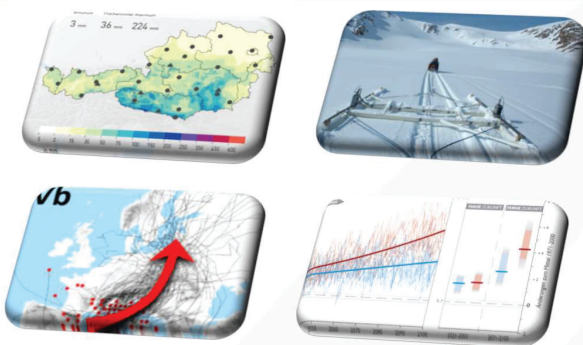


28th OSCE Economic and Environmental Forum
Second Preparatory Meeting
Session 4

Mr. Gerhard Wotawa, ZAMG, Austria

Disaster Risk Reduction (DRR)

Multi-Hazard Early Warning Systems and access to information



Gerhard Wotawa

DRR: Natural hazards and NATECH events

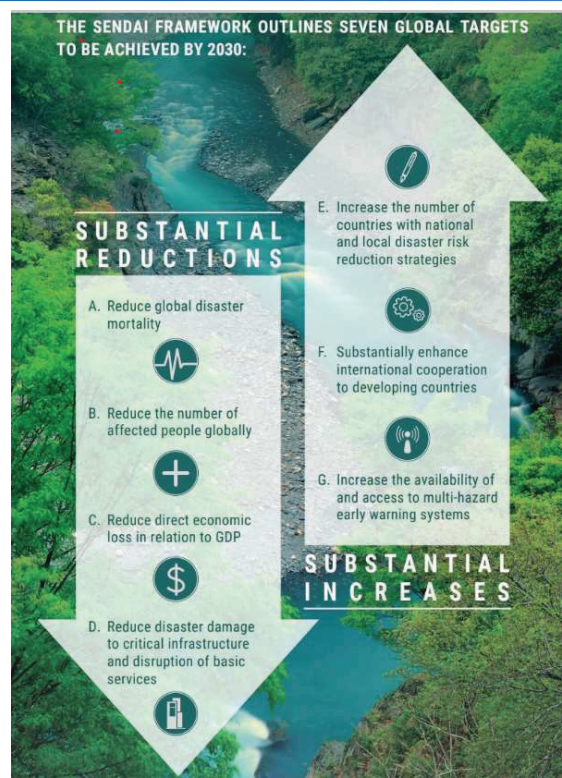
- Natural hazards (weather-related, geophysical, health-related) are the biggest threat to human safety and wellbeing
- They can be followed by associated technical failures – **NATECH** events
- In the field of Disaster Risk Reduction (DRR), the **lack of coping capacity** is the feature that needs to be urgently addressed at national and international levels (corruption, poverty and inequality increase disaster risks)



Lack of coping capacity

- Institutional element
 - DRR (Hyogo Framework for Action, Sendai Framework)
 - Governance
- Infrastructure element
 - Communication
 - Physical infrastructure
 - Access to health system
- Interoperability element
 - Agreed data model and vocabulary
 - Cross-border event identifier

Sendai Framework



DRR – our technical perspective

- Disaster preparedness requires **early warning information** from **mandated technical organizations** like National Meteorological Services, Seismological Services, Geological Services, Environmental Protection Agencies,...
- **Multi-Hazard Approach**: consider cascades of events; bring together experts from different fields; seamless linking of alerting systems
- **Impact orientation**: not the physical strength of the phenomenon is most important, but where and when it strikes (coping capacity, exposure, important infrastructure affected,...)



