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The Austrian DQC Process – achieved and intended developments

Since 1984, when the first QC- system for climate data was established, our service had three significant improvements in climate data processing. The first system was completely self developed, the second system was developed 1997 in cooperation with a commercial software house. This GIS-based system was focused on the online climate data process and was presented at the ICEAWS 1999 and ECSN 1999.

The third DQC- system based on the DWD system QualiMET runs in an operational mode since March 2006. With the renewal and upgrading of our Austrian automatic weather stations network in the period 2006-2008 from 141 to 238 stations, a lot of work was carried out. The major challenge was that the upgrade of additional 100 stations was done without an increase of the concerning staff.

This presentation, which will be given at the ECSN workshop 2009, will focus on

- handling of the upgrade of 100 additional automatic stations
- data quality in dependency of the parameters
- building up a system with “online climate observations” by using the synoptical data way (GTS)
- redesign of all daily and monthly climate data tables
 - heredity of quality flags
 - parallel storage of data values for each parameter which is measured simultaneously by different systems

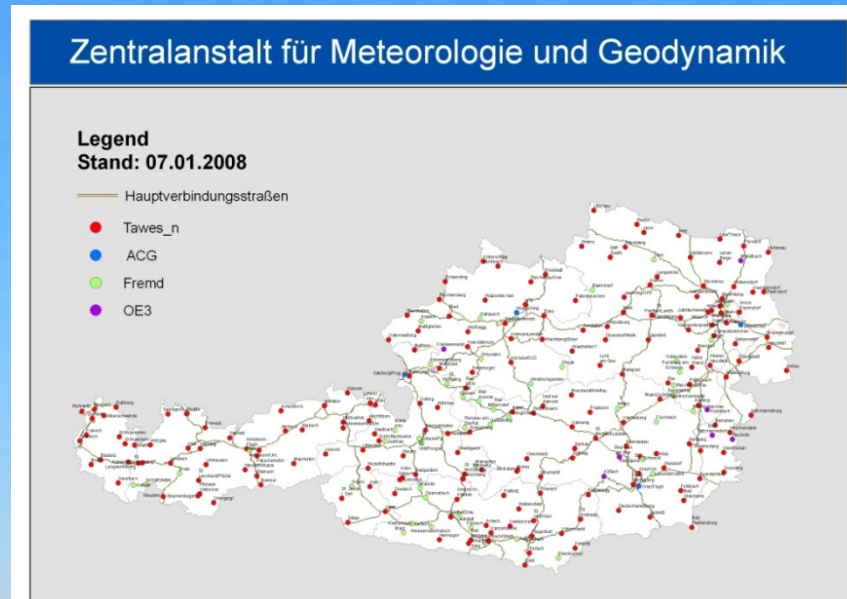
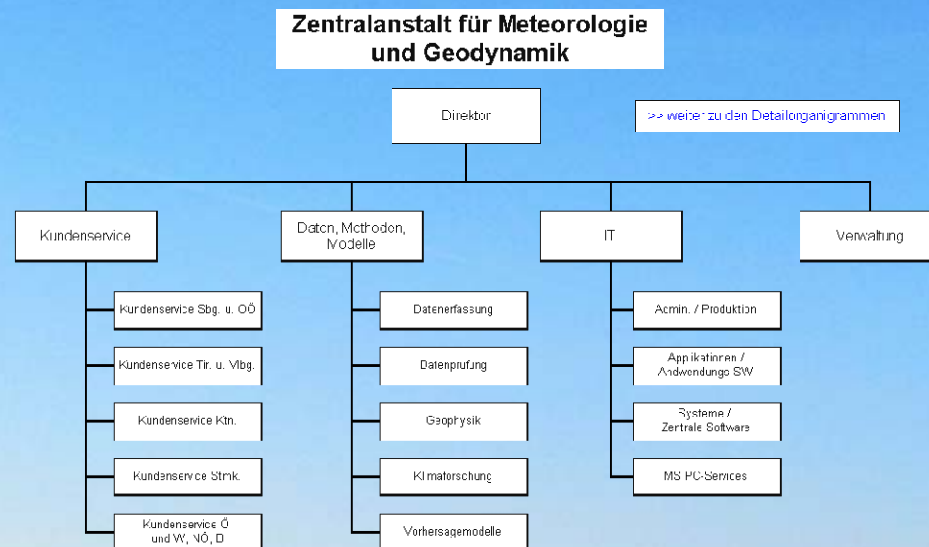
The Austrian DQC Process – achieved and intended developments

QualiMET from 141 – 244 stations
 Climate Archive – digitalisation and protection
 Climate Data Rescue
 ProCLIM

Zentralanstalt für Meteorologie und Geodynamik



New design of data tables & ZAMG restructure



ZAMG/DMM/DPRU

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Why is data quality control necessary and for what is it good for ?

That was the content of my last ECSN presentation 2007:

- DQC is the last check/filter for outgoing data and data products
- correction of previously made mistakes

And what are you doing ?



