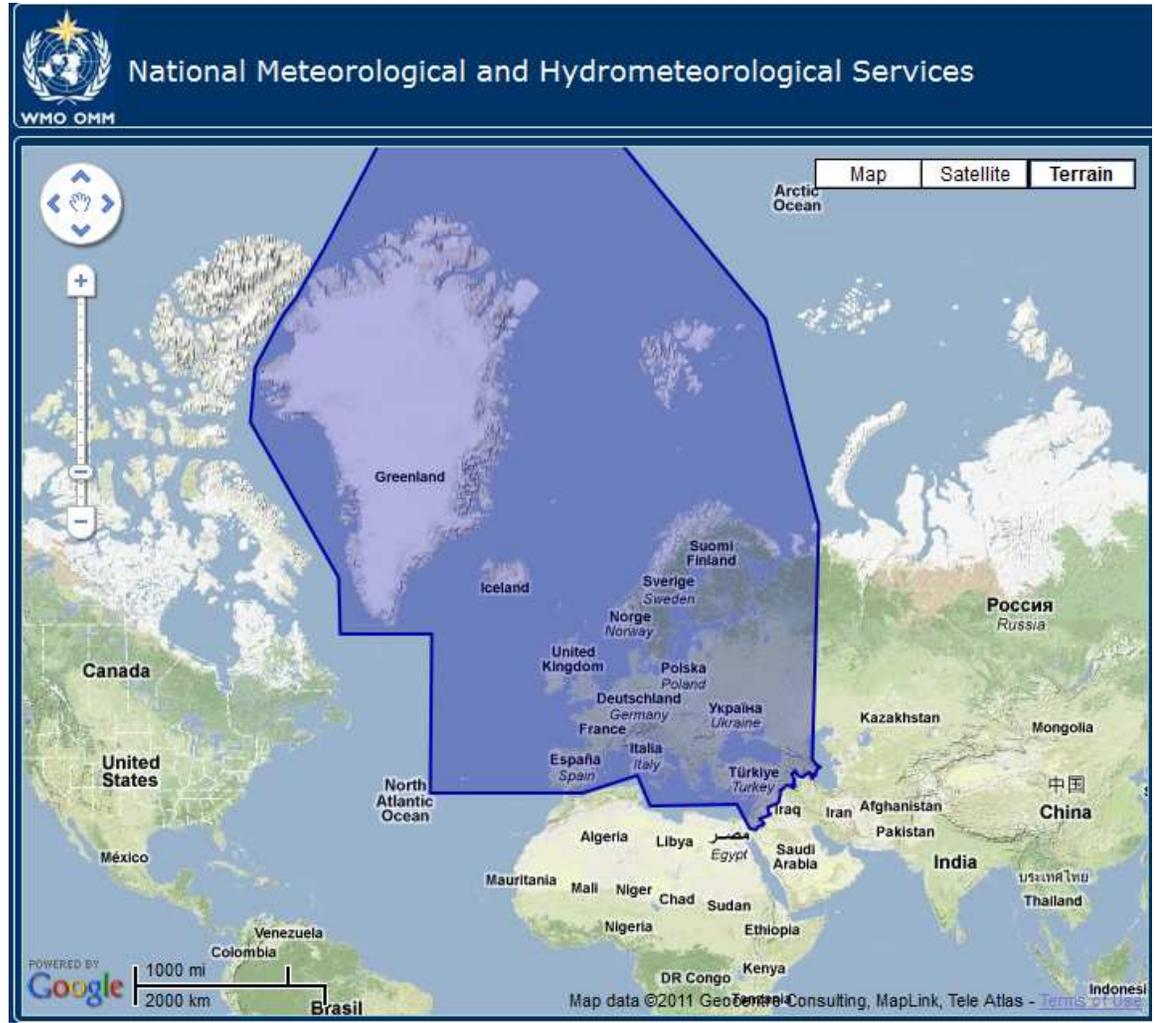

The European (RA VI) Regional Climate Centre Network

Peter Bissolli

Deutscher Wetterdienst, Germany

WMO RA VI Regional Climate Centre (RCC)

The WMO Region VI (Europe)



What is a Regional Climate Centre (RCC) ?

