
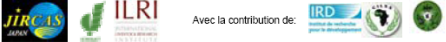


Annexe 2: Power Point Presentations

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT.
Niamey 20-26 September 2006



Avec la contribution de:



Background (1)

Fakara region:

- located 60 km east of Niamey
- privileged area for a series of studies at the landscape scale
- earlier work initiated by ILRI team (Pierre Hiernaux, Matthew Turner)
- study of livestock mediated nutrient cycling in typical South-Saharan crop-livestock systems

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Background (2)

- ILRI approach was holistic -> intensive data collects from 1994 to 2001
- area of 500 km²
- early 2000, ICRISAT involvement: characterization and in-situ evaluation of technologies
- 2003-2004: JIRCAS special projet; DGDC/ICRISAT project; DMP project; Agrhymet impact of climate change project ...

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Background (3)

Secondary data:

- IRD/CNES/CESBIO lead HAPEX-Sahel project (Hydrological and Atmospheric Pilot Experiment in the Sahel, 1990-1992)
- African Monsoon Multidisciplinary Analysis (AMMA) (ICRISAT has recently signed a Data Agreement with AMMA/IRD allowing access to several data sets and satellite images collected within this project)
- INRAN (Gandah et al.)
- UCL
-

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Background (4)


Secondary data:

- Free distribution data i.e. Landsat, SRTM,

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Today's situation:

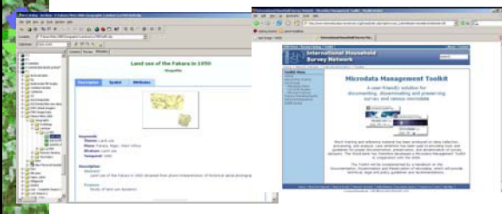
- Data are not properly documented
- Difficult to capitalize on data collected by collaborating institutions
- Data sharing is very limited
- Important data sets may be lost



Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

JIRCAS Commissioned Research:

Objective:
Document Fakara Data collected in the Fakara area by ILRI, ICRISAT and JIRCAS, according to recognized standards and software



Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

JIRCAS Commissioned Research:

Workplan:

- 1) Completion of the inventory of available data, by September 2006 through interaction with concerned scientists and a workshop
- 2) Encoding of data, by December 2006
- 3) Finalization of the Fakara Metadatabase document and submission of final report with publication list to JIRCAS, by January 2007

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Workshop objectives:

- 1) Complete the inventory of bio-physical, socio-economic data sets (spatially explicit or not) collected over the Fakara region by the three institutions (JIRCAS, ICRISAT, ILRI)
- 2) Refine guidelines for metadabase creation and data sharing (procedure, tools, sharing rules)

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Workshop objectives:

- 3) Share past on going research objectives protocols and results and future research plans for better integration of research of the three institutions and future data requirements
- 4) Establish clear protocols between ICRISAT staff responsible for metadata encoding and data owners (scientists) to facilitate metadata collection/encoding during the period October-November 2006.

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Programme Wednesday 20 September :

- 9:30-9:45 Opening statement (R. Matsunaga)
- 9:45-10:15 Presentation of the objectives (B. Gérard)
- 10:15-10:45 Why documenting research data? Is it worth the extra-effort? (P.S. Traoré)
- 10:45-11:15 Coffee break
- 11:15-12:15 Presentation of ILRI past and on-going research in the Fakara (A. Ayanitunde)
- 12:15-13:15 Lunch
- 13:15-14:00 Presentation of JIRCAS research in the Fakara (S. Hitoshi, K.Hayashi, R. Matsunaga)
- 14:00-14:45 Presentation of ICRISAT research in the Fakara (F. Dougbéji, B. Gérard, R. Tabo)
- 14:45-15:15 Coffee break
- 15:15-15:45 Inventory of Fakara secondary data sets (B. Gérard)
- 15:45-16:15 Activities of AMMA in the Fakara (J.L. Rajot and L. Descroix)

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Programme Thursday 21 September :

- 8:30-10:30 Tools and methods for data documentation (P.S. Traore, M. Binta, A. Laouali, B. Gérard)
- 10:30-10:45 Coffee break
- 10:45-12:00 Agrhymet experience with metadata and data sharing such as AP3A (H. Nouaga, I. Garba)
- 12:00-13:00 Lunch
- 13:00-14:00 Guidelines on completing the inventory
- 14:00-17:00 Workgroup per institution to complete a detailed inventory

