



The WMO RAVI Pilot Regional Climate Centre Network – a support to users in Europe

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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**.

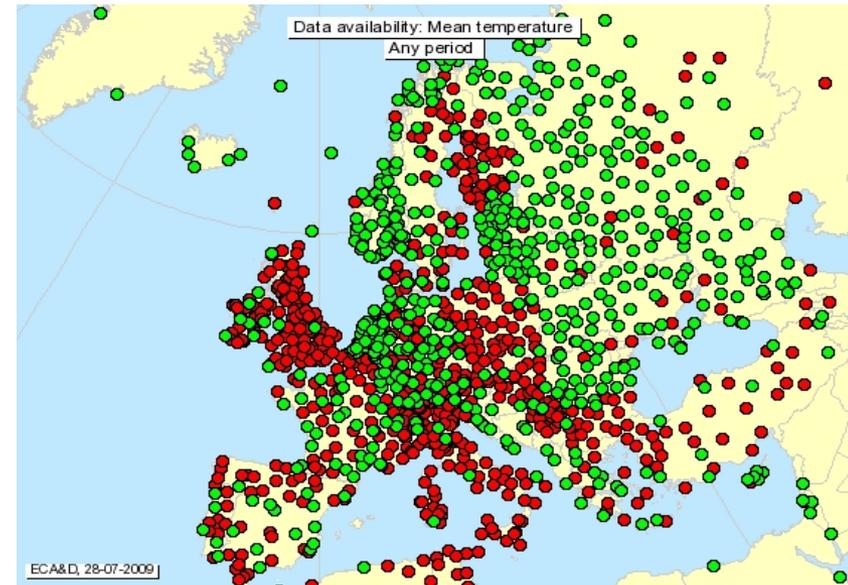
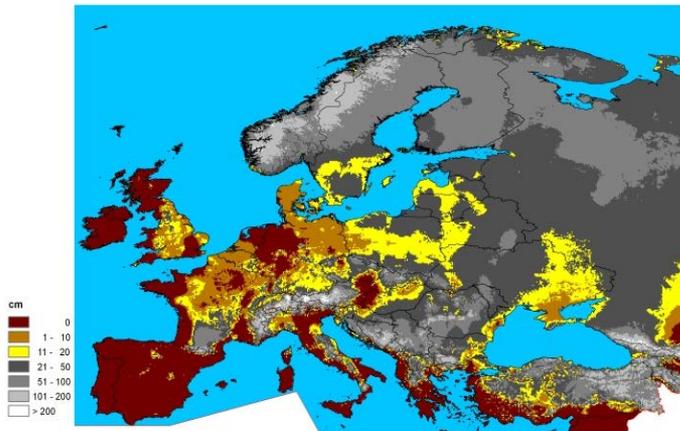
- WMO activity (there is a mandate by WMO)
- Providing high-quality climate services and products for the WMO RA VI Region (dedicated regional service: Europe and Middle East)
- At RA VI: Organized as a network of many participating national meteorological and hydrological services (NMHSs). (in contrast to other RAs)
- Principle of shared work/tasks (one for all, all for one)
- No duplication of work which is already done on a national level
- Users are other RCCs and the NMHSs, end-users the customers of the NMHSs
- “Pilot”: official designation by WMO pending

