CACIP KEY POINTS

• is not only a container of data but mainly a collector of contents and tools
• provides knowledge, documents, data, tools
• aims to increase the regional awareness and collaboration
• aims to keep in touch with users
• is sustained from a community and supports the community
• CACIP was born today
Knowledge is

- news, events, calendar, forum, blog, social, training material, reports, scientific papers, ...

**What we have done**

- inventoried existing sites/databases
- checked the suitability in terms of contents and interoperability
Some knowledge portals suitable to be harvested

<table>
<thead>
<tr>
<th>Portal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OKR-WB (Open Knowledge Repository of World Bank)</td>
<td>database, ...</td>
</tr>
<tr>
<td>Climate Technology Center &amp; Network (CTCN)</td>
<td>database, ...</td>
</tr>
<tr>
<td>CAN-EECCA (Climate Action Network of Eastern Europe Caucasus Central Asia)</td>
<td>Climate change-related news and publications.</td>
</tr>
<tr>
<td>Kyrgyzstan (MMR) network Climatic</td>
<td>Climate change-related news and publications.</td>
</tr>
<tr>
<td>Energy balance</td>
<td>National statistics.</td>
</tr>
<tr>
<td>and others ...</td>
<td></td>
</tr>
</tbody>
</table>
COLLECTOR OF CONTENTS 2/2

the main contents come from multiple sources

about DATA & TOOLS contents

<table>
<thead>
<tr>
<th>Data are</th>
<th>Tools are</th>
</tr>
</thead>
<tbody>
<tr>
<td>maps and geographical layers, statistical data, measurements, indexes, ...</td>
<td>applications providing information derived from the analysis of processing of data</td>
</tr>
</tbody>
</table>

What we have done

- inventoried existing sites
- checked the suitability in terms of contents and interoperability
GEO-DATA portals suitable to be harvested

<table>
<thead>
<tr>
<th>LPDAAC (MODIS)</th>
<th>Land Processes Distributed Active Archive Center (NASA/USGS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMO (World Weather)</td>
<td>World Meteorological Organization</td>
</tr>
<tr>
<td>NASA (Fire Information for Resource Management System)</td>
<td>temperature, precipitation, others</td>
</tr>
<tr>
<td>Protected Planet</td>
<td>fires</td>
</tr>
<tr>
<td>NSIDC (National Snow and Ice Data Center)</td>
<td>protected areas</td>
</tr>
<tr>
<td>NASA (Soil Moisture Active Passive)</td>
<td>snow, glaciers, soil moisture, frozen ground, others</td>
</tr>
<tr>
<td>FAO (GeoNetwork)</td>
<td>soil moisture</td>
</tr>
<tr>
<td>ECMWF (ERA5)</td>
<td>drainage, basins, watersheds, major aquifers and others</td>
</tr>
<tr>
<td>SPRINTARS Forecast</td>
<td>hourly estimates of a large number of atmospheric, land and oceanic climate variables</td>
</tr>
<tr>
<td>Central Asia Water and Energy Portal</td>
<td>condition of atmospheric pollution by atmospheric aerosols</td>
</tr>
<tr>
<td>and others ...</td>
<td>re-index several data portals</td>
</tr>
</tbody>
</table>
harvested data can be processed to create new and derived products
MODIS DERIVED MAPS
a specific tool for CACIP

- data derived from MODIS satellite images (vegetation index and surface temperature)
- collected, processed, quality checked by NASA
- detail of the image: different resolution (approx pixel size 5600x5600, 1000x1000, 250x250 m)
- length of time series: 2000-now
- temporal resolution: 8/16 days (also others)
- near real-time: 1 month processing time
CACIP POST-PROCESSING

• definition of reference “map units” based on a multi temporal classification to obtain polygons with an homogeneous behavior over the time
• localized analysis: calculation of statistics for each map unit
• analysis of characteristics (avg, min/max, variability, periods, …)
• analysis of trend and calculation of future scenarios
the following maps are calculated using the **LAND SURFACE DAILY TEMPERATURE** (5600m) derived from MODIS satellite images
SURFACE TEMPERATURE TREND

the map shows the trend of surface temperature in the past 20 years
variability depends on the relevance of seasonal changes during the year
SURFACE TEMPERATURE INSTABILITY

calculation of the baseline is used to summarize the intrinsic variability of the phenomena

average instability around the baseline (assumed to be constant in the long term). It is a measure of "instability", where instability does not mean heterogeneous values along the year (with very high and very low values), but a poor agreement of the observed values with the baseline. Greater values relate to areas with more and/or wider deviations of the index values from the baseline (less stable areas, with many unpredictable events)
the map focuses on the deviations of the observed values from the baseline, analyses these deviations along the whole time interval covered by the data, and highlights the areas where the deviations are globally increasing or decreasing over the time.

High positive values mean a tendency to an increase of the number and/or the size of exceptional events; or a "changing baseline", i.e. a change of the general conditions compared with the previous years.

Negative values denote a stabilization process toward the baseline (decreasing number and/or size of exceptional events).

