Instituto de Capacitación en Clima y Salud - Mercosur

### Presentación de la Data Library

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# Objetivos

- Familiarizarse con la organización de la Data Library
- Aprender como localizar bases de datos y seleccionar dominios espaciales y temporales
- Aprender como efectuar análisis aritméticos simples
- Aprender como construir mapas y gráficos
- Aprender como bajar datos e imágenes
- Entender como la Data Library está relacionada con los Map Room

### Plan de la Presentación

Presentación de la organización y herramientas básicas de la Data Library Ejercicios

## La Data Library del IRI es...

- Base de datos
  - >400 bases de datos relacionadas con todos aspectos del clima

### • Análisis de datos

- Operaciones aritméticas
- → análisis de EOF

### Visualización de datos

Series temporales, mapas, gráficos

#### Bajar datos

 Acceso a archivos de datos en formato texto, binario, compatible con SIG, etc.

### http://iridl.ldeo.columbia.edu

## Página Home de la Data Library

🚩 🚰 IRI/LDEO Climate Data Library - Mozilla Firefox	_ <b>-</b> ×								
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Data Library       • access any number of datasets;         • create analyses of data ranging from simple averaging to more advanced EOF analyses;         • monitor present climate conditions with maps and analyses in the Maproom;         • create visual representations of data, including animations;         • download data in a variety of commonly-used formats, including GIS-compatible formats.	Global Climate								
Datasets       Are you now to the world of climate data? Check out our Introduction to Climate Data page.         By Category       What's New	Map Room A collection of maps and analyses used to manitor alignets								
By Search       Mar 08       - Shapes for climate zones in Sri Lanka have been added as a new Features data set         Help       Mar 08       - A new "International Federation" Map Room has been added to the IRI Map Rooms a from the Map Room front page. It contains a forecast precipitation map tool develope with the International Federation of Red Cross and Red Crescent Societies that features provide context for global precipitation forecasts.	and is accessible ed in collaboration es analyses to access the source data.								
Ouestions and Answers help@iri       Mar 08       - A new "linked pdf" image option has been added to the Figure Viewer pages of the D Clicking on the "linked pdf" button will produce a clickable PDF version of the image that links back to the Figure Viewer page for the image in the Data Library. The follow provides an example: February 2008 SSTA         Feb 08 - A k-means cluster analysis named k-means136 has been added to the Data Library as	Data Library.     Climate Information       ge you are viewing owing link     Digest       A monthly publication     covering global climate								
Finding Data     Help Resources       Data sets by Category     Introductory Tutorial	events, their impacts and the seasonal forecast. ENSO Web								
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### Localizar Bases de Datos

# Organización de las Bases de Datos

-Organización Primaria

-Base de Datos -Base de Datos -Variables -Base de Datos -Variables -Base Datos -Variables



-NASA

-ERBE (Earth Radiation Budget Experiment) -Datasets by instrument

-Variables

-GES-DAAC (Distributed Active Archive Center)

-GISS

-LeGrande\_Schmidt2006 (authors)

-GPCP (Global Precip Climatology Project)

-Datasets by version

-Datasets by instrument -Variables

-Organización Primaria

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help@iri	CDIAC tr051	5x4	GLOBAL, [625,86N]	Dec 1850 - Feb 1851,Sep-Nov 1989	SEASONAL					
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	<u>PrepClim</u>	Description: Precipitation climatology from the Variability Analysis of Surface Climate Observations (VASClimO) project - a joint project of the German Weather Service (DWD/GPCC)and the Johann Wolfgang Goethe-University Frankfurt.								
	IITM	7 REGIONS, 29 SUBDIVISIONS	[65E,98E], [5N,35N]	Jan 1871,Dec 2002; Jan 1901,Dec 1990	MONTHLY					
		Description: Subdivision	-, region-, and country-level pre	ecipitation and temperature	data for India.					
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	EPIOMS	Description: Aerosol ind	ex and erythemal UV irradiance	data from the Earth Pr	obe TO	MS instrument.					
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Contenidos y Estructura de las Páginas de Bases de Datos Bases de Datos en Retículas

























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🐑 get data as a table in a variety of formats.
Contenidos y Estructura de las Páginas de Bases de Datos Bases de Datos de Estaciones



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### Selección del Dominio de los Datos

**Bases de Datos en Retícula** 





🕝 Internet

#### Setting Ranges

If you want to restrict the range along a grid, choose here.

	name	range				
X	Longitude	0.5E to 0.5W				
Y	Latitude	89.5N to 89.5S				
T	Time	1 Oct 1996 to 31 Dec 2005				
		Restrict Ranges				
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<u>Selección de los Datos</u> <u>Etapa 1</u>. Cambie el texto en la sección Setting Ranges *utilizando la misma sintaxis* del texto ya escrito.

