

INVITATION TO TAKE PART IN THE SYNTHESIS OF AVAILABLE KNOWLEDGE ABOUT THE
CARBON CYCLE IN MEXICAN LAND ECOSYSTEMS – PROGRAMA MEXICANO DEL CARBONO

VERSION 1.1

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INTRODUCTION

Since its creation, the Programa Mexicano del Carbono (PMC) has created national syntheses of the available knowledge about the carbon cycle and its' interaction with Mexican ecosystems. Individually, or through their institutions, some partners of the PMC have taken part in the National Greenhouse Gas (GHG) Inventories (INEGEIs), but they have not collaborated in the most recent ones.

The knowledge of carbon storage and flow in land ecosystems at global and national scales is an urgent task to define public policies based on relevant scientific information. The main objective of the PMC is to generate and analyze information about the carbon cycle to provide elements for the development of public policies, including REDD+ mechanisms (mechanisms for GHG emission reduction through avoided deforestation and forest degradation, plus carbon stock conservation and increase, and sustainable forest management), as well as all instruments related to the Paris Agreement.

This document seeks to put together a collective national effort, coordinated by the PMC, to carry out tasks and activities that allow the execution of the 2008 PMC scientific plan (http://www.pmc carbono.org/pmc/documentos/plan_cientifico.php), which has not been reviewed nor implemented due to a lack of resources. This plan presents the first version of the structure of the document to be drawn up in 2016, where theme coordinators will be designated according to their experience and knowledge. We encourage all PMC members to participate, contributing their ideas in each area. The PMC scientific plan set out a series of activities per subject area of the scientific committee, following a general strategy, defined by Figure 1.

In general terms, the scientific plan consists of the following tasks:

- Data compilation and generation to draw up national syntheses, considering the spatial and temporal variability of carbon stocks and flows.
- Compilation and generation of experimental data to standardize and synthesize knowledge in theoretical and/or empirical models, to generate prospective scenarios that are conducive to the development of future public policies.
- Fusion of data and models to synthesize knowledge, as well as generation of diagnosis models.
- Generation of spatially explicit data, per region or country, for their synthesis in geographical information systems of problem areas where public policies can be implemented.
- Generation of possible action scenarios to provide feedback for the development of public policies for the mitigation and adaptation to climate change.
- Synthesize, standardize, and simplify the generated information for the development of public policies or policy-maker intervention at different levels of influence.