Fuchsia areas are subject to a sharp increase in deviations from normal conditions; abnormal events could be more frequent in the future.
statistical correlation between the observed value and the baseline: high values denote a good relation/agreement with the baseline, and also an almost homogenous behavior over the long term; instead, low values may denote significant trends (positive or negative), or occasional anomalies.
OTHER SAMPLE MAPS

the following maps are calculated using the a VEGETATION INDEX (5600m) derived from MODIS satellite images
VEGETATION INDEX BASED MAPS

**greenness trend** annual trend over the entire time series (approximately since 2000), and highlights areas where the EVI (Enhanced Vegetation Index) is globally decreasing or increasing over the time.

with vegetation index can be calculated similar maps to the ones calculated with the surface temperature.
"local" period of the year, on average, the vegetation index reaches its **maximum** value.
This is useful to identify the period of maximum vegetative growth.

"local" period of the year, on average, the vegetation index reaches its **minimum** value.
This is useful to identify the period of minimum vegetative growth.
MODIS derived data can be also used to monitor in near real time the vegetation index status and the related vegetation conditions.
«MONITORING»

VEGETATION CONDITIONS

This map shows the conditions of the vegetation at a specific date. Red areas denote a stress, i.e. the current vegetation index is much lower than "normal", where normal means consistent with the long term baseline. Green areas denote good conditions.
shows the **localized cumulated seasonal differential** of the Vegetation Index at a specific date, by comparing the cumulated value from the beginning of the current season, with the same date interval of the previous year.
collaboration is not only matter of willingness but also opportunities and instruments
to provide an opportunity of collaboration CACIP embeds this tool

COLLABORATIVE DATASETS
this tool allows to create “collaborative/inductive regional maps” or to derive “collaborative/inductive regional statistics” based on national data, where the information/data related to each single country are provided by different institutions and stakeholders: the information entered by different subjects are merged to produce a regional output based on national contributes.
a collaborative outcome

data to build an “inductive map” come from different national sources
Objective: a collaborative outcome

the results is a dataset at regional level
the specific source of data is:

- cited in the interface
- included in metadata
how does it work
**use case as accredited user**

- obtain an account as accredited user
  - for specific datasets
  - for specific geographical extents (a country)

**MANUAL UPDATE**

- access the platform as **accredited user**
- choose an **inductive dataset**
  (example monthly average temperature)
- enter the data using a specific form

**AUTOMATIC HARVESTING** or **UPLOADING**

- definition of the **harvesting method** (the platform automatically “harvest” data from the user repository)
- or
- definition of **uploading procedure** (the user upload data to the platform with)
Use case 2: sample for the dataset “average monthly temperature”:

- is based on data at “district level” (for each district and country, the average temperature for each month)
- contains data for each month (July 2019, August 2019, September 2019, etc.)

<table>
<thead>
<tr>
<th>City</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tashkent</td>
<td>21 °C</td>
<td>26 °C</td>
<td>28 °C</td>
<td>27 °C</td>
<td>27 °C</td>
</tr>
<tr>
<td>Fergana</td>
<td>22 °C</td>
<td>26 °C</td>
<td>28 °C</td>
<td>27 °C</td>
<td>27 °C</td>
</tr>
<tr>
<td>Samarkand</td>
<td>20 °C</td>
<td>25 °C</td>
<td>27 °C</td>
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</tr>
<tr>
<td>Bukhara</td>
<td>23 °C</td>
<td>28 °C</td>
<td>29 °C</td>
<td>27 °C</td>
<td>27 °C</td>
</tr>
<tr>
<td>Termez</td>
<td>25 °C</td>
<td>29 °C</td>
<td>31 °C</td>
<td>29 °C</td>
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</tr>
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</table>
Use case 2: sample for avg monthly temp data for each district of Central Asia, together with a map of the all districts, allow the creation of

- a map of average temperature for each month/year
- graphics with trend and comparison

<table>
<thead>
<tr>
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</tr>
</tbody>
</table>

data for each district of Central Asia.
Access to CACIP

Username ____________________________

Password _____________________________

Login

access the platform as accredited user
Use case 4: select a dataset

- Monthly average precipitation
- Monthly minimum temperature
- Monthly average temperature
- Water scarcity
<table>
<thead>
<tr>
<th>City</th>
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<td>23 °C</td>
</tr>
</tbody>
</table>
Use case 5: manual updating

Login

°C

Upload

Preview

<table>
<thead>
<tr>
<th>Month</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>28 °C</td>
</tr>
<tr>
<td>August</td>
<td>27 °C</td>
</tr>
<tr>
<td>September</td>
<td>21 °C</td>
</tr>
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<td>July</td>
<td>28 °C</td>
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<td>August</td>
<td>27 °C</td>
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</tr>
<tr>
<td>July</td>
<td>17 °C</td>
</tr>
<tr>
<td>August</td>
<td>25 °C</td>
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<tr>
<td>September</td>
<td>19 °C</td>
</tr>
<tr>
<td>July</td>
<td>19 °C</td>
</tr>
<tr>
<td>August</td>
<td>27 °C</td>
</tr>
<tr>
<td>September</td>
<td>21 °C</td>
</tr>
<tr>
<td>July</td>
<td>11 °C</td>
</tr>
<tr>
<td>August</td>
<td>29 °C</td>
</tr>
<tr>
<td>September</td>
<td>23 °C</td>
</tr>
</tbody>
</table>
Use case 5: manual updating

