DRIAS portal as a climate service


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A growing need for climate information

- Wide spectrum of users involved in impact and adaptation issues: Research, Institutional Communities, Local Association, Business, Consulting…
- Complicated access to information, complex to use

A support need for Scientists

- To deliver scientific productions
- To promote research work to a wide public

A system to bridge between the offer & demand

- Facilitate and simplify access and use of regional climate informations
- Provide a service and facilitate the link between users and researchers
The DRIAS Project

DRIAS: To provide Access to French Regional Climate data and products for Impact and Adaptation of our Society and environment

- Funding & Support: Management and Impact of Climate Change program of the French Ministry of Ecology and Sustainable Development
  - Project duration of 2 years.
  - Launching of the web portal: July 2012

- Coordination: Direction of Climatology of Météo-France
  - Know-how on system, development and distribution of climate products

- Implication of the major French teams of climate modelling
  - Institut Pierre-Simon Laplace (IPSL) : Laboratoire de Météorologie Dynamique (LMD) & Laboratoire des Sciences du Climat et de l’Environnement (LSCE)
  - Centre Européen de Recherche et Formation Avancée en Calcul Scientifique (CERFACS)
  - Centre National de Recherches Météorologiques (CNRS / Météo-France)

Development an implementation of a web portal, mixing the operational know-how of Météo-France & the scientific vision
Interaction with users

- A users committee from the beginning of the project
  - Public sector
  - Research community
  - Engineering consultancy
  - Industry
  - Territorial authority

- Keeping contact with them through:
  - Drias hotline
  - ‘Users feedback event’
A dedicated portal, 3 areas

Drias, futures of climate, aims to provide regionalized climate projections computed by several French laboratories involved in climate modeling (IPSL, CERFACS, CNRM-GAME). Climate informations are delivered in a variety of graphical or numerical forms.

Drias offers a process of appropriation in three steps: **Education Space** shows an user guide and best practices for climate projections. **Discover Space** allows to view and locate geographically "nearest you" climate projections; in France and Overseas ; you can get all the informations provided by the different climate models for the most recent scenario which are showed in the last IPCC report (RCP). Finally in **Data and Products Space**, you can download all these parameters and climate indices as numerical data.

**AREA Educations**
The user and good practice guide for Data and Products Drias.

**AREA Discover**
Exploratory paths of climate projections: temperature, precipitation, models, IPCC scenarios.

**AREA Data and Products**
Data and products Drias.
1) Education Area

An appropriate support, facilitating the use of the different informations and communicate good practices

- General notions on Climate Change
- Access to general resources specific to the portal: documentation on the models used, description of DRIAS products, publications, FAQ
- Fitted Support to users: Hotline to initiate a service
2) Discovery Area

Quick visualisation of Interactive maps of climate indices, allowing a first and fast analysis

- Two access ways:
  - *Initiation path* for unskilled users
  - *Expert path* for skilled users
2) Discovery Area

Several hypothesis of emission, several models, allowing a first assessment of uncertainty

Geographical tools
- Zoom (up to the level of a French department)
- Geographical layers (i.e. relief, cities, administrative areas, watershed...)

Layer of geographical informations

Several Scenarios

Several Horizons
3) Data & products Area

- Order & reception of numerical data
- Authentication needed before the download
- Public and free Data
Atmospheric variables and indicators

**Indicators** (monthly, seasonal, yearly)

- **Température (19)**
  - Mean temperature - °C
  - Minimum temperature - °C
  - Maximum temperature - °C
  - Thermal amplitude - °C
  - Smaller value of minimum temperature (90th centile of the time series) - °C
  - Larger value of the maximum temperature (90th centile of the time series) - °C
  - Number of summer days (maximum temperature > 25°C) -
  - Number of tropical nights (minimum temperature > 20°C) -
  - Number of unusually warm days (maximum temperature > 0°C) -
  - Number of unusually warm nights (minimum temperature > 0°C) -
  - Number of warm spell days (maximum temperature higher than 20°C) -
  - Larger value of the minimum temperature (10th centile of the time series) - °C
  - Smaller value of the maximum temperature (10th centile of the time series) - °C
  - Number of frost days (minimum temperature < 0°C) - NBJ
  - Number of ice days (maximum temperature < 0°C) - NBJ
  - Number of unusually cold days (minimum temperature lower by at least 5°C) -
  - Number of cold-spell days (minimum temperature lower by at least 5°C) -
  - Heating Degree-days - °C
  - Cooling Degree-days - °C

