FP7–INCO-2011–7
INCO-LAB project 294947
https://swanproject.arizona.edu/

GLOBAL CLIMATE MONITOR

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SCHEME OF THE PRESENTATION

1. **Background**
2. **Objectives**
3. **Climate data used**
4. **Data model and data flow. Technology and Information System**
5. **Climatic indicators designed**
6. **GLOBAL CLIMATE MONITOR**
7. **Further research….**
8. **Some final ideas**

1. Background (The climate data sets)

TRADITIONAL CLIMATE DATA SETS

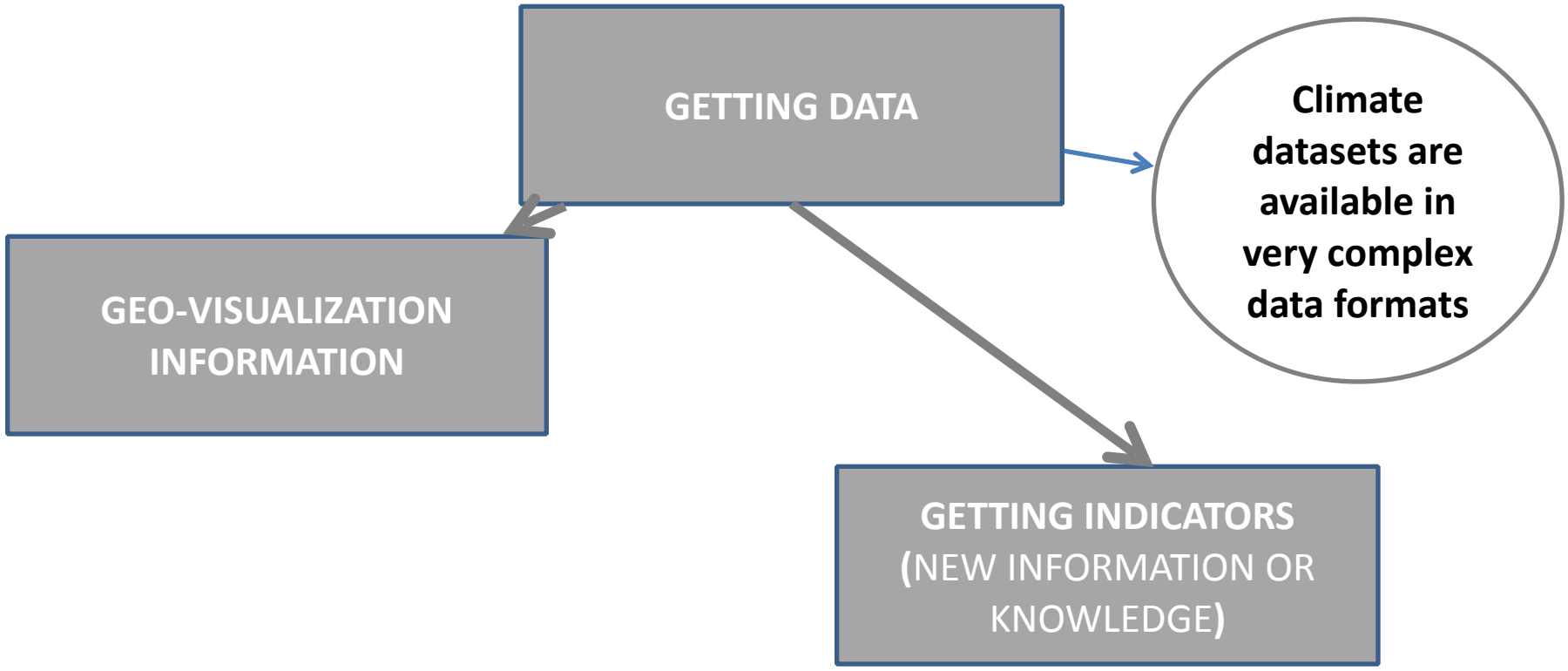
- Irregular coverage
- Heterogeneus time span (very short)
- Poorly quality controlled
- No global coverage

RECENT CLIMATE DATA SETS

- Regular coverage
- Long and homogeneous time span
- Highly quality controlled
- GLOBAL COVERAGE

NOAA IPCC MET OFFICE GLOBAL PRECIPITATION CENTRE ……

1. Background (Data dissemination and the viewers)



1. Background (The viewers)

1st EXAMPLE: GREAT DATA, LITTLE VISUALIZATION → CRU WEB: http://www.cru.uea.ac.uk/

