Hydrometeorological Information System

HYDROMETEOROLOGY

TIME SERIES MANAGEMENT
KiTSM INSIDE
TIME SERIES MANAGEMENT

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In time and with water,
everything changes

Leonardo da Vinci | Artist and
Inventor, Visionary and Engineer

K KISTERS
Pioneering Technologies.

Advances in marine safety

At the turn of the 16th century, marine safety was just a concept.
To protect ships against hull damage, da Vinci suggested double-walled ships' hulls. A hollow space was to exist between the wood layers. Double-walled tankers built today for the transport of liquid cargos are based on the same simple principle.
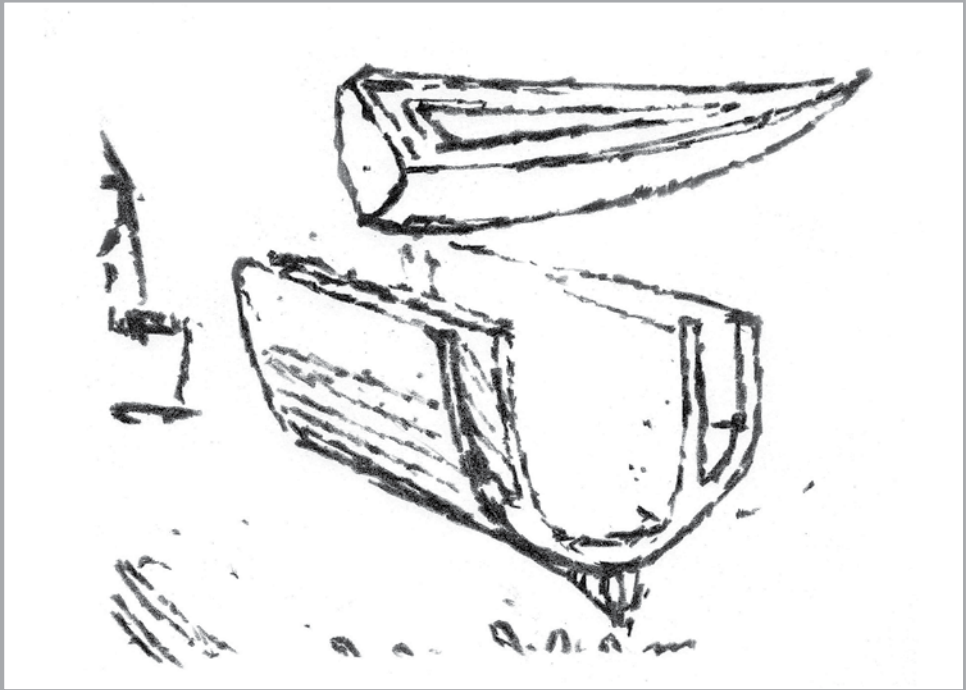
Reliability – Information – Performance.
Hydrometeorology with WISKI, CALAMAR, and SODA.

A comprehensive software suite for hydrometeorology

At the boundary between hydrology and meteorology, hydrometeorology produces an ever more advance knowledge about the water cycle. In general, this cycle is essential to life on earth, but its extremes can be very devastating. Hydrometeorology helps understanding the complex interactions between the weather and the water resources of our planet, in view to harness their power and to inhibit its threats.

Hydrometeorology is in need of huge amounts of data collected by hydrological monitoring networks, meteorological monitoring stations, precipitation radars, satellites and further sensing systems.

KISTERS develops and sells the software technology needed to collect and manage these data, and to integrate them into a structured data model for further evaluation and analysis:

WISKI is a powerful water information system specifically designed to handle huge amounts of data from large and diverse monitoring networks, using KISTERS advanced TSM (time series management) technology.

CALAMAR helps understanding the data issued by precipitation radars, creates links with classical rain gauging stations and produces advanced precipitation predictions.

SODA focuses on telemetry tasks, i.e. it is the specialist for collecting the data from a large variety of data providers.

Supervision of a huge area of land, open water (sheets, flows), groundwater, and water in lower atmospheric layers requires a more or less dense net of monitoring sites equipped with sensors producing a wealth of data, some of which is continuously monitored in single points (time series data, e.g. from metering and groundwater stations) and some of which is captured at discrete steps in space and time for areas of defined size (raster data, e.g. weather radar information).

