



CLARIS | LPB

A Europe-South America Network for Climate Change Assessment

And Impact studies in La Plata Basin

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Deliverables



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CLARIS LPB

A Europe-South America Network for Climate Change Assessment and Impact Studies in La Plata Basin

DELIVERABLES

D8.1: Identification of data availability from different land use sectors (focus on agriculture) and availability of socio-economic data in La Plata Basin

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D8.1	Identification of data availability from different land use sectors (focus on agriculture) and availability of socio-economic data in La Plata Basin	WP8	P11 - UFSC	13,25	R	PU	6

REPORT OF DELIVERABLE 8.1

This deliverable presents sources of data and indicators from different land use sectors and availability of socio-economic data in La Plata Basin. Some of the data sources searched were previous relevant projects like CLARIS I and SENSOR, as well as regional institutions and national institutes of geography and statistics, and international data bases like CEPAL and FAO. The selected data are presented as metadata in a table containing the source of the data, the web link to access the corresponding data, the coverage, and the format, among other information. As can be taken from the table, there is a high disparity between available environmental and socio-economic data for the different land use sectors across the Basin. A lack of information of land use was also perceived, with scarcity of temporal series, large areas information and also GIS data. Even with this lack of data, it is possible to verify that a significant portion of the Basin is occupied agriculture, livestock production – pastures and forestry land use sectors.

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LIST OF ABBREVIATIONS

ANA – National Agency of Water (Brazil);

AR – Argentina;

BR – Brazil;

CEPAL – Economic Commission for Latin America and Caribbean;

CICPlata – Intergovernmental Coordinating Committee for the La Plata Basin;

CONAE – National Commission for Space Activities (Argentina);

DGEEC – General Director of Statistics, Survey and Census (Paraguay);

DGI/INPE – Image Generation Division/National Institute for Space Research (Brazil);

EARTHTRENDS – World Resources Institute Environmental Information Portal (USA)

ECO – Economical;

EMBRAPA – Brazilian Agricultural Research Corporation (Brazil);

ENV – Environmental;

EPAGRI – Rural Extension Service and Research Corporation of Santa Catarina State (Brazil);

EU – European commission;

FAO – Food and Agriculture Organization (United Nations);

GCMD – NASA's Global Change Master Directory (USA)

GDP – Gross Domestic Product;

GEOG – Land Use and Global Environmental Change (Canada)

IBGE – Brazilian Institute of Geography and Statistics (Brazil);

IIASA – International Institute for Applied Systems Analysis (Austria)

INA – National institute of Water (Argentina);

INDEC – National Institute of Statistics and Surveys (Argentina);

INMET – National institute of Meteorology (Brazil);

INPE – National Institute for Space Research (Brazil);

INTA – National Institute of Agricultural Technology

IPCC – Intergovernmental Panel on Climate Change;

JRC – Joint Research Centre (European Union);

LAC – Latin America and Caribbean;

LPB – La Plata Basin;

MAG – Ministry of Agriculture and Livestock (Paraguay);
MGAP – Agriculture, Livestock, Fishery and Food Ministry (Uruguay);
NASA – National Aeronautics and Space Administration (USA)
PY – Paraguay;
SAGE – Center for Sustainability and the Global Environment (USA)
SAGPyA –Agriculture, Livestock, Fishery and Food Secretary (Argentina);
SIAT – Sustainability Impact Assessment Tool;
SIB – Biodiversity Information System (Argentina);
SIDALC – Agricultural Information and Documentation System of the Americas (Costa Rica)
SIDSA – Environment and Sustainable Development Secretary (Argentina)
SIFAP – Federal System of Protected Areas (Argentina);
SIGAgropecuario – Geographical Information System of Agriculture (Argentina)
SIIA – Integrated Agricultural Information System (Argentina);
SIRHESC – Map Server of Hydrological Resources Directory of Santa Catarina State (Brazil)
SOC – Social;
UMD – University of Maryland's 1km Global Land Cover (USA)
UR – Uruguay;
WP – Work package.
WRI – World Resources Institute (USA)

1. INTRODUCTION

Land change science has emerged as a fundamental research field to address global environmental change and the related sustainability issues. This interdisciplinary research field seeks to understand the dynamics of land cover and land use as a coupled human–environment system to address theory, concepts, models, and applications relevant to environmental and societal problems (TURNER et al, 2007).

Climate patterns have a strong influence on land use, and climate variation is expected to increase in the near future. Changes in precipitation and large temperature variation, for example, will affect agriculture, cattle grazing and energy generation. Effects of climate change on water resources will further strengthen impacts on land use and agriculture. Changes in sustainable water availability would have considerable regional-scale consequences for economies as well as for ecosystems (MILLY, 2005). Land use reallocation and changes in land use sectors will lead also to socioeconomic implications which will strongly alter human well-being, since the poor and rural poor populations will be most affected (CLARIS PART B, 2007). Additionally, anthropogenic reactions to climate change, as the large scale plantation of bio energy crops, are increasing the pressure on land use.

The La Plata River Basin is one of the most important river basins in the world. Draining approximately one-fifth of the South American continent, extending over some 3.1 million km², and conveying waters from central portions of the continent to the south-western Atlantic Ocean, the La Plata Basin represents an important concentration of economic development in the southern and in the central South America (OAS, 2006). Land use in the La Plata Basin (LPB) is highly dynamic and it is of particular importance not only for the region itself, but also for the world economy and food security. The Basin counts with a number of unique ecosystems like the Pantanal, the Atlantic Rainforest, the Cerrado, the Chaco and the Pampas (Figure 1). Land use in rural areas of LPB is dominated by cattle grazing and export monocultures including soybean, maize, cotton, sugarcane (for alcohol and sugar production), eucalyptus and pines (for wood and celluloses industry), pastures (planted and native), rice, wheat, coffee, and orange crops (CLARIS PART B, 2007).

During the last years, the region was subjected to significant processes of land use change, as a result of different policies implemented since the 1960 decade. These land use change processes can be categorized as:



Figure 1. La Plata Basin ecosystems. Source: CIC Plata.

- i) the expansion of agriculture over forests;
- ii) the expansion of tree plantations over grasslands;
- iii) the intensification of agricultural systems, and
- iv) grazing on natural vegetation.

The intense human activity with associated urbanization and deforestation of land for cultivation increased runoff to the rivers, modified local climatic conditions and, due to the spatial scale of the La Plata Basin, certainly impacted the global climate. The trend is an increase in pressures for land use change, in order to attend LPB countries demands for agricultural products, raw materials and energy (from biofuels and hydroelectricity), forcing the enlargement of their agricultural and industrial development systems.

Predicting impacts resulting from these pressures requires predicting the evolution of complex systems, which results from feedbacks between the regional climate, the land-use (including societal issues such as rural development), the water resources and society (therefore individuals). Designing adaptation strategies requires to integrate all these interactions and uncertainties through socio-economic indicators quantifiable for decision-making. Predicting the climate change impacts and designing adaptation strategies is a

challenge for the region future. Therefore, to deal with these issues the CLARIS LPB Project has been set up.

Among other objectives, CLARIS LPB aims the prediction of regional climate change impacts and design adaptation strategies for land-use on LPB, focusing agriculture, rural development, hydropower production, river transportation and water resources. To achieve these goals, CLARIS LPB is divided in four inter-related and complementary subprojects, containing nine different Work Packages (WPs), each one addressing different but complementary and coordinated issues. The WP 8, entitled “Land use, agriculture and socio-economic impacts”, has as main tasks:

1. To reveal insights into the complex net of impacts and interdependencies of climate variability and change and anthropogenic adaptation measures to climate change on land use, agriculture and deforestation by identifying causal chain relationship between climate change (scenarios) and induced anthropogenic reactions on land use, agriculture, bio energy and deforestation;
2. To focus the agricultural sector, specifically on small and large farms: main cropping systems of major socio-economic relevance will be analyzed and simulation studies for different climate scenarios will be projected under climate change forcing scenarios. With these results, adaptation strategies will be proposed;
3. To carry out an assessment making explicit the strong relationship existing between land use systems, climate and water cycle, in order to define integrated adaptation strategies to climate change impacts;
4. To elaborate scenarios of potential future land use options identifying its impacts on social factors, like as migration, poverty, and economic implications such GDP and unemployment. When possible, monetary impacts will be estimated;
5. To build an indicator framework that includes farmers’ participation in the development of an assessment tool to be integrated on a later stage into a warning and decision support system for decision makers.