WMO RAVI Pilot RCC-Network

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

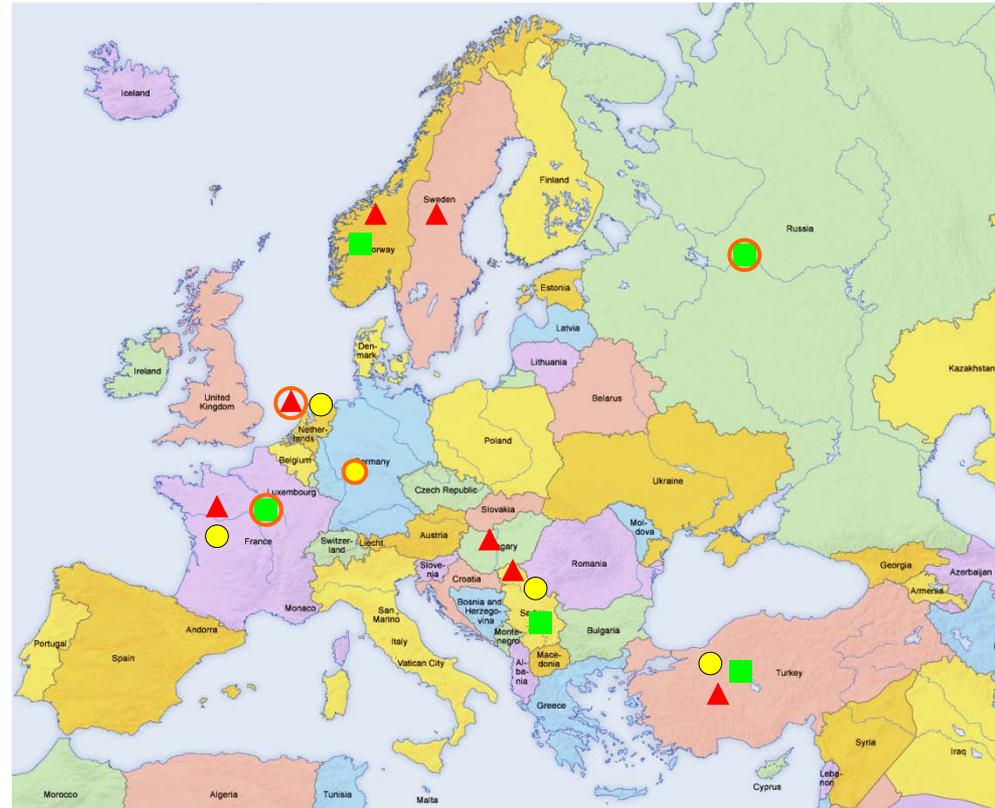
Maximale Schneehöhe Februar 2012
Maximum snow depth February 2012

Datenbasis/Data basis: SYNOP
Stand/last update: 01.03.2012



WMO Pilot RCC-Network in Europe

- ➔ using the Members' knowledge to improve meteorological services
- ➔ RA VI RCC Pilot Network
 - ➔ RCC on Climate Data:
France, Hungary, Norway, Serbia, Sweden, Turkey;
lead: The Netherlands
 - ➔ RCC on Climate Monitoring:
Armenia, France, The Netherlands, Serbia, Turkey;
lead: Germany
 - ➔ RCC on Long-range Forecasting:
Norway, Serbia, Turkey;
lead: France, Russian Federation



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National contributors and primary users: all 50 Met Services of RA VI



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-CD product examples

- ➔ Reports on extreme events
- ➔ Data sets for download
- ➔ Maps of daily data

ECAD European Climate Assessment - Dataset

Flooding in Poland and Eastern Europe, Spring 2010

GEO theme: Water, Disasters
Category: Rain
Country: Poland, Czech republic, Slovakia, Serbia, Hungary

In May 2010, extremely heavy and persistent rain caused severe flooding in Poland and neighbouring countries, the worst the area has seen in 100 years, much worse than the last major floods in 1997. Southern Poland was hit hardest, but northern areas were inundated as well. Parts of Czech Republic, Slovakia, Hungary and Serbia also experienced flooding and were majorly affected. As reported by the BBC, there were at least 20 fatalities and thousands of people living along the Vistula River, which flows from the Southern Tatra Mountains into the Baltic Sea, were forced to evacuate as the river swelled. According to the Bloomberg News, total damage from the floods may exceed 2.5 billion Euros.

The month of May consisted of many more wet days than normal for these regions; over 12 more than the normal over the period 1961-1990. A wet day is defined as the precipitation amount being greater than or equal to one millimetre. The anomalously high amount of wet days during May 2010 can be seen on the ECAD map below.