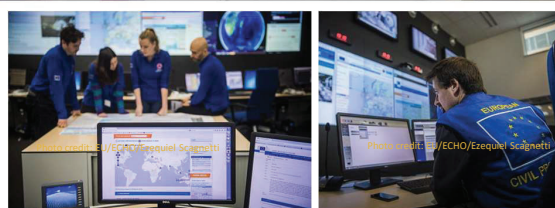
ARISTOTLE – Multi-hazard advice for Europe

ARISTOTLE –ENHSP(*) builds upon member states national expertise to improve EC coordination and support the EU-CPM

National Operational Centers



ERCC



ARISTOTLE – expert advice

(*) European Multi-Hazard Scientific Partnership



ARISTOTLE Hazard Reports

- Upon request from ERCC, **emergency reports** are issued within 3 hours
- System is **multi-hazard** and **impact-oriented**
- Provides **expert advice** to support international search and rescue operations
- 24x7 operational rotation system

ARISTOTLE-EHNSP EMERGENCY REPORT (AR0039)

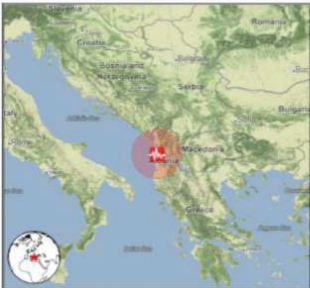
EARTHQUAKE IN ALBANIA

MAIN DETAILS

Area	Albania (Europe)	Operation mode	Reactive
Event start	26 November 2019, 02:54 UTC	Event end	-
Report created	26 November 2019, 04:41 UTC	Report finalized	26 November 2019, 06:45 UTC

EXECUTIVE SUMMARY

- A **STRONG** earthquake with magnitude 6.4 occurred on Tue Nov 26 02:54:12 2019 (UTC) with latitude 41.52°N, longitude 19.56°E and depth of 20.0 km. This is an inland event at a distance of 3.9 km from the nearest coast.
- According to the USGS shakemap, the maximum felt intensity in the epicenter area was VIII, which corresponds to severe shaking. The population exposed to MMI (Mercalli Modified Intensity) intensity above VII (a level of intensity related to severe shaking and from light to moderate damage) is 702K. Shaking was felt across the region, as far away as Montenegro, Kosovo, North Macedonia, Greece and Italy.
- Tirana city, the capital of Albania, with a population of 375 k experienced strong shaking (intensity VIII).
- Footage on social media showed collapsed buildings in Durrës, in the nearby village of Thumane and damage was reported in the capital city. Reports indicate that hundreds of people are injured many of them in Tirana. Eyewitnesses describe the collapse of 5-story building fell in Durrës.
- The buildings affected by the mainshock became more vulnerable and more damage is expected due to strong aftershocks.
- There were more than 10 felt aftershocks recorded. The strongest aftershocks occurred at 5 minutes (M5.1), 9 minutes (M5.3) and 3h and 14 minutes (M5.4) after the main shock. Due to the very high aftershocks rate, further shocks in the following days can not be discarded.
- Given the size of the earthquake and its location within the coast, no tsunami is expected to occur. This is confirmed by both the sea level data from the nearest stations that show no tsunami signal and the tsunami simulations that show the generation of very small waves (less than 10 cm wave height). Regarding the weather hazard the large amount of precipitation may increase the risk of landslides in mountainous regions. The risk is slightly increased by the rains that have already occurred during the last few days, but accumulations have not been significant.



GEOGRAPHICAL LOCATION

ALBANIA: 41.52N 19.56E
Magnitude: 6.4. Depth: 20 km.

OVERALL IMPACT


Low/Medium/High

LACK OF COPING CAPACITY

Albania	LOW	(4.2)
Macedonia	LOW	(3.6)
Montenegro	LOW	(3.3)
Kosovo	N/A	(N/A)

ALERT LEVEL

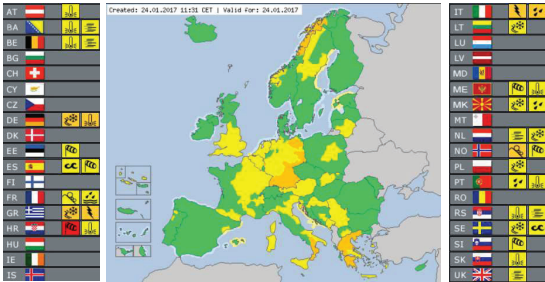
Life-threatening to medium	High	X	
	Medium		
	Low		
Required Resources		Sub-national	International



ZAMG
Zentralanstalt für Meteorologie und Geodynamik


METEOALARM System – Alerting Europe for severe weather

What is Meteoalarm?

