GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

Country report : Brazil

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Presentation to IRG Annual Meeting
Cali, 5 February 2019

Specific contributions to IRG

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Research Networks

Farm & Regional Scale Integration Network

Field Integration Network

Grasslands Research Network

Greenhouse Gas Inventories Network

Soil Carbon Sequestration Network

- ✓ SOC Sequestration Flagship
- ✓ CIRCASA
- ✓ Sustainable Intensification of livestock systems with leguminous crops: Latin America and Caribbean cooperation platform

?? Latin American and the Caribbean Platform for Sustainable Intensification of Livestock Production (Fontagro)

Projects, initiatives and contributions to IRG's topics

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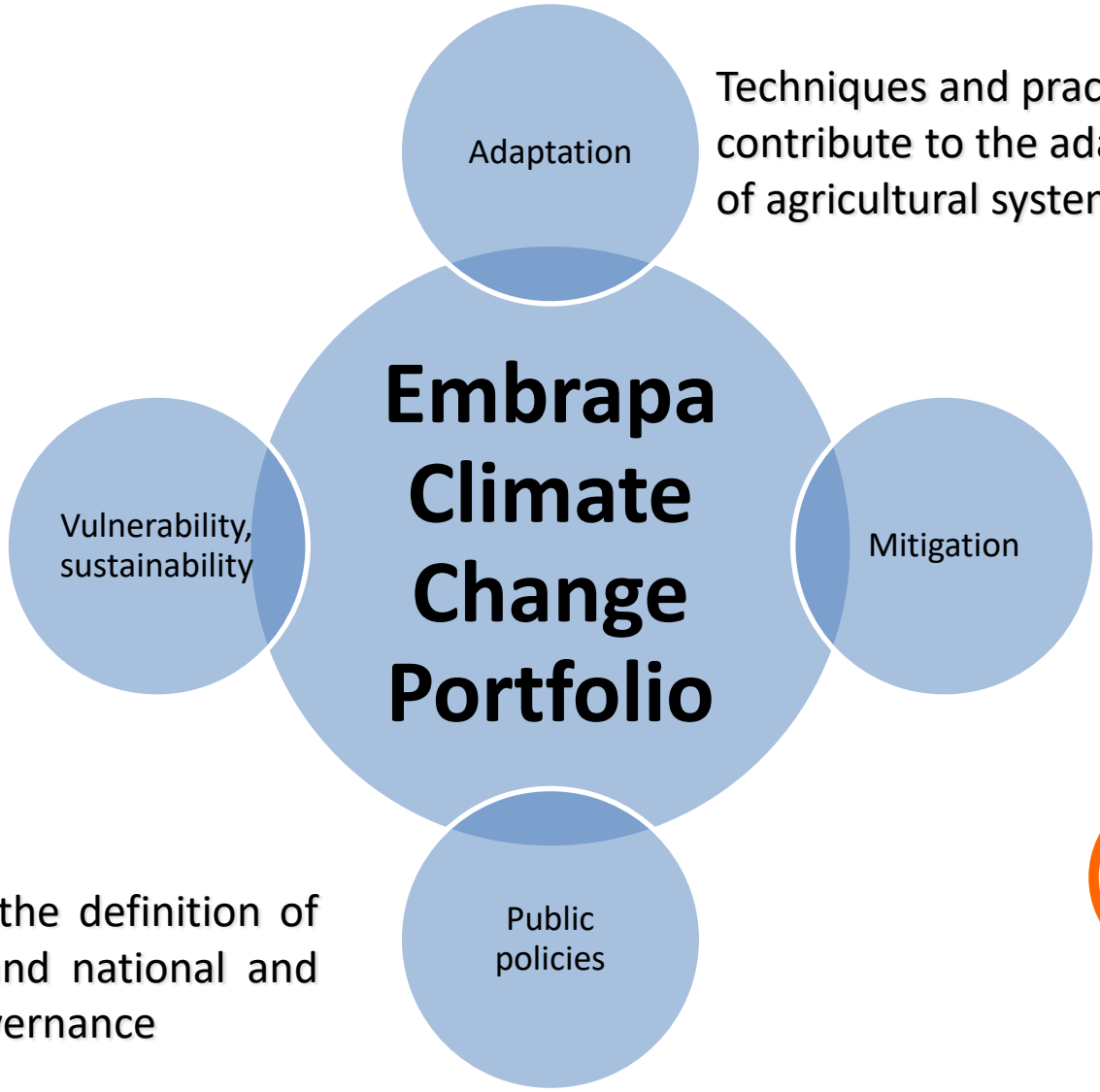
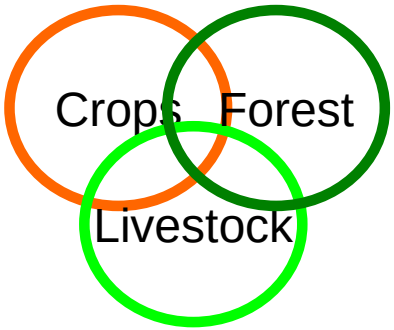