ECAD map of the anomaly in the number of wet days, where precipitation amount is greater than or equal to 1 mm, for the month of May 2010 compared to the normal period 1961-1990.

The bulk of the rainfall was due to a weather regime characterized by strong baroclinic temperature contrasts, high amounts of precipitable water (the water vapour available for precipitation), and a quasi-stationary area of low pressure in the upper atmosphere termed an 'upper low'. The low tracked across the Southern Alps and the subsequent orographic lifting in the lee of the mountains triggered the release of the softening precipitable water amounts causing intense precipitation. According to the German weather service (Deutscher Wetterdienst, DWD), previous floods in Poland during the recent past in 1997 and 2001 were also instigated by such a weather regime.

Satellite images of the heaviest storm days (16, 17 and 18 May) along with figures of the precipitation sums on 16 and 17 May are shown below.

Satellite images of the heaviest storms on 16, 17 and 18 May 2010.

E-OBS precipitation sums for the heaviest rain days 16 and 17 May. The two-day total exceeds 200 mm in some areas, but the bulk of this precipitation fell in a 24-hour period.

As seen in the figure below, precipitation amounts in the month of May were well over 100 mm above average across vast regions of Eastern Europe.

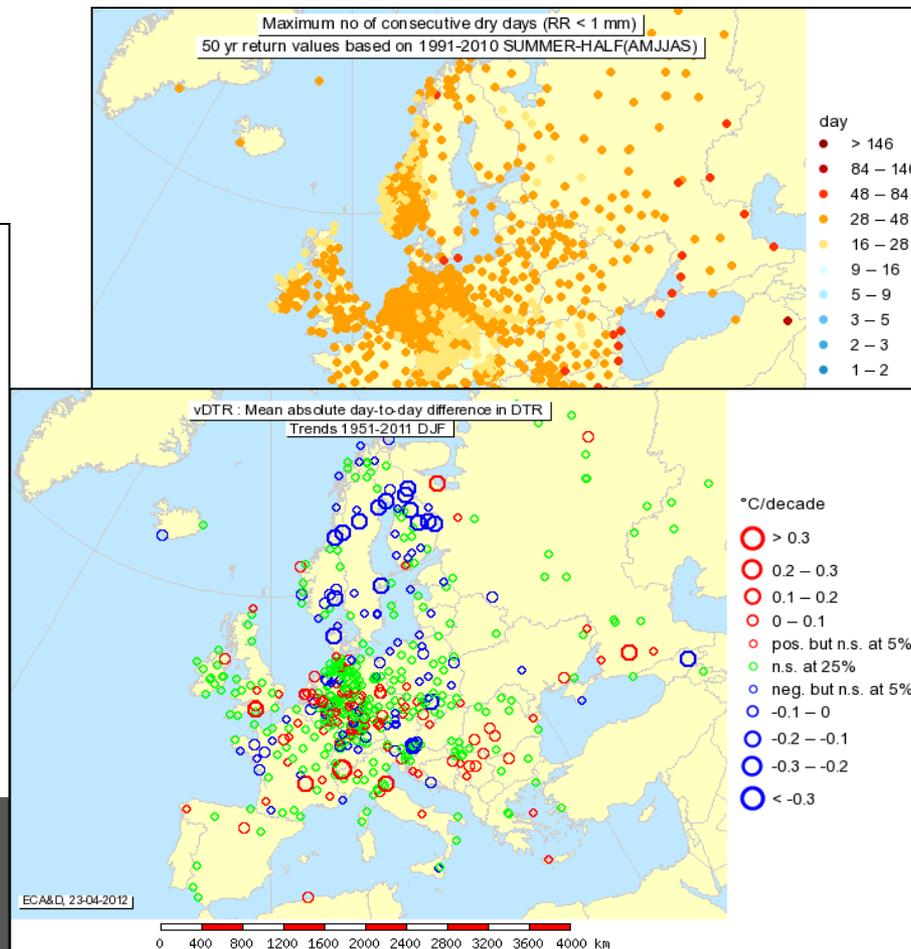
E-OBS anomalies of precipitation sum for the month of May 2010 compared to the normal period 1961-1990.