A powerful software system consisting of individual components for organized data storage, time series management and raster data management helps the expert in understanding the bigger picture. Coupling the data results in synergetic effects, where the result is more valuable than the sum of its parts.

Considering the huge amounts if data and the differences in data types, software support

becomes an essential in developing a deeper understanding of the closely interrelated water cycle and meteorological system. Properly stored and managed, legacy data describing anything from nbormal situation to isolated or recurring extremes can be conveniently re-visited for all kind of quantitative and qualitative study and research purposes.

What you need

A comprehensive hydrometeorological management system contains

- an organized data sink, an RDBMS
- a management system and evaluation tool for time series and raster data (WISKI)
- a powerful mathematical processor with hydrometeorological functions and formulas (WISKI)
- a telemetry system retrieving time series and raster data from monitoring sites (SODA)
- a weather radar evaluation software to study past, follow-up ongoing and predict upcoming events (CALAMAR)

What you get

KISTERS fulfils theses needs with an integrated solution consisting of WISKI, SODA, and CALAMAR. **Your benefits** are clear:

- much better appreciation of the overall hydrometeorological situation and an improved understanding of the complex hydrometeorological cycle
- means to plan better before an event occurs
- rainfall predictions optimized for the study area and calibrated on ground based rain gauges

WISKI provides comprehensive water information

WISKI is at home with the diversity of your data and opens the door to a flexible range of applications. WISKI and the KISTERS Time Series Management server (KiTSM) are the result of more than 25 years of experience in the global water industry.

WISKI's mass data calculation, optimized database and transfer capabilities make the storage, visualization and analysis of data a highly efficient process.

WISKI can easily manage a single stream of time series data, that includes

- Instantaneous and mean values
- Equidistant and non-equidistant data
- Interpolatable or non-interpolatable data

...regardless of the sampling frequency!
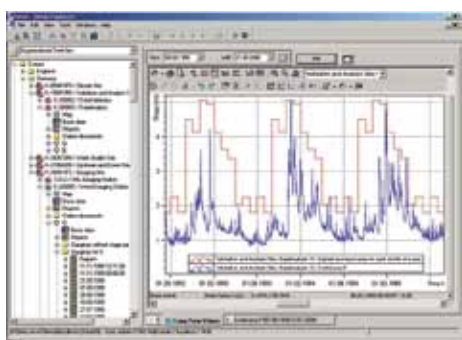
WISKI also enables users to capture and manage basic/meta data about their monitoring stations. The WISKI Basic Data tab pages are flexible and can be configured for any station type at any time in WISKI. Basic data can include picture elements, pdf documents, URLs, as well as key lists, floating or text fields to help create a customized look and feel to your meta data.

In hydrometeorological systems, WISKI acts as the central data sink and processing system. WISKI operates with the database

platform of your choice (e.g. Microsoft's MS-SQL or Oracle). WISKI is a flexible and expandable system and an ergonomically optimized and powerful tool scaled to your needs. The WISKI Database design brings true relational database capabilities to manage, analyze and process huge amounts of data (limited only by disk space) at lightning fast speeds.

SODA collects all necessary data

The SODA telemetry system is the ideal platform for remote data collection (push and pull) over a multitude of communication channels and from various data loggers from a wide range of manufacturers. SODA consists of hardware especially designed for telecommunication and software that leaves nothing to be desired in the field of remote data collection. SODA supports the most recent technologies such as IP telemetry, file transfer protocol (ftp) and communication using either web services or email. Two different hardware platforms are available, depending on the size of the data collection network.

