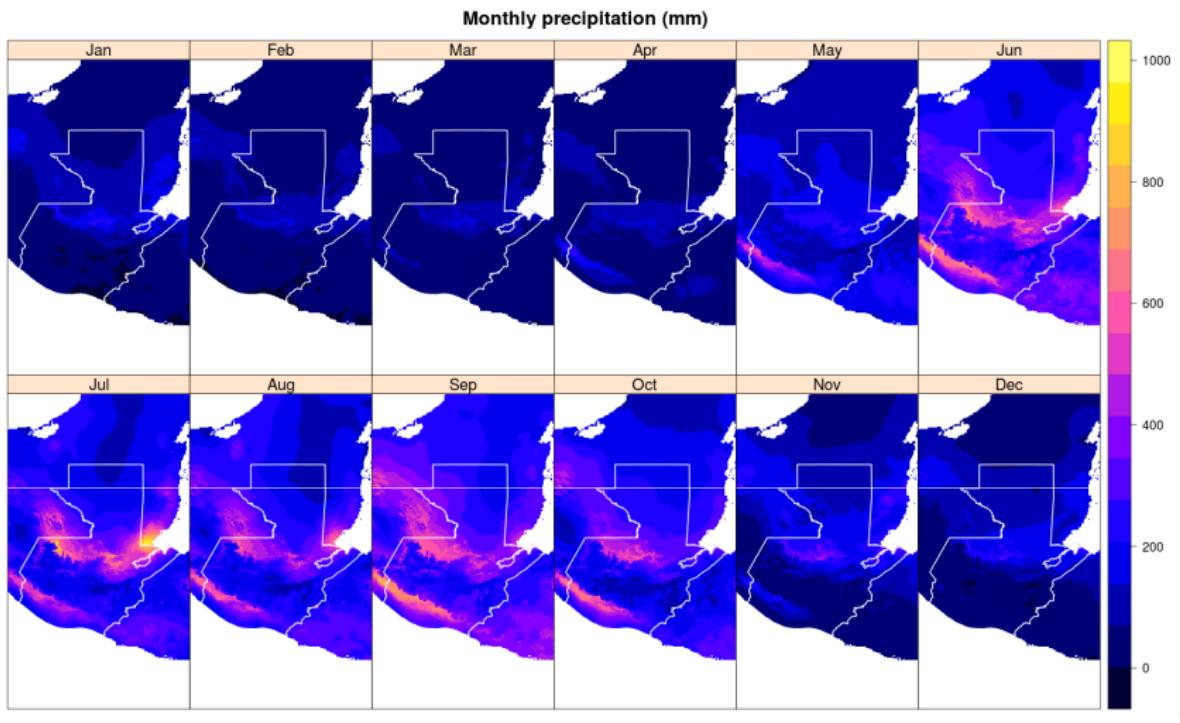
vegetation greenness/abundance vs watersheds