UEA University of East Anglia

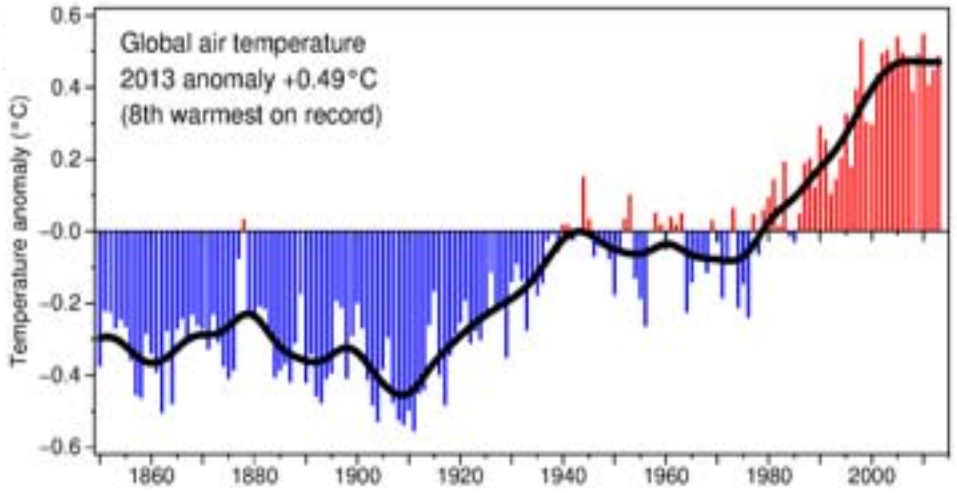
Climatic Research Unit

Home | About CRU | Data | Academic Programmes | Research | Staff and Students | Information Sheets | Publications | Media | News/Events

Home

The aim of the Climatic Research Unit (CRU) is to improve scientific understanding in