RCCs are **Centres of Excellence** that **assist WMO Members** in a given region to deliver **better climate services and products** including regional long-range forecasts, and to strengthen their capacity to meet **national climate information needs**.

- WMO activity (with mandate of WMO)
- Regional component of the Global Framework for Climate Services (GFCS) in the GFCS - pillar “Climate Service Information System (CSIS)”
- Users: other RCCs and the NMHSs (end users are customers of the NMHSs)

RCC in the RAVI:

- Poll in 2008 led to product portfolio (fixed in the implementation plan)
- Start as pilot network in 2009; 3 nodes; each node formed by a consortium
- CBS XV (09/2012): approval of nomination of the pilot RCC network to become the WMO RAVI RCC network
- Final decision by EC in May 2013 (RCC to be assigned as an RSMC of WMO)

WMO RAVI Pilot RCC-Network

- RCCs provide regional-scale tailored climate services on
 - Climate Data
 - Climate Monitoring
 - Climate Outlook and projections



WMO Pilot RCC-Network in Europe (<http://www.rccra6.org>):

RA VI RCC Pilot Network

RCC on Climate Data (red):

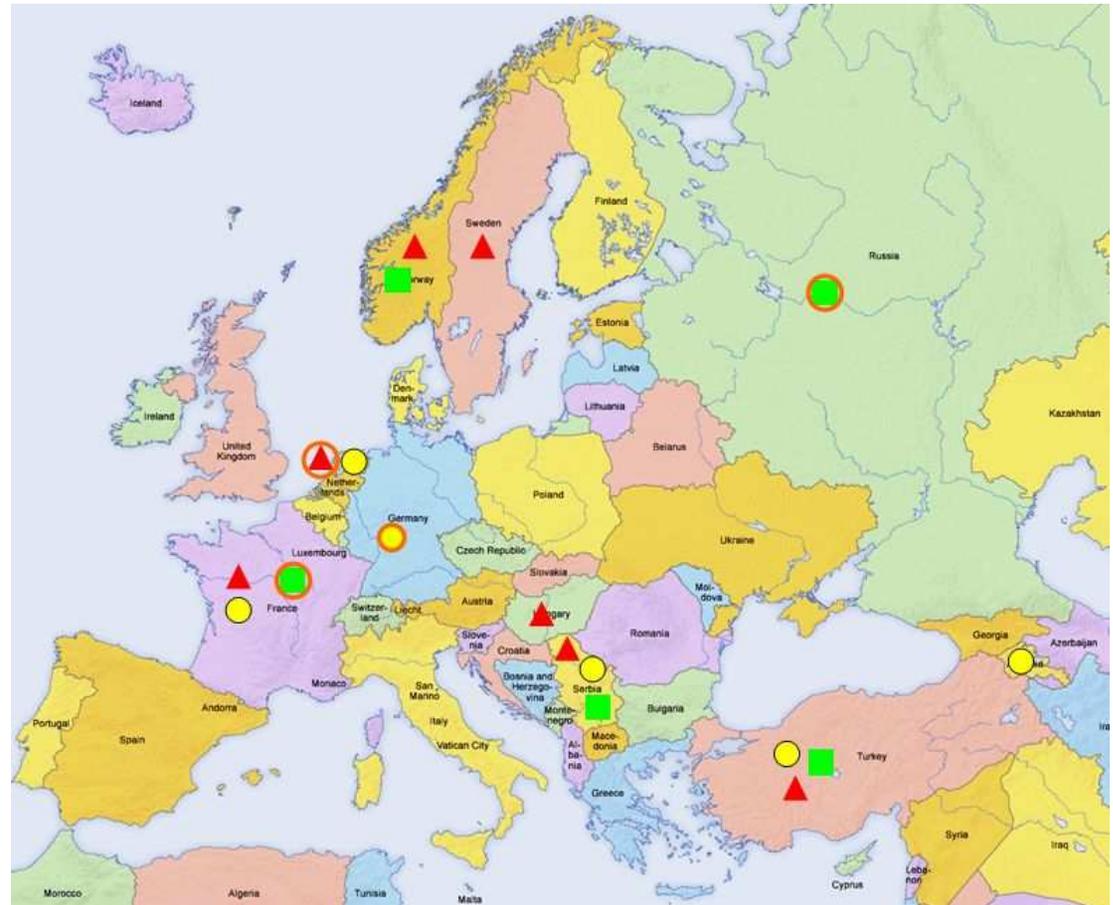
France, Hungary, Norway, Serbia, Sweden, Turkey;
lead: The Netherlands