For the areas over which the greatest amount of precipitation fell, there appears to be no clear trend toward a change in the number of very wet days, with greater than 20 mm of precipitation, during May. See the ECAD trend map below.

ECAD trend map of the number of very heavy precipitation days greater than 20 mm in May for the period 1961-2010.

Page 1 of 3, source: <http://eca.kmi.ni>, created on 23-04-2012

Page 2 of 3, source: <http://eca.kmi.ni>, created on 23-04-2012

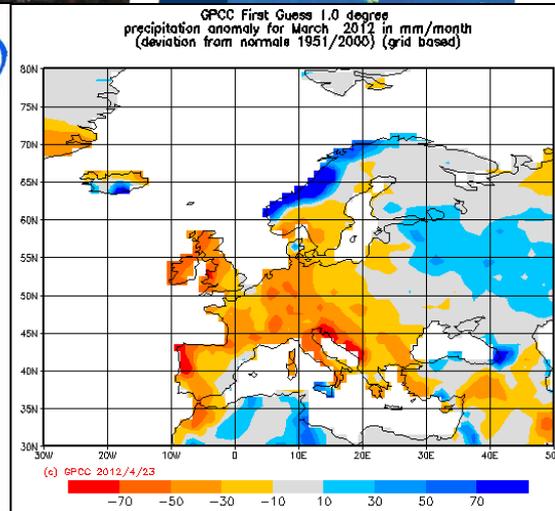
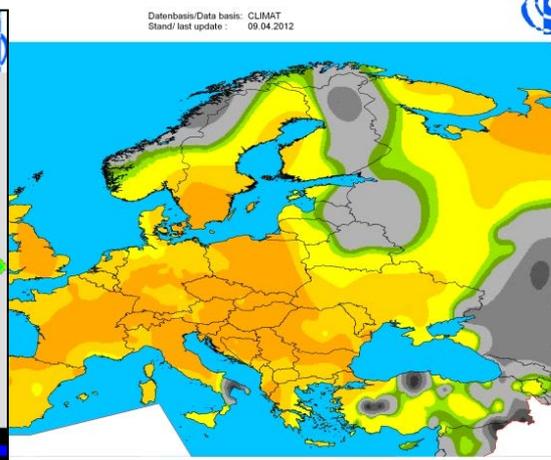
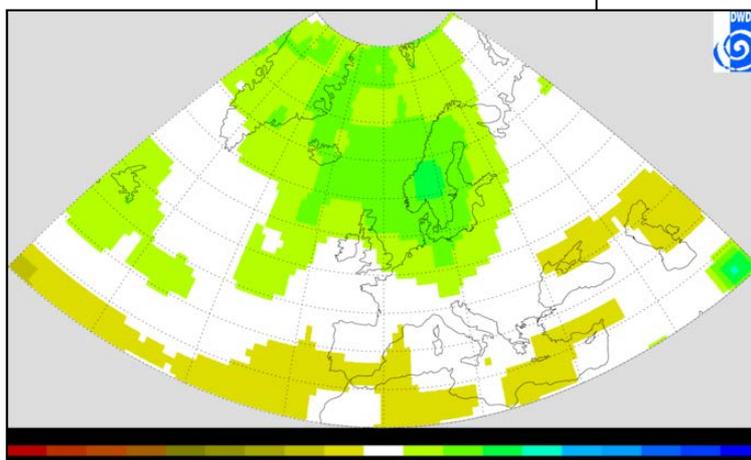


RCC-CM product examples

- ➔ Maps, including from satellites
- ➔ Significant events documentations
- ➔ Reports
- ➔ Gridded data sets for download
- ➔ Climate watches