Techniques and practices that contribute to the adaptation of agricultural systems

Analysis from the economic, social and environmental aspects

Understanding the C balance and control of GHG emissions

Contribution to the definition of public policies and national and international governance



Projects, initiatives and contributions to IRG's topics

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Mitigation: Carbon balance and GHG emissions in agricultural production systems

PECUS

Livestock

Saltus
Florestas Brasileiras, um Salto no Conhecimento

Planted forests

C/N N_2O CO_2 CH_4
FLUXUS

Crops

Projects, initiatives and contributions to IRG's topics

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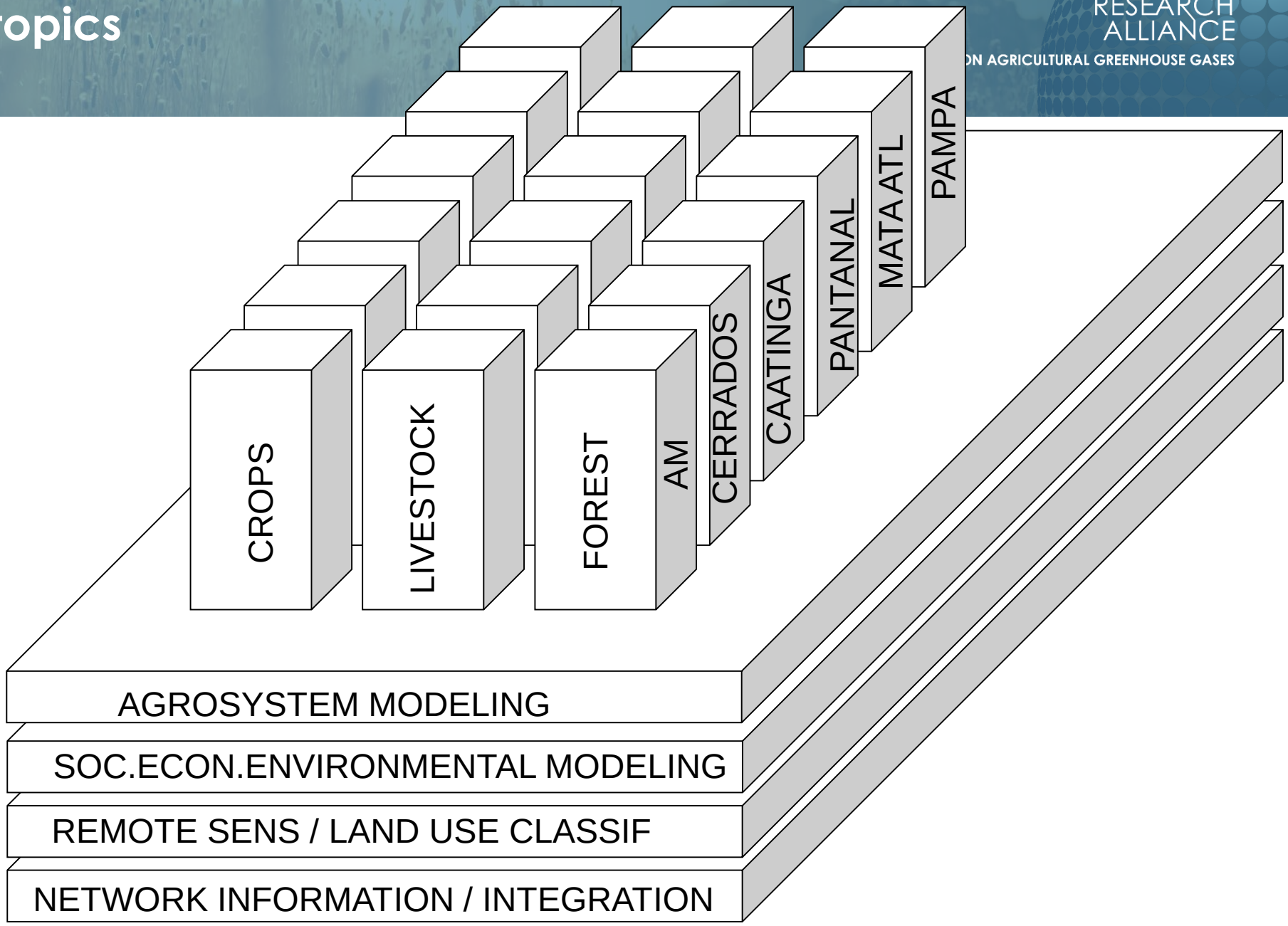