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Programme Friday 22 September :

•8:30-10:30	Presentation of the detailed inventory by JIRCAS, ILRI, ICRISAT
•10:30-10:45	Coffee break
•10:45-12:00	Discussion on the user interface for the metadatabase
•12:00-13:00	Lunch
•13:00-15:00	Planning of interaction between ICRISAT staff responsible for metadatabase creation and data owners/custodians

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Programme Monday 25 September and Tuesday 26 September :

Monday:

All day: Work session of the ICRISAT staff and interaction with data custodians as required

Tuesday:

Morning: Work session of the ICRISAT staff interaction with data custodians as required

Afternoon: Debriefing session: Presentation of the work realized and discussion of the modalities/time frame to complete the exercise

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Participants :

T. Abdoulaye¹ (JIRCAS/INRAN, Niamey)
 A. Ayantunde¹ (ILRI, Niamey)
 Ms. Binta² (ICRISAT, Bamako)
 L. Descroix³ (IRD, Niamey)
 D. Fatondji¹ (ICRISAT, Niamey)
 M. Gandah¹ (INRAN, Niamey)
 I. Garba³ (Agrhymet, Niamey)
 B. Gérard^{1,2} (ICRISAT, Belgium)
 K. Hayashi¹ (JIRCAS, Niamey)
 A. Laouali² (ICRISAT, Niamey)
 I. Maikano² (ICRISAT, Niamey)
 R. Matsunaga¹ (JIRCAS, Niamey)
 H. Nouage³ (Agrhymet, Niamey)
 H. Ousamne² (ICRISAT, Niamey)
 H. Rabe² (ICRISAT, Niamey)
 J.L. Rajot³ (IRD, Niamey)
 H. Shinjo¹ (Kyoto University/JIRCAS, Japan)
 R. Tabo¹ (ICRISAT, Niamey)
 P.S. Traore^{2,3} (ICRISAT, Bamako)

¹ data owner/custodian, ² metadatabase building, ³ resource person

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Title. The name by which the resource is formally known.

Subject. The topic of the resource.

Description. An abstract, a table of contents, or a free-text account of the content.

Type. The nature or genre of the content of the resource (e.g., a survey questionnaire, a data processing syntax program, a map).

Source. A reference to a resource (e.g., a PDF filename, or a website URL).

Relation. A reference to a related resource (this element will rarely be used).

Coverage. The extent or scope of the content of the resource. Coverage will typically include spatial location (e.g., a country), or a temporal period (a date or date range).

Creator. The person(s), organization(s), or service(s) responsible for making the content of the resource.

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT

Publisher. The person(s), organization(s), or service(s) responsible for making the resource available.

Contributor. The person(s), organization(s), or service(s) having contributed to the content of the resource.

Rights. A rights management statement for the resource.

Date. A date associated with an event in the life cycle of the resource. Typically, Date will be associated with the creation or availability of the resource.

Format. May be used to determine the software, hardware or other equipment needed to display or operate the resource (e.g., "STATA Version 9", or "MS-Excel 2000").

Identifier. An unambiguous reference to the resource within a given context. Examples of formal identification systems include the Uniform Resource Locator (URL), and the International Standard Book Number (ISBN).

Language. A language of the intellectual content of the

Workshop on the documentation of the Fakara data collected by JIRCAS, ILRI and ICRISAT



Why documenting research data? Is it worth the extra effort?

P.S. Traoré & al.



ICRSAT-ILRI-JIRCAS Fikara metadata workshop, 20-26 Sept. 2006

Outline

- Laying the foundation: scientists and the data [investment in data][geospatial case]
- what are metadata and why they are important [definition][the burden]
- what is a dataset? [definitions][series-level][feature-level][geospatial, attribute features]
- CSDGM = the FGDC standard [ask Binta]
- Metadata errors and tips [10 common errors][metadata checklist]
- The next step: serving (meta)data [online][GeoNetwork][IMS]
- Closing the loop: meta-crap and the meta-utopia... [Fakara Inc.]?