QualiMET 2007 - 2008 : Overview

(Präsentation)

04.01.2010

Folie 3



from TAWES **141** up to TAWES_New **244**
with less staff for data quality control

achieved by:

- fewer gaps caused by communication systems (TUS + GSM)
- automatic retracing of missing data
- new sensors -> wind (ultrasound) -> no icing
- rejecting of non – TAWES stations like (ORF, Minitaklis)

but:

- problems by software performance in spite of
new hardware (8 GM Memory & 8 CPU's a 3 GHz)
using of flash and radar information with another system
- no data capture of observations and manual gauging at site
- „Illness of staff not allowed“



QualiMET 2008 key data

(Präsentation)

04.01.2010

Folie 4



the data flood

397.423.634 one- and ten- minutes data were checked with QualiMET

1.099.666 was suspicious flagged
465.977 committed as correct
372.812 deleted
260.877 changed

1.596.571 were automatic or manual completed



Climate Archive – digitalisation and backup

(Presentation)

04.01.2010

Folie 6



If you have a look at the archive ->
than you can see how correct and careful the content will be handled

-> Your archive is your business card for quality

New project:

reorganisation of the ZAMG paper archive with a

- new self developed archive system
- handling of paper archive
- access to the digital picture archive



Climate Archive – Adaption

(Präsentation)

04.01.2010

Folie 7



- Inventory of all climate paper records
- logistic reorganisation - new folder System
- new ARCHIVE data base (Access)

One of our very happy and competent colleague by developing the ARCHIVE Database System





- History:
 - Only a few daily climate data available before 1939: Kremsmünster (Kloster), Wien, Innsbruck, Salzburg, Graz, Sonnblick, currently: digitalisation of Villacher Alpe, Hochobir, Mallnitz, ...
 - Reason: all Austrian Climate Data have been transferred to Berlin --> burned by bomb blast (1944/45)
 - 1970: first digitalisation with punch cards -> no DQC
 - 1984: first ZAMG DQC for all current daily data

- Data capture of all historical daily data (before 1984) :

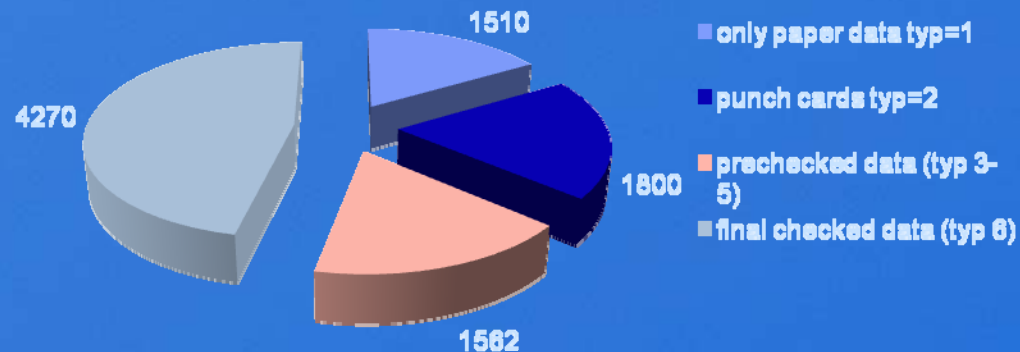
Internal Project: Climate Data Rescue

- Goal: complete digitalisation and DQC for all historical data
- Final status: typ 6





Status of daily climate data (1872-1983) 2009/12



- Since 1985 data capture of historical data : in 23 years 3670 station years -> 160 station years/year
- 2008 internal project CDR to hurry up
- 2008: 300 station years/year
- 2009: 300 station years/year
- 2010 - 2014: 900 station years/year (costs: 150.000.- Euro/year)
- **Additional check -> PROCLIM (typ7)**





Why ProCLIM ?

Additional, statistical DQC of Database

Goal:

to check all „final checked daily“ and monthly data with an independent new DQC Software

-> Implementation into a scientific and commercial project
climate description of Carinthia (40.000 Euro for checking
foreigner data sets)

-> as well as for all other ZAMG data



New design of data tables & ZAMG restructure

(Präsentation)

04.01.2010

Folie 11



- 1997 GEKIS Flag System for hourly data
- 2006 QUALIMet Flag System for one and ten minutes values
only three different flags:
unknown, original + correct, changed + correct
- 2010? Daily and monthly values
 - Internal project: Hope - Flagsystem
 - For each parameter and different gauging system one row (precipitation, snow, visibility)
- 2010? Data capture of observed and manual gauged values on site
- 2010? Computing of global radiation data from sunshine duration (Angstrom formula) and vice versa





Automatic data supplementation of gaps

2008 Internal project: feasibility study of an Austrian Weather Radar systems for an Austrian wide surface precipitation evaluation

2009 INCA -> import of calculated values (in hourly resolution) for all TAWES

2010 Internal projects:

HOPE – *Heritage Of PropertiEs – Heritage of flags from minute-values to monthly-values*

ÜNKOR *reduction of evaporation errors by heating the precipitation bucket*