The WP8 will last during the four years of the project: at the beginning, the main activities will be to gather information or data to analyze relationships and build and calibrate models. During the second half of the project climate change impact scenarios and adaptation strategies will be approached. An important aspect of WP8 is the responsibility of projecting future evolutions of land-use in La Plata Basin and to suggest adaptation strategies.

Collaboration with stakeholders will be important in particular to confront their projections and strategies concerning to pressures induced on the system by the future climate. A very important aspect hereby is the integration of stakeholders and experts. Models that provide multidisciplinary results and show the interdependencies of the relevant processes are helpful tools to foster this integration (BARTHEL, 2008). One of the main challenges here is to conciliate different fields of knowledge, putting them together to reach a common goal. In order to accomplish the tasks and achieve the objectives of WP8, eight deliverables should be produced.

2. DELIVERABLE 8.1: IDENTIFICATION OF DATA AVAILABILITY FROM DIFFERENT LAND USE SECTORS (FOCUS ON AGRICULTURE) AND AVAILABILITY OF SOCIO-ECONOMIC DATA IN LA PLATA BASIN

The effects of future changes in land cover will be a complex interaction between the impacts of the changes in local land cover and the effects due to the changes in land cover elsewhere. According to FEDDEMA et al (2005), land cover impacts on global climate can be divided into two major categories: biogeochemical and biogeophysical. Biogeochemical processes affect climate by altering the rate of biogeochemical cycles, thereby changing the chemical composition of the atmosphere. Biogeophysical processes directly affect the physical parameters that determine the absorption and disposition of energy at Earth surface, i. e. albedo.

However, projecting the potential outcomes of future climate effects due to the changes in land cover is a difficult task for two reasons. First, there is a considerable uncertainty regarding to how land cover will change in the future. In this context, the past actions may not be a good indicator of the types of land transformation that may occur in the future (the future is not the simple continuation of the past). Second, current models of land process cannot simulate all the potential impacts of human land cover transformation. Such processes as adequate simulation of urban systems, agricultural systems, ecosystem disturbance regimes (e.g., fire) and impacts on soil have not been well represented yet.

Finally, although a regional summary of hydrological scenarios is not presented in the regional climate report of the Intergovernmental Panel on Climate Change (IPCC) for South America, a major challenge for the region is to quantify the hydrological cycle scenarios in the context of climate warming, considering a probable low increase in precipitation (relative

to the potential increase in evapotranspiration) and its consequences for hydropower production, availability of water resources, river navigation, and the sustainability of ecological systems, such as observed in wetlands.

The first deliverable of WP 8 (D. 8.1) aims to identify the data availability from different land use sectors and the availability of socio-economic data in La Plata Basin. Land use sectors can be understood as agriculture, grazing, forestry, natural and protected areas, urbanizations, etc. These data should be useful for others WP partners and they will also indicate which data and indicators exists in fact.

2.1. Objective

The objective of this deliverable is to identify and to describe the availability of data from different land use sectors such as ground cover, main agricultural productions, pastures, area occupied by bioenergy crops, protected areas, hydrological resources, forestry, fire spots, etc., in LPB. Economic and social indicators, such as rate of employment, poverty, land ownership, gross domestic product (GDP), among others, will also be informed. It is important to remark that all data will focus on the agricultural sector or they will be related to this sector.

These data and indicators might be used by different partners to investigate the relationship between climate changes and anthropogenic reactions, and how the climate changes can increase the risk of extreme events like fire or floods, droughts, soil losses, and their economic and social effects on LPB. A large number of data is usually necessary to build these scenarios or models properly. Due the complexity of LPB in environmental and administrative aspects and also in data collecting methodologies, these data are not readily available to be used in models and in other evaluations, requiring the transformation of the data and of the indicators from different sources.

3. METHODOLOGY

3.1. Data and indicators selection

CLARIS LPB will have to define its own set of necessary data and indicators since there were no other previous projects that included land use, agriculture and socio-economic impacts in LPB. General data sets and indicators have been employed in other projects, like CLARIS I and SENSOR, and these data can be useful for CLARIS LPB. However, not all these data sets can be considered for CLARIS LPB purposes due their specificity.

The first step to identify data availability was to study the aims of WP8 deliverables and to identify what kind of data would be necessary to accomplish their tasks. These necessary data was then organized in three basic metadata categories: environmental, social, and economical. However, some metadata, due the presentation and structure of the data in the source could be included in more than one group. In these cases, the metadata were identified according to their groups.

3.2. Availability of data sources of previous relevant projects

Data collected by previous projects could be useful for CLARIS LPB WP8 deliverables. In order to collect these data and to identify their sources two projects were consulted: CLARIS I and SENSOR.

3.2.1. CLARIS I

The CLARIS I project started on July 2004 and lasted for three years. This project aimed to strength the collaboration between research groups in Europe and in South America in order to develop common research strategies on climate change and impact issues in the subtropical region of South America through a multi-scale integrated approach (continental-regional-local). CLARIS I favored the transference of knowledge and expertise on Earth System Models, their different components and coupling procedures. The project provided to European and South American scientists involved in climate modeling the framework to compare and to exchange their methodologies. This framework was completed with an easy-access database which compiled the observed and simulated climate data required for models to be both validated and properly forced, and also to create an access to large scale climate data sets and climate simulations. At local scale, CLARIS I created a bridge between the

climate research community and stakeholders in the framework of three pilot actions. These actions were designed to integrate multi-disciplinary components and to demonstrate the potential and feasibility of using climate information in the decision-making process. Three major areas were addressed: agriculture, health and pollution.

The CLARIS I data can be found at <http://eolo.cima.fcen.uba.ar/> (requires a user name and password – an e-mail should be send to clarisproject_AT_cima.fcen.uba.ar to request the access to data). These data refer to the global climatic data organized monthly and daily. The GrADS-DODS Server User's Guide (<http://eolo.cima.fcen.uba.ar/DS>) explains how the data can be used. Although some data are not clearly necessary for WP8 deliverables or are not directly related to land use in LPB, the inclusion of the whole database, which also contains data about sea water, climatic variation, etc., aimed to facilitate the access if necessary.

3.2.2. SENSOR

SENSOR (Sustainability Impact Assessment: Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Regions - <http://www.sensor-ip.org/>) is an Integrated Project in the 6th Framework Research Programme of the European Commission. Thirty-nine research partners from 15 European countries, plus China, Brazil, Argentina and Uruguay developed science based forecasting instruments to support decision making on policies related to land use in European regions. Two years after the beginning of the Project, it was created an 8th module aiming international cooperation with Targeted Third Countries (TTC), as China and Mercosur Countries (Argentina, Brazil and Uruguay). The aim of this module was to adapt the European approach on ex-ante sustainability impact assessment of land use changes to extra European conditions. The project SENSOR (it started on December 2004 and it will be finished on May 2009) aimed to develop a sustainability impact assessment tool (SIAT) to identify environmental, economical and social impacts of different policy options. The purposes were: (i) to link policy options with land use changes; (ii) to associate land use changes with environmental, social and economical impacts; and (iii) to present an evaluation framework of these impacts in the light of sustainable development (Helming et al, 2008).

