WEATHER CLIMATE WATER
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WMO data rescue activities

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WMO OMM

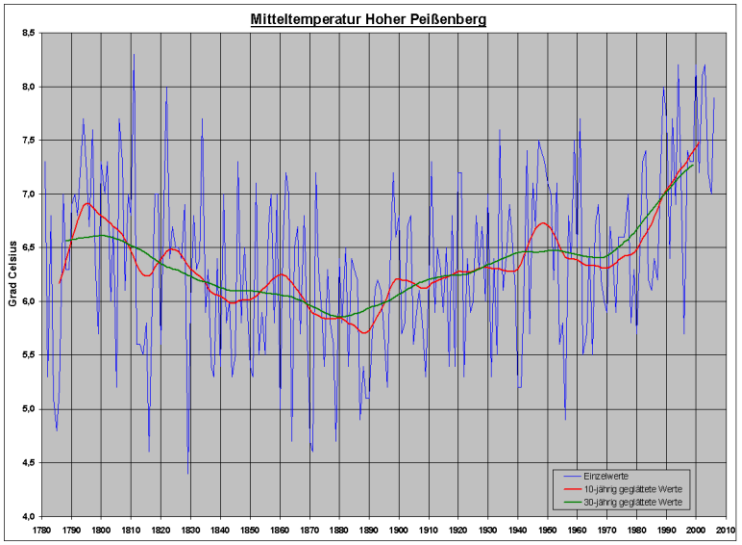
World Meteorological Organization
Organisation météorologique mondiale

The importance of long-term observing stations

No data
No data
No past data

Climate variability and change over the last 250 years

No services
No understanding
No predictions and projections



IEDRO motto: Saving Data – Saving Lives

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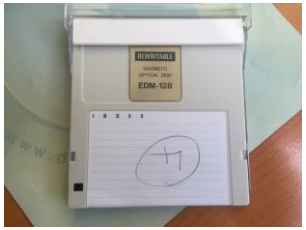
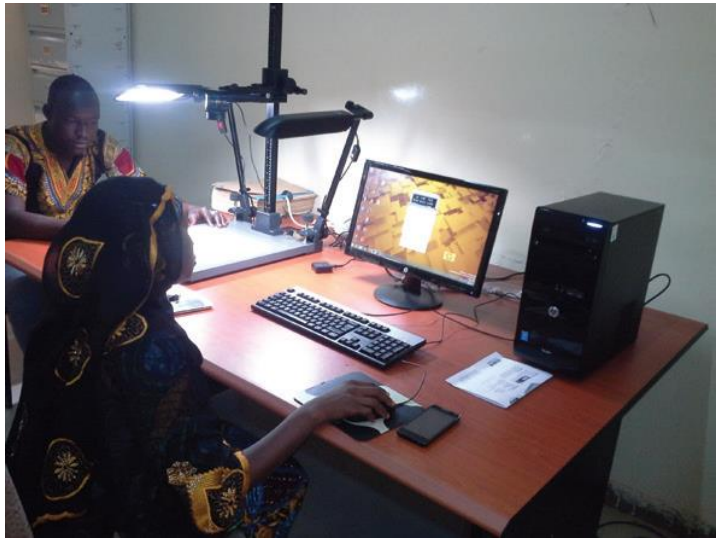
The rescue of (long-term) observational data





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The challenge of data rescue

Example from Deutscher Wetterdienst/Germany (2005):

5 km of shelfs full of data on paper

Amount of work to digitise all information:

790 person years

Though:

A journey of a thousand miles begins with a single step
(Chinese wisdom)

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Typical WMO/CMP data rescue activities

Maintaining and developing good practices: WMO Guidelines on Climate Data Rescue, Data Rescue Resource Plan, Citizen Science

Assisting data rescue projects: Coordination of data rescue assessments and plans, expertise re data rescue process and required tools and resources, magnetic tapes and diskettes