- **Precipitation (7)**
  - Daily precipitation - mm
  - Mean precipitation for wet days - mm
  - Precipitation sum - mm
  - Number of wet days (precipitation sum > 1 mm) - NBJ
  - Number of heavy precipitation days (precipitation sum > 20 mm) - NBJ
  - Maximum number of consecutive wet days (maximum number of consecutive days with precipitation sum > 1 mm) -
  - Percentage of intense precipitation (precipitation above the 90th annual percentile) -
  - Drought period (maximum number of consecutive days with precipitations sum < 1 mm) -

Atmospheric variables (13):

(daily data)

- **Températures ... (Sélectionnez l’unité de votre choix)**
  - Température à 2 m
  - Température minimale journalière à 2 m
  - Température maximale journalière à 2 m

- **Précipitations ... (Sélectionnez l’unité de votre choix)**
  - Précipitations liquides
  - Précipitations solides
  - Précipitations totales

- **Vent ...**
  - Vitesse du vent horizontal à 10 m [m/s]

- **Humidité ...**
  - Humidité spécifique à 2 m [kg/kg]
  - Humidité relative à 2 m [%]
  - Humidité relative minimale journalière à 2 m [%]
  - Humidité relative maximale journalière à 2 m [%]

- **Rayonnement ...**
  - Rayonnement visible incident à la surface [W/m²]
  - Rayonnement infra-rouge incident [W/m²]
Recent evolutions

Integration of a new set of climate projections with RCP scenarios
  - Scénarios RCP 2.6, RCP4.5 et RCP8.5

Integration of impact indicators issued from Climsec project: soil wetness index SSI, SSWI

Integration of data on French overseas territories: Réunion, Nouvelle-Calédonie, Antilles, Guyane, Polynésie

English version of Drias
Next evolutions

- Integration of other impact studies results
  - Agriculture, Energy, Forest, Water, Biodiversity

- Integration of uncertainty products as percentile products
  - Q25, Q50, Q75 produced with eurocordex scenarios

- Integration of past data as in situ data and re-analysis

- Technical improvements
  - news formats
  - Improved download capabilities
A l'horizon 2071-2100, augmentation estivale très importante (+5° C pour Aladin-Climat). Tous les modèles s'accordent sur une augmentation plus importante en allant vers le sud-est de la France.

Exemples of uncertainty products
Temperature in summer : anomaly beside reference

C25 - 2021-2050
WRF - 2021-2050
Aladin-Climat - 2021-2050
C75 - 2021-2050

C25 - 2071-2100
WRF - 2071-2100
Aladin-Climat - 2071-2100
C75 - 2071-2100

Percentiles (25, 75)
Overview on Drias technologies

Drias portal is based on J2E technology
- Play framework has been used
- Support area is based on CMS functionnalities
- Discovery area is based on web map services (OGC standard)
- For the Delivery area the Okapi/Climatheque system has been re-used

Data formats
- Daily climate projections in netcdf format ; file system
- Indices stored in a posgreS data base
Some statistics

- Launched: 1st July 2012
  - Press Event 24th July at ministry level

- Visiting
  - 2014: 80 000 visits
  - Total of 3 000 000 pages visited

- Accounts for the delivery area
  - 1000 accounts opened

- Hot-line: around 100 answers/year concerning the portal and the data sets
Past and future climate data...
Heatwaves from 1947 to 2100

Michel Schneider, Météo-France, DClim/AVH, comm. pers.

Période 1947-2011
Observations aux postes
Indicateur 30 postes

Périodes 2021-2050 et 2071-2100
SCAMPEI
Modèle : Aladin
Scénario : A1B
Données corrigées
Indicateur 30 points de grille

La surface des sphères symbolise l'intensité globale des vagues de chaleur, les sphères les plus grandes correspondant aux vagues de chaleur les plus sévères.
**DRIAS, les futurs du climat: a web portal & a service**

- A tool for adaptation in France, consistent with research strategies
- Facilitate access to climate informations for users involved in impact and adaptation to climate change issues (Free)
- Regionalised climate simulations over France
- Support and highlight of research works
- Structure: Education, Discovery and Delivery areas which represent 3 levels of information from the simplest to the most complicated

**The seed for future demands**

- Very positives users feedback
- Important needs of support and training
- For the producers: daily support for diffusion of climate simulations
- To extend with past data

**Conclusion**
Thank you for your attention!