SENSOR–MERCOSUR carried out a survey to identify relevant indicator databases. There were international, national and regional available indicator databases. Among these data sources, the ones that might be useful for CLARIS LPB were selected and included in the results. In the SENSOR-MERCOSUR Deliverable 8.2.2b a remark that the survey was not

complete can be found (there might be other databases available), mostly due to the reduced number of available databases for LPB when compared with European databases. Among the databases, the Economic Commission for Latin America and Caribbean (CEPAL) has a special focus on Latin and South America, including data for Argentina, Brazil, Paraguay and Uruguay. Another important feature of CEPAL is the possibility of finding common and homogenous data for Latin America, which makes any evaluation much easier to be done due to the uniformity and organization of the data, despite its reduced spatial resolution. Other very significant data source was the Food and Agriculture Organization (FAO -United Nations), which contains records of several indicators related to land use and agriculture. CEPAL was another data source which presents the data organized in common standards.

3.3. Other data sources

In addition to the data sources discussed above, other data sources were searched. Among these data sources were public institutions like statistical and geographical institutes, research and extension service, etc, from LPB countries or international organizations. These data sources were accessed over the internet and it was not required any passwords or registration for most of them. Some of them required a previous registration, and only a few of them demanded a formal contact in order to obtain a large amount of data or historical series, for example.

4. DATA SEARCH AND SELECTION

After selection of necessary data or indicators for the WP8 deliverables and identification of data sources employed by CLARIS I and SENSOR, other possible data sources of LPB were consulted. It is important to highlight that CLARIS I has been carried out in LPB and it contains several environmental data of this region, as well as SENSOR, which also operated with indicators of land use in LPB.

Other information was gathered from articles and web pages that could contain the data selected previously. Once the data source was selected, an investigation was initiated in order to identify which data and indicators were stored on each one. After that, the data sources were organized as metadata – a structured data describing the characteristics of a resource – in three different tables: one presenting land use data (Table 1), another presenting indicator of land use, economical and social data (Table 2) and another one presenting CLARIS I environmental data (Table 3). Due the structure of some data sources, the users should be aware that some metadata will be identified as land use data and also as an indicator.

The metadata are presented in a table structured in the following columns:

- Data groups: environmental (ENV), social (SOC) and/or economic (ECO);
- Land use sector (this column is valid only for land use data): related to possible land use, and it is divided into agriculture (AG), livestock production and pastures (LI), forestry (FO), bioenergy (BI), hydrological resources (HY), protected areas (PA) and urban areas (UR).
- Keywords: other reference words that can be used to localize the data source in a electronic data-base;
- Data name: according to the name given by the source;
- Source: name of the institution, public or private, that processes, stores and provides the data;
- Web link: for access via World Wide Web. This link usually takes the user directly to the data. However, for some sources, this link opens a main page that offers the possibility of choosing different datasets;
- Coverage: spatial area or region covered by the data – a state, country, etc.;
- Format: descriptive tables, maps, graphics.

The metadata presented in the tables should offer a good view of potential data and indicators sources of land use sectors – agriculture, forest, among others – and also socio-economic aspects.

The data groups were build to facilitate the division of metadata: when a metadata is considered ECO (economic), it can refers to something that can be measured trough mass units (tons, liters) or monetary units. The classification SOC (social) is employed to metadata related to development, education, health or other indicators, and the classification ENV is used for metadata that comprehends area units and have a geographic reference (a forested area or a specific crop in a certain region, for example).

To classify the metadata of land use sectors (Table 1), seven categories of land use were adopted to facilitate the identification of the data: AG (agriculture) refers to land occupied by production of grains, fruits and other crops; LI (livestock production and pastures) is associated with livestock production, mainly on pastures and grasslands; FO (forestry) is related to planted forests, mainly pines and eucalyptus; HY (hydrological resources) refers to area occupied with dams, lakes or other flooded areas; PA (protected areas) should refer to protected areas or natural reserves, where no other activities can take place; UR (urban areas) refers to the occupied land with urban areas. When a metadata is identified as BI (bioenergy), it should refer to land used for production of biofuels like bio-diesel, crude oil or ethanol. However, there are few data available for those areas dedicated to production of biofuels. Generally, depending on the contracts or specific market conditions, the crops with potential to be converted in biofuels (oleaginous crops and sugar cane) can be directed to food processing industry or oil extraction/ethanol production. As it is difficult to define if the land is being used for biofuels or food production, the same metadata can be referred to BI and also as AG.

Until the publication of this Deliverable, all the web links related to it were active and the data were available. However, there is no guarantee that the web location will be always the same as indicated, or that the data will be indefinitely available.

5. RESULTS

Table 1: List of metadata for different land use sectors in the La Plata Basin.

Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV	AG, BI	Agriculture	Grain crops: area, specie, state, evolution of planted area, yield	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=544	AR	Tables
ECO, ENV	AG, BI	Agriculture	Oleaginous crops: implanted and harvested surface, yield per cultivate, per state	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=551	AR	Tables
ECO, ENV	AG, BI	Agriculture	Spatial database of agricultural land-use statistics	FAO	http://www.fao.org/landandwater/agll/agromaps/interactive/page.jsp	Global	Tables, maps, graphics
ECO, ENV	AG, LI, FO	Agriculture	Geographical information system for agriculture	SIG Agropecuario	http://www.sigagropecuario.gov.ar/	AR	Tables, maps, graphics
ECO, ENV	AG, LI, FO	Agriculture	Agricultural regions, animal and vegetal production. Per region and specie.	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice-c2.html	UY	Tables
ECO, ENV	AG, LI, FO, BI, PA	Agriculture	Agricultural statistics	SIIA	http://www.sii.gov.ar/index.php?option=com_content&task=blogcategory&id=15&Itemid=54	AR	Tables

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV	FO, PA	Forests, agriculture	Wood production, surface, extraction, fires, types of forests. Total in the country.	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=504	AR	Tables
ECO, ENV	LI	Agriculture	Pastures: area, specie, state, evolution of area.	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=552	AR	Tables
ECO, ENV	AG, LI	Agriculture	Historical data base	MGAP	http://www.mgap.gub.uy/SeriesHistoricas/hshistoricas.aspx	UY	Tables
ECO, ENV, SOC	AG, LI, FO	General data	Data bank of aggregated data in the country (all areas)	IBGE	http://www.sidra.ibge.gov.br/bda/acervo/acervo1.asp?z=t&o=3	BR	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, FO	Vegetal production	General data of flora production/extraction	IBGE	http://www.sidra.ibge.gov.br/bda/extveg/default.asp?z=t&o=17&i=P	BR	Tables
ECO, ENV, SOC	AG, LI, FO, BI	Agriculture	Agricultural census - 2006	IBGE	http://www.sidra.ibge.gov.br/bda/pesquisas/ca/default.asp?o=2&i=P	BR	Tables
ECO, ENV, SOC	AG, LI, FO, BI	Agriculture	Interactive map of data from agricultural census - land, production, location, etc	IBGE	http://www.sidra.ibge.gov.br/bda/territorio/cartograma/default.asp?z=t&o=4	BR	Tables, maps, graphics

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV, SOC	AG, LI, FO, BI, HY, PA	Agriculture	Agricultural Information and Documentation System of the Americas	SIDALC	http://orton.catie.ac.cr/sisinfoen.htm	LAC	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, FO, BI, HY, PA	Land, society	Environmental data for agriculture, hydrology, weather, etc	SAGPyA	http://www.ambiente.gov.ar/?idseccion=211	AR	Tables, maps, graphics
ECO, ENV, SOC	AG	Land and water management	Agricultural Land and Water Information for Sustainable Agricultural Development	FAO - AGL	http://www.rlc.fao.org/proyecto/gcp/rla/126/jpn/	Global	Tables, maps, graphics
ECO, ENV, SOC	AG	Land use and resources	Land resource potential and constraints statistics at country and regional levels	FAO - AGLL	http://www.fao.org/ag/agl/agll/terrastat/#terrastatlinks	Global	Tables, maps, graphics
ECO, ENV, SOC	AG, BI	Agricultural production	Agricultural Production data, area/stock and yield data	FAO - ProdSTAT	http://faostat.fao.org/site/567/default.aspx#ancor	Global	Tables