ICRSAT-ILRI-JIRCAS Fikara metadata workshop, 20-26 Sept. 2006

Gathering, generating data: a considerable investment for ag. scientists

- field data, lab data
- biophysical, socio-economic data
- proprietary, 3d party data
- specialized, disciplinary data
- spatialized or not

Trends in data gathering / data generation

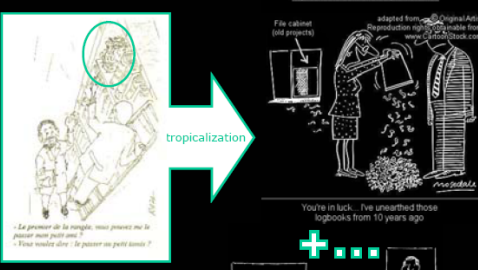
- data quality / data quantity paradigm = consequence for metadata
- remote sensing share of data provision growing – just a matter of time (technology driven)
- increase in connectivity =
- increase in stochasticity = increase in dataset sizes
- fall of the King data, rise of the Queen metadata?

ICRSAT-ILRI-JIRCAS Fikara metadata workshop, 20-26 Sept. 2006

However...


tropical version... with help of farming



File cabinet (old projects) adapted from Original Artist: Reproductions: igli, iStock from www.istock.com

Le premier de la meute, quel premier me le premier sera-t-il ?
 Vous voulez être ? le premier ou le dernier ?

You're in luck... I've unearthed those logbooks from 10 years ago



ICRSAT-ILRI-JIRCAS Fikara metadata workshop, 20-26 Sept. 2006

Recent trends with geospatial datasets

GIS boom over relatively short time has generated many undocumented geospatial datasets => 2 problems:

- absence of documentation shielded existing datasets to many potential users
- lack of info. on technical characteristics raised doubts on data fitness for other potential applications

This general lack of knowledge (rather than a lack of resources) forced GIS institutions to spend considerable \$\$\$ on data production (duplication) and limited time available for data analysis

Since the 1990s the problem of standardizing GIS data descriptions was addressed with 2 objectives:

- document a set of characteristics of GIS datasets that can make the information more useful for third parties
- use machine readable standards so that GIS community can easily retrieve useful datasets for given thematic/geographic attributes using online search engines

Expected outcomes = spread of knowledge of existing data, less duplication of data, more data analysis

ICRSAT-ILRI-JIRCAS Fikara metadata workshop, 20-26 Sept. 2006

Metadata = "data about data"... definitions:

Meta = change or transformation

Data = factual information used as a basis for reasoning

Metadata = factual information used as a basis for reasoning which describes a change or transformation (ouch...). In fact, that is exactly what metadata is.

For the Federal Geographic Data Committee (FGDC), metadata is data about the content, quality, condition, and other characteristics of data. Metadata is that component of data which describes itself.

In terms of a GIS, however, metadata is used to describe how the geospatial and attribute data was collected and processed into its final form. Metadata, though not always an obviously visible component of a GIS, is just as important as the geospatial and attribute components.

(ESRI, 2005 – Protecting your investment in data with metadata)

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Metadata = "data about data"... examples

CSRSAT 4LR 2006
ArcObjects developer's guide: ArcInfo 9
Environmental Systems Research Institute (Redlands, Calif.)

Title: **ArcObjects Developer's Guide, ArcInfo 9**
Publication info: Redlands, CA: Environmental Systems Research Institute, c1999.
Original author: Esri
Help for: CSRSAT/ESRI
Title subject: **ArcInfo**
Subject terms: **Geographic information systems; Handbooks; Manuals, etc.**
Added author: **Environmental Systems Research Institute (Redlands, Calif.)**

Data = ArcObjects developer's guide (not shown)
Metadata = corresponding card in library card catalog



Data = food stuff inside
Metadata = nutrition facts label

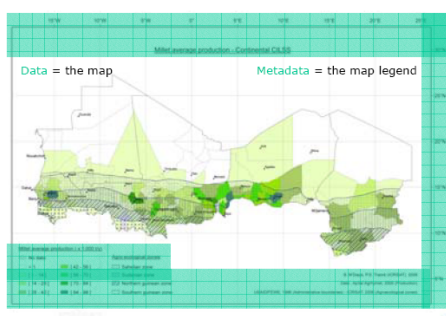


Data = photo
Metadata = backside notes

Andrea and Emma (15 mos.)
12/02/99
Photo © Terry Burnette; house.

