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for Climate Change Adaptation

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**SUDPLAN workshop at ISESS 2011
Brno, Czech Republic**

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1. Management Summary

This document is a deliverable (D9.4.1 Dissemination Event 1) of the SUDPLAN project, which is an EU FP7 project under the Information Communication Technology Programme (ICT-2009-6.4 ICT for Environmental Services and Climate Change Adaptation).

Purpose and structure of this Document

The SUDPLAN DOW foresees two dissemination events. The first one with the objective to communicate and receive feedback on the scientific background of the services developed. This document summarizes the special topic (Climate Services and ICT Tools for Environmental Urban Planning) of the ISESS 2011 conference, organized by the SUDPLAN consortium. The session included 5 SUDPLAN presentations augmented by 7 presentations of other projects relevant for the topic. A 6th SUDPLAN presentation was given in another session. This document summarizes the content of the presentations made at the SUDPLAN session and the experience and feedback gained by the discussions with the present experts.

The INTRODUCTION tells what SUDPLAN development is all about and which pilot cities that will demonstrate the usefulness of the resulting software. The objectives of the two dissemination events are given, as well as the rationale to place the first one under the ISESS 2011 umbrella.

The following section describes the form of the ISESS 2011 conference and how a SUDPLAN session fit into the meeting agenda. The invitation call for the SUDPLAN session is cited and the final participants, representing SUDPLAN consortium, are listed. A summary is given of the presentations made during the SUDPLAN session, together with the experiences gained and the conclusions.

Intended Audience

This document is public and will be distributed through the SUDPLAN official web page (<http://www.sudplan.eu>).

Summary

The SUDPLAN 1st dissemination event was successfully accomplished as part of the ISESS 2011 conference in Brno, June 27-29, 2011.

Around 100 international experts working in the field of environmental software systems participated. The SUDPLAN session included 12 presentations of which 5 discussed SUDPLAN development. A 6th SUDPLAN presentation was given in another conference session. All oral presentations of the scientific papers had to pass a peer-review process with at least two reviewers of each manuscript. The proceedings will be published by Springer in the series IFIP Advances in Information and Communication Technology (ENVIRONMENTAL SOFTWARE SYSTEMS. FRAMEWORKS OF EENVIRONMENT IFIP Advances in Information and Communication Technology, 2011, Volume 359/2011).

The ISESS 2011 conference served well the objectives of the SUDPLAN first dissemination event, i.e. to present and discuss the scientific background of the SUDPLAN software together with external approaches to similar challenges. The overall impression gained is that the SUDPLAN tool is well advanced both in IT and environmental aspects. The discussions with experts of different research aspects of environmental information systems at the ISESS conference did not give us motivation to re-consider the design of any part of the SUDPLAN tool. After this event we are even more convinced that the general approach pursued is sound.

Abbreviations and Acronyms

| Acronym | Description |
|---------|---|
| CS | Common Services (component of SUDPLAN tool) |
| DEM | Digital Elevation Model |
| DoW | SUDPLAN Description of Work |
| DSS | Decision Support Systems |
| GIS | Geographic Information System |
| GUI | Graphical User Interface |
| ICT | Information and Communication Technologies |
| ISESS | International Symposium on Environmental Software Systems |
| OGC | Open Geospatial Consortium |
| SOS | Sensor Observation Service (OGC specification of draft) |
| SMS | Scenario Management System (component of SUDPLAN tool) |
| SPS | Sensor Planning Service (OGC specification of draft) |
| WFS | Web Feature Service |
| WMS | Web Map Service |

2. Introduction

SUDPLAN is an EU FP7 project under the Information Communication Technology Programme (ICT-2009-6.4 ICT for Environmental Services and Climate Change Adaptation). SUDPLAN shall provide local information and a quality services to effectively support urban planners and decision makers in urban areas all over Europe in the areas of intense rainfall events, drought and flood risks, and severe air pollution episodes, affecting urban infrastructure and population under the influence of a changed climate. The services will be offered through a highly interactive, web-based decision support and training tool. There are four pilots demonstrating the use of the SUDPLAN tool: Stockholm (air quality), Wuppertal (stormwater flooding on streets), Linz (intense rainfall and combined sewer overflow) and the Czech Republic (air quality and soil humidity/fertility in the Prague region). Through dissemination and exploitation efforts, the SUDPLAN tool should be presented and offered to whatever cities in Europe.