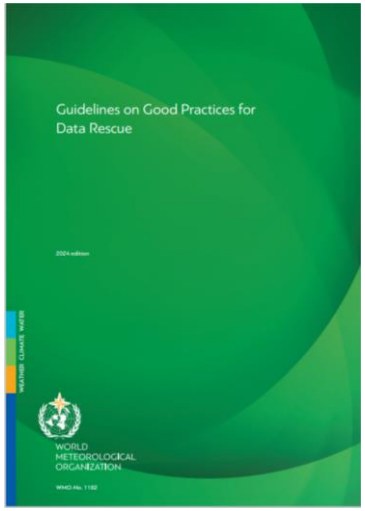
International collaboration incl. with IEDRO, ACRE, C3S

Coordinating the International Data Rescue Portal I-DARE

Putting data rescue in context: Long-term observing stations, CDMSs, discovery of nationally lost data in international archives

Promotion of data rescue: Posters, presentations, side events, Resolutions, data rescue work packages in WMO projects, etc

WMO Guidance on climate data rescue



World Meteorological Organization (WMO), 2024: Guidelines on good practices for data rescue. WMO-No. 1182, WMO, Geneva

Drafted and published in close collaboration with strategic partners incl. IEDRO, C3S, ACRE and climate, hydrology and marine communities
Complementary material -> C3S Data rescue portal

Content:
Overview of data rescue
Archiving paper media
Imaging orginal media
Digitising data values
Archiving digital media

14 Annexes including:
Data rescue assessment checklist
Equipment and personnel considerations
Maintaining paper archives
Prioritisation considerations
Crowdsourcing
Lessons learnt
Etc

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WMO data rescue process

To start with: Assessment, inventory, data rescue plan
(no appropriate data rescue plan = high risk of failure)

Mostly forgotten: Consolidate paper archive
(inappropriate paper archive = useless digitization project)

Very important: Imaging by photographing or scanning
(no imaging = missing metadata)

Eventually: Digitising
(digitising handwritten data = manual keying)

Ensuring sustainability: QC and integration in CDMS
(no CDMS = high risk of data rescue repetition)

WMO data rescue process

DARE Process:

Archiving paper media

Imaging

Digitising

Archiving electronic media

Consolidate and inventory paper archives, thereby facilitating an efficient imaging process:

Locate appropriate clean **space** in a safe building

Clean paper documents and **sort** them into **labelled archive boxes** to be stored in double-space **shelves** (it should be a pleasure to enter the archive room!!)

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WMO data rescue process

DARE Process:

Archiving paper media

Imaging

Digitising

Archiving electronic media

Prioritise: Data of high quality, data of high importance, data filling gaps

Selected process highlights:
Handle fragile documents with care (incl. transport)
Create a master inventory of images to keep track
Validate imaged files for readability
Handle image file naming properly

Scanners vs Cameras:
We recommend of-the-shelves compact cameras over scanners, where appropriate. Camera to be mounted on a stand/tripod with a lighting unit (no lightning/flashes!!). Camera to be handled with a remote control. Photos with filenames to be transferred directly to the computer

For details consult DARE Guidelines (WMO-No. 1182)

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WMO data rescue process

DARE Process:

Archiving paper media

Imaging

Digitising

Archiving electronic media

Prioritise: Data of high quality, data of high importance, data filling gaps

Selected process highlights:

Currently, manual keying is the recommended approach for handwritten documents

We recommend double-keying from images

Create templates of forms being keyed

Key as you see (no additional coding, no modifications)

Consider citizen science approaches

Ingest keyed data into the **Climate Data Management System (CDMS)** and make use of the **CDMS quality-control processes.**

For details consult DARE Guidelines (WMO-No. 1182)

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WMO data rescue process

DARE Process:

Archiving paper media

Imaging

Digitising

Archiving electronic media

Eventually, do not forget to refresh the media (-> technology migration)

Safeguarding data is just as important for **(rescued) digital data** as paper data, since the media on which they reside are not permanent.

Paper starts to crumble after centuries, but magnetic tape media and other computer-readable media **become unreadable in a matter of decades.**

As computer technology evolves, **computers, computer operating systems, computer languages and the software used to read the old media also become obsolete.**

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THANK YOU!
MILLE GRAZIE!

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