<u>Etapa 2</u>. Haga clic el botón **Restrict Ranges**.

<u>Etapa 3</u>. Cuando la información en la sección arriba corresponde a lo que quiere, haga clic el botón **Stop Selecting**.





## Selección del Dominio de los Datos

**Bases de Datos de Estaciones** 



🔄 NOAA: National Oceanic and Atmospheric Adminstration

🥑 Internet

Opción 1: Seleccionar todas las estaciones en

<u>la mapa</u>

<u>Etapa 1</u>. Haga clic y arrastre un rectángulo sobre el área que quiere (o manualmente ingrese las limites lat/lon y haga clic el botón de actualización).

<u>Etapa 2</u>. Cuando tiene el área que quiere, haga clic el lazo **List of stations in current view.** 

Etapa 3. Haga clic el lazo Dataset (and map) with all data found in search.





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<u>Ejemplo</u> Seleccionar estaciones en el sur del continente africano	Pageness (a) Indep() (Inde).dee0.columnal.edu/sources/.novAA(.NCDC).GHCN(.v2deta)searches.html?searchpar.toh.low=11.66666 (Columnal.edu/sources/.novAA(.NCDC) GHCN beta         Searches in NOAA NCDC GHCN beta         Vou can specify a single station here, otherwise use the searches below.         Tutorial Questions & Answers         NOAA NCDC GHCN v2beta         Bercify ranges and the words or (sub)strings you would like to match: anything left blank wirestrict the search. In particular, you can specify a lower limit without specifying an upper limit vice versa).						will not limit (ar	: nd
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#### Opción 2: Buscar una estación Etapa 1. Haga clic el lazo Searches.

<u>Etapa 2</u>. Ingrese la localización que quiere y haga clic el botón **Search** [Dataset Name].

Etapa 3. Para seleccionar todas las estaciones que corresponden, haga clic el lazo Dataset (and map) with all data found in search.

Para seleccionar una o mas de las estaciones que corresponden, selecciónelas y haga clic el botón **Get Marked Stations**.



	🔮 Searches in NO	AA NCDC GHCN v2beta - Microsof	't Internet Explo	rer			J	<u>-       ×</u>
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## Visualizar Datos: Construir mapas y gráficos



#### Other Info

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## Bajar Archivos de Datos



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	Partial Information These files contain only	Formats some of the available metadata.						
Da	Columnar Table	A table with separate columns of numbers for each independent variable (i.e., grids) and for the data. This is an inefficient for you would have gotten a <b>HUGE</b> file for dataset of this size. This file will be approximately 58724352 bytes, with 4 columns 3670272 numbers.	mat, so of					
Fi Q	2-Dimensional Tab-Separated Tables	Tab-separated-values (tsv) file with information about the independent variables (i.e., grids). The list to the left allows you to	specify					
Do — Ni	<u>Y X Table</u> <u>X Y Table</u>	running down the side of the table (identifing rows) is listed second.						
sat pi	t GIS-Compatible Formats There are three GIS-compatible formats available.							
	2-Dimensional Table	A 2-dimensional ascii file that includes an ArcInfo Header.						
	<u>IDA Image</u>	File(s) in the Image Display and Analysis format. Typically used with WinDisp.						
Oth	LAN Image	File(s) in the ERDAS LAN format. Typically used with various GIS programs, including ArcView and HealthMapper.						
	GeoTIFF Image	File in GeoTIFF format. Typically used with various GIS programs, including ArcView and nv.						
Ful								
Ine	These files contain just t	the data without any of the available metadata.						
OP	_	A big-endian, ieee single-precision file in floating-point format. Also known as a binary random access file. This is a random-	access					
<u>net(</u>	Binary direct access	file; it is purely data with no record-structuring information. The data is structured to correspond to the independent variables grids) in X Y T order, with the first grid varying the fastest.	(i.e.,					
Dat	DEC ALPHA direct access	Same as the binary random/direct access format above except that it is byte-swapped for DEC ALPHA's and PC's (little-en	idian).					
<b>Pai</b> The	Binary FORTRAN sequential access	A big-endian, ieee, single-precision file in floating-point format. This is a sequential-access file with each record containing all Y points. It <b>must</b> be read using FORTRAN sequential access. Records correspond to T.	the X					
Done	DEC ALPHA sequential access	Same as the binary sequential access format above except that it is byte-swapped for DEC ALPHA's and PC's (little-endian	).					
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give the data as numbers. Missing Data You have the choice of <b>skipping</b> (i.e. omitting) all lines that contain missing data, <b>blanking</b> missing data (i.e. there will still be a line), or <b>marking</b> missing data. The Missing Data Marker lets you specify the missing data marker in that	
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#### Opciones de Análisis... Table of Contents - Netscape -File Edit View Go Bookmarks Tools Window Help N http://iridl.ldeo.columbia.edu/dochelp/StatTutorial/TOC/ 🐔 Home 🛛 🛅 Bookmarks ⊡, 💿 Table of Contents [ 💿 dataset: NOAA NCDC GHCN v2b... 🗍 💿 Datasets By Category - Atmosphe... × 囱 Table of Contents IRI Statistical Measures of Central Climatologies and Standardized Running and Weighted Analysis Tendency Āverages Anomalies Tutorial Data Homogeneity Data Stationarity Measures of Dispersion Table of Contents Climate Indices Frequency Distributions Correlation Measures of Central Tendency Singular Value Interpolation Techniques Running and Decomposition Weighted Averages Climatologies and Standardized Anomalies 1. Measures of Central Tendency Data A. Introduction Homogeneity Data Stationarity B. Mean Measures of C. Median Dispersion D. Trimmed Mean Correlation E. Trimean Climate Indices F. Interpreting Measures of Central Tendency Frequency Distributions Singular Value 2. Running and Weighted Averages Decomposition A. Running Average Interpolation B. Weighted Average Techniques 3. Measures of Dispersion help@iri A. Introduction -II: 🔊 🔐 Frequency Distributions 🖂 🞯 🔲