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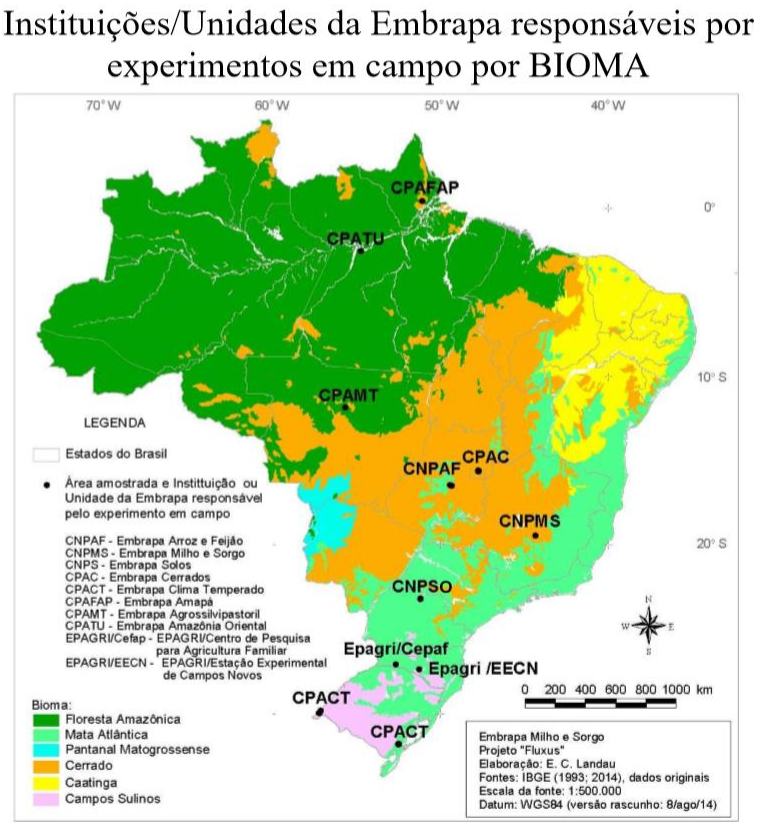
Major localization of field experiments for GHG and SOC