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV, SOC	AG, FO, LI, PA	Agriculture	Time-series and cross sectional data relating to food and agriculture	FAO - FAOSTAT	http://faostat.fao.org/	Global	Tables
ECO, ENV, SOC	AG, FO, LI, PA	Land use	Agricultural resources: use of fertilizers, agrochemicals, land, water, labor, machinery and practices	FAO – Resource STAT	http://faostat.fao.org/site/377/default.aspx#ancor	Global	Tables
ECO, ENV, SOC	AG, HY	Land and water	Land and water on-line database/information systems	FAO - AGL	http://www.fao.org/ag/agl/lwris.stm	Global	Tables, maps, graphics
ECO, ENV, SOC	AG, HY	Water, agriculture	Water resources and agricultural water management	FAO	http://www.fao.org/nr/water/aquastat/main/index.stm	Global	Tables, maps, graphics
ECO, ENV, SOC	AG, LI	Livestock	Livestock Production and Health Atlas - land use	FAO	http://www.fao.org/ag/aga/glipha/index.jsp	Global	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, BI	Agriculture	Agricultural statistics	MAG	http://www.mag.gov.py/mag/Estadisticas.htm	PY	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, BI	Agriculture	General characteristics of Brazilian agriculture	IBGE	http://www.ibge.gov.br/series_estadisticas/subtema.php?idsubtema=100	BR	Tables, graphics

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV, SOC	AG, LI, FO	Agriculture and forestry	Agricultural and forestry sector	MAG	http://www.mag.gov.py/mag/Estadisticas/rev2006.pdf	PY	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, FO	Land	Land use	MGAP	http://www.mgap.gub.uy/Diea/CENSO2000/ResultadosDefinitivosVol_1/data/13.htm	UY	Tables
ECO, ENV, SOC	AG, LI, FO, BI	Agriculture	Agricultural census - 1	MGAP	http://www.mgap.gub.uy/Diea/CENSO2000/ResultadosDefinitivosVol_1/indice.htm	UY	Tables
ECO, ENV, SOC	AG, LI, FO, BI	Agriculture	Agricultural census - 2	MGAP	http://www.mgap.gub.uy/Diea/CENSOVOL2/indice.htm	UY	Tables
ECO, ENV, SOC	AG, LI, FO, BI, HY, PA	Environmental data	Energy, biodiversity, agriculture, food, forests, water resources	EARTHTR ENDS	http://earthtrends.wri.org/#	Global	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, FO, BI, HY, PA	Land and water data	Land and water indicators and statistics	FAO - AGLL	http://www.fao.org/landandwater/agll/landuse/	Global	Tables, maps, graphics
ECO, ENV, SOC	AG, LI, FO, HY, PA	Agriculture	Geo-referenced information on physical and socio-economic resources for agriculture	FAO - SPATL	http://www.fao.org/spatl/gateway_en.asp	Global	Tables, maps, graphics
ECO, ENV, SOC	LI	Agriculture	Maps of agricultural statistics	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indices-mapas.html	UY	Maps

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV, SOC	AG, LI	Agriculture	Census of agriculture, area, production, location	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=494	AR	Tables
ECO, ENV, SOC	AG, FO, HY	Agriculture	Agricultural information of Santa Catarina State	EPAGRI - CEPA	http://cepa.epagri.sc.gov.br:8080/cepa/Dados_do_LA_C/lac_indice.htm	Santa Catarina State, BR	Tables, maps, graphics
ENV	AG	Environmental data	Environmental data for agriculture, hydrology, weather, etc	EPAGRI - CIRAM	http://ciram.epagri.sc.gov.br/portal/website/	Santa Catarina State, BR	Tables, maps, graphics
ENV	AG	Land	Brazil observed from the space	EMBRAPA Monitoramento por satélite	http://www.cdbrasil.cnpm.embrapa.br/	BR	Pictures
ENV	AG	Land	Land use	SAGE	http://www.sage.wisc.edu/mapsdatamodels.html	Global	Tables, maps
ENV	AG	Land	Land Use and Global Environmental Change Data sets	GEOG	http://www.geog.mcgill.ca/~nramankutty/Datasets/Datasets.html	Global	Tables, maps
ENV	AG	Land and soils	Land and soils - Land use	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ENV	AG	Soil	Thematic maps: soils of Brazil	IBGE	ftp://geoftp.ibge.gov.br/mapas/tematicos/mapas_murais/solos.pdf	BR	Maps
ENV	AG, FO, HY	Ground cover	Global land cover	JRC	http://www-tem.jrc.it/glc2000/ProductGLC2000.htm	Global	Maps

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ENV	AG, FO, HY, PA	Land	LANDSAT 5 and 7 processed images for agriculture	CONAE	http://www.conae.gov.ar/imageneselaboradas/imageneselaboradas.html	AR	Maps and graphics
ENV	AG, FO, HY, PA	Vegetal cover, soil cover	Brazil vegetal cover map	EMBRAPA Monitoramento por satélite	http://www.cobveget.cnpem.embrapa.br/	BR	Tables, maps, graphics
ENV	AG, FO, PA	Forest, deforestation and fire spots	Global environment monitoring	EU	http://gem.jrc.ec.europa.eu/index.php/pages/GlobalForestResourceMonitoring/4	Global	Tables, maps, graphics
ENV	AG, FO, PA	Land	Land - environmental statistics	SAGPyA	http://www.ambiente.gov.ar/?idarticulo=5509	AR	Tables
ENV	AG, FO, PA	Land cover	Global land cover product	UMD	http://www.geog.umd.edu/landcover/1km-map.html	Global	Maps
ENV	AG, FO, PA	Land cover, vegetation	Vegetation Map of Latin America	JRC-GVM	http://www-tem.jrc.it/glc2000/ProductGLC2000.htm	Global	Maps
ENV	AG, FO, PA	Land use map	Map of land use in Brazil	IBGE	ftp://geoftp.ibge.gov.br/mapas/tematicos/uso_da_terra/	BR	Maps
ENV	AG, FO, PA	Soil map, soil classification	Santa Catarina State soil map	Digital Maps Data source EMBRAPA	http://mapoteca.cnps.embrapa.br/english/projetos.aspx	Santa Catarina State, BR	Maps
ENV	AG, FO, PA, LI	Agriculture	Agro-ecological zoning of Santa Catarina State	CIRAM - EPAGRI	http://ciram.epagri.sc.gov.br/portal/website/index.jsp?url=jsp/agricultura/zoneAgroecologico.jsp&tipo=agricultura	Santa Catarina State, BR	Tables, maps, graphics
ENV	AG, FO, PA, LI	Land	Ortho-photo mosaics of Santa Catarina State	IBGE	ftp://geoftp.ibge.gov.br/mapas/ortofoto/Projeto_SC25/	Santa Catarina State, BR	Graphics