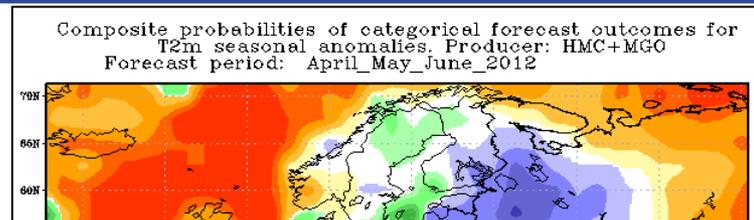


Sonnenscheindauer März 2012 in % vom Normalwert 1961-1990
Sunshine duration March 2012 in % of the 1961-1990 normal



RCC-LRF product examples

- ➔ Monthly global bulletin
- ➔ Gblal and regional seasonal prediction maps
- ➔ Climate outlook



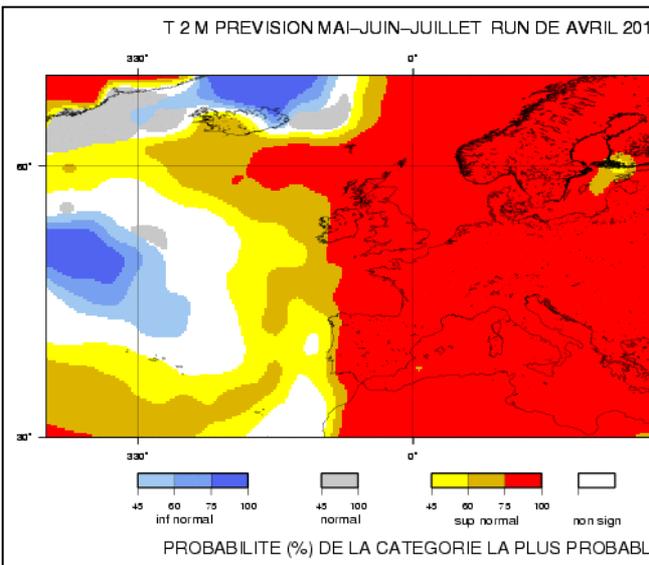
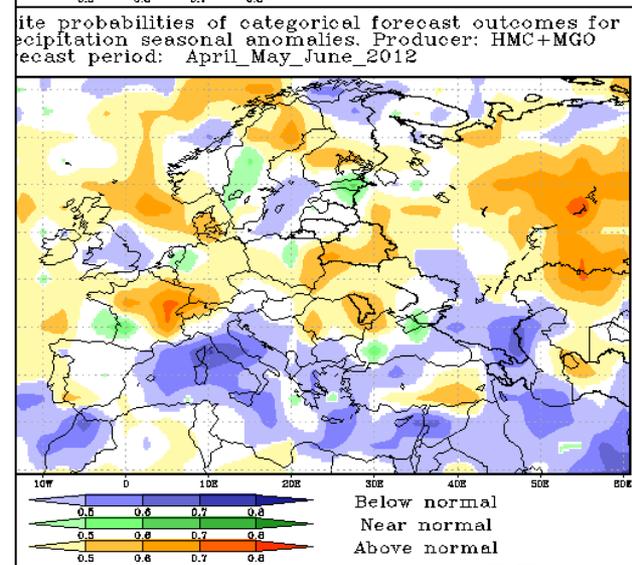
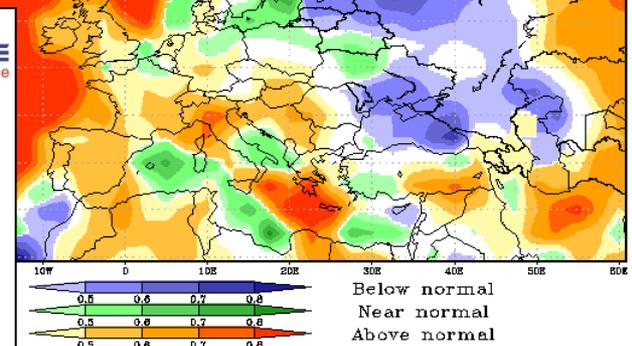
METEO FRANCE
Toujours un temps d'avance