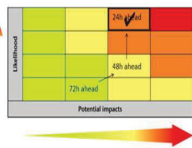


Created: 26.01.2017 11:01 CET | Valid for: 26.01.2017

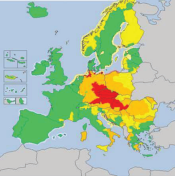
An impact-oriented, common framework to aggregate, display and make available meteorological and hydrological warnings of NMSs in an easy and understandable way to the general public and to European (re)users operated in the EUMETNET framework



Concepts

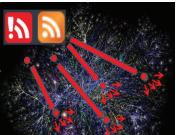


UNISDR Sendai Framework conformal regional description of expected impact and a clear advice what to do




Warning decision on a national basis


Added common value through consistent warning philosophy



Dissemination of warnings to (re)users via RSS and CAP feeds, Alert hub



Meteoalarm 3 C's:
Content
Communication
Co-operation



ZAMG
Zentralanstalt für Meteorologie und Geodynamik

METEOALARM



Hard facts

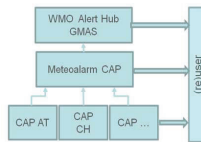
- Integrated regional warning system in 33 languages
- Authoritative warning information from 37 NMHSs in WMO Region VI
- Operational since 2007
- Easy and understandable four level colour code
- 12 warning parameters
- Supports impact descriptions and instructions/advisories
- Considered as best practice by WMO, Worldbank
- Complete Relaunch in 2020



Community building



Communication with civil protection on national and European basis (ERCC), integration of national partners



Joint development of guidelines and warning concepts

Enhance cross-border collaboration



Exchange of best-practices: „How is it done in your country“?