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ENV	AG, FO, PA, LI	Vegetation, soil cover	Vegetal cover map of Brazil	EMBRAPA Monitoramento por satélite	http://www.cobveget.cnpm.embrapa.br/resulta/regiao/cart_su.html	BR	Maps, tables
ENV	AG, LI, FO	Agriculture	Land use	MGAP	http://www.mgap.gub.uy/Diea/Trabajos%20Especiales/RegionesdeEspecializacionProductiva/FRAMECENTRO.HTM	UY	Tables
ENV	AG, LI, FO	Land	Land use	MGAP	http://www.mgap.gub.uy/Diea/CENSO2000/ResultadosDefinitivosVol_1/data/13.htm	UY	Tables
ENV	AG, LI, FO	Land use	Land use, farming systems	FAO - FARMING SYSTEMS	http://www.fao.org/farmingsystems/maps_LAC_en.htm	LAC	Maps
ENV	AG, LI, FO, HY, PA	Satellite images, land	DGI/INPE's Image Database presently contains images cast by Landsat-1, Landsat-2, Landsat-3, Landsat-5, Landsat-7, CBERS2 and CBERS-2B (China-Brazil Environment Resources Satellite) satellites	INPE	http://www.dgi.inpe.br/CDSR/	LPB	Graphics
ENV	AG, LI, FO, PA	Land, fauna and flora	Thematic maps: biomes	IBGE	ftp://ftp.ibge.gov.br/Cartas_e_Mapas/Mapas_Murais/	BR	Maps
ENV	AG, LI, FO, PA	Land, flora	Thematic maps: vegetation	IBGE	ftp://geofp.ibge.gov.br/mapas/tematicos/mapas_murais/vegetacao.pdf	BR	Maps

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ENV	AG, LI, FO, PA	Land, soil	Harmonized World Soil Database	IIASA	http://www.iiasa.ac.at/Research/LUC/luc07/External-World-soil-database/HTML/index.html?sb=1	Global	Tables, maps, graphics
ENV	AG, LI, FO, PA	Land, soil	Land use and land cover	IIASA	http://www.iiasa.ac.at/Research/LUC/luc07/External-World-soil-database/HTML/SupplementaryData.html?sb=5	Global	Tables, maps, graphics
ENV	AG, LI, FO, PA	Maps for rainfed cropping	Land Suitability Maps for Rainfed Cropping	FAO - AGLL	http://www.fao.org/ag/agl/agll/cropsuit.asp	Global	Tables, maps, graphics
ENV	FO	Forest inventory	Forest inventory of Misiones State	Prov. Misiones	http://www.misiones.gov.ar/ecologia/InventForest/inventario/index.htm	Prov. Misiones, AR	Tables, graphics
ENV	FO	Ground cover	Area of natural Forest	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ENV	FO, PA	Fire	Forest fires	SAGPyA	http://www.ambiente.gov.ar/?idarticulo=5512	AR	Tables, maps, graphics
ENV	FO, PA	Forestry	Volume, biomass and C content of Argentine forests	SAGPyA	http://www.ambiente.gov.ar/archivos/web/umsef/file/volumen_biomasa_carbono.pdf	AR	Tables, maps, graphics
ENV	FO, PA	Forestry	Statistical compendium of Forest-industry sector of Misiones State	Prov. Misiones	http://www.misiones.gov.ar/ecologia/Todo/Bosques/InfCuatrienal/GautoIB.pdf	Prov. Misiones, AR	Tables, maps

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ENV	FO, PA	Geography	Environmental information of residues management, forestry, environmental management	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=26	AR	Tables
ENV	HY	Hydrological change detection	Hydrological situation	INA	http://www.ina.gov.ar/alerta/satelital/index.htm	AR	Images
ENV	HY	Hydrology	Drainage area of watersheds	ANA	http://hidroweb.ana.gov.br/cd5/index.htm	BR	Maps
ENV	HY	Hydrology	Hydrology - cartographical bases	ANA	http://hidroweb.ana.gov.br/cd7e/index.htm	BR	Maps
ENV	HY	Hydrology	Hydrology - geo-referred mosaic	ANA	http://hidroweb.ana.gov.br/cd8e/index.htm	BR	Maps
ENV	HY	Hydrology, watershed	Digital map of hydrographic units of Santa Catarina State	SIRHESC	http://www.aguas.sc.gov.br/mapas/mapas_publico.do	Santa Catarina State, BR	Maps
ENV	HY	Hydrology, watershed	Digital map of hydrographic units of Santa Catarina State	EPAGRI	http://ciram.epagri.rct-sc.br:8080/mapoteca/pre_download_hidrograficas.jsp	Santa Catarina State, BR	Maps
ENV	AG, HY, FO, PA	Hydrology	Watersheds: soils, vegetation	ANA	http://hidroweb.ana.gov.br/HidroWeb.asp?TocItem=4100	BR	Maps
ENV	UR	Land use	Urbanized areas in Brazil, position, total and urbanized area	EMBRAPA Monitoramento por satélite	http://www.urbanizacao.cnpm.embrapa.br/conteudo/ba se.html	BR	Tables

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ENV	PA	Forestry	National forest inventory	SAGPyA	http://www.ambiente.gov.ar/?idarticulo=316	AR	Tables, maps, graphics
ENV	PA	National parks, environmental reserves	Protected areas of Argentina	SIFAP	http://www2.medioambiente.gov.ar/sifap/default.asp	AR	Maps
ENV	PA	Protected	Surface of protected areas	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ENV	PA	Protected areas	Conservation units	IBGE	ftp://ftp.ibge.gov.br/Cartas_e_Mapas/Mapas_Tematicos/unidades_de_conservacao.zip	BR	Maps
ENV	PA, HY	Geography	Geographical information, weather, rivers, lakes, mountains.	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=20	AR	Tables
ENV, ECO	AG	Agriculture	Planted area, location, production	SAGPyA	http://www.sagpya.mecon.gov.ar/new/0-0/agricultura/otros/estimaciones/cultivos/index2.swf	AR	Maps
ENV, ECO	AG, BI	Land use	Thematic maps: agriculture - sugar cane	IBGE	ftp://geoftp.ibge.gov.br/mapas/tematicos/mapas_murais/cana_2005.pdf	BR	Maps
ENV, ECO	AG, BI	Land use	Thematic maps: agriculture - soybeans	IBGE	ftp://geoftp.ibge.gov.br/mapas/tematicos/mapas_murais/soja_2005.pdf	BR	Maps
ENV, ECO	AG, FO, BI	Land use, agriculture	Area harvested and production	FAO - AgroMaps	http://www.fao.org/landandwater/agll/agromaps/interactive/page.jsp	Global	Tables, maps, graphics
ENV, ECO	AG, FO, PA	Land, vegetation	Thematic maps: agricultural production and natural vegetation	IBGE	ftp://geoftp.ibge.gov.br/mapas/tematicos/mapas_murais/prod_agricola_e_veget_natural.pdf	BR	Maps

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Group	Land use sectors	Key-words	Data name	Source	Link	Coverage	Format
ENV, ECO	FO	Forestry	Forest Statistics	MGAP	http://www.mgap.gub.uy/Forestal/Boletin2005.pdf	UY	Tables
ENV, ECO	FO, PA	Forestry	Forest surface	MGAP	http://www.mgap.gub.uy/Forestal/cont_Estadisticas.htm	UY	Tables
ENV, ECO	FO	Forestry	Forestry	SAGPyA	http://www.sagpya.mecon.gov.ar/new/0-0/forestacion/econo/econo3.htm	AR	Tables, maps, graphics

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Table 2: Metadata list of indicators sources from different land use sectors in the La Plata Basin.