GLOBAL CLIMATE BULLETIN
n°154 - APRIL 2012

Table of Contents

I. DESCRIPTION OF THE CLIMATE SYSTEM (DECEMBER 2011)	3
I.1. OCEANIC ANALYSIS	3
I.1.a Global Analysis	3
I.1.b Pacific Basin	4
I.1.c Atlantic Basin	5
I.1.d Indian Basin	6
I.2. ATMOSPHERE	6
I.2.a Atmosphere : General Circulation	6
I.2.b Precipitation	8
I.2.c Temperature	9
I.2.d Sea Ice	9
II. SEASONAL FORECASTS FOR FEBRUARY-MARCH-APRIL FROM DYNAMICAL MODELS	11
II.1. OCEANIC FORECASTS	11
II.1.a Sea Surface Temperature (SST)	11
II.1.b ENSO Forecast	13
II.1.c Tropical Atlantic forecasts	15
II.1.d Indian Ocean forecasts	16
II.2. GENERAL CIRCULATION FORECAST	17
II.2.a Global Forecast	17
II.2.b North hemisphere forecast and Europe	18
II.3. IMPACT : TEMPERATURE FORECASTS	20
II.3.a ECMWF	20
II.3.b Météo-France	20
II.3.c Met Office (UKMO)	21
II.3.d Japan Meteorological Agency (JMA)	21
II.3.e Euro-SIP	22
II.3.f International Research Institute (IRI)	23
II.4. IMPACT : PRECIPITATION FORECAST	24
II.4.a ECMWF	24
II.4.b Météo-France	24
II.4.c Met office (UKMO)	25
II.4.d Japan Meteorological Agency (JMA)	25
II.4.e Euro-SIP	26
II.4.f International Research Institute (IRI)	27
II.5. REGIONAL TEMPERATURES	28
REGIONAL PRECIPITATIONS	29
II.6. MODEL'S CONSISTENCY	30
II.6.a GPC's consistency maps	30
II.7. "Extreme" Scenarios	31