- past climate history and its impact on humanity
- the course and causes of climate change during the present century
- prospects for the future



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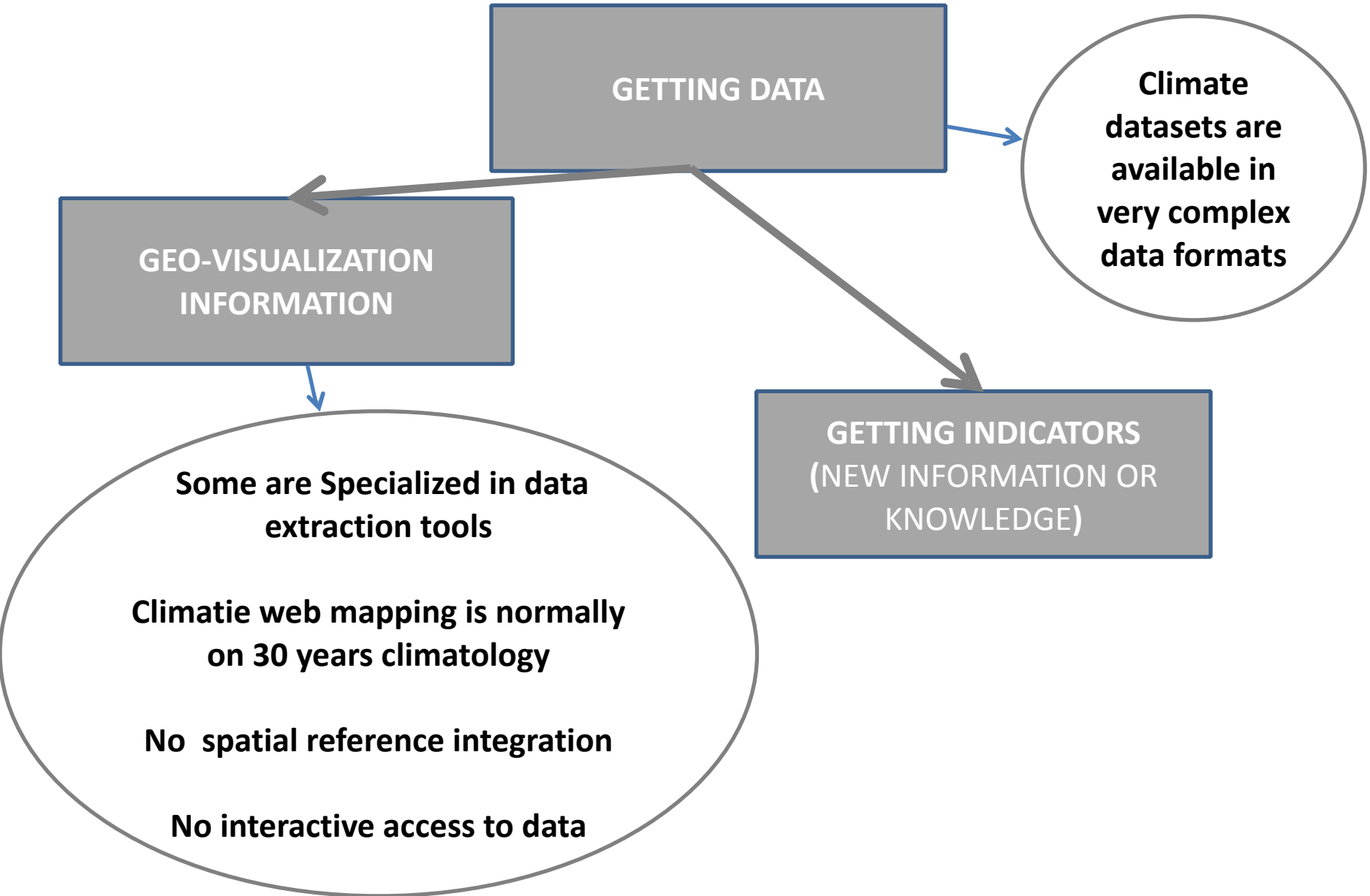
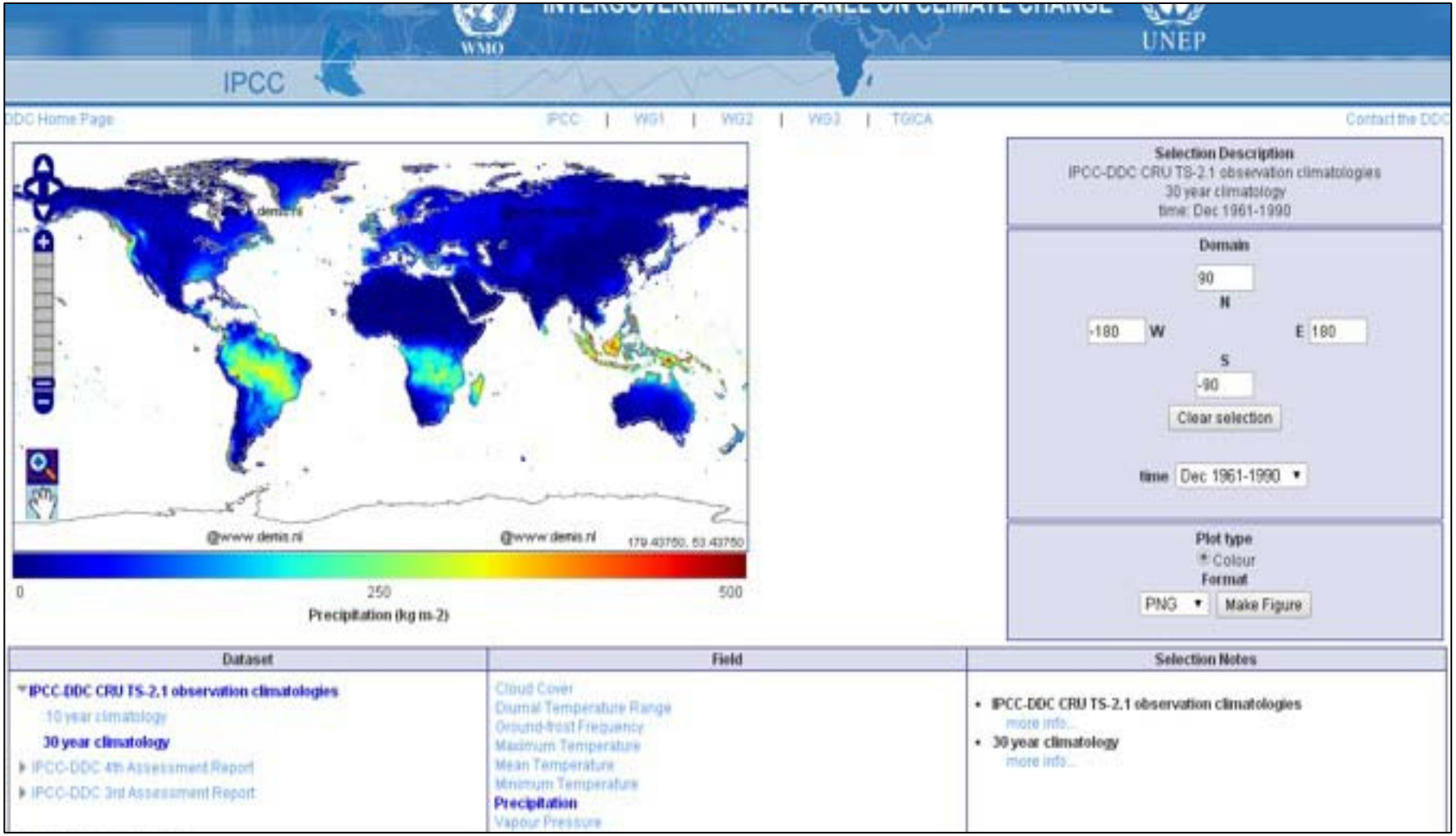