Group	Key-words	Data name	Source	Link	Coverage	Format
ECO	Agricultural prices	Agricultural prices in local currency and US dollars	FAO - PriceSTAT	http://faostat.fao.org/site/351/default.aspx	Global	Tables
ECO	Agriculture	Change in agricultural output potential due climate change	WRI	http://www.wri.org/map/change-agricultural-output-potential-2000-2080	Global	Maps
ECO	Agriculture	Agricultural statistics	SIIA	http://www.siiia.gov.ar/index.php?option=com_content&task=blogcategory&id=15&Itemid=54	AR	Tables
ECO	Agriculture	Agricultural exports and imports	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice-c4.html	UY	Tables
ECO	Agriculture	Prices of products, inputs and land	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice-c3.html	UY	Tables
ECO	Agriculture	Macroeconomic farming indicators	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice-graficos.html	UY	Graphics
ECO	Agriculture	Aspects of cattle production in Argentina: production, animal evolution , management systems	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=749	AR	Tables
ECO	Agriculture	Sheep production, wool production, prices, per state.	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=782	AR	Tables
ECO	Agriculture	Aspects of sheep, goats and swine production in Argentina: production, animal evolution, management systems	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=807	AR	Tables
ECO	Agrochemicals	Land and soils - Agrochemical use	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics

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Group	Key-words	Data name	Source	Link	Coverage	Format
ECO	Aquaculture	Aquacultural production	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ECO	Economic indicators and statistics	Macroeconomic farming indicators, agriculture sectorial statistics and indicators	CEPAL-BADECON	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ECO	Energy	Electric energy	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ECO	Forestry	Forestry data	FAO – ForesSTAT	http://faostat.fao.org/site/630/default.aspx	Global	Tables
ECO	Macro economy	GDP, Gross value of agricultural production per year and sector	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice-c1.html	UY	Tables
ECO	Trade	Annual trade	IBGE	http://www.sidra.ibge.gov.br/bda/pesquisas/pac/default.asp?o=12&i=P	BR	Tables
ECO, ENV	Agriculture	Agricultural regions, animal and vegetal production. Per region and specie.	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice-c2.html	UY	Tables
ECO, ENV	Agriculture	Birds and others animals. Total in the country	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=845	AR	Tables
ECO, ENV	Agriculture	2007 agricultural production	IBGE	http://www.sidra.ibge.gov.br/bda/pesquisas/pam/default.asp	BR	Tables
ECO, ENV	Agriculture	Vegetal extraction and forestry statistics	IBGE	http://www.sidra.ibge.gov.br/bda/pesquisas/pevs/default.asp?o=23&i=P	BR	Tables
ECO, ENV	Agriculture	Animal production indicators	IBGE	http://www.sidra.ibge.gov.br/bda/pesquisas/ppm/default.asp?o=21&i=P	BR	Tables
ECO, ENV	Agriculture	Harvest forecast: yield, area, total production	IBGE	http://www.sidra.ibge.gov.br/bda/prevsaf/default.asp?z=t&o=24&i=P	BR	Tables

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Group	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV	Agriculture	Agricultural and livestock production data, area/stock and yield data	FAO - ProdSTAT	http://faostat.fao.org/site/526/default.aspx	Global	Tables
ECO, ENV	Aquaculture	Total sea fishing, per species. Total in the country	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=502	AR	Tables
ECO, ENV	Fisheries	Fisheries and aquaculture information system	FAO – Fish STAT	http://www.fao.org/fishery/statistics/collections	Global	Tables, maps, graphics
ECO, ENV	Land use	Agro-ecological zones	FAO - IIASA	http://www.fao.org/ag/agl/agll/gaez/index.htm	Global	Tables, maps, graphics
ECO, ENV, SOC	Agriculture	Agricultural Information and Documentation System of the Americas	SIDALC	http://orton.catie.ac.cr/defaulten.htm	LAC	Tables, maps, graphics
ECO, ENV, SOC	Agriculture	Agricultural census - 2006	IBGE	http://www.sidra.ibge.gov.br/bda/pesquisas/ca/default.asp?o=2&i=P	BR	Tables
ECO, ENV, SOC	General data	Data bank of aggregated data in the country (all areas)	IBGE	http://www.sidra.ibge.gov.br/bda/acervo/acervo1.asp?z=t&o=3	BR	Tables, maps, graphics
ECO, ENV, SOC	Land, society	Indicators of sustainable development	SIDSA	http://www.ambiente.gov.ar/?idseccion=60	AR	Tables, maps, graphics
ECO, ENV, SOC	Land, society	Environmental data for agriculture, hydrology, weather, etc	SIDSA	http://www.ambiente.gov.ar/?idseccion=211	AR	Tables, maps, graphics
ECO, ENV, SOC	Population	Thematic maps: demography	IBGE	http://ibge.gov.br/mapas_ibge/tem_demografia.php	BR	Tables, maps, graphics

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Group	Key-words	Data name	Source	Link	Coverage	Format
ECO, ENV, SOC	Population	Population structure	IBGE	http://www.sidra.ibge.gov.br/bda/popul/default.asp?z=t&o=23&i=P	BR	Tables
ECO, ENV, SOC	Vegetal production	General data of flora production/extraction	IBGE	http://www.sidra.ibge.gov.br/bda/extveg/default.asp?z=t&o=17&i=P	BR	Tables
ECO, SOC	Economy	Thematic maps: structure and logistics	IBGE	http://ibge.gov.br/mapas_ibge/tem_infra.php	BR	Tables, maps, graphics
ECO, SOC	Trade, agriculture	Annual trade statistics by country, region and economic country groups for food and agriculture commodities	FAO - TradeSTAT	http://faostat.fao.org/site/406/default.aspx	Global	Tables
ECO, SOC, ENV	Agriculture	Agricultural statistics	MGAP - DIEA	http://www.mgap.gub.uy/Diea/	UY	Tables, maps, graphics
ECO, SOC, ENV	Agriculture	Agricultural statistics	MGAP	http://www.mgap.gub.uy/Diea/Anuario2008/Anuario2008/pages/a-indice.html	UY	Tables, maps, graphics
ECO, SOC, ENV	Agriculture	Agricultural statistics	MAG	http://www.mag.gov.py/mag/Estadisticas.htm	PY	Tables, maps, graphics
ECO, SOC, ENV	Agriculture	Agricultural indicators	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=494	AR	Tables
ECO, SOC, ENV	Agriculture	General characteristics of Brazilian agriculture	IBGE	http://www.ibge.gov.br/series_estadisticas/subtema.php?idsubtema=100	BR	Tables

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Group	Key-words	Data name	Source	Link	Coverage	Format
ECO, SOC, ENV	Agriculture	Agricultural resources: use of fertilizers, agrochemicals, land, water, labor, machinery and practices	FAO – Resource STAT	http://faostat.fao.org/site/405/default.aspx	Global	Tables
ECO, SOC, ENV	Agriculture	Time-series and cross sectional data relating to food and agriculture	FAO - FAOSTAT	http://faostat.fao.org/	Global	Tables
ECO, SOC, ENV	Agriculture and forestry	Agricultural and forestry sector	MAG	http://www.mag.gov.py/mag/Estadisticas/rev2006.pdf	PY	Tables, maps, graphics
ECO, SOC, ENV	Environmental data	Energy, biodiversity, agriculture, food, forests, water resources	EARTH TRENDS	http://earthtrends.wri.org/#	Global	Tables, maps, graphics
ECO, SOC, ENV	Food	Food security statistics	FAO - Food Security Statistics	http://www.fao.org/es/ess/faostat/foodsecurity/index_en.htm	Global	Tables, maps, graphics
ECO, SOC, ENV	General data	Statistical information	DGEEC	http://www.dgeec.gov.py/	PY	Tables, maps, graphics
ECO, SOC, ENV	General data sources	LPB – Institutional databases	CICPLATA	http://www.cicplata.org/db_i/dbi_map.php	LPB	Tables, maps, graphics
ECO, SOC, ENV	General data sources	LPB - Projects databases	CICPLATA	http://www.cicplata.org/db_projects/?Mapa=paises&onRollOver=%5Btype+Function%5D&onRollOut=%5Btype+Function%5D&onRelease=%5Btype+Function%5D	LPB	Tables, maps, graphics, publications
ECO, SOC, ENV	Land and water management	Land and water links database	FAO - AGL	http://www.fao.org/landandwater/links.jsp	Global	Tables, maps, graphics