RCC on Climate Monitoring

(yellow): Armenia, France, The Netherlands, Serbia, Turkey;
lead: Germany

RCC on Long-range Forecasting (green):

Norway, Serbia, Turkey;
lead: France, Russian Federation

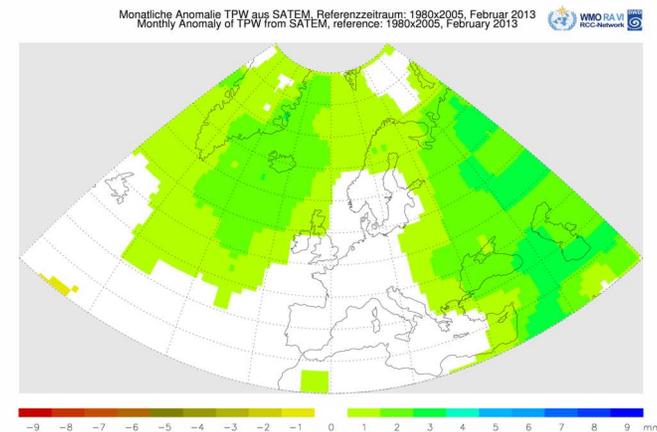
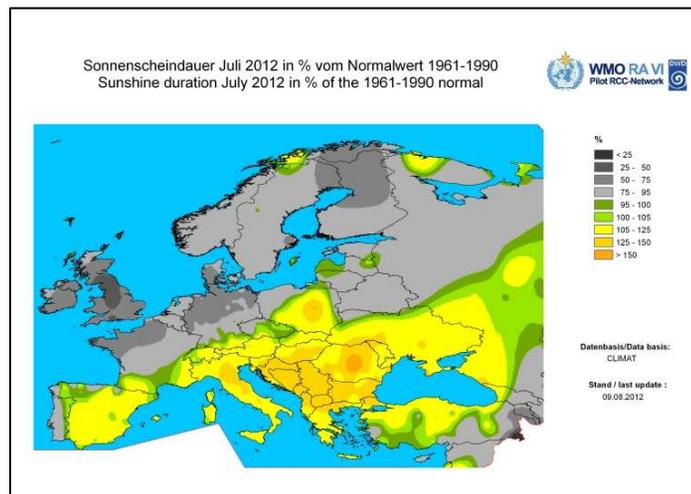


RAVI RCC Product summary

- **RCC on Climate Data:**
 - various data sets for Europe, both station data and gridded data (ECA/D, MILLENNIUM, ENSEMBLES, BALTEX, SHARK) and various sub-regional data sets
 - Services: Archiving functions, data management tools
- **RCC on Climate Monitoring**
 - Maps, reference climatologies, anomalies, indices, trends, statistics
 - reports, significant weather event data base, climate watch (advisories on possible future events),
- **RCC on Long-Range Forecasting** (seasonal forecasts)
 - Seasonal forecast bulletins, maps and graphs on model performance, seasonal outlooks, consensus statements, model verification

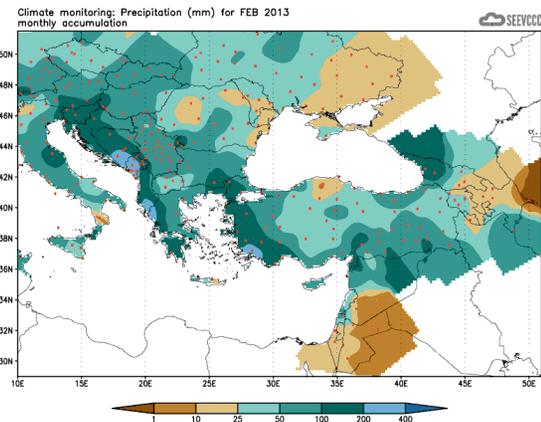
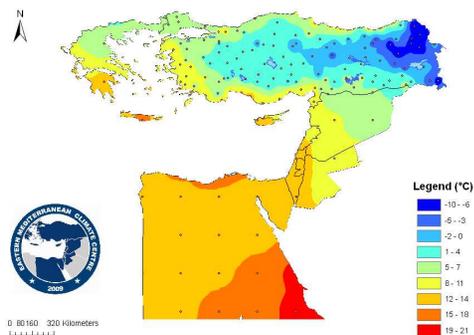
RCC-CM products in general:

- Maps, including from satellites
- Gridded data sets for download
- Documentation of significant events
- Monthly and annual reports
- Climate watches

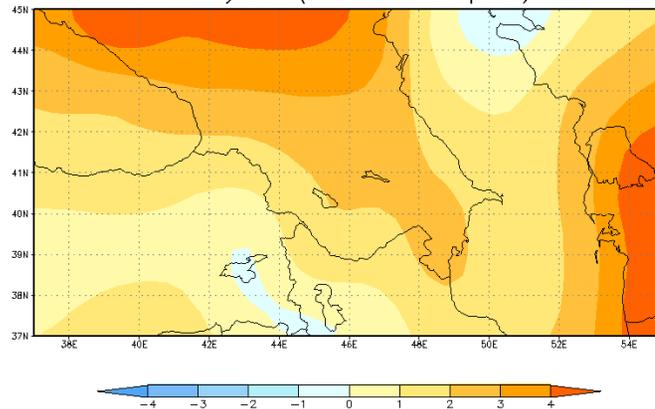


RCC-CM – products from members of the consortiums:

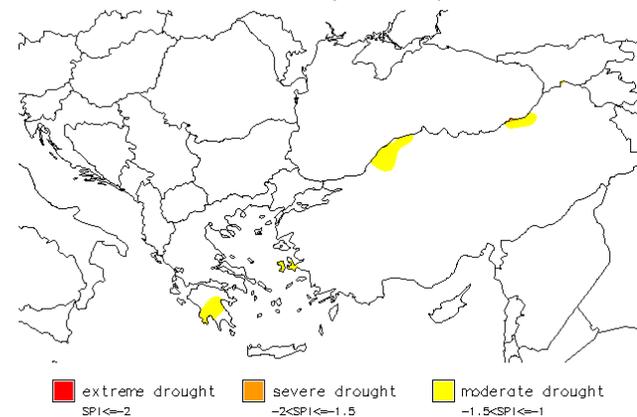
Monthly Temperature for The Eastern Mediterranean Region in January 2013



Monthly temperature anomalies (deg.C) South Caucasus
January 2013 (1961–1990 base period)