RCC-LRF Note GLOBAL CLIMATE BULLETIN n°154 APRIL 2012 1/37



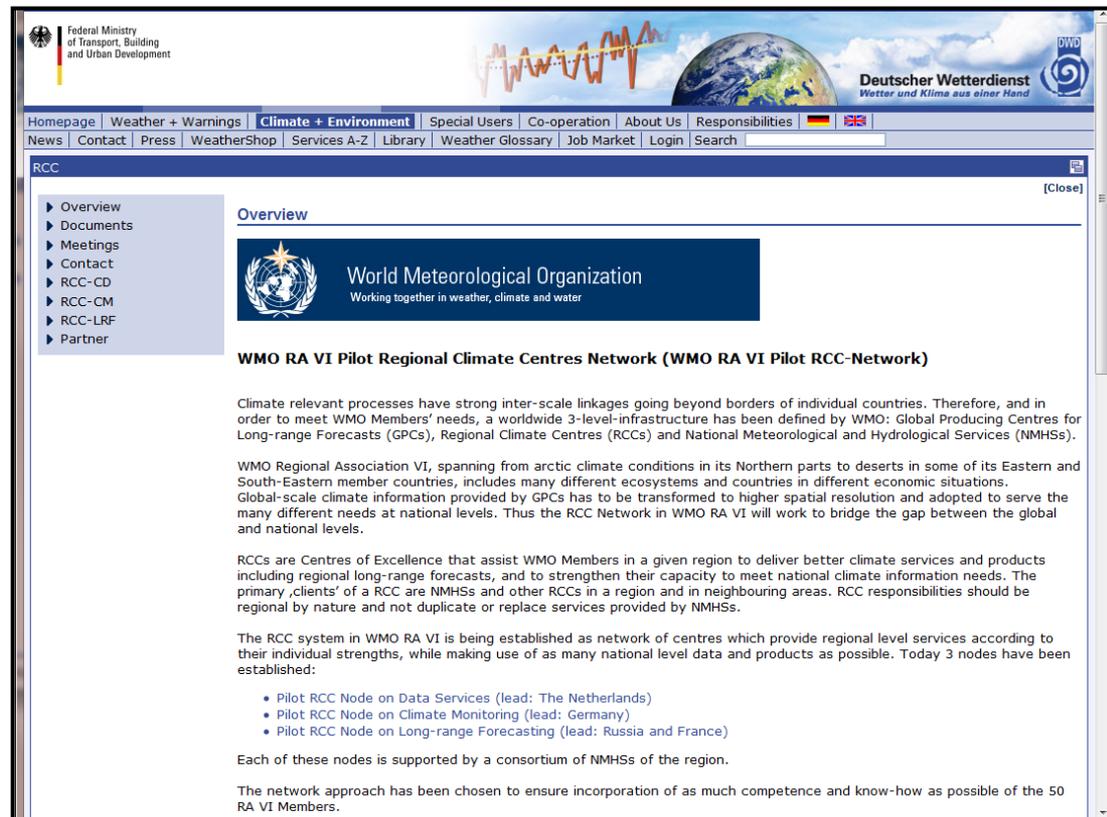


Access to RCC-Network products - overview

- 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
 - Through the respective NMHS
 - User and password authorised by host of RCC node
 - For RCC-LRF products and gridded data from RCC-CM
- Via one of the WMO Global Information System Centres (GISCs)
 - Additional access option
 - Also offers search for RCC products (if smart keywords used)

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 website for the WMO RA VI Pilot Regional Climate Centres Network. The page features a navigation menu with options like 'Overview', 'Documents', 'Meetings', 'Contact', 'RCC-CD', 'RCC-CM', 'RCC-LRF', and 'Partner'. The main content area includes the WMO logo and the title 'WMO RA VI Pilot Regional Climate Centres Network (WMO RA VI Pilot RCC-Network)'. The text describes the network's purpose, its structure, and the roles of its member nodes.

WMO RA VI Pilot Regional Climate Centres Network (WMO RA VI Pilot RCC-Network)

Climate relevant processes have strong inter-scale linkages going beyond borders of individual countries. Therefore, and in order to meet WMO Members' needs, a worldwide 3-level-infrastructure has been defined by WMO: Global Producing Centres for Long-range Forecasts (GPCs), Regional Climate Centres (RCCs) and National Meteorological and Hydrological Services (NMHSs).

WMO Regional Association VI, spanning from arctic climate conditions in its Northern parts to deserts in some of its Eastern and South-Eastern member countries, includes many different ecosystems and countries in different economic situations. Global-scale climate information provided by GPCs has to be transformed to higher spatial resolution and adopted to serve the many different needs at national levels. Thus the RCC Network in WMO RA VI will work to bridge the gap between the global and national levels.

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. The primary 'clients' of a RCC are NMHSs and other RCCs in a region and in neighbouring areas. RCC responsibilities should be regional by nature and not duplicate or replace services provided by NMHSs.

The RCC system in WMO RA VI is being established as network of centres which provide regional level services according to their individual strengths, while making use of as many national level data and products as possible. Today 3 nodes have been established:

- Pilot RCC Node on Data Services (lead: The Netherlands)
- Pilot RCC Node on Climate Monitoring (lead: Germany)
- Pilot RCC Node on Long-range Forecasting (lead: Russia and France)

Each of these nodes is supported by a consortium of NMHSs of the region.

The network approach has been chosen to ensure incorporation of as much competence and know-how as possible of the 50 RA VI Members.



Quo vadis RCC?

- 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 regional partners, enhance consortium

- Improve user friendliness

- Better integration of RCC webpages; WMO design



Thank you for your attention !