As part of dissemination task, two events have been planned. The first event, realized during year 2 and summarized in this document, had as its objective to communicate and receive feedback on the scientific background of the planned SUDPLAN services. The second event, to be realized during the second half of year 3, will be directed to potential end-users in European cities.

During the 2nd PMC meeting in Norrköping, October 7-8, 2010, the idea was launched to realize the 1st dissemination event as part of the ISESS 2011 conference. Contacts were made with the ISESS 2011 chairmen, Professor Jiří Hřebíček at the Masaryk University, Brno, Czech Republic. A formal decision was taken in early December 2010 and the SUDPLAN event was formally announced as a session entitled “Climate Services and ICT Tools for Environmental Urban Planning”, with SUDPLAN co-ordinator Dr. Lars Gidhagen as convenor. Personal invitations were spread out through emails, making use of the consortium’s professional networks in IT development and geosciences. Invitations were also found on the ISESS 2011 web page <http://www.isess2011.org/> and included in the SUDPLAN 1st Newsletter, available at the SUDPLAN web page <http://www.sudplan.eu/>.

3. SUDPLAN dissemination event at ISESS 2011

Form of the event

ISESS, the International Symposium on Environmental Software Systems, was initiated in 1995 as a forum to present and discuss the fundamentals, progress and actual trends in this area in terms of methods, tools and state-of-the-art environmental informatics applications. Over the years, it has also evolved into an important networking tool for academics, environmental professionals, and other interested parties.

ISESS is a conference series organized on behalf of the International Federation for Information Processing (IFIP), WG 5.11 “Computers and Environment”. In odd-numbered years, ISESS is held as a conference with a complete range of topics related to Environmental Information Systems (EIS) and related topics. In even-numbered years ISESS is held as a workshop of International Congress on Environmental Modelling and Software (IEMSS) with the focus being on a specific topic.

The ISESS 2011 conference was organised by the Masaryk University in cooperation with IFIP, the Ministry of the Environment of the Czech Republic, the European Commission and the European Environment Agency. The organization committee included:

- Jiří Hřebíček, Masaryk University, chairman
- Gerald Schimak, AIT Austrian Institute of Technology, vice chairman
- Miroslav Kubásek, Masaryk Univerzity
- Jana Klánová, Masaryk Univerzity

The program committee included a large number of international recognized experts in the field of environmental software systems.

| | |
|-------------------------|---|
| Robert Argent | Centre for Environmental Applied Hydrology, University of Melbourne, AU |
| Ioannis N. Athanasiadis | Democritus University of Thrace, Xanthi, GR |
| Guiseppe Avelino | Elsag Datamat, IT |
| Vladimir Benko | Slovak Environmental Agency, SK |
| Arne J. Berre | SINTEF, NOR, WG chair |
| Raul Carlsson | Chalmers University, SWE |
| Ralf Denzer | Saarland University of Applied Sciences, DE, WG chair |
| Ladislav Dušek | Masaryk University, CZ, WG chair |
| Giorgio Guariso | University of Milan, Italy |
| Werner Geiger | Research Center Karlsruhe, DE |
| Lars Gidhagen | Swedish Meteorological and Hydrological Institute, SE, WG chair |
| Albrecht Gnauck | Brandenburg University of Technology Cottbus, DE |