1. Background (The viewers)

2nd EXAMPLE: GOOD EXTRACTION TOOLS BUT 30 Y. AVERAGE VALUES→ NCDC – NOAA https://gis.ncdc.noaa.gov/map/viewer/#app=cdo&cfg=isdsummaries&theme=isdsummaries

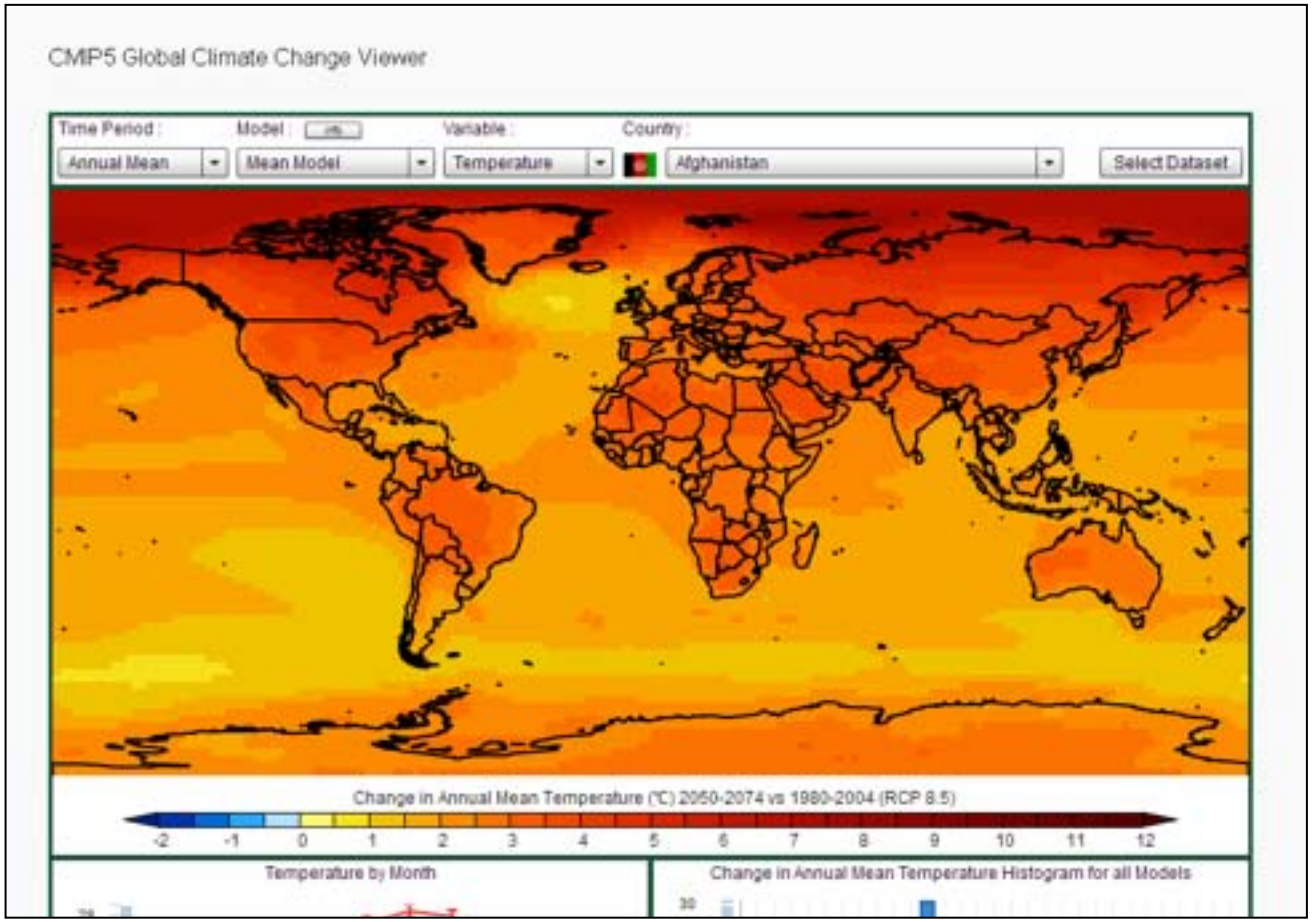
1. Background (The viewers)

3rd EXAMPLE: AVERAGE VALUES, GOOD EXTRACTION AND LOTS OF DATA BUT NO GOOD DISPLAY, NO PIXEL INFO, NO MAP BACKGROUND → IPCC http://www.ipcc-data.org/maps/



1. Background (The viewers)

4th EXAMPLE: SOME NICE INDICATORS (FUTURE TRENDS) BUT NO GOOD DISPLAY, NO PIXEL INFO, NO MAP BACKGROUND →US GEOLOGICAL SURVEY
http://regclim.coas.oregonstate.edu/visualization/gccv/cmip5-global-climate-change-viewer/