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Metadata = "data about data"... examples (contd)



Data = the map
Metadata = the map legend

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the importance of metadata

- Help potential users **retrieve data** and **evaluate fitness**
- Help data producers **publicize and support use** of data
- **Increase the value** of data as potential users are more likely to retrieve information about it and make proper use of it
- **Protect an organization's investment** in data throughout the years
- **Limit loss of value** that affects undocumented data with staff changes
- **Reduce duplication** of datasets arising from lack of confidence in existing data

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the burden of metadata

- **high initial time commitment** that people are often not prepared to do
- guidelines and tools can help implement **metadata policy**
- but **metadata encoding** remains dependent upon efficient software tools



- metadata policy = should apply not only to new datasets, but also previously created ones... **by far the biggest burden** for an organization, because info. required to describe past data often missed as data creators have left

⇒ postponing description of existing datasets will result in **shinking knowledge** about the datasets = **NO GOOD!**

⇒ highlights the need to **plan metadata establishment ASAP** for existing datasets

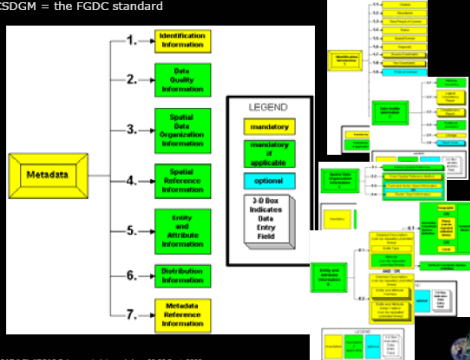
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What is a dataset? What does it mean for metadata?

- "collection of related data"
- but... **no standardized, unique definition** of geographical datasets ⇒ subjective and project/objective specific !
 - different themes belonging to same geographic area (e.g. Fakara)
 - similar themes belonging to different geographic areas (
- different GIS datasets might show different content and hierarchical structure
- **granularity** is a way to define hierarchy in a dataset, helps metadata implementation
- understanding **commonality** between elements is key... "to correctly apply a metadata standard to a dataset, it helps to understand what the single elements **share in common** and how they could **integrate inside the dataset**" (CSI, 2005) ⇒ e.g. contact, distribution infos.
- then, implementing **inheritance** is critical... "the efficient metadata management of a GIS dataset is implemented in such a way that most of the metadata info can flow from coarse level of granularity down to individual elements of the dataset" (CSI, 2005) ⇒ use of **metadata templates**

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CSDGM = the FGDC standard



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10 most common metadata errors
(see FGDC and National Metadata Cadre handout for details)

10. Define your dataset too finely or too broadly
9. Using incorrect State Plane Coordinate System Zone Identifier values
8. Confusing "Currentness Reference" with "Publication Date"
7. Misunderstanding resolution
6. Putting too much faith in metadata tools
5. Taking the minimalist approach
4. Understanding assessments of consistency, accuracy, completeness, and precision
3. Glossing over Section 5. Entity and Attributes
2. Thinking of metadata as something you do at the end of the data development process
1. Not doing it!

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Suggested Metadata Checklist (see Schweitzer1998*.pdf handout for details)

Metadata standards are specifications => they tend to emphasize fine details of geospatial data. Below are interview guidelines to fill FGDC type records

1. **What** does the dataset describe?
2. **Who** produced the dataset?
3. **Why** was the dataset created?
4. **How** was the dataset created?
5. **How reliable** are the data, and **what problems** remain in the dataset?
6. **How can one get a copy** of the dataset?
7. **Who wrote the metadata?**

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GeoNetwork



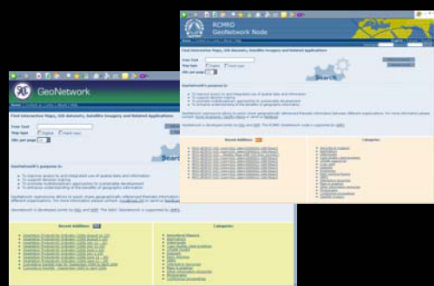
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GeoNetwork inside CGIAR



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GeoNetwork in Africa



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Metadata records on GeoNetwork nodes



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Metacrap... oops, metadata?