| | |
|----------------------|--|
| Reiner Güttler | Saarland State University for Applied Sciences, DE |
| Gavin Fleming | CSIR Water Environment and Forestry Technology, ZAF |
| Steven Frysinger | James Madison University, USA |
| Ivan Holoubek | Masaryk University, CZ |
| Jiří Hradec | Czech Environmental Information Agency, CZ |
| Jiří Hřebíček | Masaryk University, CZ, chairman |
| Karel Charvát | Czech Centre for Science and Society, CZ |
| Anthony Jakeman | Australian National University, AU |
| Stefan Jensen | European Environment Agency, DK |
| Martin Kaltenböck | Semantic Web Company & OGD Austria, AT |
| Kostas Karatzas | Aristotle University, GR |
| Jana Klánová | Masaryk University, CZ |
| Milan Konečný | Masaryk University, CZ |
| Horst Kremers | CODATA - Germany, DE |
| Daniel Vidal-Madjar | Centre National d'Etudes Spatiales, FR |
| Colette Maloney | European Commission, DG INFSO, BE |
| Patrick Maué | University of Muenster, DE |
| Thomas Maurer | Federal Institute of Hydrology, DE |
| Jaroslav Myšiak | FEEM, Venice, IT |
| Meropi Paneli | European Commission, DG Environment, BE |
| Tomas Pariente | Atos Origin, ES |
| Thomas Pick | Ministry of Environment of Lower Saxony, DE |
| Werner Pillmann | International Society for Environmental Protection, AT |
| Tomáš Pitner | Masaryk University, CZ |
| Jaroslav Pokorný | Charles University, CZ |
| Nigel Quinn | Berkeley Research Lab and University of Berkeley, USA |
| Iva Ritschelová | Czech Statistical Office, CZ |
| Andrea E. Rizzoli | IDSIA, CH |
| Bernt Røndell | European Environment Agency, DK |
| Ivica Ruzic | Rudjer Boskovic Institute, HR |
| Miquel Sànchez-Marrè | Technical University of Catalonia, ES |
| Gerald Schimak | AIT Austrian Institute of Technology, AT, vicechairman |

Alberto Susini

Geneva Labour inspectorate
(OCIRT), CH

David Swayne

University of Guelph, CA, WG
chair

Olga Štěpánková

Czech Technical University, CZ

Thomas Usländer

Fraunhofer IOSB, DE

Irina Zálišová

EPMA, CZ

The ISESS conference took place in the city of Brno, in pavilion A11 of the University Campus Bohunice, during June 27-29, 2011. Plenary talks included “Making progress in environmental modelling and simulation” by Anthony Jakeman (Australian National University, director of iCAM Centre), “Digital Earth Vision for Europe” (Alessandro Annoni, EC-JRC, head of Spatial Data Infrastructures Unit, on video-link) and “Environmental statistics collection at the CZSO” (Iva Ritschelová, Czech Statistical Office).

The SUDPLAN session covered the June 27 afternoon. Other sessions were entitled:

- eEnvironment and Cross-border Services in Digital Agenda for Europe
- Environmental Information Systems and Services - Infrastructures and Platforms
- Semantics and Environment
- Distributed Modelling
- Information Tools for Global Environmental Assessment
- Advanced Approaches to Catchment Hydrology Simulation

The last hydrological session was merged with the SUDPLAN session, as it fitted very well under “Climate Services and ICT Tools for Environmental Urban Planning” objectives.

Topics raised in the SUDPLAN session of ISESS 2011

The invitation to join the session “Climate Services and ICT Tools for Environmental Urban Planning” was formulated as follows:

Sustainable cities require a long term and integrated planning approach for utilities and infrastructures so that the investments to be made will help to assure population's health, comfort and life quality. The dimensioning of sustainable urban infrastructure is typically based on a statistical assessment of historical environmental data – ambient temperature, rainfall, river runoff etc - that determines the risk for an extreme event to occur within a certain time period. Urban planners need models, statistical tools and input data to find an appropriate design of infrastructure projects that can resist also extreme environmental events.

A changed climate, with temperature increase and changes in e.g. precipitation and storm frequency, may invalidate the dimensioning calculation of larger – and therefore longer term – infrastructural projects. Climate services in the form of simulated future environmental conditions will be important input to urban planners that need to plan decades ahead.

For the Information and Communication Technology community it is a challenge to integrate the different tools and data needed for this type of future scenario evaluation in complex decision support but easy-to-use applications. The tools should be able to

support with a large number of possible decision processes (generic). In addition, these tools should be usable by a wide range of end users that e.g. are not experts in statistical and numerical modelling but still need access to a multitude of models to consolidate momentous decisions, the results should furthermore be possible to easily integrate in urban planner's day to day working environment.

This ISESS 2011 session invites you to present ideas, methods and already implemented tools that support urban planning of sustainable cities. The tools may or may not address planning under a changed climate. In particular the session welcomes modelling results of climate change and systems/services meant to present these often very extensive datasets. Future climate is here broadly interpreted as both the direct climate change (e.g. temperature and precipitation) and changes in other environmental data, e.g. air quality and hydrology, which will be affected by an altered climate.