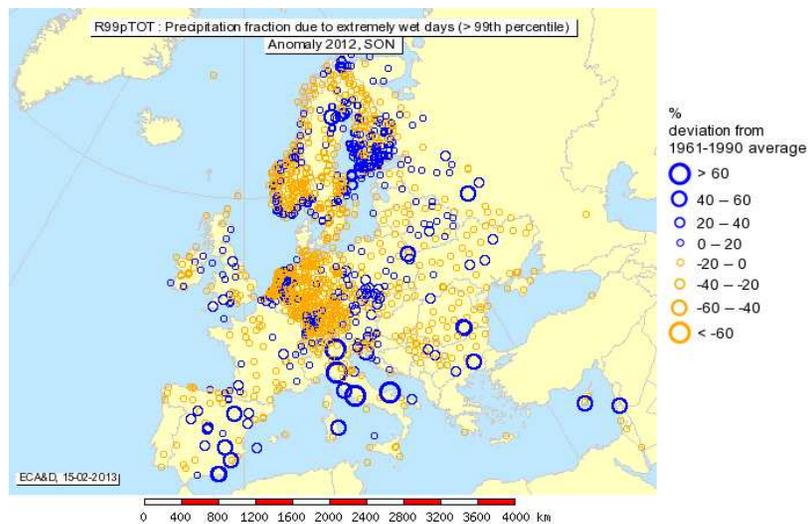


SPI Dec 2012 (3 months)
GPCC first-guess analysis

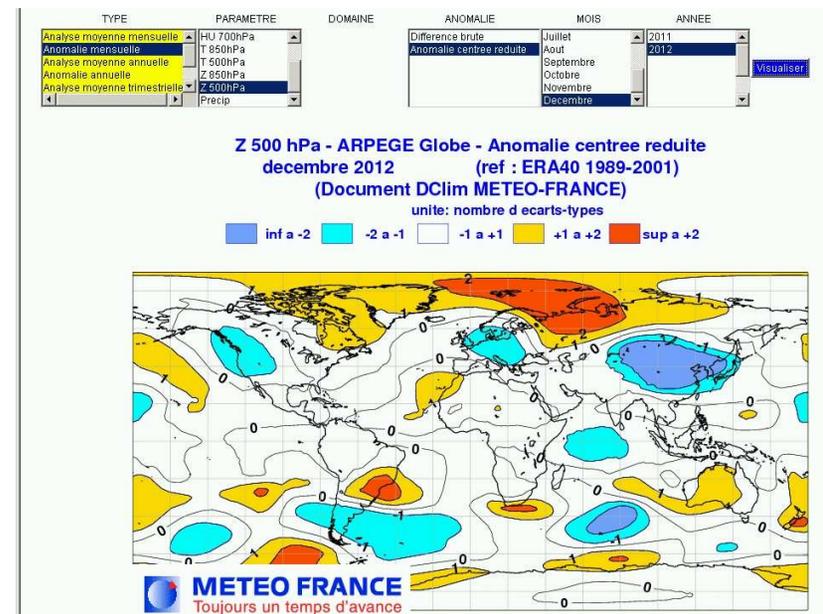


RCC-CM – products from members of the consortiums:

<http://ecad.knmi.nl/>



http://www.meteo.fr/special/CLIM/clim_model.html



Monthly event calendar

2013 april

Selected Significant Events

for the year: 2013 and the month: April

last updated: Thu May 16 11:05:45 UTC 2013

- **Dust over the eastern Mediterranean Sea**

'A thick plume of dust blew over the eastern Mediterranean Sea on April 1, 2013, extending northward from Egypt toward Turkey in a giant, counter-clockwise arc. Between Egypt and Turkey, dust clogged skies over Israel, the West Bank, and Cyprus.'. The situation was documented by the MODIS instrument on NASA's Terra satellite

Links:

[April 1 2013, Dust over the eastern Mediterranean Sea](#)

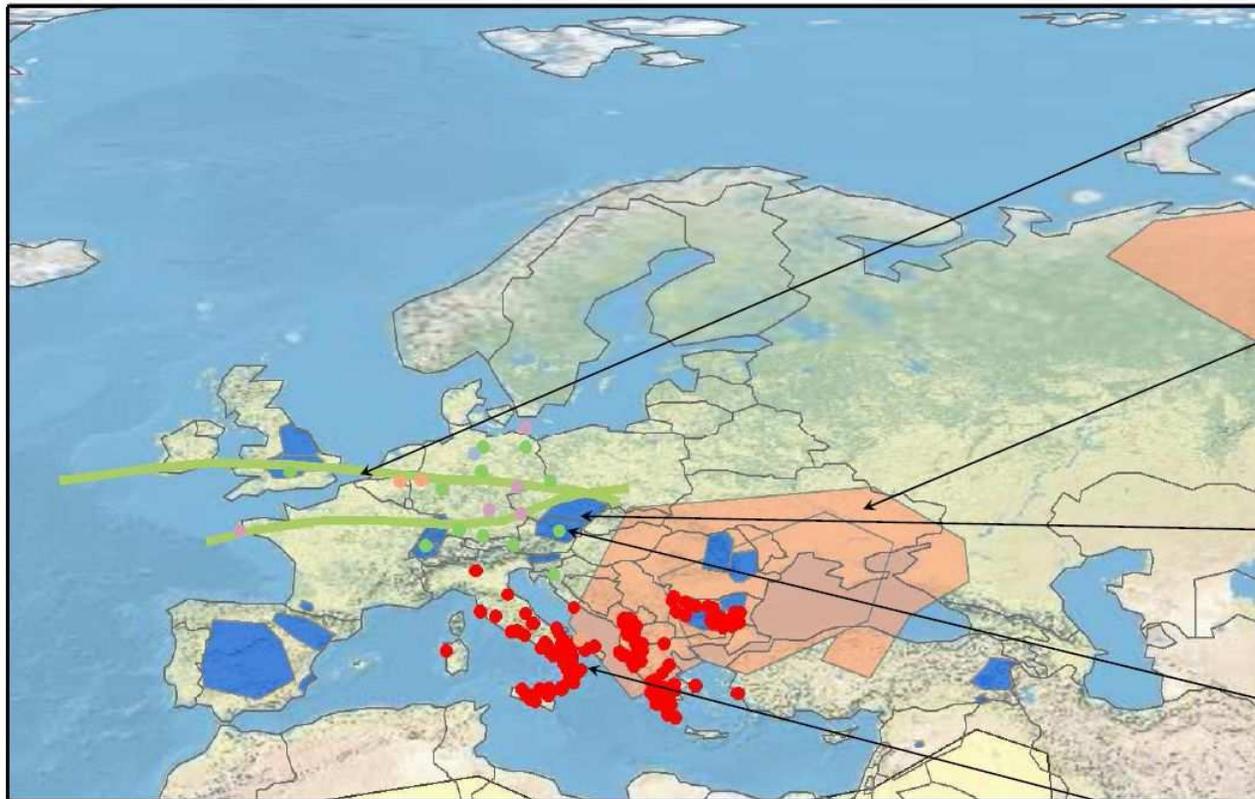
- **Dust plumes over the eastern Mediterranean Sea**