Cory Doctorow, 2006-2007 Canadian Fulbright Chair in Public Diplomacy:



"A world of exhaustive, reliable metadata would be a utopia. It's also a pipe-dream, founded on self-delusion, nerd hubris and hysterically inflated market opportunities" (2001)

- **metadata are too expensive and time-consuming.** Argument = companies will not produce metadata without need because they cost extra money and private users also will not produce complex metadata because their creation is very time-consuming. Thus it is not useful to create formats and standards when no one will use them.
- **metadata are too complicated.** Private users will not create metadata because existing formats, especially MPEG-7, are too complicated. As long as there are no automatic tools for creating metadata, they will not be created.
- **metadata are subjective and depend on context.** Most probably, two persons will attach different metadata to the same resource due to their different points of view. Moreover metadata can be misinterpreted due to its dependency on context.

.../... (worse to come... :-)



Metadata bashing contd.



- **there is no end to metadata.** E.g. annotating a match of soccer with metadata one can describe all the players and their actions in time and stop there. Or one can also describe the advertising in the background and the clothes the players wear. Or one can also describe each fan on the tribune and the clothes they wear. All of these metadata can be interesting to one party or another — e.g. the spectators, sponsors or a counterterrorist unit of the police.

- **metadata are useless.** Many of today's search engines allow finding texts very efficiently. There are other techniques for finding pictures, videos and music, namely query-by-example that will become more and more powerful in the future. Thus there is no real need for metadata.



So...??



Adapted from S. Harris





What we can contribute (Sibiry & al. in support of the JIRCAS-ILRI-ICRSAT team)

- Guidelines, documentation and backstopping on best practices in metadata edition and sharing (e.g. automation)
- Setup of a GeoNetwork node at Sadoré and interconnection with other ICRISAT/CGIAR/third party nodes
- Provision of two ESRI courses on:
 - Protecting your Investment in Data with Metadata
 - Creating and Maintaining Metadata using ArcGIS desktop



**Fakara Metadata base:
 Method and Activities for data
 documentation**
Bamako Meeting 20070118

AMLaouali

Topics content

- 1- Metadata Overview
- 2- International Metadata standards
- 3- Method and Progress activities

Metadata Overview

Definitions

- **literal translation**
 - Metadata are data on data;
 - Metadata is information about data;
 - Metadata is information about information
- **improved definition**
 - Metadata is structured, encoded data that describe characteristics of information entities (Resources) to aid in the identification, discovery, assessment, and management of the described entities

Metadata Overview

Objectives

- To count and to catalogue the data,
(Geographic, Socio-economic, Agronomic... data)
- To store and to manage the metadata through a relational base
- To ensure the consultation of the catalogue... and later the access to the data
- To allow the export of the metadata to a XML... interchange format.

International Metadata standards

15 Metadata Elements

- **Content**
- **Intellectual property**
- **Version**

<ul style="list-style-type: none"> • Title • Creator/Author • Contributors • Subject/Keywords • Description • Publisher • Dates: creation; last modified 	<ul style="list-style-type: none"> • Identifier • Resource type • Format • Relation • Source • Language • Coverage • Rights
--	---

Source: Dublin Core (DC)

International Metadata standards

- Content Standards for Digital Geospatial Metadata (FGDC)
 - Identification Information
 - Data Quality Information
 - Spatial Data Organization Information
 - Spatial Reference System
 - Entity and Attribute Information
 - Distribution Information
 - Metadata Reference Information

Progress activities

Datasets documented but not approved

Scientists custodian	Institution
Ryoichi Matsunaga	JIRCAS
Keiichi Hayashi	JIRCAS
Tahirou Abdoulaye	JIRCAS
Fatondji Dougbedji	ICRISAT
Hitoshi Shinjo	JIRCAS
Uru Tanaka	JIRCAS
Augustine A. Ayantunde	ILRI

Progress activities

Non documented datasets

--Priority data

Scientists custodian	Institution
• Bruno Gérard	ICRISAT
• Fatondji Dougbedji	ICRISAT
• Hitoshi Shinjo	JIRCAS
• Pierre Hiernaux	ILRI
• Augustine Ayantunde	ILRI

--Secondary data

Thanks