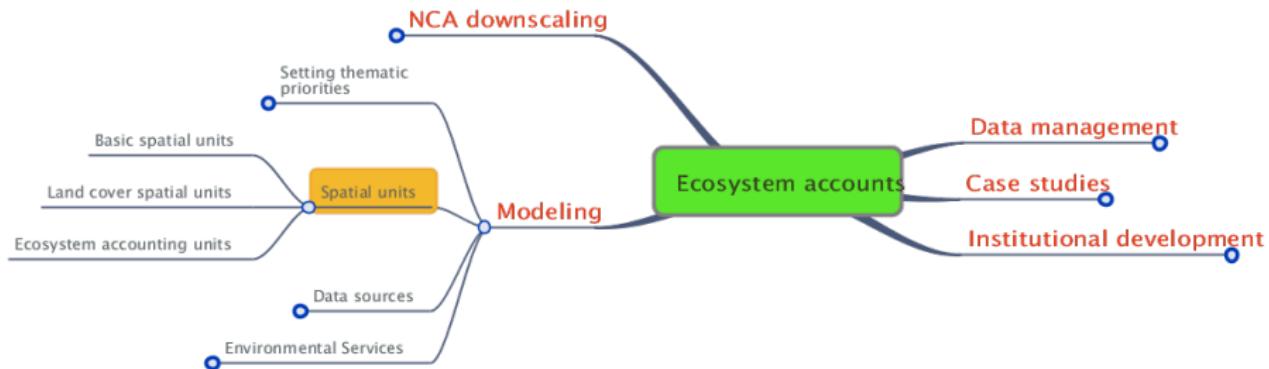
Mean temperature



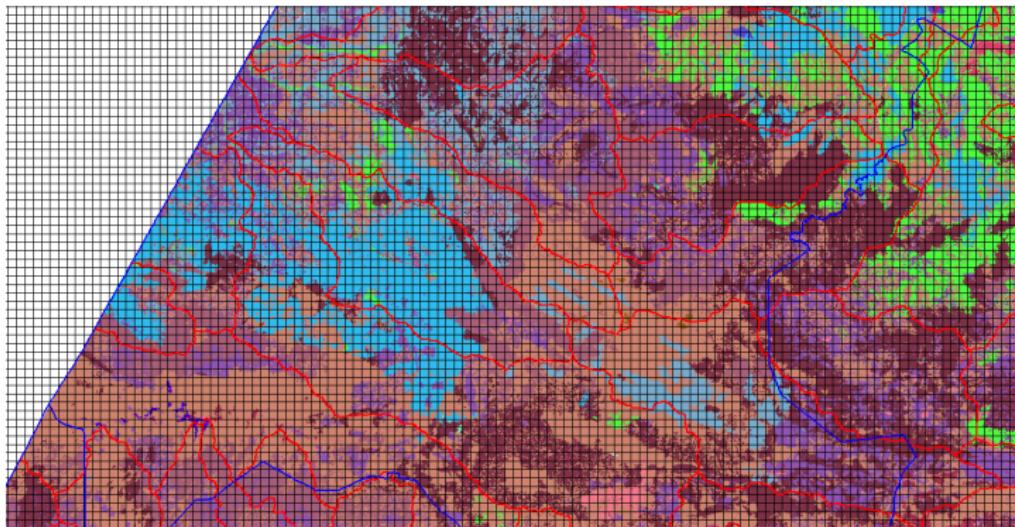
Monthly precipitation



Spatial units



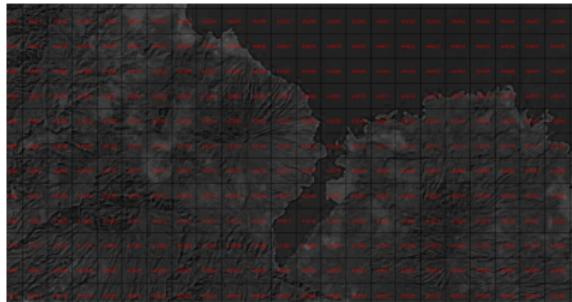
Spatial units



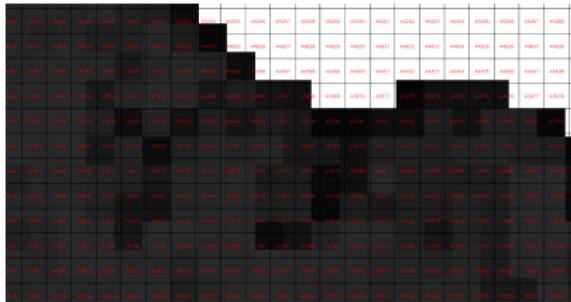
- ___ EAU
- ___ BSU
- LCEU: similar and adjacent BSU