Localization at

- Embrapa research institutes
- State research institutes
- Universities

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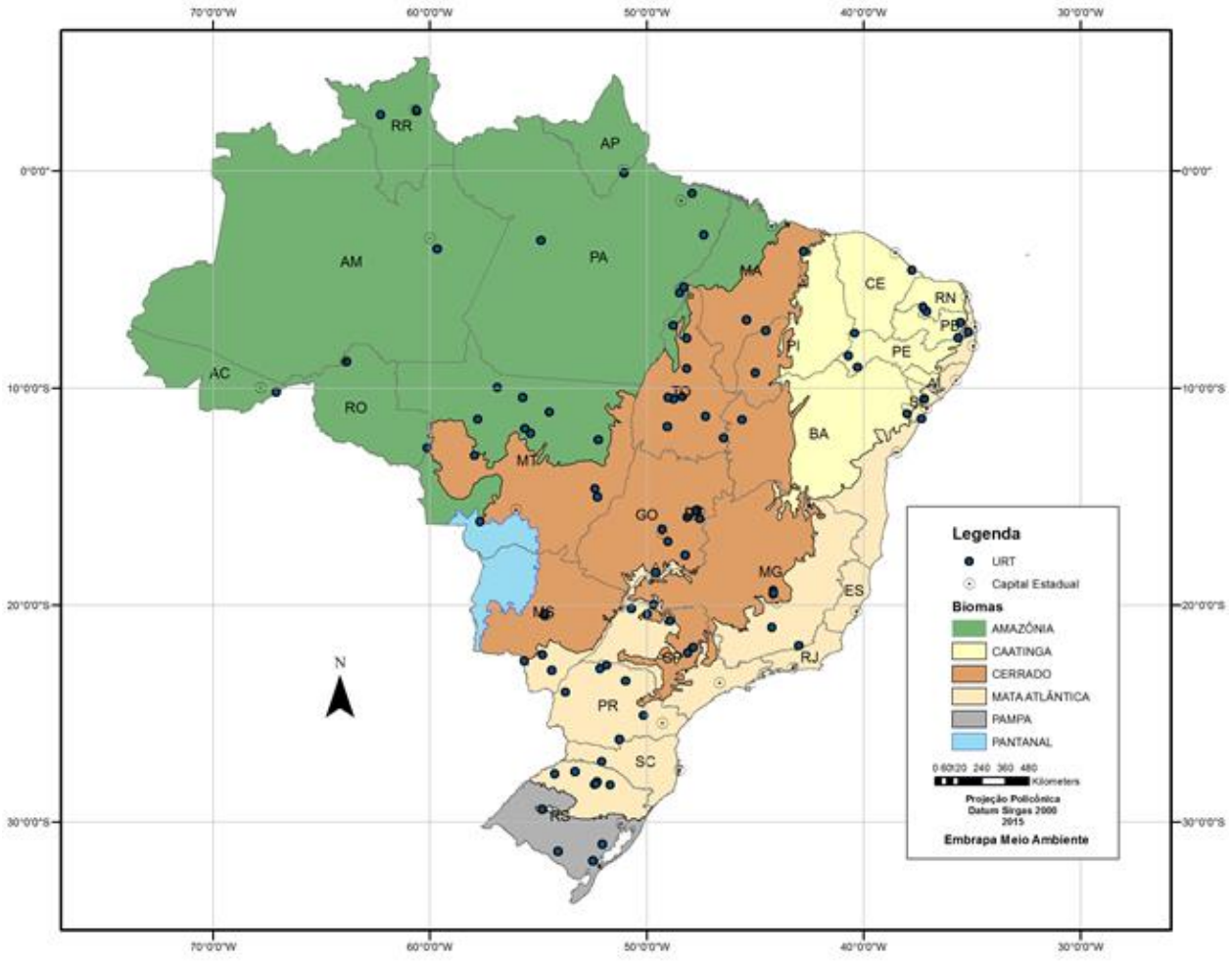
Technological Reference Units in ICLF



Localization at
- Embrapa research institutes
- Private farms
- Other research / academic institutions (occasionally)

System types:
- ICL
- ICLF
- ILF
- ICF

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Public Policy: Contribution to the definition of public policies and national and international governance

Low Carbon Emission Agriculture

The objective is to organize and plan the actions to be taken for the adoption of sustainable production technologies, selected to meet the commitment to reduce emissions of greenhouse gases in the agricultural sector assumed by the country.