'Dust plumes blew over the Mediterranean Sea in early April 2013. Thick plumes hovered off the coasts of Libya and Egypt on April 7 and spanned the sea's eastern shoreline the following day, reaching as far north as Turkey.' This was documented by the MODIS instrument on NASA's Aqua satellite on April 8 and April 7.

On April 7, the plumes were thick enough to completely hide the land and water surfaces along the coasts of Libya and Egypt. In Libya, the coastal region enjoys a milder, moister climate than the inland desert. In Egypt, the land is fertile along the Nile River Valley and in the Nile Delta. Away from the Libyan coast and the Nile Valley, however, sandy desert spans hundreds of kilometers. The sand provides ample material for dust storms, and the desert's dearth of vegetation leads to substantial daytime heating of the ground surface. This creates instability in the lowest level of the atmosphere, increasing the likelihood that wind will stir dust storms. Such storms often increase in the springtime.

RCC-CM products: The Climate Knowledge Database

extreme weather events in 2007 in Europe



field	value
category	storm
begin	2007-01-17
end	2007-01-19
killed	46
damage (Million US\$)	9,010
cyclone	Kyriell
source	EM-DAT
affected countries	NL, PL, SI, DK, AT, BY, BE, FR, DE, CH, GB, DE, CZ, UA

field	value
category	heat
begin	2007-07-01
end	2007-07-31
killed	506
source	EM-DAT
affected countries	MK, RS, SK, AL, AT, BA, HU