SUDPLAN participation at ISESS 2011

SUDPLAN staff was represented by the following persons:

| <i>First name</i> | <i>Surname</i> | <i>Affiliation</i> | <i>SUDPLAN role</i> | <i>role at ISESS 2011</i> |
|-------------------|----------------|--------------------|---|------------------------------|
| Lars | Gidhagen | SMHI | co-ordinator | program committee, moderator |
| Magnuz | Engardt | SMHI | air quality, climate | presentation |
| Jonas | Olsson | SMHI | stormwater rainfall, climate | presentation |
| Patrik | Wallman | SMHI | hydrology, climate | presentation |
| Sascha | Schlobinski | cismet | IT, decision support system, exploitation | moderator, presentation |
| Peter | Kutschera | AIT | IT, communication services, validation | presentation |
| Mihai | Bartha | AIT | IT, communication services | |
| Stefan | Sander | Wuppertal city | pilot application Wuppertal | presentation |

Contents of the SUDPLAN session

Annex 1 lists the agenda for the SUDPLAN session. There were 12 presentations in total, of which 5 were from the SUDPLAN project (there was also a sixth SUDPLAN presentation taking place in another session). All oral presentations had been passing a peer-review process with at least two reviewers of each manuscript. The proceedings will be published by Springer in the series IFIP Advances in Information and Communication Technology

<http://www.springer.com/series/6102?changeHeader>

SUDPLAN presentations included one IT oriented talk about the communication standards used by the SUDPLAN tool, three presentations describing the background of the environmental models in Common Services and one presentation from a pilot user perspective (Wuppertal). A poster summarized the overall SUDPLAN objectives and content.

External presentations, most of them highly relevant for SUDPLAN development, included three presentation on environmental portals for distributed data (measurements as well as model results) and one presentation of a more interactive portal that includes model execution – a decision support system very similar to SUDPLAN Common Services for Air Quality downscaling. Then there were two environmental modelling papers (one of them including climate change). There was also a third, more IT-oriented modelling paper.

The SUDPLAN IT paper (Kutschera, AIT) described the Service Oriented Architecture of SUDPLAN and how distributed data and model runs will be handled through the Scenario Management System. OGC SWE 1.0 standards, further developed in the SANY project, will be used: SOS for time series and gridded data transfer, SPS for model runs.

The background to the rainfall and climate change impact assessment in Common Services was presented by Olsson (SMHI) and downscaling results were presented in the form of high resolution precipitation time series for future conditions. The SUDPLAN pilot user presentation (Sanders, Wuppertal City) explained how this future precipitation data can be used as input to small scale local models for sewer and surface runoff, contributing to a scientific basis for long term planning of flood risk mitigation.

SUDPLAN downscaling of air quality was described by Engardt (SMHI) and examples of downscaling results for Stockholm were presented. Projections of future air quality require complex models to be executed on different scales, so that even with super computers the calculation time is of the order of days. The simulations should ideally be repeated various times, using different models or input data sets, to assess the uncertainty of a specific scenario result. Jensen (NERI) presented a similar concept for Denmark, however extended both to assess the coupling back of air pollution to climate change (urban heat island modelling) as well as assessing health impact and economic evaluation. Loibl (AIT, but not SUDPLAN staff) presented a model approach for assessing micro-climate characteristics of a planned urban sub-centre, as a basis for urban planning and building design. This impressive, highly complex model study, also used - as SUDPLAN Common Services - regionally downscaled climate scenarios based on global climate model results. The Loibl (AIT) presentation was awarded the title “Best paper” of the SUDPLAN session.

The hydrological paper (Wallman, SMHI) described the technical background to the panEuropean model included in Common Services and discussed the advantages to be gained

with an open source community that together, supported by web-based services, develops a hydrological core service for Europe. Hjerdt (SMHI, but not SUDPLAN staff) showed how hydrological measurements and model results for Sweden now are easily available for analysis and download on the web, with very positive development of web page visitors and number of users of the information. The need for public web portals to access distributed water related environmental data, both measurements and model results/codes, were also communicated by the paper of Wong (Environment Canada) and Usländer (Fraunhofer IOSB). The latter also discussed the process of analysing user requirements for environmental portals, in this case to be developed as a support for the Integrated Rhine Programme.