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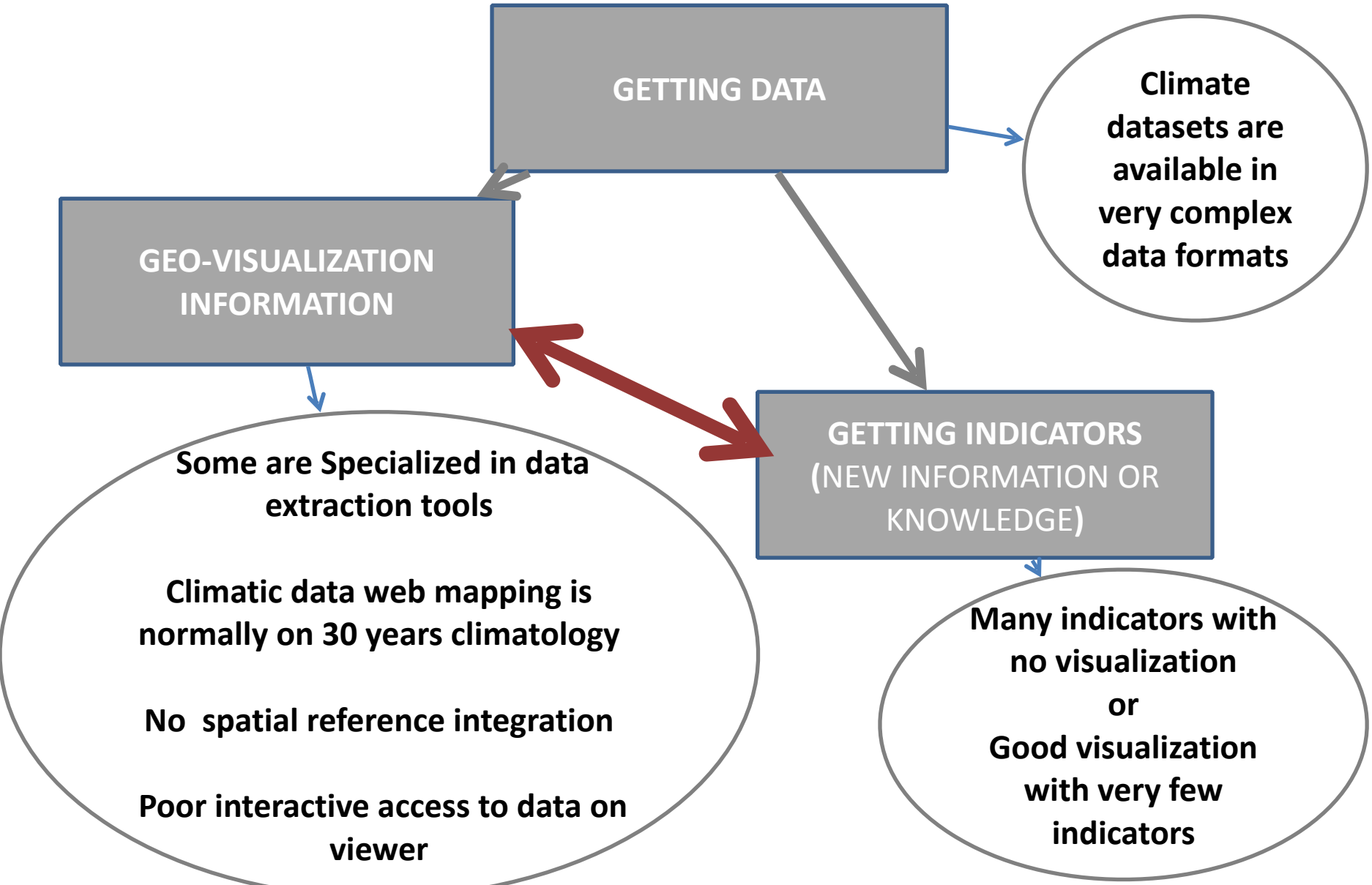
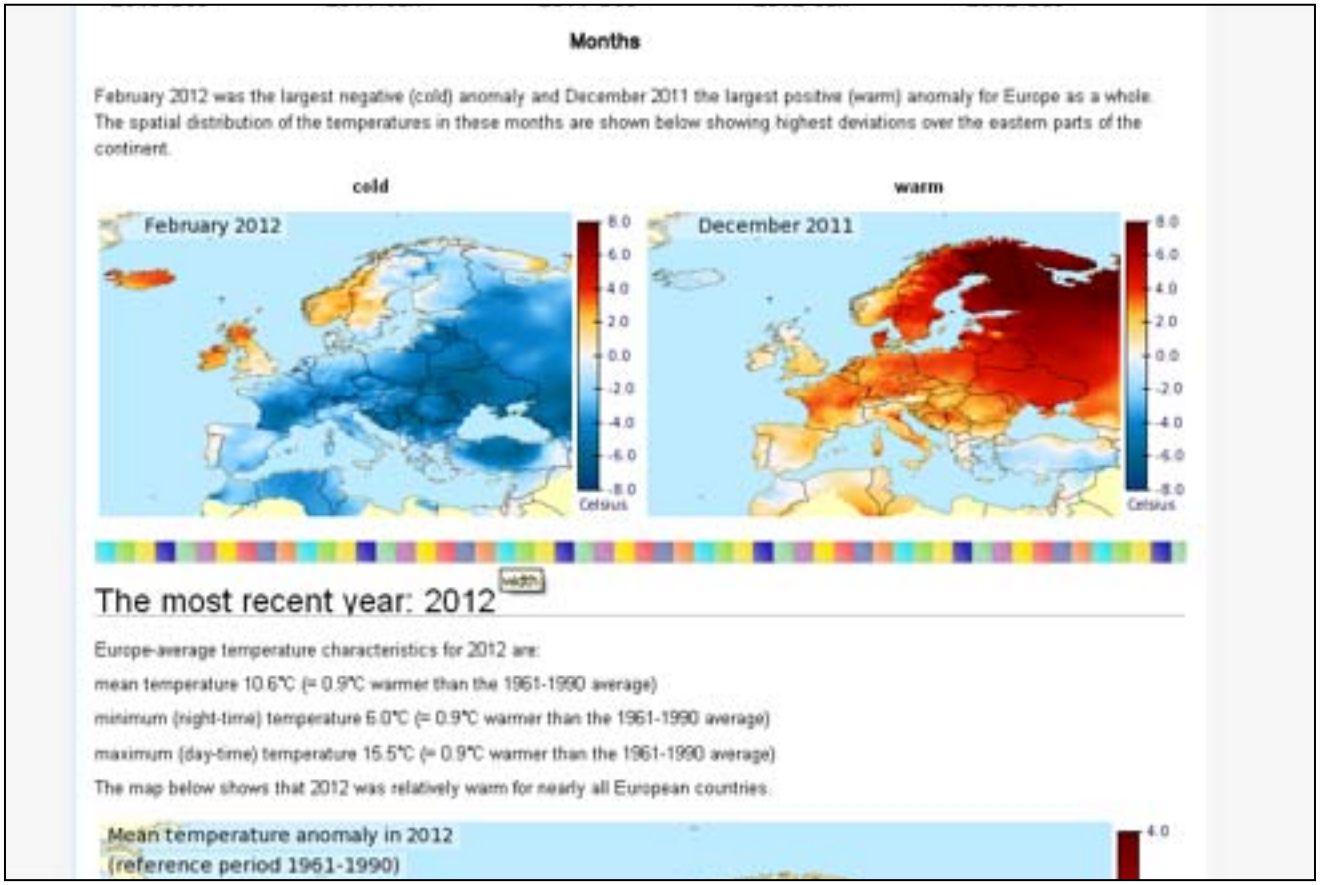


