

Workshop Description

Prediction and Monitoring of Flash Flood Events by Weather Radar Systems held on 16th - 18th October 2007 at our factory in Neuss, Germany

**Prof. Chris Collier, TIES University of Salford, UK
and
Prof. Witold Krajewski, University of Iowa, USA
and
Prof. Ezio Todini, University of Pisa, Italy**

Floods have a major impact on the global economy and the public safety. Flooding and flash floods are the single most destructive type of natural disasters that strike humans and their livelihoods across the globe. These events are catastrophic by any standard, but we know that their impacts can be lessened with sound investments in modern flash flood detection and monitoring systems.

The goal of the workshop is to show the need and the limits of such integrated systems and to understand the need to continue the challenge and to grow the collaborative effort using modern sensor and data processing technologies. This workshop is our opportunity and contribution to share knowledge, technology, lessons learned and to draw parallels between individual and expert's experiences with flash floods.

We will have a look into warning systems. Critical aspects regarding the quality of any flood prediction are discussed. The importance of accurate real-time provision of rainfall information, high resolution numerical weather prediction forecasts and the operation of hydrological model systems in addition to forecast delivery procedures are explained.



This course will explain how flash floods are forecasted considering the limitations and uncertainty involved in both the meteorological and hydrological aspects of forecasting systems.



Let us join the challenge. Data assimilation and the use of forecast ensembles are both key elements across disciplines. The usage of polarimetric radar system technology and its benefit for a more accurate quantitative prediction of flash floods are discussed.



How you will benefit:

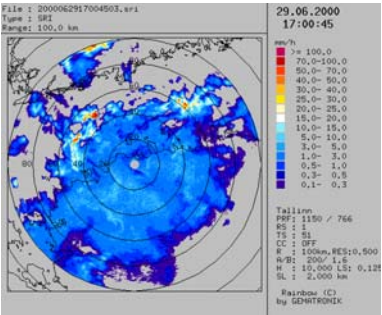
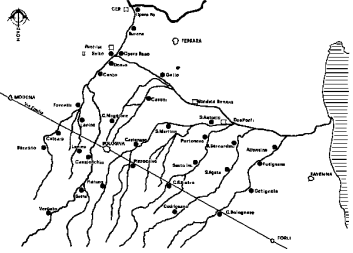
Understand the theory, design and operation of modern flash flood detection systems with special focus on their limitations. Realize your position and identify your individual, incremental set-up of an integrated, multi-sensor based flash flood detection system.



Who should attend:

Meteorologists & hydrologists, weather forecasters, physicists, engineers and decision makers.
Other professionals who need to understand applications of flash flood forecasting systems.

Special program topic:

Session 2 offers a practical excursion and field experiment with our **new mobile dual polarization radar system METEOR 50DX**. The field test will include the operational set-up of the mobile system, the measurement of data and the data evaluation (dependent on weather).

Workshop Program:	Places:
<p>Tuesday 16th October 2007, 09:00 – 16:00</p> <p>Opening and Introduction by Selex-Gematronik</p> <p>Session 1 Prof. Witold Krajewski, University of Iowa, USA “Focus on the uncertainty quantification of radar-rainfall estimation”.</p> <p>The session will focus on the uncertain quantification of radar-rainfall estimation. The lecturer will discuss sources of uncertainty in radar observations and their conversion to rainfall quantities relevant for operational hydrologic forecasting. He will present statistical models of uncertainty suitable for probabilistic quantitative precipitation estimation and their link to quantitative precipitation forecasting. The lecturer will also discuss the benefits of polarimetric radar observations for rainfall estimation.</p>	<p>At Hotel Holiday Inn, Neuss</p> 
<p>Wednesday 17th October 2007, 09:00 – 16:00</p> <p>Session 2 Prof. Ezio Todini, University of Pisa, Italy “Integrating Radar and telemetering rain gauges in operational flash flood forecasting systems: an example of the Reno River”.</p> <p>This session illustrates the integration of radar and telemetric rain gauges for an operational flash flood forecasting system: Example of the <i>Reno River</i>. The problem with flash floods is mainly due to the fact that they are fast phenomena to be described on the basis of short space and time intervals.</p>	<p>At factory SELEX-Gematronik GmbH, Neuss</p> 

<p>At these smaller scales the rain gauges loose their accuracy. Therefore the role of meteorological radars becomes essential. Unfortunately sometimes radars introduce a number of estimation errors, which may become a strong source of uncertainty in flood forecasting. This is why the use of gauges is still important to increase the robustness of the final precipitation products.</p> <p>Optimal combination of radar and gauges, and possibly additional sources of information, is here performed via Bayesian combination in order to combine the different sources while taking into account the relevant errors of different nature.</p>	
<p>Practical excursion: Field demonstration and experiment with the SELEX METEOR 50DX mobile dual polarization radar (experiments depend on weather situation)</p>	<p>At countryside nearby Neuss</p> 
<p>Thursday, 18th October 2007, 09:00 – 16:00</p> <p>Session 3 Prof. Chris Collier, TIES University of Salford, UK “Flash Flood forecasting: What are the limits of predictability?”</p> <p>Any warning system must depend upon the accurate real-time provision of rainfall information and hydrological model structures that function during extreme conditions. In this session we review how flash floods are forecasted considering the limitations and uncertainty involved in both - the meteorological and hydrological aspects of forecasting systems.</p>	<p>At Hotel Holiday Inn, Neuss</p> 