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Group	Key-words	Data name	Source	Link	Coverage	Format
ECO, SOC, ENV	Land management	Integrated planning and management of land and plant nutrient resources, enhancement of soil fertility and land productivity for food production and other social and environmental services of land	FAO - AGL	http://www.fao.org/landandwater/agll/index.stm	Global	Tables, maps, graphics
ECO, SOC, ENV	Livestock	Livestock Production and Health Atlas - indicators	FAO	http://www.fao.org/ag/aga/glipha/index.jsp	Global	Tables, maps, graphics
ECO, SOC, ENV	Sustainable development indicators and statistics	Sustainable development indicator: social, economic and environmental	CEPAL-BADESALC	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ENV	Altimetry	Altimetry map	EPAGRI	http://ciram.epagri.rct-sc.br:8080/mapoteca/pre_download_altimetrico.jsp	Santa Catarina State, BR	Map
ENV	Biodiversity	Biodiversity information system	SIB	http://www.sib.gov.ar/#	AR	
ENV	Biota	Flora - endemic species, under risk	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
ENV	Climate	Thematic maps: climate	IBGE	ftp://geofp.ibge.gov.br/mapas/tematicos/mapas_murais/clima.pdf	BR	Map
ENV	Fire spots, wild fire	Thematic maps; density of heat spots	IBGE	http://www.ibge.gov.br/home/presidencia/noticias/imagens/mapa22.pdf	BR	Tables, maps, graphics

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Fire spots, wild fire	Orbital monitoring of fires	EMBRAPA Monitoreo por satélite	http://www.queimadas.cnpm.embrapa.br/bases/base_2008.htm	BR	Maps and tables
ENV	Forestry	National forest inventory	SAGPyA	http://www.ambiente.gov.ar/?idarticulo=316	AR	Tables, maps, graphics
ENV	Forestry	Volume, biomass and C content of Argentine forests	SAGPyA	http://www.ambiente.gov.ar/archivos/web/umsef/file/volumen_biomasa_carbono.pdf	AR	Tables, maps, graphics
ENV	Forestry	Statistical compendium of Forest-industry sector of Misiones State	Prov. Misiones	http://www.misiones.gov.ar/ecologia/Todo/Bosques/InfCuatrienal/Gauto1B.pdf	Prov. Misiones, AR	Tables and maps
ENV	Hydrology	National system of hydrological information	ANA	http://hidroweb.ana.gov.br/	BR	Tables, maps, graphics
ENV	Land, soil	Land use and land cover	IIASA	http://www.iiasa.ac.at/Research/LUC/luc07/index.html	Global	Tables, maps, graphics
ENV	Meteorology	Weather, Agrometeorology, Satellite images, historical series	INMET	http://www.inmet.gov.br/	BR	Tables, maps, graphics
ENV	Soil	Interactive maps: soils	IBGE	http://mapas.ibge.gov.br/solos/viewer.htm	BR	Maps
ENV	Soil	Soil map	INTA	http://www.inta.gov.ar/suelos/cartas/cartas_de_suelos_indice.htm	AR	Maps

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Soil	Soil and terrain database	GCMD - NASA	http://gcmd.gsfc.nasa.gov/KeywordSearch/Metadata.do?Portal=GCMD&KeywordPath=%5BData_Center%3A+Short_Name%3D%27WDC%2FSOILS%2C+ISRIC%2C+WAGENINGEN%27%5D%7CRefine+By+DataCenters%7CMULTINATIONAL+ORGANIZATIONS%7CUN%2FFAO%2FAGL%2FLAND&OrigMetadataNode=GCMD&EntryId=WORLD-SOTER&MetadataView=Brief&MetadataType=0&lbnode=mdlbl	Global	Tables, maps, graphics
ENV	Soil	Soil parameters	GCMD - NASA	http://gcmd.gsfc.nasa.gov/KeywordSearch/Metadata.do?Portal=wdc&KeywordPath=Parameters%7CAGRICULTURE%7CSOILS%7CRefine+By+DataCenters%7CMULTINATIONAL+ORGANIZATIONS%7CWD%7C%2FSOILS%2C+ISRIC%2C+WAGENINGEN&NumericId=25001&MetadataView=Full&MetadataType=0&lbnode=mdlbl	LAC	Tables, maps, graphics
ENV	Terrain elevation	Digital model of elevation	EPAGRI	http://ciram.epagri.rct-sc.br:8080/mapoteca/pre_download_elevacao.jsp	Santa Catarina State, BR	Maps and images
ENV	Terrain, digital map of terrain	Brazil terrain	EMBRAPA Monitoramento por satélite	http://www.relevobr.cnpm.embrapa.br/conteudo/infotec.htm	BR	Maps
ENV	Wood production	Wood production in Misiones State, ARG	Prov. Misiones	http://www.misiones.gov.ar/ecologia/Todo/Bosques/Plan%20Maestro/PMF.htm	Prov. Misiones, AR	Doc
ENV, ECO	Energy	Production and consumption	CEPAL-BADEIMA	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
SOC	Education	Educational level	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=78	AR	Tables
SOC	Education	Education data	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=79	AR	Tables
SOC	Health	Health statistics	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=65	AR	Tables

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Group	Key-words	Data name	Source	Link	Coverage	Format
SOC	Population	Demographic indicators, per state and total of country	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=163	AR	Tables
SOC	Population	Population projection	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=165	AR	Tables
SOC	Population	Population of indigenous people.	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=167	AR	Tables
SOC	Population	Population data: historical series.	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=50	AR	Tables
SOC	Population	Housing data	INDEC	http://www.indec.gov.ar/principal.asp?id_tema=75	AR	Tables
SOC	Population	Thematic maps: indigenous tribes and areas	IBGE	ftp://geofp.ibge.gov.br/mapas/tematicos/mapas_murais/terras_aldeias_indigenas.pdf	BR	Map
SOC	Population	Population density	IBGE	ftp://ftp.ibge.gov.br/Cartas_e_Mapas/Mapas_Tematicos/densidade_da_populacao.zip	BR	Maps
SOC	Poverty	Poverty in Latin America	CEPAL	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics
SOC	Social indicators and statistics	Population, health, education, etc	CEPAL-BADEINSO	http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp	LAC	Tables, graphics

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Table 3: List of environmental data from CLARIS I for the La Plata Basin.

Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Air speed	Eastward wind	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 3-d atmosphere data (longitude, latitude , pressure, month)
ENV	Air speed	Eastward wind (10mts)	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Air speed	Northward wind	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 3-d atmosphere data (longitude, latitude , pressure, month)
ENV	Air speed	Northward wind (10mts)	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Atmospheric pressure	Sea level pressure	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Cover	Sea ice area fraction	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Cover	Sea ice area fraction	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Cover	Sea ice thickness	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Drought, water	Maximum number of consecutive dry days (Rday < 1 mm)	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Energy flow	Cloud area fraction	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Heat wave duration index: maximum period > 5 consecutive days with Tmax > 5 deg C above the 1961-1990 daily Tmax normal.	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Energy flow	Northward ocean heat transport	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Energy flow	Northward ocean heat transport due to diffusion	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 1-d ocean data (latitude, region, month)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Energy flow	Northward ocean heat transport due to gyre	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 1-d ocean data (latitude, region, month)
ENV	Energy flow	Northward ocean heat transport due to overturning	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 1-d ocean data (latitude, region, month)
ENV	Energy flow	Surface downwelling long wave flux in air	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data(longitude, latitude, month)
ENV	Energy flow	Surface downwelling long wave flux in air assuming clear sky	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Surface downwelling shortwave flux in air	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Surface downwelling shortwave flux in air assuming clear sky	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Surface upward latent heat flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Energy flow	Surface upward sensible heat flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Surface upwelling long wave flux in air	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Surface upwelling shortwave flux in air	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Surface upwelling shortwave flux in air assuming clear sky	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Toa incoming shortwave flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Toa outgoing long wave flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Energy flow	Toa outgoing shortwave flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Energy flow	Toa outgoing shortwave flux assuming clear sky	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Ground cover	Surface snow thickness	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Moisture	Atmosphere water vapor content	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Moisture	Specific humidity	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 3-d atmosphere data (longitude, latitude , pressure, month)
ENV	Pressure	Air pressure at sea level	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Daily mean 2-d atmosphere data (longitude ,latitude, day)
ENV	Rain	Convective precipitation flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Rain	Convective precipitation flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Rain	Precipitation flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Salinity	Sea water potential density	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Global Monthly mean 3-d ocean data</i> (latitude, Longitude, depth, month)
ENV	Sea level height	Geopotential height	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 3-d atmosphere data (longitude, latitude , pressure, month)
ENV	Snow	Snowfall flux	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Stream	Eastward sea water velocity	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Global Monthly mean 3-d ocean data</i> (latitude, Longitude, depth, month)
ENV	Stream	Northward sea water velocity	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Global Monthly mean 3-d ocean data</i> (latitude, Longitude, depth, month)
ENV	Stream	Upward sea water velocity	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Global Monthly mean 3-d ocean data</i> (latitude, Longitude, depth, month)
ENV	Surface	Land area fraction	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Time independent 2-d land surface data