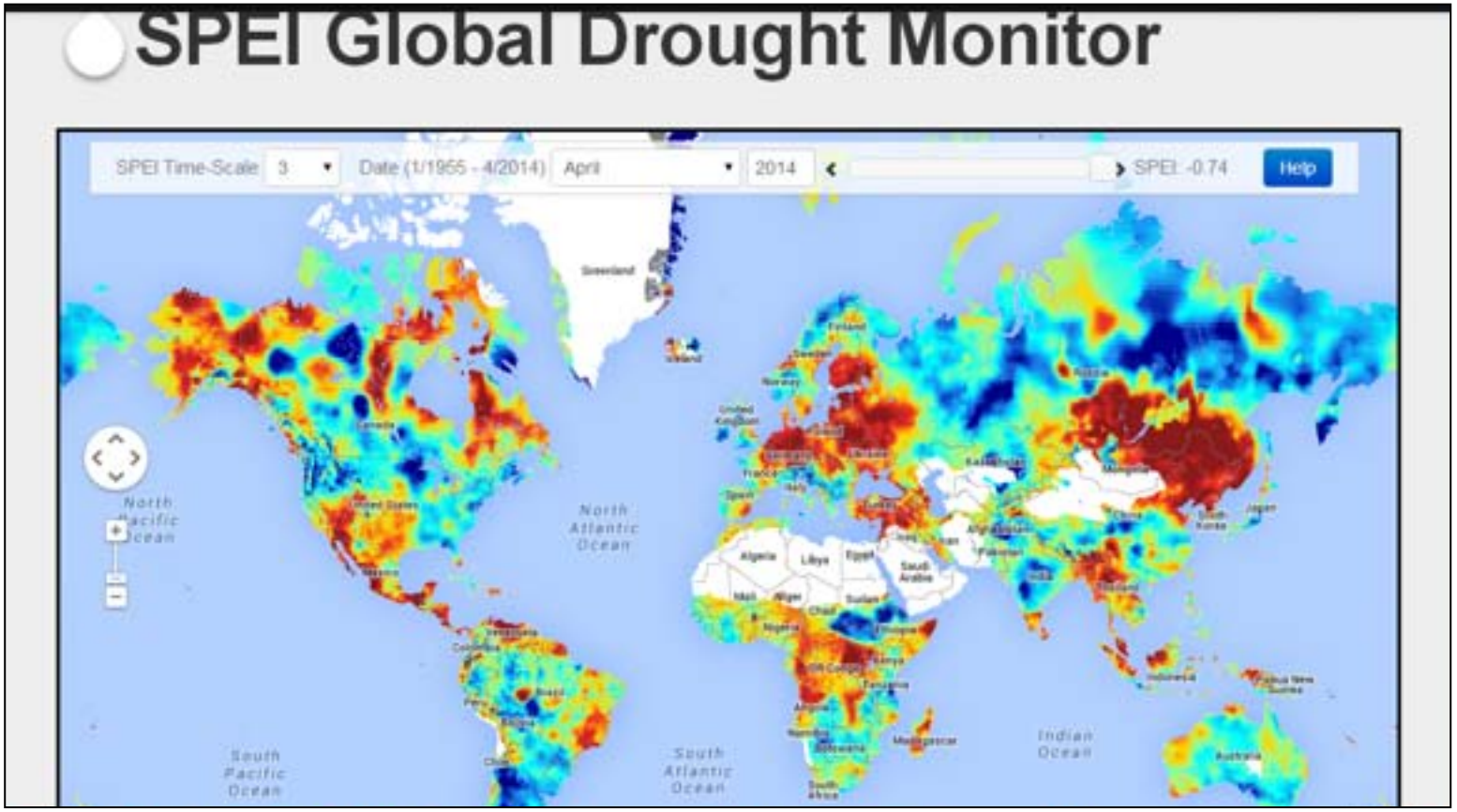
1. Background (The viewers)

5th EXAMPLE: LOTS OF USEFUL INDICATORS, BUT ONLY STATIC MAPS → EURO4M FP7 http://cib.knmi.nl/mediawiki/index.php/European_Temperature



1. Background (The viewers)

6th EXAMPLE: THE «PERFECT» MONITOR BUT JUST FOR DROUGHT →SPEI GLOBAL DROUGHT MONITOR http://sac.csic.es/spei/map/maps.html



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2. Objectives

- To make complex scientific data accesible
- To build climate indicators
- To design an operational web mapping tool for climate data visualization and monitoring: GLOBAL CLIMATE MONITOR
- **To GET KNOWLEDGE FROM DATA and to share it**

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3. Climate data used

CLIMATIC RESEARCH UNIT, UNIVERSITY OF EAST ANGLIA (http://www.cru.uea.ac.uk/)

High-resolution gridded datasets (CRU TS3.21)→ **Tested and recommended by IPCC**

Variables: pre, tmp, tmx, tmn, pet, etc.

