WISENT

wisent.d-grid.de

WISENT
WISSENSNETZ ENERGIEMETEOROLOGIE

Energy Meteorology

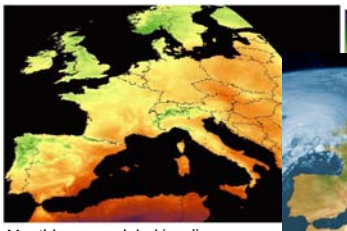
An objective of energy meteorology is obtaining the information needed to characterize the fluctuating generation of solar and wind energy.

The knowledge acquisition is based on interdisciplinary cooperation:

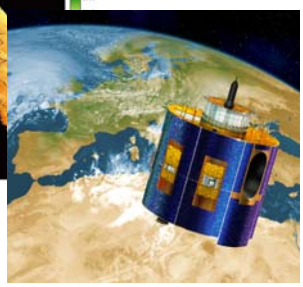
- Physical and meteorological methods
- Transformation of wind and solar energy (physics)
- Energy supply structures (electrical engineering, economics)
- Monitoring methods (computer science, sensor technology)
- Efficient, flexible distributed systems (computer science)

Challenges of energy meteorology:

- Preservation of future energy supply
- Large amounts of data (tera bytes)
- Complex process chains (partially in real-time)



Monthly mean global irradiance map from Meteosat 7
April 2000
Source: University of Oldenburg



Weather satellite MSG-1
Source: EUMETSAT

WISENT Objectives

Photo-voltaic plant in Berlin-Adlershof
Source: Wikipedia

WISENT supports the scientific collaboration of the energy meteorology community through

- simplified access to distributed resources
- standardized data transfer methods
- New access methods for data integration and archiving
- Use of distributed computing resources for
  - Near-real-time simulation
  - Parallel simulation
- Inexpensive processing of large amounts of data
- High flexibility (e.g., scalability)

WISENT will extend and renew today's processes to enable new scientific methods and business segments.

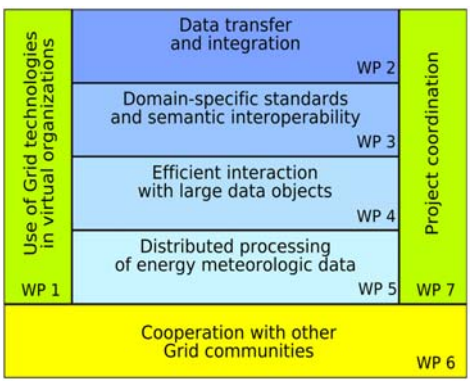
Wind energy plant in Denmark
Source: Wikipedia

WISENT Work Packages

AP1: Use of Grid technologies in virtual organizations
- Building a Grid infrastructure for scientific collaboration
- Tools for networked knowledge and information management
- Virtual Institute of Energy Meteorology (vIEM) as an institutional framework

AP2: Transfer and integration of data
- Automation, standardization and monitoring of data transfers
- Foundation for distributed computing

AP3: Domain-specific standards and semantic interoperability
- Standardization of interfaces
- Evaluation of data quality
- Interoperability between software systems of the project partners



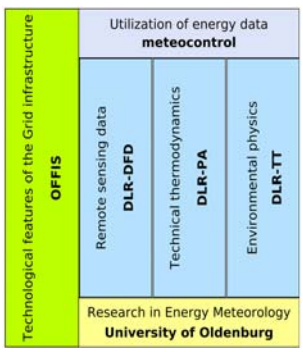
AP4: Efficient interaction with large data-objects
- Visualization of large amounts of data
- New forms of visualization
- Forward-thinking data distribution in the Grid

AP5: Distributed processing of energy meteorologic data
- Grid Computing: Parallelizing of arithmetic procedures
- Scalability advantages for existing systems
- Enabling new application fields through Grid technology
- Flexible use of external Grid resources

AP6: Cooperation with other Grid communities
- D-Grid; Establishment of the „Energy Meteorology" community
- EU project EGEE (Enabling Grids for E-sciencE)

AP7: Project coordination
Coordination of the project
Documentation of results and publication on conferences

Project Partners and their Expertise



OFFIS

Oldenburg Research and Development Institute for Information Technology Tools and Systems (OFFIS)
Research- and development division „Business Information Management" (BI)

meteocontrol

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Energy & weather service

DLR

vIEM

German Aerospace Center (DLR)
German Remote Sensing Data Center (DLR-DFD)
Institute of Environmental Physics (DLR-IPA)
Institute of Technical Thermodynamics (DLR-TT)

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