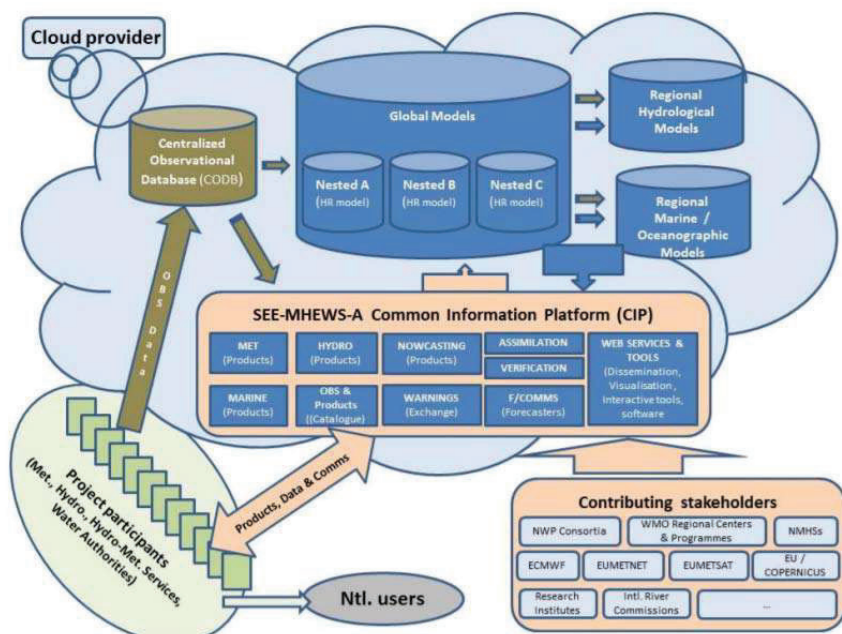


Yearly partner group meetings



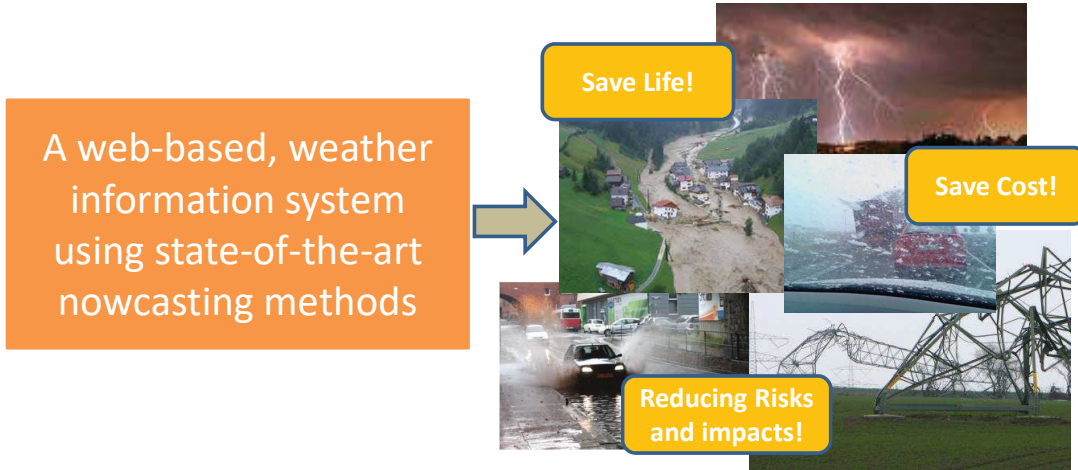
SEE-MHEWS-A Project

South-East European Multi-Hazard Early Warning Advisory System

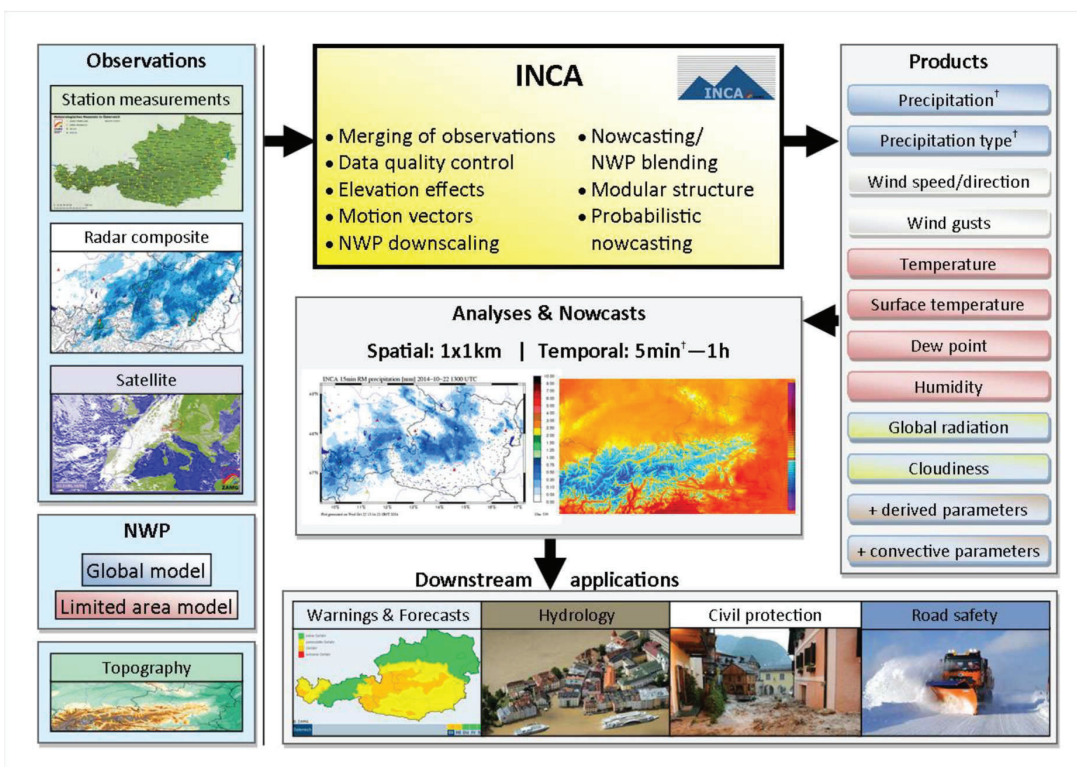


Austrian contribution to SEE-MWEWS-A: INCA Model

Combining numerical weather prediction models and nowcasting techniques to create the best possible automatic short-range forecast (up to 48h) at high temporal and spatial resolution.

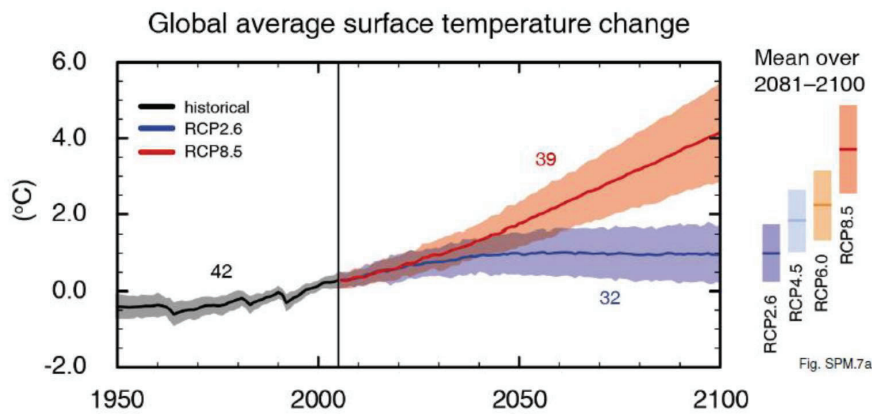


INCA Method: Merge together all information available

