



ANOUKIS Flash Flood Early Warning Service

Real time anticipation of potential flash flood events

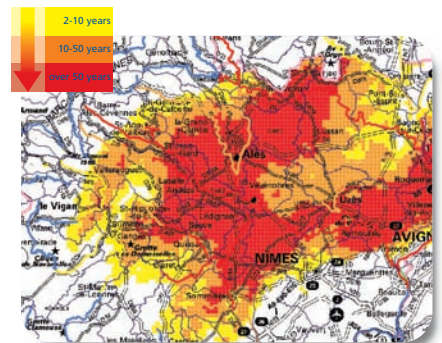
Flash floods, usually resulting from severe thunderstorms accompanied by heavy and sudden rainfall, are extremely dangerous and often devastating hazards. This threat can be reduced by a more efficient Early Warning Service, enabling the population to be given advanced warning: ANOUKIS has been devised to achieve this.



Combining advanced methodologies and tools designed by Météo-France and Infoterra France, ANOUKIS is a complete, effective and operational solution which can be easily set up in local or regional flood forecasting centres, to deliver an early warning service with real-time and high resolution mapping of the anticipated risk.

An innovative and effective approach

Based on the patented AIGA (Adaptation d'Information Géographique pour l'Alerte), ANOUKIS is complementary to conventional flash flood forecasting systems. Real-time precipitation measurements are used to run hydrological models to obtain risk maps of potential river overflow and excessive runoff, taking into account structural and dynamic basins parameters. Risk levels are derived from the analysis of past events, recorded in the database to enable classification and the strength of the forecast, and are classified according to the event return period.



The ANOUKIS system's main strong points

- **complete coverage of the hydrographical network:** every river is monitored once the system has been set up in a given region.
- **rapid implementation over large territories:** thanks to AIGA methodology, no river-specific calibration is required.
- **real time and automatic computation:** risk maps are automatically updated every time a new precipitation measurement is received.
- **high-resolution risk mapping:** 1 km² resolution, for each river portion and sub-basin.
- **event anticipation:** 2 to 8 hours, depending on basin characteristics.

A powerful decision support system

ANOUKIS is based on RISKFRAME, the powerful, generic software platform for risk and crisis management developed by Infoterra France. This provides the flood forecasting centres with a highly interactive and efficient environment, for real-time situation monitoring and decision support, as well as for off-line analyses.

ANOUKIS is a 100% GIS-based environment, characterised by a high level of ergonomics, and enabling information integration for optimum decision support. All information (sensor outputs, model outputs) is accessed via the maps and superimposed on cartography and/or satellite images.



The ANOUKIS system's main functions



- **real-time monitoring of sensor and model outputs** (rain gauges, river sensors and hydro-meteorological forecasts).
- **automatic computation of indicators and hydro-meteorological parameters evolution per basin** (eg: cumulated rainfall, runoff/discharge modelling, etc.) to assist in decision-making.
- **output products preparation**, with possibility of interactive correction of the automatic processing results.
- **data management** (sensors and model outputs), mechanisms for **capitalisation of historical situations** during real-time situations.
- **re-run of past events**.

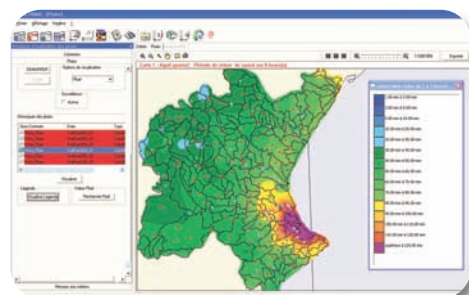
ANOUKIS is an open, highly configurable solution, that can be easily adapted to the specificities of each operational environment: existing forecasting models, data sources, etc.

Information dissemination to the end-users

The flood early warning information can be disseminated to the end-users in two main ways:

- automatic generation and publication, on a Web server, of a risk map updated every time a new precipitation measurement is received;
- automatic creation and dissemination of warning reports and messages to pre-defined end-users (regional authorities, civil protection services, etc.).

The ANOUKIS solution is based on a simple but expandable architecture. A minimum configuration relies on two PCs. It can then be extended to provide more working positions for forecasters.



A complete offer for a turnkey solution

We provide a full range of services to ensure full and successful implementation of ANOUKIS in your operational environment: from the analysis of your specific requirements, to system integration and operator training. End-to-end rollout over an entire region can be achieved in less than 6 months.

We are also ready to propose any optional activities to adapt to your specific needs, such as:

- upgrading of your radar processing chain;
- system customisation.



Infoterra France, a wholly-owned subsidiary of EADS Astrium, is dedicated to providing geo-information products & services. The company delivers services to a wide range of users in various economic sectors, such as government and local authorities, defence, telecommunications, agriculture and environment, and develops dedicated cartographic solutions (digital maps and RISKFRAME GIS application) for risk and crisis management.

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Subsidiary of Météo-France, Météo France International (MFI) works in long term partnership with National Meteorological Services around the World to help them develop and modernise their information systems, observation infrastructure and Public Weather Services (PWS). Products supplied by MFI are developed on the basis of proven systems operated daily by Météo-France, but MFI is also continuously improving its line of products with innovative solutions such as Central Information Systems, Numerical Weather Prediction, Public Weather Services, Flash Flood warnings, etc.

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