BSU vs data sources

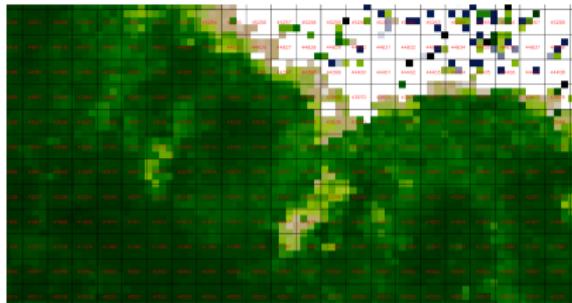
Landsat 8



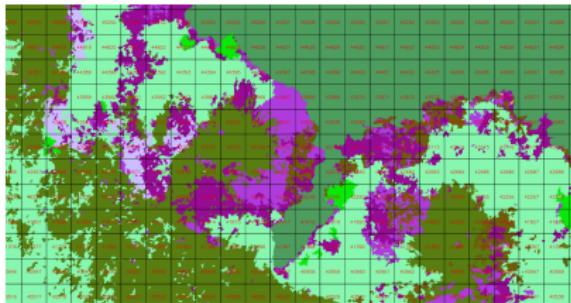
MODIS 1 km



MODIS 250

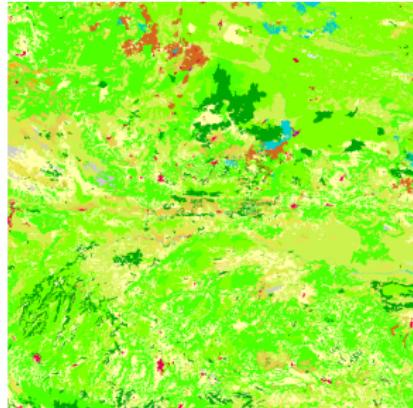


Land cover map

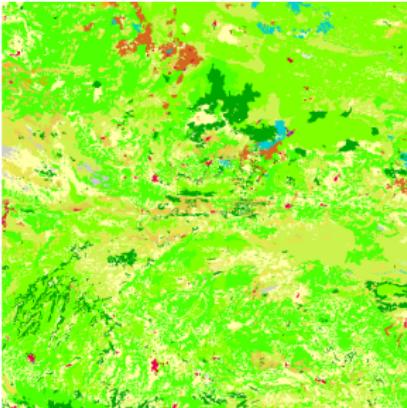


The size of BSU (1)