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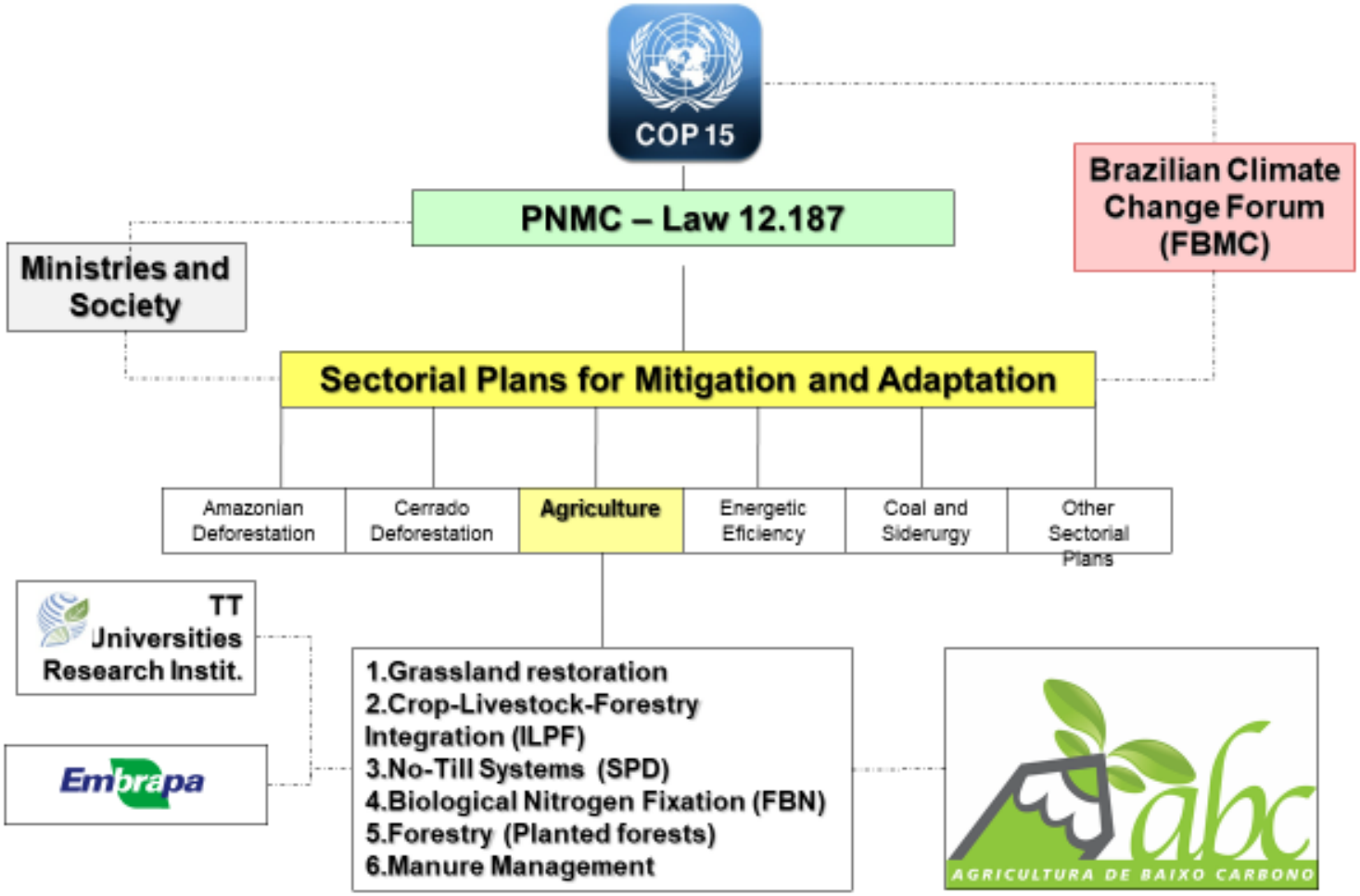

Funding: ABC Program (National), Rural Sustentável (International)

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NDC Based on ABC Plan adoption:

- restoring an additional 15 million hectares of degraded pasturelands by 2030,
- enhancing 5 million hectares of integrated cropland-livestock-forestry systems (ICLF) by 2030

National Adaptation Plan for Agriculture (2016) - Based on Report from the main Embrapa Portfolio Networks

Projects, initiatives and contributions to IRG's topics

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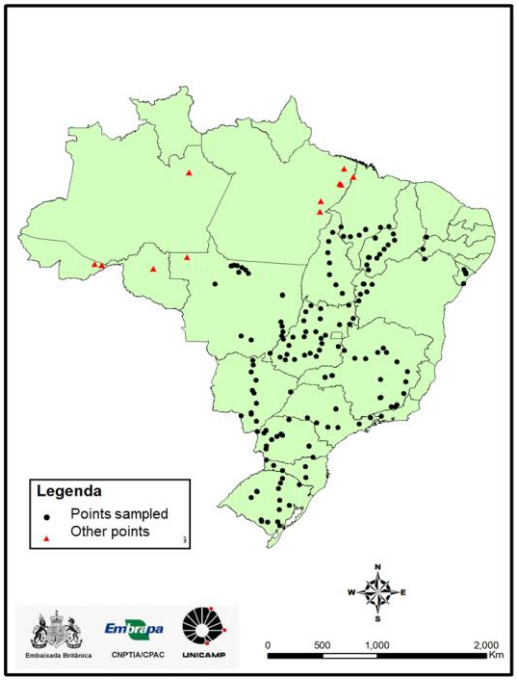
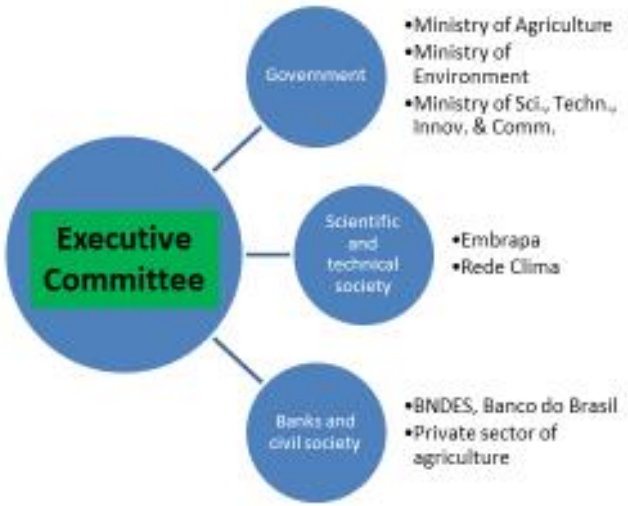
Monitoring, Reporting and Validation