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# Map Room del IRI

	<ul> <li>344</li> <li>344</li> </ul>	RI Map Room - Mozilla Firefox	
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		The IRI Map Room offers many detailed analyses of current global and regional climate, as well as historical data.	
		Many maps are linked directly to the IRI Data Library - for quick access to the data being viewed just click on the map. You will then be able to change dates, views, or even download the data.	
		The map room is divided into seven sections:	
<u>Global</u>		Current and past observations of the global physical climate including climatol	ogies
Regional		Current and past observations of regional physical climate including climatolog	gies
<u>ENSO</u>		Analyses for monitoring the current and past state of the El Niño Southern Osci	llation (ENSO)
<u>Health</u>		Analyses that explore and inform users about the relationship between climate a	and health
Food Securi	ty	Analyses that monitor climate and environmental conditions associated with for	od security
<u>Fire</u>		Analyses that monitor climate and environmental conditions and provide predic with fire	tive tools associated
Internationa Federation	<u>l</u>	Analyses developed in collaboration with the International Federation of Red C Crescent Societies to provide context for global precipitation forecasts	ross and Red

	Regional	Current and past observations of regional physical climate including climatologies	ĺ
	<u>ENSO</u>	Analyses for monitoring the current and past state of the El Niño Southern Oscillation (ENSO)	
	<u>Health</u>	Analyses that explore and inform users about the relationship between climate and health	
	Food Security	Analyses that monitor climate and environmental conditions associated with food security	
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## Información Climática en Contexto



#### http://iridl.ldeo.columbia.edu/maproom/.IFRC/.Forecasts/
# Información Climática en

#### Contexto



http://iri.columbia.edu/~mbell/MDG/

# Avanzar Solo

- Consejo: Marque como favorito los análisis que pudiera utilizar de nuevo
- Que hacer cuando tiene alguna duda:
  - 1. Buscar ejemplos similares en los Tutoriales o las Documentaciones
  - 2. Enviar un e-mail\*\* a <u>help@iri.columbia.edu</u>

\*\* Copie el url de la página problemática en el correo

# Ejercicios

- 1. Selección del dominio (espacial y temporal)
- 2. Buscar Datos
- 3. Calcular...
- 4. Climatologías
- 5. Construir mapas/gráficos
- 6. Bajar datos en el formato GeoTIFF

# Ejercicio Grupo 1

- Utilice el catálogo Datasets by Category para localizar una base de datos con las características siguientes:
  - 1. Tiene observaciones de temperatura superficial del mar
  - 2. Resolución temporal mensual
  - 3. Resolución espacial de 1ºx1º a lo menos
  - 4. Incluye 60ºS-60ºN en el dominio espacial
  - 5. Incluye 1985-2005 en el dominio temporal