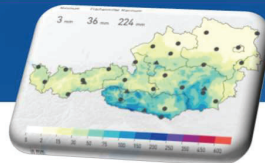


Global Warming – an international game changer

- Due to human activities, global temperature has increased by 1° in the last century
- Until 2100, a further increase by 0.5 ° - 1 ° is inevitable
- The temperature increase and its effects **varies regionally** – we expect significant increase in severe weather events like heat, drought and storm

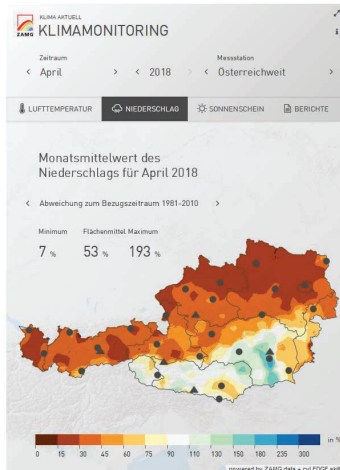


Climate monitoring

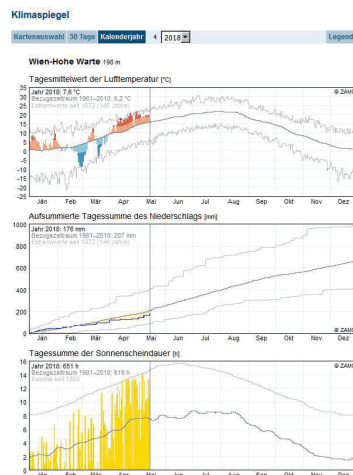


Operational climate monitoring

anomaly maps



anomaly time-series



climate extremes (ranking)