Multi-Institutional Platform for Monitoring GHG Emissions Reductions

ABC Plan – Sample points





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Networks, initiatives

Rede Clima
Mudanças Climáticas Globais no Brasil

Brazilian Research Network on Global Climate Change

Supports the National Climate Change Policy

Sub-Network on Agriculture

- Development of models to define and quantify **future impacts of climate change** on agriculture and its associated scenarios;
- Influence of climate changes on **pests, diseases, mutualists and symbionts** of cultivated plants;
- Evaluation of the efficiency and **adaptation of production systems** to the new agricultural scenarios;
- Studies on **greenhouse gas emissions and soil carbon stock**.

- Coordination of 3rd Inventory of national GHG emissions in Agriculture sector
- MRV methodology for ABC Plan monitoring

Projects, initiatives and contributions to IRG's topics

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PronaSolos
Programa Nacional de Solos do Brasil

National Soils Programme

Goal:

- Systematization of existing data
- Mapping 1.3 million km^2 of soils in the first ten years, and another 6.9 million km^2 by 2048, ranging from 1: 25,000 to 1: 100,000
- Improve in formation for land use management, adaptation and vulnerability assessment, prediction of catastrophic events, agricultural credit system

Cost / financing: R$ 4 billion in 30 years (national public and private)

Institutions: Embrapa, IBGE, SBCS, CPRM, UFRRJ, UFPI, UDESC, UFLA e Ministry of Agriculture, ...

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Sistema de Estimativas de Emissões e Remoções de Gases de Efeito Estufa (SEEG)

System for Estimating Greenhouse Gas Emissions

Initiative to produce annual estimates of GHG emission in Brazil

Climate Observatory, an initiative comprising ~ 40 non-governmental and civil society organizations in Brazil

Coordination:
Imazon (Land Use Change)
Imaflora (Agriculture)
IEMA (Energy and Industrial Processes and Product Use)
ICLEI (Waste)

IPCC guidelines, Data: National Inventories, government reports, institutes, research centers, industry and other non-governmental organizations

Source: Azevedo et al. 2018. Data Descriptor: SEEG initiative estimates of Brazilian greenhouse gas emissions from 1970 to 2015. Nature SCIENTIFIC DATA | 5:180045 | DOI: 10.1038/sdata.2018.45 https://www.nature.com/articles/sdata201845

Projects, initiatives and contributions to IRG's topics

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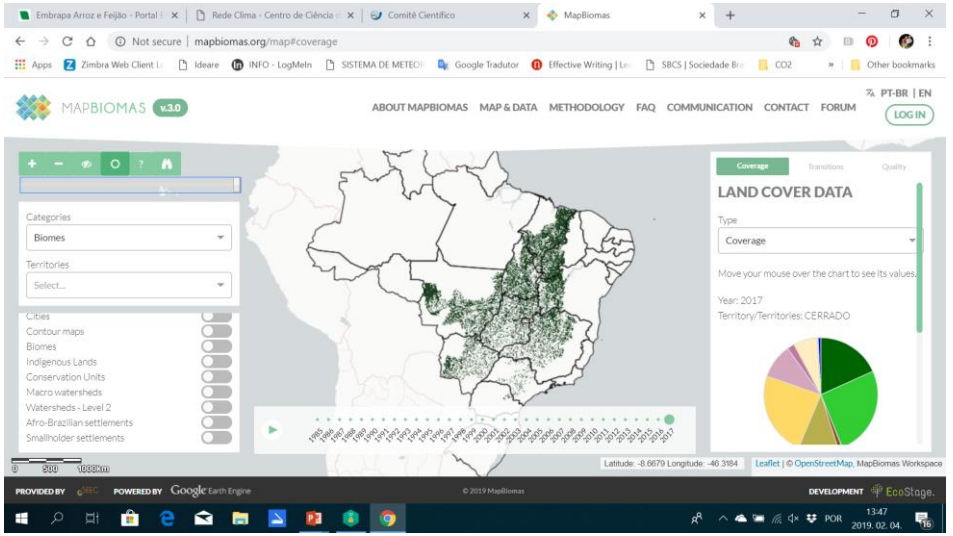
MAPBIOMAS