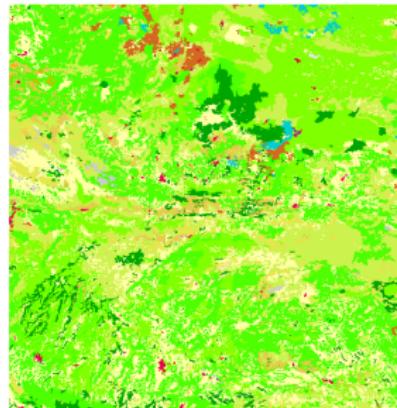
cell size: 25 m



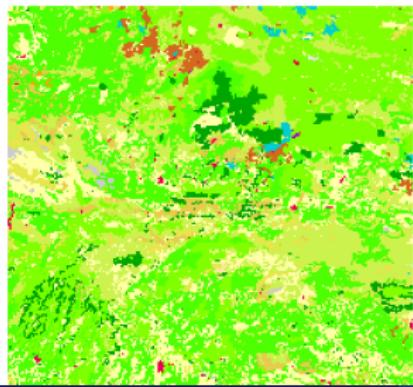
cell size: 100 m



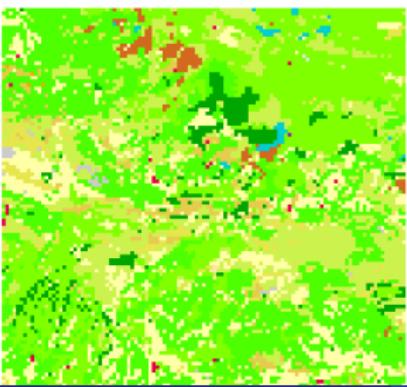
cell size: 200 m