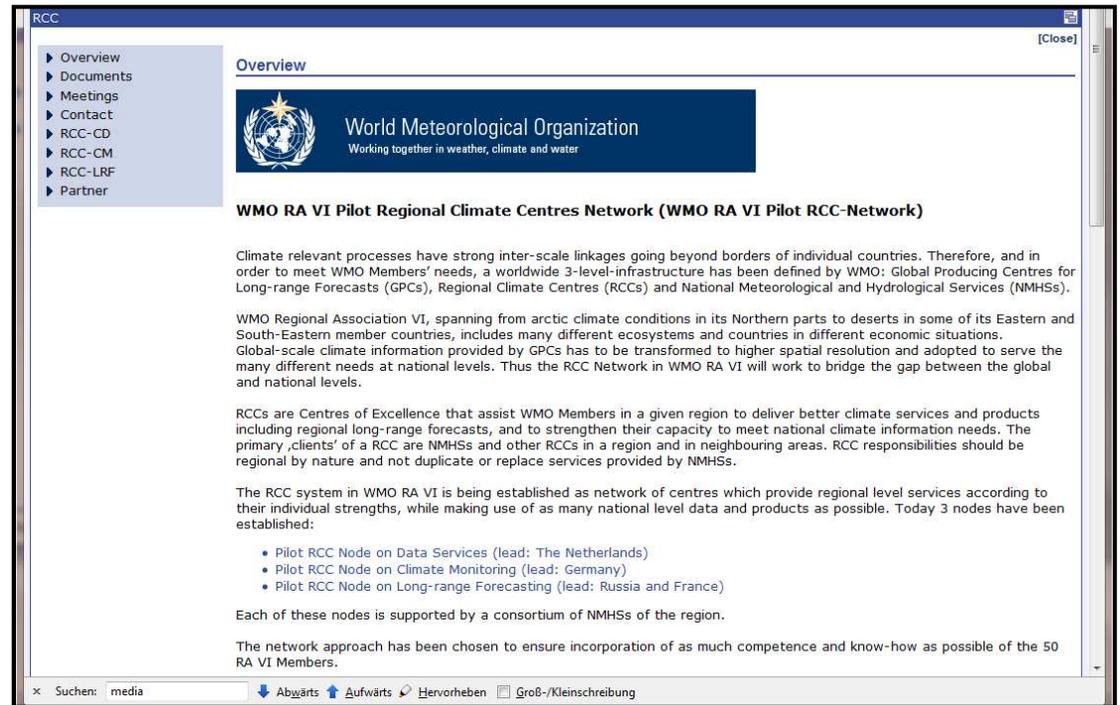
field	value
category	flood
begin	2007-09-06
end	2007-09-10
source	DFO
affected countries	CZ

field	value
category	rainfall
begin	2007-09-05
end	2007-09-08
source	KIT
cyclone	Xaver
affected countries	AT

field	value
category	wildfire
begin	2007-07-01
end	2007-08-31
source	EM-DAT
killed	11
affected countries	IT

Access to RCC network information and products

- Website
<http://www.rccra6.org>
- General description
- Links to
 - Documents
 - Meeting information
 - Contact details
 - Links to all RCC nodes, including product catalogues



The screenshot shows the 'Overview' page of the WMO RA VI Pilot Regional Climate Centres Network. The page features a navigation menu on the left with options: Overview, Documents, Meetings, Contact, RCC-CD, RCC-CM, RCC-LRF, and Partner. The main content area includes the WMO logo and the text 'World Meteorological Organization Working together in weather, climate and water'. Below this, the title 'WMO RA VI Pilot Regional Climate Centres Network (WMO RA VI Pilot RCC-Network)' is displayed. The text describes the network's purpose, its structure, and the role of Regional Climate Centres (RCCs) in providing regional climate services and products. It also lists three pilot RCC nodes: Data Services (lead: The Netherlands), Climate Monitoring (lead: Germany), and Long-range Forecasting (lead: Russia and France). The page footer includes search and navigation controls.

Access to RCC network products - overview

- **Internet**
 - Recommended by implementation plan
 - Should include product catalogue for each node as PDF including examples for products
 - **Access without restriction**
 - Most products of RCC-CD and RCC-CM
 - **Access with restriction**
 - For RCC-LRF products and gridded data from RCC-CM
 - Through the respective NMHS
 - User and password authorised by host of RCC node
- **Via one of the WMO Global Information System Centres (GISCs)**
 - Additional access option
 - Also offers search for RCC products (if smart keywords used)

RCC on Climate Monitoring (<http://www.dwd.de/rcc-cm>):

Homepage | Weather + Warnings | **Climate + Environment** | Special Users | Co-operation | About Us | Responsibilities |  

News | Contact | Press | WeatherShop | Services A-Z | Library | Weather Glossary | Job Market | Login | Search

RCC-CM [Close]

- ▶ Overview
- ▶ News
- ▶ Members
- ▶ Products
- ▶ Documents
- ▶ Links
- ▶ Meetings
- ▶ Contact

The new WMO RA VI Regional Climate Centre on Climate Monitoring (Europe and Middle East)



Regional Climate Centres (RCCs) are institutions with the capacity and mandate by WMO within the Global Framework for Climate Services (GFCS) to develop high quality regional-scale products using global products and incorporating regional information. Recently a pilot network of three RCC consortia was established for the WMO region RA VI (Europe and Middle East):

- RCC node on climate data,
- RCC node on climate monitoring,
- RCC node on long-range forecasting.

