



Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Verkeer en Waterstaat

INSPIRE impact study for the meteorological community

KNMI Use Case:
Climate Data

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Outline

- INSPIRE & Meteorology / Climatology
- INSPIRE & KNMI
- Use Case Approach – Climate Data
- Conclusion





INSPIRE & Meteorology / Climatology

Annex III Data

- 7.5 Human Health and Safety
Air quality (O_3 , NO_2 , SO_2 , UV, aerosols).
- 7.7 Environmental quality
Air quality, synoptic observations, **climate data**.
- 7.12 Natural Risk Zones
Seismograms, wind products (radar, scatterometer, model output).
- 7.13 **Atmospheric conditions**
Precipitation, wind, clouds, lightning, temperature, UV.
- 7.14 **Meteorological geographical features**
Synoptic observations, clouds, precipitation.
- 7.15 Oceanographic geographical features
VOS (Volunteering Observation Ships), remote sensing, waves, model output.
- 7.16 Sea Regions
Sea water temperature, sea level





INSPIRE & Meteorology / Climatology

INSPIRE Milestones

- 15 May 2013: Metadata available for spatial data corresponding to Annex III.
- 15 May 2014: Newly collected and extensively restructured Annex II and III spatial data sets available.
- 15 May 2019: Other Annex II and III spatial data sets available.



INSPIRE & Meteorology / Climatology

Stakeholders & status

- Individual NHMS (National Hydro-Meteorological Services).
 - Network of European Meteorological Services (EUMETNET).
 - World Meteorological Organisation (WMO).
 - European Centre for Medium-Range Weather Forecasts (ECMWF).
 - European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).
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- › Individual NHMS and WMO are active in INSPIRE reviews as LMOs.
 - › Coordination through INSPIMET, an EUMETNET technical working group.
 - › Participation in *planned* Annex III TWGs.
 - › OGC Meteorology Domain Working Group.



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Organisation



External

- Active as LMO.
- Participation in INSPIMET.
- Participation in OGC Meteorology Domain Working Group.
- Joining/monitoring national initiatives (through GEONOVUM).

Internal

- INSPIRE Team
 - › Impact analysis.
 - › “KNMI INSPIRE expert center” facilitating INSPIRE implementation:
 - » provision of knowledge, advise, training and workshops.
 - » provision of tools and methods.
 - › Supporting the start-up of **INSPIRE Use Cases** and demonstration implementations.



INSPIRE & KNMI

Use Case Approach

Use cases to develop user requirements:

- Who is responsible for the data?
- Which data and services are needed?
- Do the proposed INSPIRE services and data specifications meet our needs?
- How to integrate INSPIRE services in operational production environments?

Key Issues:

- › Assess completeness and correctness of the INSPIRE IRs, guidelines and recommendations.
- › Harmonize with other international developments like WMO-WIS.
- › Provide feedback to the community.



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Use Case Approach

Potential Use Cases:

- Real-time (inter)national and regional data (OPERA, Meteoalarm).
- Satellite data (EUMETSAT).
- Climate modelling summaries (IPCC).
- Global climate data (ERA: ECMWF).
- **Climate summaries for national and regional data**
 - › Example: the European Climate Assessment & Dataset (ECA&D) project.



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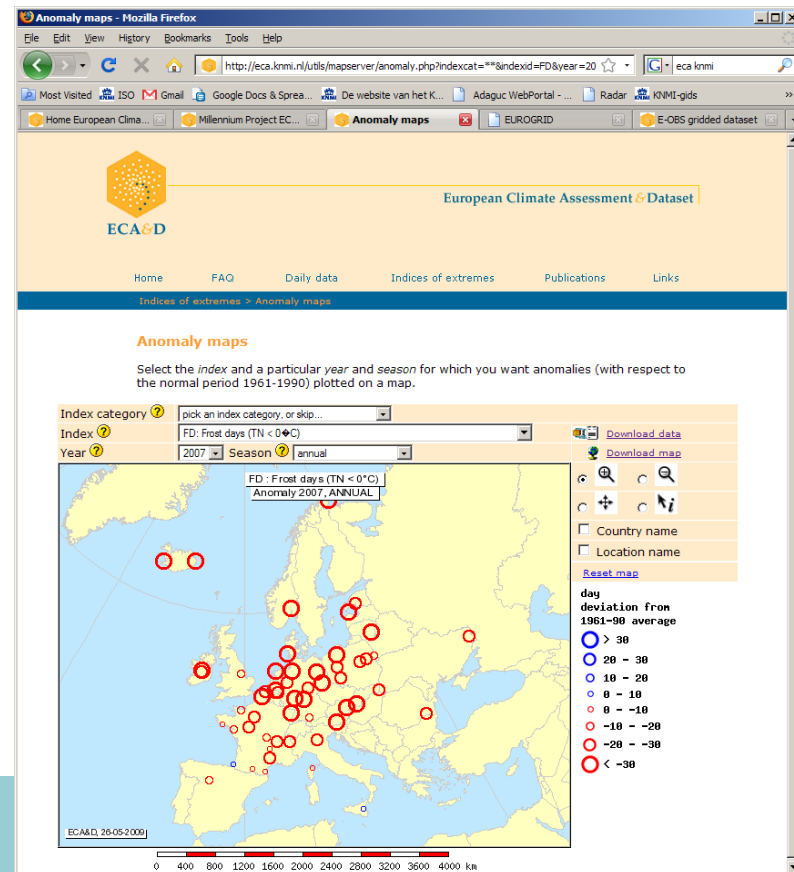
Use Case Approach

the European Climate Assessment & Dataset (ECA&D) project

Providing:

- Indices for monitoring and analysing changes in climate extremes.
- Daily source datasets.
- Interpolated datasets (grids, maps).

Initiated by the European Climate Support Network (ECSN), supported by EUMETNET.





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Use Case Approach

the European Climate Assessment & Dataset (ECA&D) project

INSPIRE checklist (status 2009), governance & data:

- ECA&D: User requirements & community support: ++
- ECA&D: Usage of data formats based on open standards: -
- Responsibility for the data (governance): +- / - - (INSPIRE)
- ECA&D: Data availability & completeness: +- (data policy per country)
- ECA&D: Data complexity: +
- ECA&D: Data harmonization: +



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Use Case Approach

the European Climate Assessment & Dataset (ECA&D) project

INSPIRE checklist (status 2009), proposed technology:

- Applicability INSPIRE metadata: +
- Applicability INSPIRE catalog service (CSW): - /?
- Applicability INSPIRE map service (WMS): +
- Applicability INSPIRE feature download service (WFS): +
- Applicability INSPIRE coverage download service (WCS): - /?
- Applicability INSPIRE direct download service (HTTP): +
- Applicability INSPIRE SOAP services: - /? (SOAP vs RESTFUL)



Conclusions

- Important to start with use cases
 - › to develop user requirements.
 - › to pinpoint issues.
- Issues:
 - › Selection criteria for Annex-III datasets.
 - › Governance of pan-European datasets.
 - › Services (WCS) & data models for raster data.
 - › Catalog services State of Art.
 - › Soap vs REST.





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