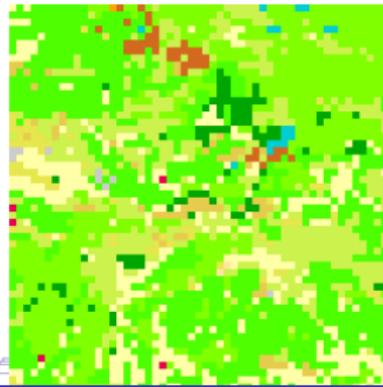
cell size: 400 m



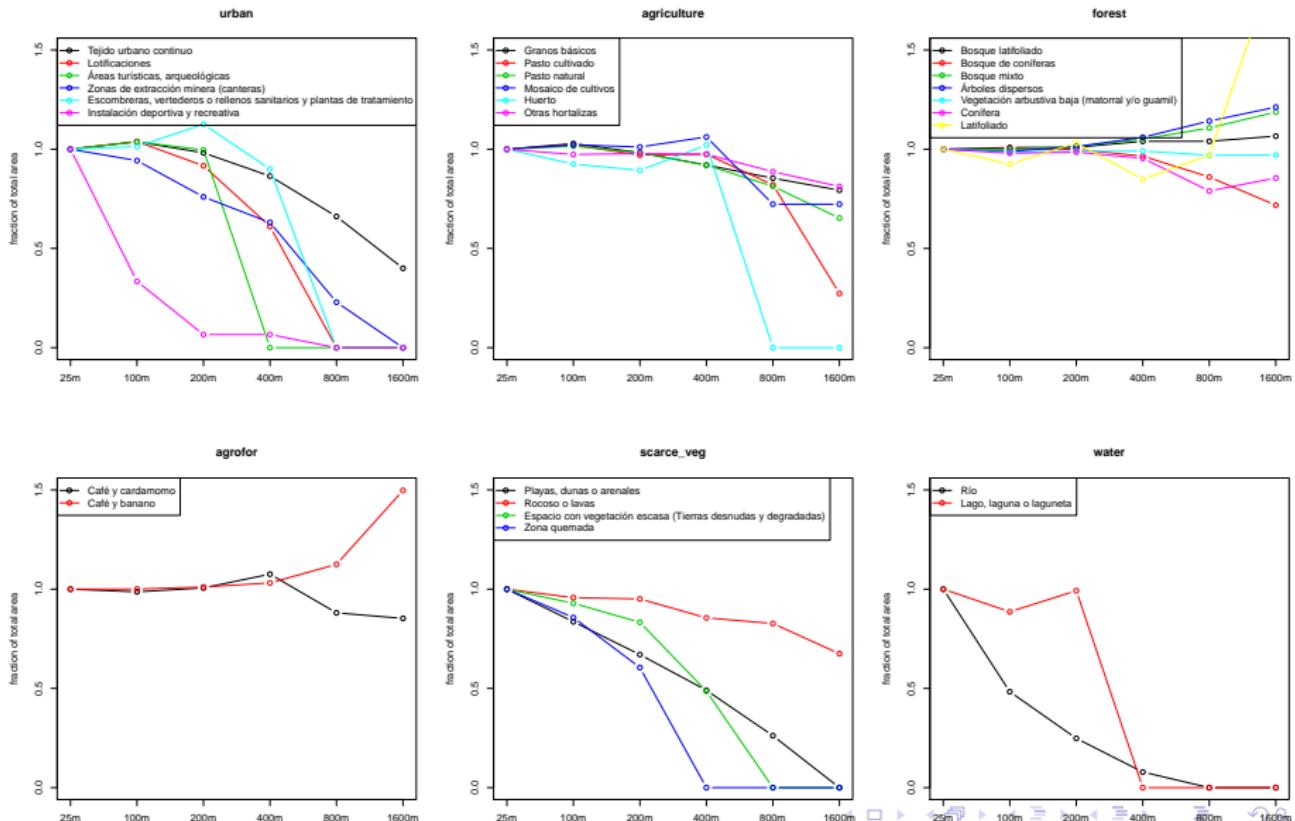
cell size: 800 m



cell size: 1600 m



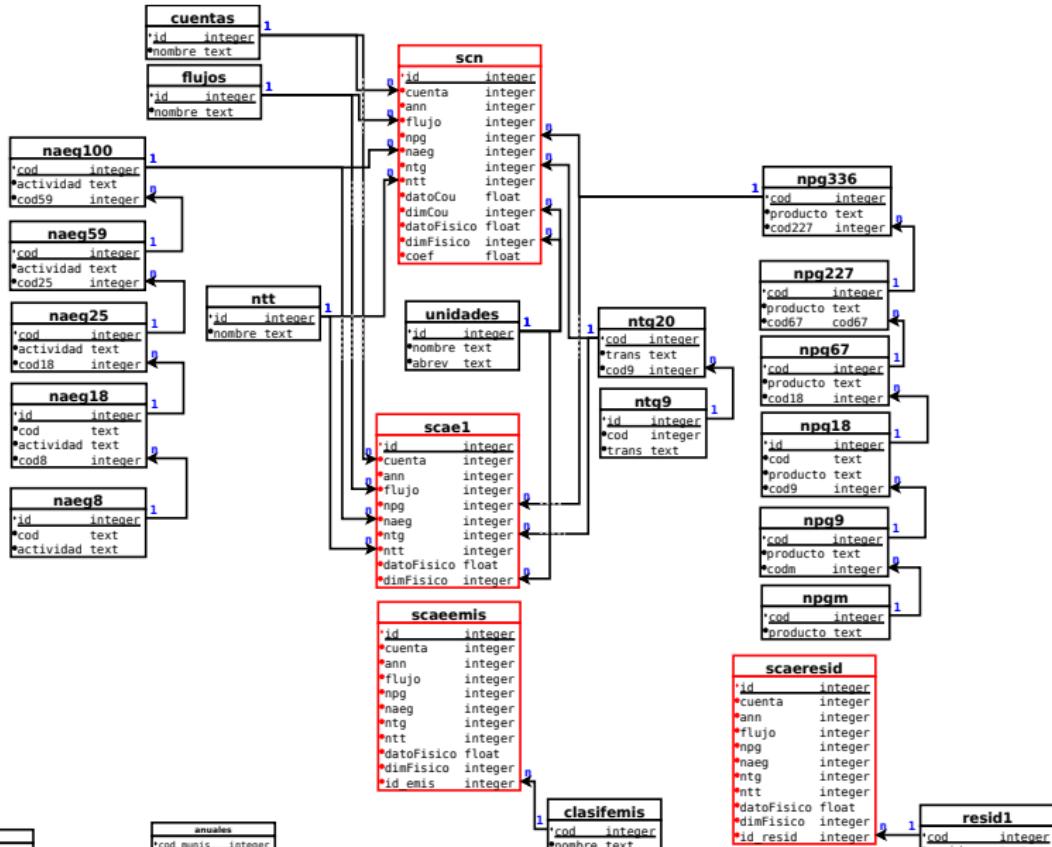
The size of BSU (2)