RCCs provide online access to their products and services to national meteorological and hydrological services and to other regional users. Vice versa, RCCs receive data, products, know-how and feedbacks from the meteorological services as a main source for regional information. By the same time, they provide regional data, products and feedbacks to Global Production Centres and Lead Centres for respective verification and product optimisation of the global-scale information.

The WMO RA VI Regional Climate Centre on Climate Monitoring (RCC-CM) will perform basic functions covering the domain of climate monitoring:

- Annual and monthly climate diagnostic bulletins,
- Monthly monitoring maps: global, RAVI, Eastern Mediterranean, South Caucasus,
- Reference climatologies and trend maps,
- RA VI climate monitoring WebPortal,
- Climate watches,
- Training; Research and Development (R&D).

RCC-CM provides products for the following climate variables:

- temperature
- precipitation
- sunshine duration
- drought
- surface air pressure
- cloud cover
- water vapour content (precipitable water)
- radiation
- snow



```

graph TD
    GPCs[GPCs: Global ensemble prediction outcome  
(means and spreads of distribution)  
for the next season]
    RCCs[RCCs: (Tools for) regional downscaling,  
assessment/interpretation for the region,  
training on methodologies  
RCOF processes: Consensus statements  
on regional forecasts]
    NMHSs[NMHSs: Advisories/warnings to the end  
users, provision of tailored seasonal outlooks  
to the end users]
    GPCs --> RCCs
    RCCs --> NMHSs
    NMHSs --> GPCs
    
```

How to go on?

- Upcoming challenges and opportunities
 - Global Framework for Climate Services (GFCS)
 - GMES Climate Core Service
 - Interaction with other RCCs
 - New inter-regional RCCs, e.g. for the Polar Region, Mediterranean
- Add new products, new regional partners, enhance consortium
- Improve user friendliness
- Better integration of RCC webpages; WMO design

WMO RCC PRODUCTS AND SERVICES

WMO RCCs shall perform the following minimum set of mandatory functions covering the domains of long-range forecasting (LRF), climate monitoring, data services and training:

- Interpret and assess LRF products from GPCs, including the exchange of basic forecasts and hindcast data
- Generate regional tailored products, including seasonal outlooks
- Provide online access to RCC products
- Perform regional climate diagnostics
- Develop regional climate datasets
- Establish a regional historical reference climatology
- Provide climate archiving services
- Implement a regional Climate Watch
- Coordinate training for RCC users
- Provide information on RCC products and guidance on their use

In addition, depending on a region's specific requirements, WMO RCCs should perform "highly recommended functions" in the areas of climate predictions and projections, data services, research and development, coordination, training, and capacity-building.



Asian RCC Network Web portal
www.rccra2.org

WMO RCC PRODUCTS AND SERVICES

A multifunctional centre that fulfils all the required functions of an RCC for the entire region, or for a sub-region to be defined by the regional association, may be designated by WMO as a WMO Regional Climate Centre (WMO RCC). A group of centres performing climate-related activities that collectively fulfil all the required functions of an RCC may be designated by WMO as a WMO Regional Climate Centre Network. Each centre in a designated WMO RCC Network will be referred to as a Node. A Node will perform, for the region or subregion defined by the regional association, one or several of the mandatory RCC activities, for example, long-range forecasting, climate monitoring, climate data services, and training.

GLOBAL FRAMEWORK FOR CLIMATE SERVICES

WMO, in cooperation with other United Nations agencies, governments and the private sector, organized the World Climate Conference-3 (WCC-3) in Geneva, from 31 August to 4 September 2009. WCC-3 established the Global Framework for Climate Services, an international framework to guide the development of climate services. This framework links science-based climate predictions and information with climate risk management and adaptation to climate variability and change throughout the world. WMO RCCs form an integral component of this framework.

For more information:

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www.wmo.int

WMO Regional Climate Centres (RCC) at a glance:

Serving National Meteorological Services
in enhancing climate services



World
Meteorological
Organization
Weather · Climate · Water

More general information on RCCs:

http://www.wmo.int/pages/prog/dra/eur/documents/RCC%20Network/RCC_flyer_April2010_EN.pdf



Thank you for your attention !

Don't worry, be happy ...