Brazilian Annual Land Use and Land Cover Mapping Project

An initiative of the Greenhouse Gas Emissions Estimation System (SEEG) of Climate Observatory that involves a collaborative network of biomes, land use, remote sensing, GIS and computer science experts that rely on Google Earth Engine platform and its cloud processing and automated classifiers capabilities to generate Brazil's annual land use and land cover time series.

Biomes Coordination:

- Amazon – Institute of Man and Environment of the Amazon (IMAZON)
- Caatinga – State University of Feira de Santana (UEFS) and Plantas do Nordeste Association (APNE)
- Cerrado – Amazon Environmental Research Institute (IPAM)
- Atlantic Forest – Foundation SOS Atlantic Forest Foundation and ArcPlan
- Pampa – Federal University of Rio Grande do Sul (UFRGS)
- Pantanal – Institute SOS Pantanal Institute and ArcPlan



Google Earth engine / EcoStage / Terras App

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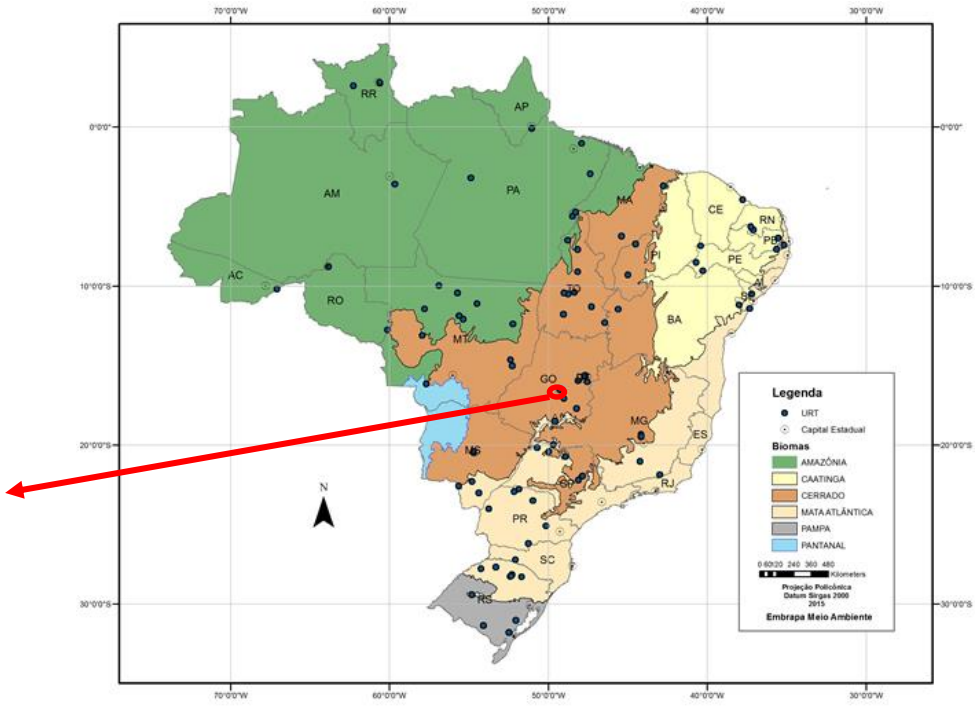
Associação Rede ILPF ICLF Network Association

Activities:

- Technology transfer
- Training of technical assistance staff
- Communication
- (Research)



Projects, initiatives and contributions to IRG's topics

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Federação Brasileira de Plantio Direto e Irrigação
Brazilian No-Till Farmers' Federation

Congregate and represent the associations that stimulated and promoted adoption of the No-Till System.