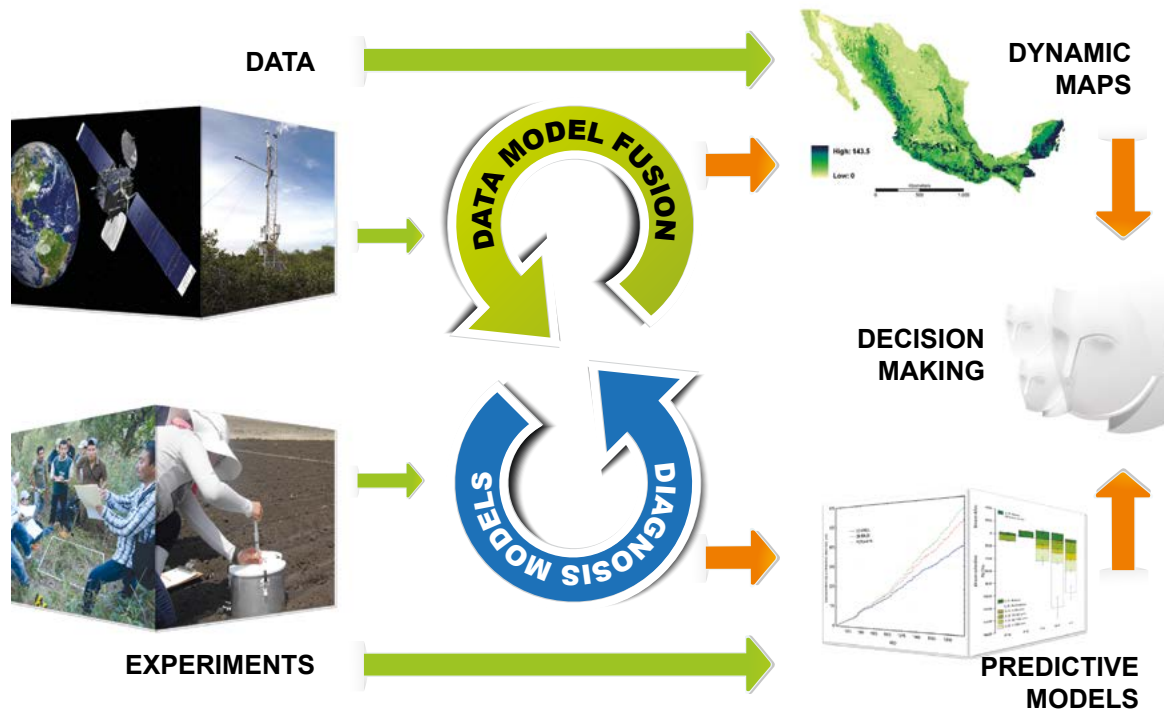


Figure 1. Diagram of the tasks/activities defined by the PMC scientific plan.

GENERAL STRATEGY TO ACCELERATE THE IMPLEMENTATION OF THE SCIENTIFIC PLAN

The general strategy of the PMC for the implementation of its scientific plan has always been to build the necessary elements for its execution, and to build competencies. The concrete actions taken by the PMC to achieve this can be listed as follows:

- Generation of input (databases and maps) about emission factors and activity data.
- Creation of a space to compile data from all over the country, through PMC annual simposia, in books issued with ISBN. This allows the indexation of the work of researchers from all over the country in regional, thematic or national compilations and syntheses.
- Thematic national syntheses in indexed magazines or books issued by the PMC to organize available knowledge, as well as to detect information gaps.
- Finally, the objective of this is to draw up a national synthesis of the carbon cycle and its interaction with ecosystems in Mexico, based on previous action and new information.

GENERAL LOGISTIC PROGRAM OF THE PROCESS OF DEVELOPMENT OF THE NATIONAL SYNTHESIS

Considering the restrictions in financial resources, the proposal for the development of the synthesis is the following:

- There will be an open invitation for PMC members to participate as coordinators and contributors to the thematic areas of the synthesis. Participation is voluntary, and the goal is to make the most of the resources available to PMC partners.
- PMC will contribute with financial resources to the meetings of the thematic and general groups, in order to dynamize exchange and development.
- PMC will handle all the management aspects of the project, in order to facilitate the synthesis development process. These aspects include translation and publishing costs of the developed scientific articles, as well as related publications.
- PMC will form a small support group for the statistical process, geographic information systems and database management activities in order to facilitate synthesis development.
- Depending on the availability of financial resources, PMC will provide support grants to main researchers (thematic and general coordinators).

GENERAL STRUCTURE OF THE SYNTHESIS DEVELOPMENT PROCESS

In order to use standardized and interoperable information, the development of the national synthesis will be carried out in several phases:

- 1) Diagnosis of the current state of the carbon cycle in land ecosystems.
- 2) Information synthesis through theoretical and empirical models to create customized scenarios with information related to current socioeconomical and environmental conditions in Mexico and climate change.
- 3) Analysis, discussion and development of proposals for public policies related to the implications of the current state of the carbon cycle in Mexico.
- 4) Dissemination of the results to several different types of audience.

Phases 1 and 2 will be the first to be jointly developed, without limiting the advancement of phase 3. Phase 4 will be ready for implementation once there is material available for its dissemination or publication.

MATERIALS FOR PHASES 1 AND 2 OF THE NATIONAL SYNTHESIS PROCESS

In order to use only one set of materials for all the groups, PMC will provide the following information:

- a) Emission factors database of the five carbon stocks of the IPCC: live aerial biomass, live underground biomass, woody materials on the surface, topsoil and the ground. The data will come from two sources:

- i. State and national forestry and soil inventories
 - ii. Sampling sites, determined by scholars, NGOs and other organizations
- b) Parameters for the assessment of carbon stores:
- i. Database of wood density of Mexican plant species
 - ii. Database of allometric equations for vegetation
 - iii. Database of vegetation expansion factors
 - iv. Database for other factors (ex. Topsoil, soils, etc.)
- c) Land use and vegetation maps (*sensu* INEGI) scale 1:50000:
- i. 3rd series: base year 2002 (in development)
 - ii. 4th series: base year 2007
 - iii. 5th series: base year 2011
 - iv. 6th series: base year 2014
 - v. 7th series: base year 2016 (planned)
- d) Other relevant information, to be defined jointly with the thematic coordinators.