RANK	REGION	DATE	TEMPERATURE
1.	Burgenland	8. Aug. 2013	39,7 °C
2.	Wien	8. Aug. 2013	38,4 °C
3.	Kärnten	3. Aug. 2013	37,8 °C
4.	Steiermark	8. Aug. 2013	36,3 °C
5.	Vorarlberg	28. Juli 2013	36,1 °C
6.	Niederösterreich	3. Aug. 2013	36,0 °C
7.	Oberösterreich	27. Juli 1983	35,8 °C



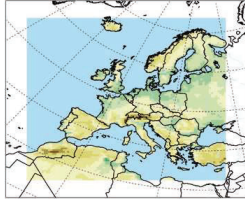
Climate Modelling, reference scenarios, mitigation



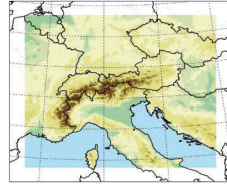
Regional Climate Modelling (COSMO – CLM)
Urban Modelling (MUKLIMO, PALM4U)



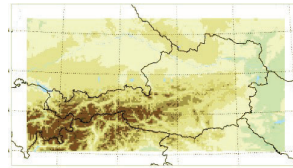
300 - 100km



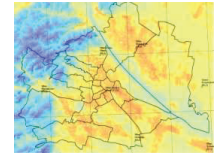
Europe 50km



Alps 10km



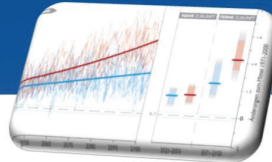
Austria 4km



Vienna 100m



Climate Reference Scenarios



ÖKS15

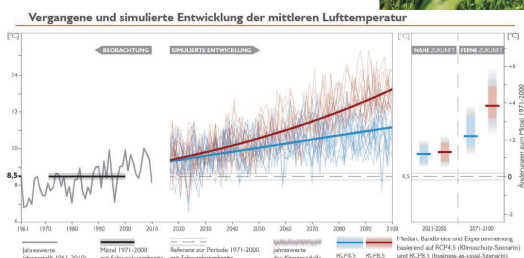
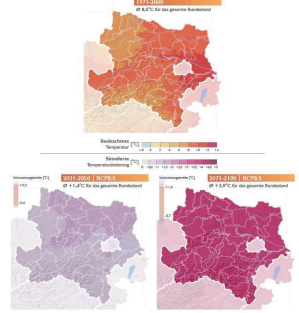


High resolution climate data and information

- a) Climate impact research (1km)
- b) General public (aggregated)
- c) Fact-Sheets



Beobachtete Lufttemperatur und simulierte Temperaturänderung für das business-as-usual-Szenario



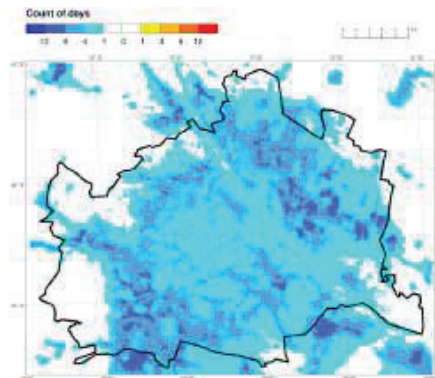
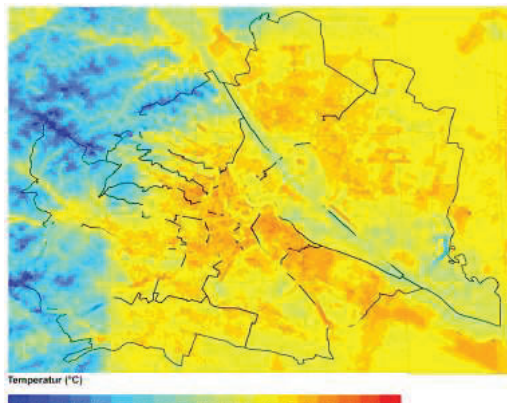
Parameter	1971-2000		2021-2050		2051-2100	
	Observed	Model	Model	Model	Model	Model
Hitzetage (Jahresmittel)	1.1	1.1	1.1	1.1	1.1	1.1
Eistage (Dezember / Januar / Februar)	27.4	27.4	27.4	27.4	27.4	27.4
Vegetationsperiode (Jahresmittel)	231.7	231.7	231.7	231.7	231.7	231.7
Einstägige Niederschlagsintensität (März / April / Mai)	4.1	4.1	4.1	4.1	4.1	4.1