Login

Temperature summary for Central Asia:

<table>
<thead>
<tr>
<th>Month</th>
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</tr>
</thead>
<tbody>
<tr>
<td>July</td>
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</tr>
<tr>
<td>September</td>
<td>27 °C</td>
</tr>
</tbody>
</table>

 manual updating of information
Use case 6: uploading of data

- FTP
- USER file
- CACIP server

- MonthlyAverageTemperature
- WaterScarcity

- [XML files]
  - 201905_AvgTemp_KG.xml
  - 201905_AvgTemp_KZ.xml
  - 201905_AvgTemp_TJ.xml
  - 201905_AvgTemp_TL.xml
  - 201905_AvgTemp_UZ.xml
  - 201906_AvgTemp_UZ.xml
  - 201907_AvgTemp_UZ.xml

- CentralAsia
- InductiveDatasets
- MonthlyAveragePrecipitation
- WaterScarcity

- [Map of Central Asia]
Use case 7: harvesting

CACIP server with a running daemon

USER API

WebResponse File

request

response
OUTCOMES OF THIS TOOL
promote joining the community
with shared national data, the platform create information at regional level
help to raise a regional awareness
USERS ARE IMPORTANT

keep in touch with users

users coming regularly into CACIP keep the platform alive
to encourage people to use the platform CACIP embeds this tool

WHAT’S CACIP
this tool is based on user preferences and is able to browse the platform (knowledge, documents, spatial data, etc.) and to produce a list/report about the specific contents related to a specific location
how does it work
List of functionalities

• access the platform
• define an area of interest (using descriptive tags, using coordinates)
• launch the search
• get a list of information matching the filters
• save the area of interest in your preferences
• activate a notification channel (email, facebook, twitter, ...)
• stay informed whenever something happens
select the area of interest

click on the map to select a country

Quick Data Explorer

Country
District
Rectangle
Point
select the area of interest
draw a point, a rectangle or a polygon on the map

select the area of interest
Login
Save search criteria in my preferences

Name _________________________________

Description ___________________________

Activate
Activate notifications

Enter an email address

Email _________________________________

Activate

Social notifications

Facebook  Twitter  Instagram  WhatsApp  Telegram

Activate

Set frequency

- Daily
- Weekly
- Monthly
- Yearly

Apply
OUTCOMES OF THIS TOOL

find the more recent information about a location

bring the latest news on user desktop
A COMMUNITY BEHIND
with different and heterogeneous interests

the questionnaire survey done during the national consultations have been very interesting, and the aggregated results at regional level have been very useful during the design phase of the platform to continue collecting feedbacks and suggestions from the users/community, CACIP embeds this tool
a section of CACIP contains a form that users can fill with their own feedback

the information entered through the form are automatically collected and processed by the system to update statistical information about the interests and suggestions of the users of the platform

these information are aggregated and shown in the dashboard of the system
a sample: the questionnaire of national consultations
all information entered in the online questionnaire are stored in a database to produce

REGIONAL STATISTICS
regional results

Interest for CACIP platform

- Uzbekistan
- Kazakhstan
- Kyrgyzstan
- Tajikistan
- Turkmenistan
- Regional level
regional results

Interest for new products

- In general
- Information summarized at regional and country level
- Information updated systematically
- Information homogeneous on the whole region

Country Analysis:
- Uzbekistan
- Kazakhstan
- Kyrgyzstan
- Tajikistan
- Turkmenistan
- Regional level
Regional results

Focused areas (as basic user)
A COMMUNITY BEHIND
with different and heterogeneous interests

the users are **heterogeneous** and have different interests and needs

to provide to each user interesting and tailored information and tools, CACIP embeds

**TARGETED INTERFACES**
the platform provides different predefined interfaces to access to the information, data and tools, for different types of users: decision makers, trainers, farmers, citizens, etc.

users can select one of the predefined interface or is able to customize her/his own home page with selected contents
a sample preview
A sample targeted interface

each targeted page is composed by a set of “contents blocks” with graphics, images, texts, maps, tools

each “content block” is usually also a link to more detailed information
Sample targeted interface

Some “contents block” show a list of documents or data:

- Filters derived from user preferences
- Filters derived from type of interface
some example maps and applications
Vegetation dynamics in response to climate change
Decadal comparison between 2000-2019
Hot spots for the targeting interventions
Vegetation dynamics in response to climate change
Land degradation
Desertification: magnitude and directions
sensitive and fragile regions
Tracking variability in response to climate and biophysical conditions to identify the fragile and vulnerable areas.
CACIP WAS BORN

Welcome CACIP
centralasiaclimatereport.org
THANK YOU FOR YOUR ATTENTION
and ...

see you on CACIP