Activities:

- Technology transfer
- Training of technical assistance staff
- Communication
- Field days
- (Research)

2018: 32 million hectares under No-Till Syste
in Brazil

Opportunities, future actions and funding

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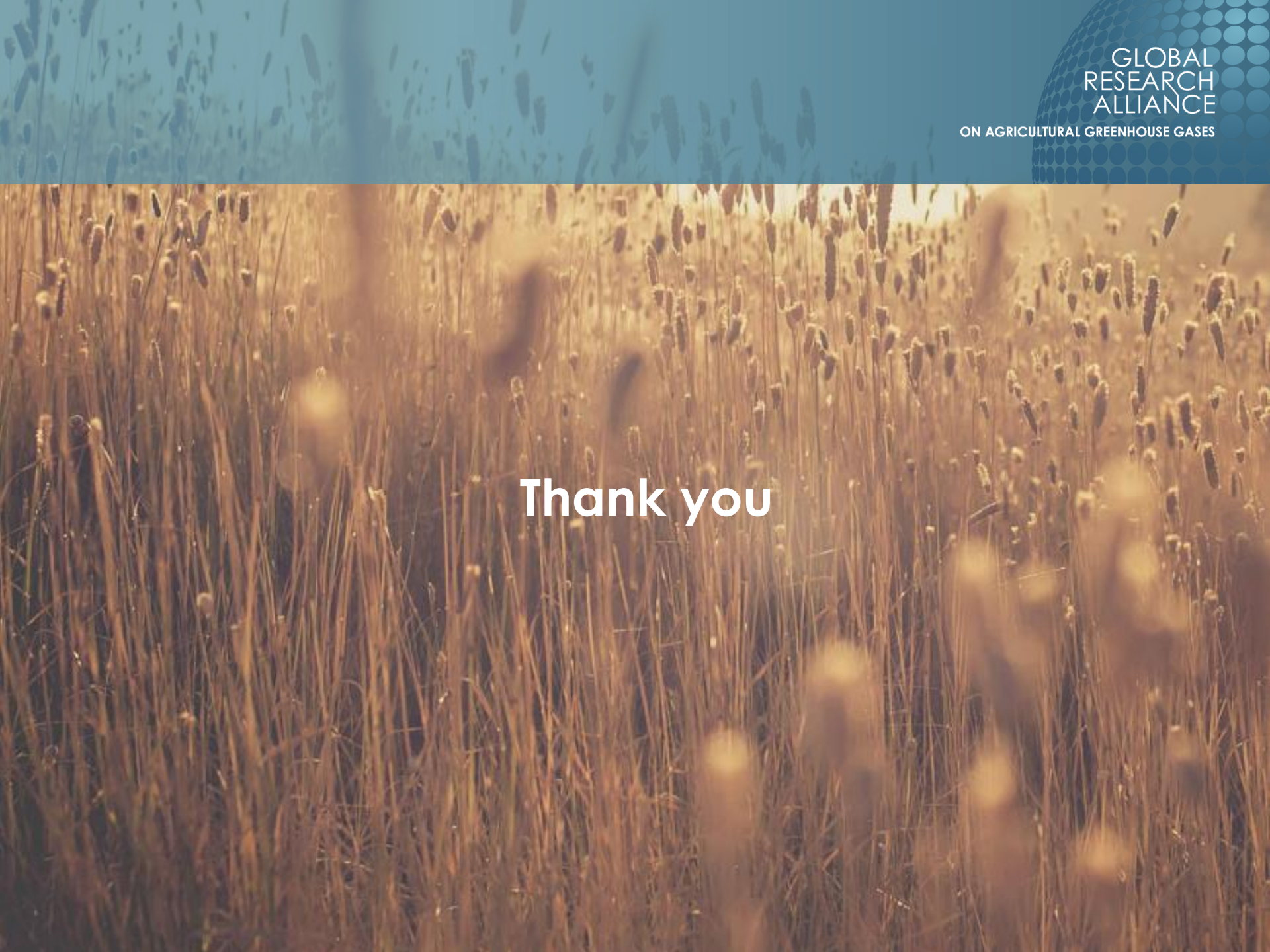
Financial resources / possible funding

ABC Programme – national, governmental
Amazon Fund - national, governmental
Climate Fund - national, governmental
Rural Sustentável – international: ICF, DEFRA, IDB, IABS
CNPq - national, governmental
State Foundations – governmental
Non-governamental organizations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Thank you