Data management



Database structure



Database query, an example

```

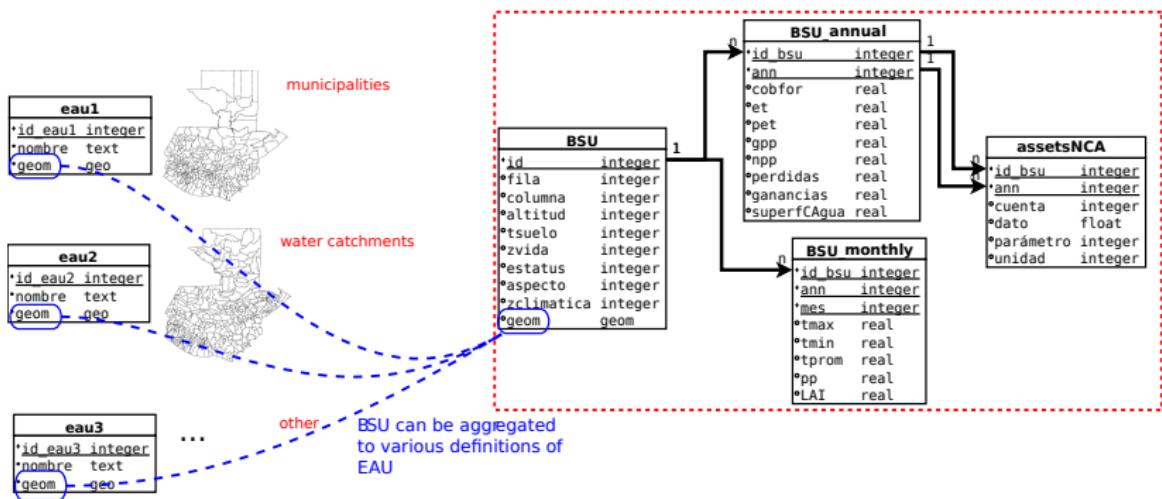
File Edit View Bookmarks Settings Help
jose : postgres - Konsole
naturacc_cuentas=> select actividad,ann,sum(datafisico) as monetario,sum(datafisico) as fisico from sctn_maeg100 where flujo>=1 and ann between 2001 and 2010 and maeg>=10 and maeg100.cod_sctn_maeg group by actividad,ann order by actividad,ann;
   actividad | ann | monetario | fisico
   Cultivo de café | 2001 | 2514.22 | 25463
   Cultivo de café | 2003 | 2561.58 | 249717
   Cultivo de café | 2004 | 2914.98 | 247732
   Cultivo de café | 2005 | 3534.92 | 234347
   Cultivo de café | 2006 | 3677.0 | 239963
   Cultivo de café | 2007 | 4276.99 | 248259
   Cultivo de café | 2008 | 4850.83 | 254566
   Cultivo de café | 2009 | 4742.71 | 247248
   Cultivo de café | 2010 | 5946.83 | 242959
[38 rows]

naturacc_cuentas=> select actividad,ann,sum(datafisico) as fisico,unidades.nombre as units,flujos.nombre as flowtype,clasifemis.nombre from sctn_maeg100
  id_maeg100.codigo_sctn_maeg,unidades.id_sctn_maegis,flowtype.id_sctn_maegis,clasifemis.id_sctn_maegis group by actividad,ann,unidades.nombre,flujos.nombre,id_maeg100.codigo_sctn_maeg
   actividad | ann | fisico | units | flowtype | clasifemis
   Cultivo de café | 2001 | 5.6 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2001 | 40807.3 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2002 | 5.3 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2002 | 5.8 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2002 | 42543.2 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2002 | 0.9 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2003 | 5.1 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2003 | 41559.9 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2003 | 0.3 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2004 | 5.4 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2004 | 38256.1 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2004 | 0.3 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2005 | 5.5 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2005 | 38256.1 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2006 | 5.4 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2006 | 39644.8 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2006 | 0.3 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2007 | 5.6 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2007 | 40807.3 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2007 | 0.3 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2008 | 5.1 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2008 | 36955.8 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2008 | 0.1 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2009 | 5.8 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2009 | 41489.5 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2009 | 0.5 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2010 | 6.0 | Toneladas | Oferta de la economía al ambiente | CH4
   Cultivo de café | 2010 | 43086.9 | Toneladas | Oferta de la economía al ambiente | C02
   Cultivo de café | 2010 | 0.3 | Toneladas | Oferta de la economía al ambiente | CH4
[38 rows]

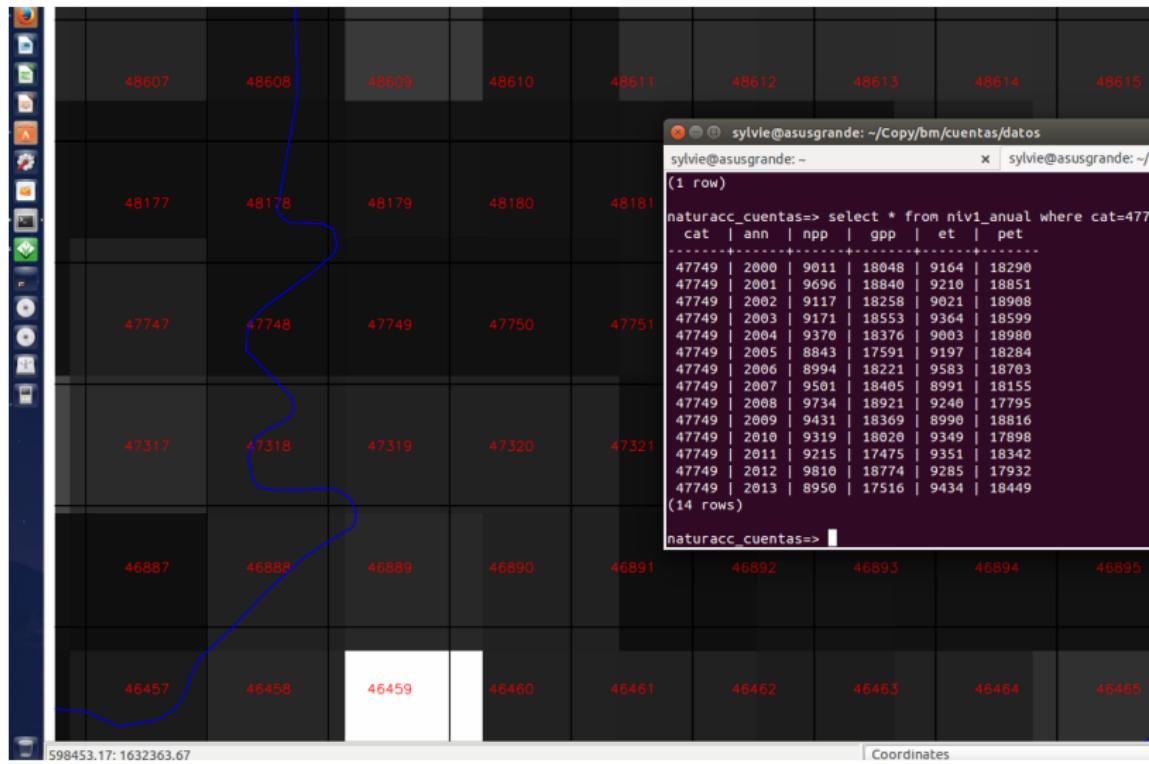
naturacc_cuentas=> []

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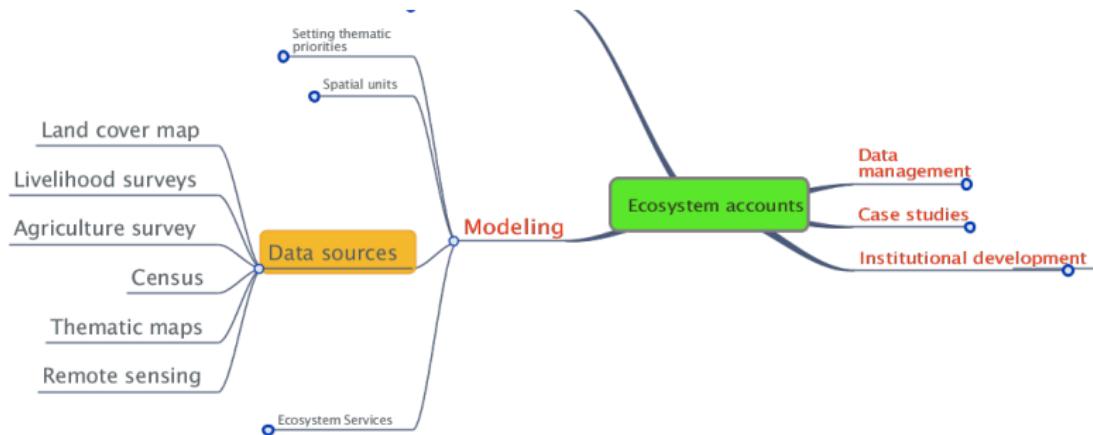
Extending the database



For instance, evapotranspiration



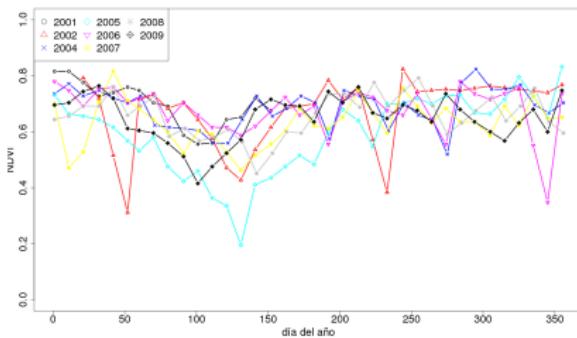
Data sources



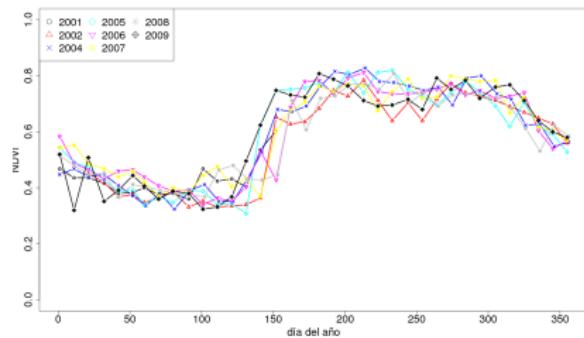
More use of RS data

For instance 'NDVI':

Petén



South-East



Challenges ahead

- Search for agreements over:
 - A clear definition of study areas
 - Identification of relevant ecosystem services
 - Spatial units
 - who does what
- Completing database
- Conducting case studies
- Basic research : monetary \rightleftharpoons physical units
- Basic research: the right modeling approach and parameterization to describe ES
- How to connect ecosystem accounts to SNA?

Thank you

Contact:

Juan Pablo Castañeda:
jpcastaneda@worldbank.org

José Miguel Barrios
jmbarriosg@gmail.com