All information available in the PMC will be used by the groups working on the synthesis, but its public use beyond this project may be restricted by property and copy rights, so it is necessary to define a protocol for this kind of situations.

GENERAL PROGRAM OF PHASES 1 AND 2 OF THE NATIONAL SYNTHESIS PROCESS

The 2006 guidelines of the IPCC, and more up-to-date documents, will be used for the establishment of the GHG inventories in land ecosystems (AFOLU sector), in order to develop inventories with Approach 3 and Tier 3.

A. Introduction

B. Background

C. GHG inventories – inventory approach

- a. Emission factors in vegetation (all stocks) and uncertainties
 - i. Tropical and subtropical vegetation
 - ii. Temperate vegetation
 - iii. Arid and semi-arid vegetation
 - iv. Wetlands

- b. Emission factors in disruptions and uncertainties
 - i. Fire
 - ii. Wood extraction
 - iii. Pests and diseases
 - iv. Hydrometeorological events
- c. Emission factors in soils and uncertainties
 - i. Tropical and subtropical vegetation
 - ii. Temperate vegetation
 - iii. Arid and semi-arid vegetation
 - iv. Wetlands
- d. Emission factors in animal husbandry and uncertainties
 - i. Enteric fermentation
 - ii. Dung
- e. Emission factors in agriculture and uncertainties
 - i. Fertilizers
 - ii. Rice cultivation
 - iii. Soil liming
 - iv. Others
- f. Activity data (focus on *sensu* INEGI)
 - i. Land use and vegetation
 - ii. Animal husbandry
 - iii. Agriculture
 - iv. Forest fires
 - v. Wood extraction
 - vi. Pests and diseases
 - vii. Hydrometeorological events
- g. Emission inventory per component
 - i. Carbon dioxide
 - ii. Methane

- iii. Nitrous oxide
- iv. Other gases
- h. Assessment of the uncertainties
 - i. Probabilistic parametrization
 - ii. Monte Carlo analysis
 - iii. Uncertainties by component

D. GHG inventories – remote sensor and inventory approach

- a. Passive and active remote sensors, and databases
- b. Covering/land use projections and their calibration/validation
- c. Changes in land use/covering and generation of time series
- d. Parametrization of remote sensors with emission factors
- e. Estimation of time inventories and their uncertainties

E. GHG inventories – multisource approach (inventories, remote sensors, models and inversions)

- a. Models and their parametrization
- b. Remote sensors and their parametrization
- c. Inversions and their use to define estimate limits
- d. Estimates of time inventories and their uncertainties

F. Predictive models and their parametrization

- a. Carbon dynamic models and their parametrization
- b. Model calibration and validation
- c. Sensitivity and uncertainty analysis
- d. Modeling of carbon cycle interactions and parametrization

G. Socioeconomic impact of different carbon cycle scenarios and interactions

- a. Socioeconomic assessment of activities related to state and transition models, plus other approaches: local and nationwide.
- b. Characterization of participants in activities related to land use
- c. Projected land use scenarios and socioeconomic impact evaluation

H. Synthesis of results

GENERAL GUIDELINES FOR PARTICIPATION

To put the synthesis together, the general coordinators will receive proposals related to the different subjects in the presented program, following these guidelines:

- This document can be viewed at <http://www.pmcarbono.org/pmc/convocatorias/>, as well as the system to register for participation in the synthesis or make comments on the proposed program.
- The general coordination will review the academic background and experience of the candidates, and will designate coordinators for each area of the proposed program, as well as the participants.
- Once the coordinators for each section of the program have been designated, they will be invited to take part in the coordinators' meeting during July/August 2016. This coordinators' meeting will establish rules and agreements for the configuration of the synthesis, as well as execution deadlines.
- Participation proposals and comments will be received until midnight of Monday, July 18th 2016.