Downscaled and bias corrected euro cordex ensembles



Mitigation: Urban Heat Island

- Climate projections for urban areas show increase in heat load for the coming decades
 - Dependent on land-use, urbanization...
 - Mitigation – green roofs, parks, water ...
 - Modelling used for city planning



Dissemination, Climate data and information portals

Informationsportal Klimawandel

von Einfacher Klima — zuletzt geändert 24.09.2013 10:02

Informationsportal Klimawandel

Wählen Sie einen der nachfolgenden Punkte oder nutzen Sie die Navigation auf der linken Seite, um von der Abteilung Klimaforschung in fundierter und verständlicher Form mehr zum Thema Klimawandel zu erfahren! Einen Schnelltest bieten die zehn häufigsten Fragen zum Klimawandel.

- Standpunkt**
Der hilfreiche Einstieg ins Portal. Neben einem Überblick über alle Artikel finden Sie allgemeine Worte zur Klimawendeldiskussion. mehr ...
- Klimaforschung**
Worauf basieren die Vorstellungen von der Klimawegenganzheit und die Annahmen über die Klimazukunft? mehr ...
- Klimasystem**
Klimaschwankungen werden durch Antriebe angestoßen, die im vernetzten Klimasystem meist nicht auf direktem Weg umgesetzt werden. mehr ...
- Klimawegenganzheit**
Lernen Sie die Phasen der Klimageschichte, vom Tropenklima des Mesozoikums zum pleistozänen Eiszeitalter, richtig einzuordnen! mehr ...
- Klimazukunft**
Hier finden Sie einen Überblick über aktuelle Ergebnisse globaler und regionaler Klimasimulationen mit Fokus auf den Alpenraum. mehr ...
- Klimafolgen**
Klimawandelungen beeinflussen andere Naturbereiche, die wiederum auf das Klima rückwirken. Das prägt den Lebensraum des Menschen. mehr ...
- Klimakarten**
Verfügen Sie die Entlastung des Klimas in Österreich vom späten 18. bis zum Ende des 21. Jahrhunderts! mehr ...
- Daten-Download**
Laden Sie verschiedenste Ergebnisse der Klimaforschung für eigene Untersuchungen und Anwendungen herunter! mehr ...

ZAMG Climate information portal

data.cca

Welcome to the CCA Data Server

1.6k Datasets

SEARCH DATASETS

Home About Us Contact Services Quick Help

CCA Climate data portal (operated by ZAMG)

KLIMA AKTUELL KLIMAMONITORING

Zeitraum: April 2019 Messtation: Österreichweit

LUFTEMPERATUR NIEDERSCHLAG SONNENSCHHEIN BERICHTE

Tagesmittel der Lufttemperatur für 3. April 2019

Abweichung zum Bezugszeitraum 1981-2010

Minimum: -1,3 °C Flächenmittel: +3,1 °C Maximum: +6,4 °C

Tageswerte: < 3. Apr. >

ZAMG Climate monitoring portal



Met Service Consulting/Co-operation

- Albania
- Belarus
- Ghana
- Hongkong (nuclear emergencies)
- Moldova
- Myanmar
- Seychelles
- South Korea (Winter Olympics)
- Sri Lanka (Monitoring Network)
- Vietnam



Thanks for your attention!

Contact:
gerhard.wotawa@zamg.ac.at