Data format: netCDF

Space: 0.5°, **global** coverage

Time: 1901-2012, monthly time-series

DATA → $5*10^8$

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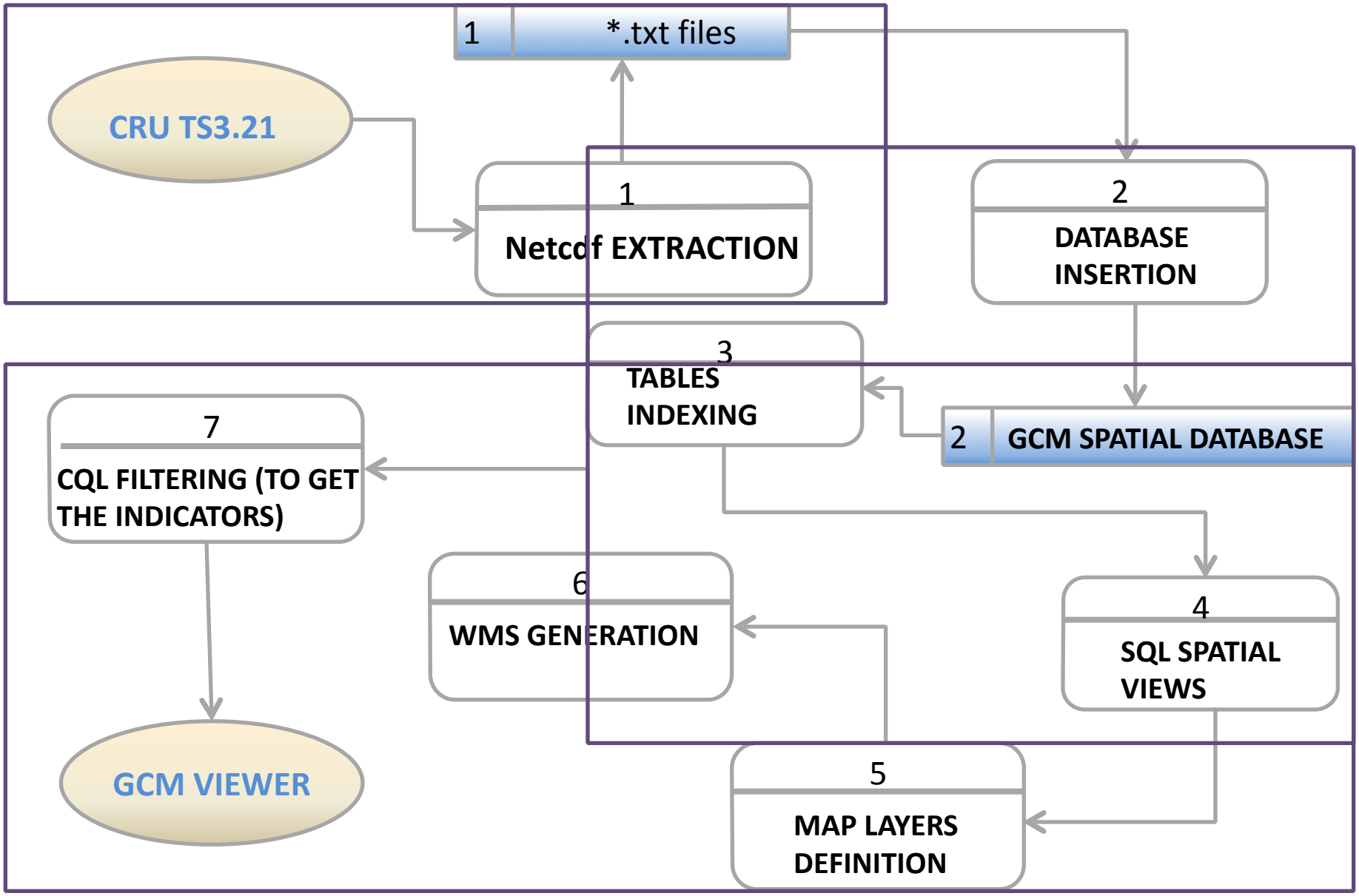
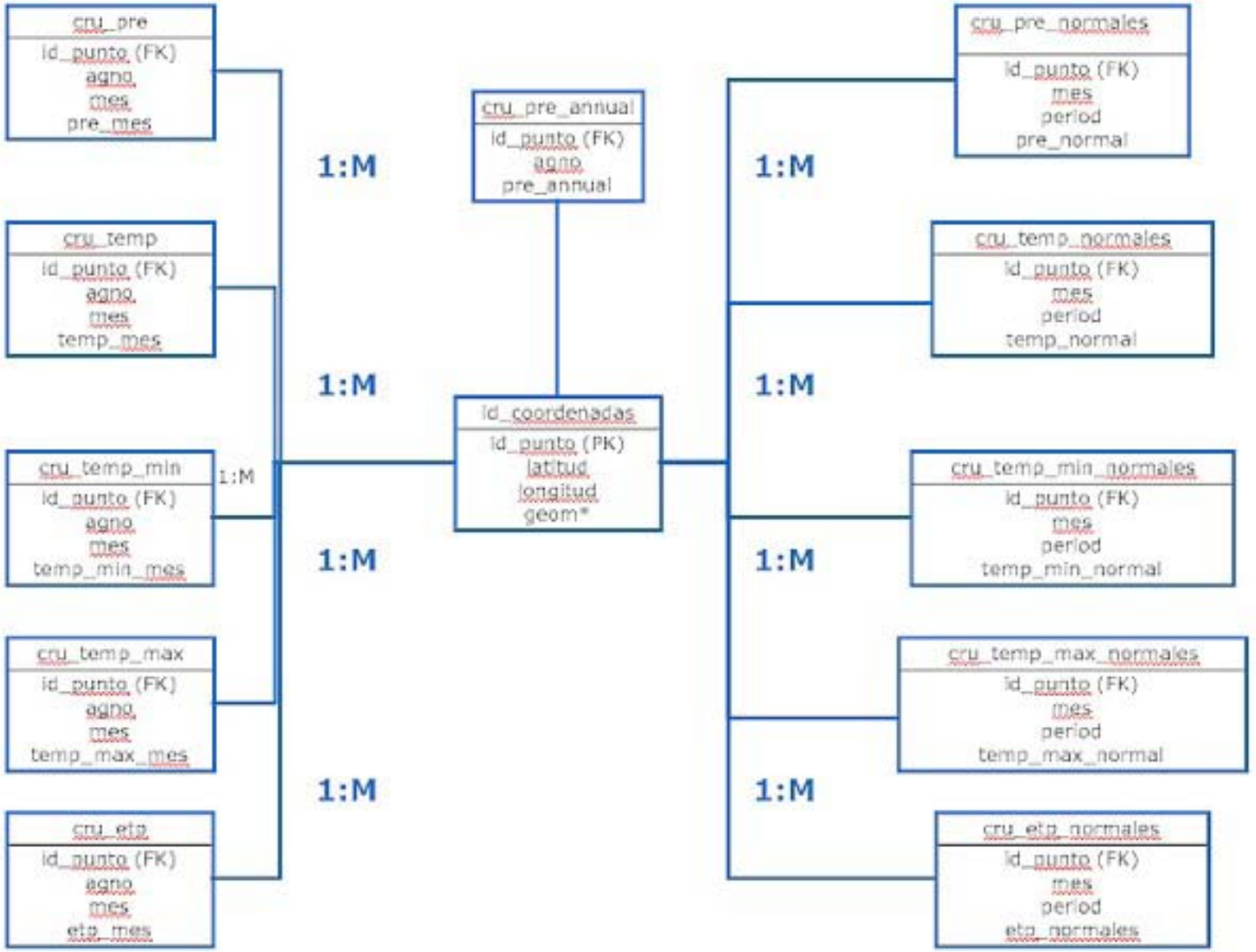
4. Data model and dataflow II