## Ejercicio Grupo 1: Resultado

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Tutorial Questions & Answers NOAA NCEP EMC CMB GLOBAL: Global SST data from Reynolds and Smith.
help@iri Documents
overview an outline showing sub-datasets of this dataset
Datasets and variables
<u>Reyn_SmithOlv1</u> Sea surface temperature fields blended from ship, buoy and bias-corrected satellite data (Reynolds and Smith 1994).
<u>Reyn_SmithOIv2</u> SST fields updated from version 1 with more COADS data, new sea-ice to SST conversion algorithm, and 1971-2000 climatology.
Last updated: Tue, 09 Mar 2004 22:00:18 GMT
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# Ejercicio Grupo 2

Utilice la interfaz Browse/Search Datasets para localizar todas las bases de datos que tienen las características siguientes:

- 1. Incluyen una variable NDVI
- 2. Incluyen datos del instrumento MODIS
- 3. Incluyen datos de África

### Ejercicio Grupo 2: Resultados

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Spatial Resolution: Gridded , 250m (6)	May 2000,19-31 Dec 2009]	
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#### Ejercicio Grupo 3:

Bajar un archivo GeoTIFF de NDVI para Etiopía para un periodo de 16 días en Diciembre 2009

- Localizar SOURCES .USGS .LandDAAC .MODIS .version\_005
  .EAF
- Seleccione la variable NDVI
- Seleccione un solo paso de tiempo en Diciembre 2009
- Visualice los datos en la herramienta de visualización y dibuje las fronteras de los países
- Haga clic y arrastre una área de la mapa que incluye Etiopía
- y pues haga clic el botón "data in view"
- Seleccione el lazo "Data Files"
- Seleccione el lazo "GeoTIFF Image"

 Precise más la selección del dominio espacial, si necesario, pues haga clic el lazo "\*\*\*\* GeoTiff for GIS" para bajar

## Ejercicio Grupo 3: Resultado



Ejercicio Grupo 4: Construir una serie temporal de precipitación de estación mensual para Dakar, Senegal

- Desde la base de datos NOAA NCDC GHCN v2beta
  - Buscar una estación en Dakar
  - Seleccionar la variable de precipitación
  - Visualizar los datos en la herramienta de visualización
  - Ajuste el periodo temporal de los datos para centrarse en datos disponibles

## Ejercicio Grupo 4: Resultado



#### Ejercicio Grupo 5: Construir una mapa animada de la temperatura de la climatología mensual en China, incluyendo fronteras provinciales y ríos mayores

- Localice la base de datos UEA CRU TS2.1
  - Seleccionar la variable de temperatura media mensual
  - Seleccionar un periodo de referencia para la climatología (1971-2000)
  - Seleccionar el lazo <u>Monthly Climatology</u> en la página Filters
  - Visualizar Ingrid en Expert Mode
  - Visualizar los datos en la herramienta de visualización
  - Seleccionar una región que incluye China
  - Seleccionar una escala de color para la temperatura y añadir los estados y los ríos
  - Animar la mapa escribiendo "Jan to Dec" en el formulario del tiempo

## Ejercicio Grupo 5: Resultado



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#### Ejercicio Individual 1:

Construir una mapa mundial de la climatología de TSS para el mes de Julio con respeto al periodo de referencia 1971-2000.

Para empezar...

Lugar de la base de datos en la Library: NOAA NCDC ERSST

Pista: Calcular la climatología de 1971-2000 antes de seleccionar el mes de Julio

#### Ejercicio Individual 2:

Construir una mapa animada de las anomalías de la humedad terrestre para el mes de Abril en Afganistán durante los anos 1990-2006

#### Para empezar...

Lugar de la base de datos en la Library: NOAA NCEP CPC GMSM

Pista: Calcular las anomalías antes de seleccionar las fechas de Abril

## Ejercicio Individual 3:

Construir un grafico tiempo/longitud de TSS semanal en el Pacífico Tropical para el periodo Ene 1982 – Dic 2005. Utilice los datos entre  $5^{\circ}S$  y  $5^{\circ}N$ . Para empezar...

Pista: Hay dos bases de datos que tienen datos semanales del interfaz mar-aire. Utilice la que ya tiene anomalías de TSS para que no tener que calcularla.

#### Ejercicio Individual 1: Resultado



#### Ejercicio Individual 2: Resultado

Para animar la mapa: Ingresar Apr 1990 to Apr 2006 en el formulario *Time* y haga clic el botón Actualizar



#### Ejercicio Individual 3: Resultado