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Temperature	Air temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 3-d atmosphere data (longitude, latitude , pressure, month)
ENV	Temperature	Air temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Temperature	Fraction (expressed as a percentage) of time Tmin > 90th percentile of daily minimum temperature, where percentiles are for the 1961-1990 base period.	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Temperature	Near-surface (usually, 2 meter) air temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Daily mean 2-d atmosphere data (longitude, latitude, day)
ENV	Temperature	Near-surface (usually, 2 meters) air temperature.	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Daily mean 2-d atmosphere data (longitude, latitude, day)
ENV	Temperature	Sea water potential temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Global Monthly mean 3-d ocean data</i> (latitude, Longitude, depth, month)
ENV	Temperature	Surface temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Temperature	Total number of frost days (days with absolute minimum temperature < 0 deg C)	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Temperature, degree days	Growing season length: period between when Tday > 5 deg C for > 5 d and Tday < 5 deg C for > 5 d	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Temperature, energy	Sea surface temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Thermal amplitude	Intra-annual extreme temperature range	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Water	Fraction (expressed as a percentage) of annual total precipitation due to events exceeding the 1961-1990 95th percentile	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Water	Maximum 5 d precipitation total	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)
ENV	Water	No. of days with precipitation greater than or equal to 10 mm d-1	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices</i> (longitude, latitude, year)

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Water	Ocean barotropic stream function	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Water	Ocean meridional overturning stream function	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Water	Ocean mixed layer thickness	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 1-d ocean data (latitude, region, month)
ENV	Water	Sea surface height above geoid	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Water	Sea surface temperature	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Water	Sea water salinity	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Global Monthly mean 3-d ocean data (latitude, Longitude, depth, month)</i>
ENV	Water	Simple daily intensity index: annual total / number of Rday greater than or equal to 1 mm d-1	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	<i>Extremes indices (longitude, latitude, year)</i>

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Group	Key-words	Data name	Source	Link	Coverage	Format
ENV	Water	Soil moisture content at field capacity	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Time independent 2-d land surface data
ENV	Water	Soil moisture content	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data(longitude, latitude, month)
ENV	Water	Transport by all ocean-related processes, including sea water and sea ice	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 1-d ocean data (latitude, region, month)
ENV	Water	Water flux into ocean	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly mean 2-d ocean or sea ice data (latitude, longitude, month)
ENV	Wind, Air speed	Surface downward eastward stress	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)
ENV	Wind, Air speed	Surface downward northward stress	CLARIS I	http://eolo.cima.fcen.uba.ar	Global	Global Monthly means 2-d atmosphere or land surface data (longitude, latitude, month)

6. FINAL REMARKS

The main difficulty in gathering data from the different land use sectors in La Plata Basin is that the existing data are highly scattered. Different and similar data can be found in different institutions across the LPB countries. It is important to make clear that, due the high diversity of environmental, social and economical conditions within LPB, different institutions adopt various survey methodologies. These differences on methodologies can lead to distinct data sampling, data storage formats and even in data discontinuity. In this situation, making comparisons or other combined analysis could be very difficult, requiring data transformation and adjustments, usually with a reduction of data quality. A common example is the time span between samples of a certain parameter, the spatial resolution and grid size of photo mosaic or digital maps. Users also should be aware that there could be inconsistencies of units, lost samples, etc, which requires data adjustments before being used.

The search of data also showed that there is a lack of integration among the institutions of the different countries. This seems to confirm the claim made by Paruelo et al. (2006), according to whom the LPB countries usually do not present standard systems for monitoring land use and other environmental aspects at local levels.

The majority of land use data is related to agriculture, followed by forestry and livestock production, showing that LPB land use is dominated by these three activities. Among these main activities, forestry seems to have the more complete and consistent data of land use, probably due the character of being an almost permanent land use. Information about protected area, although in a lower number, is very consistent. Commonly this is not the situation for agriculture and livestock production, which are very dynamic land use sectors. For example, pastures in certain cases can migrate to other regions, or even participate of rotations between pastures and crops, according markets or land use schedules.

For some land uses there were found few available data, like the area of urbanization, area of dams or even land use for biofuels production. And for some large areas, like Paraguay, few information was found, and the majority of these data were in international databases like FAO and CEPAL, with a low resolution.

Some important data for this deliverable are missing or not available, like large maps of land use, ground cover over the year, etc. This information sometimes exists in micro regional scales for some regions, but not for a whole country or for the whole LPB – this creates a kind

of mosaic of data, with several gaps. Another important remark is the scarcity of GIS data for land use. One exception is Argentina, which has one source of land use that includes GIS. In other countries within the Basin no other relevant GIS data for land use was found.

In some cases, to access certain data it is necessary a formal contact with the sources and/or a declaration of restricted use of the data. Other data, like some satellite images with higher resolution or specific wave length, need to be purchased, and therefore are not directly available. For some maps, tables or graphics, there is the possibility of getting, under contact with the institution, the raw data used to build them. On the other hand, the majority of the metadata reported in this deliverable is property of governmental institutions, which allows free access. Private institutions do not often collect this kind of data; those ones that do this activity, usually do not permit the access to their data, or they present several restrictions.

In Table 1 an imbalance in the availability of environmental and socio-economic data can be verified: social and economic indicators usually can be obtained for large areas, and they usually follow political/administrative divisions, in opposition to land use data, that are much more specific and localized. Usually land use is related to area occupied with certain crop or presents a specific use, like a dam; for this reason, the occurrence of classification ENV was much higher (91 times) than the other classifications (37 for ECO and 26 for SOC). These two data classifications are included in Table 1 whenever the data of land use were presented together with economic or social data.

The distribution of the covered area of national data sources of land use presented Brazil and Argentina with more data sources (28 and 21 data sources, respectively), followed by Uruguay (10 data sources) and then Paraguay (2 sources). International sources that covered LPB totalized 28 sources; however, not all data sources contain data of all LPB countries, requiring a further evaluation according the necessity of some data.

With respect to the different groups of indicators of land use presented in Table 2, the available data do not show the high disparity observed in Table 1. The availability of ENV and ECO indicators was very similar (57 and 53, respectively), and not so far from the selected 38 SOC indicators. The reason is that the number of indicators of land use that can be found in different sources is much higher and diverse than that of land use.

According to the coverage of the indicators of land use, it was found an equal number of sources of Brazil and Argentina (with 23 sources each one), and a reduced number of sources for Uruguay (7 sources) and Paraguay (3 sources). Data bases containing indicators

for LPB totalized 28 sources, with the majority of them being related to FAO or to CEPAL. It is important to emphasize again that some international sources may not have data covering the whole LPB.

Nevertheless, it is expected that these land use data and indicators sources can provide information to be used in different simulations within LPB at local level and large scale, as present and future scenarios simulations to describe the possible impacts on crop yields, hydrological resources, etc., in La Plata Basin, and also in helping to design adaptation strategies.

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