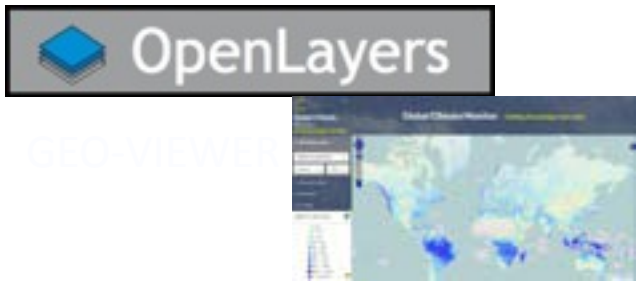


4. Data model and dataflow I



4. Technology and information system design

WEB APPLICATIONS SERVER



GEO-VIEWER

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6. Climatic indicators design

TIME SCALE	TEMPERATURE	PRECIPITATION	EVAPOTRANSPIRATION
MONTHLY	***Monthly mean temperatures*** ***Monthly maximum temperatures*** ***Monthly minimum temperatures*** ***Anomalies***	***Monthly total precipitation*** ***Anomalies (%)*** ***…***	***Monthly mean evapotranspiration*** *Anomalies*
ANNUAL	Mean temperature Minimun temperature Maximum temperature Trends …	Total precipitation Seasonality index …	Mean evapotranspiration
30 YEARS CLIMAT.	Mean temperature Minimun temperature Maximum temperature …	Total precipitation …	Evapotranspiration

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6. GLOBAL CLIMATE MONITOR

www.globalclimatemonitor.org

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7. Further research

VARIABLES

-New variables acquirement:

- -Future climate scenarios data
- -Near real time climate data from GHCN_CAMS / GPCC

INDICATORS

-New indicators calculation:

- - Trends
- - IESP drought index
- - Climate extremes by percentiles

WEB MAPPING TOOLS

Improvements on the viewer:

- - Point extraction tool
- - Point trend graphic tool
- - Double screen for data comparison
- - Animations

8. Some final ideas

FEEDBACK, DISSEMINATION & COLLABORATION

FEASIBILITY TO GENERATE OTHER SIMILAR VIEWERS WITH THIS TECHNOLOGY

GEO- VISUALIZATION IS THE MOST IMPORTANT WAY TO MAKE SUCH LARGE DATABASES ACCESSIBLE TO EVERYBODY, NOT ONLY A SCIENTIFIC COMMUNITY HERITAGE

THANK YOU!!