The functionalities of SODA include:

- Easy GUI deployment (localized)
- Modular, highly scalable architecture
- Multi user capability
- Support of multiple clients (domains)
- Scheduled Logger/Meter reading
- Various communication channels (phone line, ISDN, GSM, UMTS, GPRS, internet, radio or satellite communication, etc.)
- Protocol, reports and backup
- Bidirectional communication (push and pull)
- Modular architecture
- Localization
- Simultaneous support for up to 32 modems
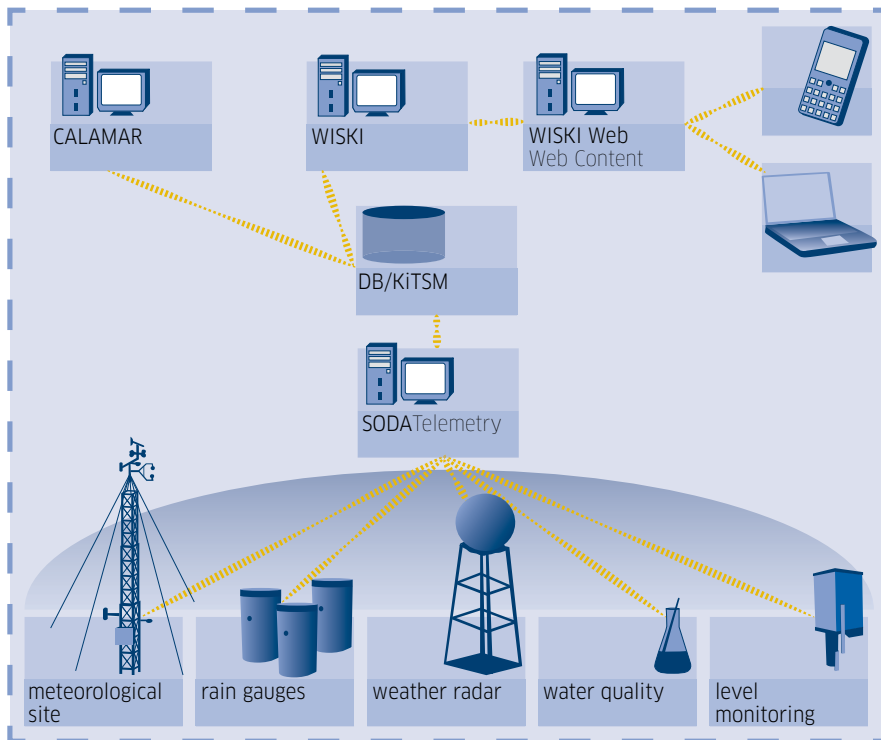
A comprehensive hydrometeorological system with WISKI, SODA, and CALAMAR

CALAMAR takes rainfall radar into account

CALAMAR was developed to provide real-time measurement and short-term forecast of rainfall on each square kilometer of a given area covered by radar hydrometeorology. CALAMAR is a genuine decision-making tool when combined with probabilistic (risk indicator) or deterministic (rainfall flow) models. CALAMAR enables the forecasting of rainstorms which are accurate enough to give flood management and emergency operations teams sufficient time to react and warn the public of imminent dangers.

The off-line variation of CALAMAR enables a rainfall event to be accurately reconstructed in order to aid in the deterministic hydrological and hydraulic modelling of a watershed or sewer shed. Furthermore, causes of difficulties can be identified and corrected, providing better environmental protection.

CALAMAR's technology is patented in both the USA and Canada and still proves to be the most accurate gauge-adjusted radar rainfall product on the market today.
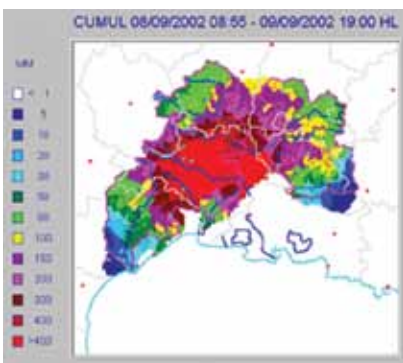
KISTERS AG

KISTERS' has been providing environmental data management software solutions since 1987. KISTERS' core business is the implementation of data management systems for environmental, hydrological, air quality and energy disciplines.

The KISTERS Group focuses on several fields of activities in environmental information:

- Software for managing, analyzing and reporting surface water, ground water, water quality, waste water, drinking water and meteorological data, including forecast and warning
- Software for real time applications and process control
- Database applications
- User-friendly GIS and Web-GIS solutions
- Hardware and software telemetry systems
- Software and engineering services that range from the development of specifications and system analysis to software installation, training and maintenance

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