The abstracts of SUDPLAN papers are found in Annex 2. The presentations can be accessed through the SUDPLAN home page www.sudplan.eu, under Results.

Experience

The ISESS 2011 conference served well the objectives of the SUDPLAN first dissemination event, i.e. to present and discuss the scientific backgrounds to the SUDPLAN software together with external approaches to similar challenges. The rather small size of the conference, around 100 persons, imply advantages (easy to get into contact with people, only two parallel sessions etc) but of course it also limits the dissemination outreach. Clearly the number of IT experts has been higher than that of environmental modelling experts, but this was foreseen as ISESS is in principle an ICT initiative. A planning mistake made the ISESS 2011 conference to be parallel to the large INSPIRE conference in Edinburgh, with the consequence that e.g. normal EC and EEA representations were lacking, as well as national environment-IT experts from CENIA. Although being more the target for the second dissemination event to come, the SUDPLAN staff also missed a larger group of users of environmental information, e.g. coming from city administration in the region around Brno.

There were various interesting presentations with relevance for SUDPLAN – both focusing IT and environmental sciences – outside the SUDPLAN session. The organization of two focused sessions in parallel made it easier for the SUDPLAN consortium to be represented at all sessions.

The overall impression is that the SUDPLAN tool is well advanced both in IT and environmental aspects. The ISESS conference did not give us motivation to re-consider the design of any part of the SUDPLAN software, rather it strengthened our ambition to show publically a fully operational system (feasible during 2011).

The conference was also important to strengthen the co-operation with other ICT projects, especially those gathered under the ENVIP (Environmental Information Infrastructures and Platforms) umbrella. The Brno meeting was used for planning for the ENVIP 2011 workshop, part of the EnviroInfo 2011 conference at JRC, Ispra, October 5-7, 2011.

4. Conclusions

The main focus of SUDPLAN's first dissemination event was to get feedback on our technical solutions from the research community, both from the ICT and the environmental side. The event was successfully accomplished as part of the ISESS 2011 conference in Brno, June 27-29, 2011. Around 100 international experts working in the field of environmental software systems participated. The SUDPLAN session included 12 presentations of which 5 discussed SUDPLAN development. A 6th SUDPLAN presentation was given within another session. All oral presentations had to pass a peer-review process with at least two reviewers for each manuscript. The proceedings have been published by Springer in the series IFIP Advances in Information and Communication Technology.

The ISESS 2011 conference served well the objectives of the SUDPLAN first dissemination event, i.e. to present and discuss the scientific backgrounds to the SUDPLAN software together with external approaches to similar challenges. The overall impression gained is that the SUDPLAN tool is well advanced both in IT and environmental aspects. The discussions with experts of different research aspects of environmental information systems at the ISESS conference did not give us motivation to re-consider the design of any part of the SUDPLAN tool. After this event we are even more convinced that the general approach pursued is sound.

Annex 1: Agenda for the SUDPLAN session at ISESS 2011

| Hall B, 14:00-16:00, Climate Services and ICT Tools for Environmental Urban Planning I, chairperson Lars Gidhagen | | |
|--|---|--|
| 14:00 14:20 | Short-term rainfall : observations, characteristics, visualisation and future changes | Jonas Olsson , Lars Gidhagen, Akira Kawamura, |
| 14:20 14:40 | Integrating Climate Change in the Urban Planning Process A Case Study for the City of Wuppertal Germany | Stefan Sander , Holger Hoppe, Sascha Schlobinski |
| 14:40 15:00 | SUDPLAN's experiences with the OGC-based model web services for the Climate Change usage area | Peter Kutschera , Mihai Bartha, Denis Havik, |
| 15:00 15:20 | Web services for incorporation of air quality and climate change in long-term urban planning for Europe, | Magnuz Engardt , Christer Johansson, Lars Gidhagen, |
| 15:20 15:40 | E-HypeWeb: Service for Water and Climate information - and Future Hydrological Collaboration Across Europe? | Berit Arheimer, Patrik Wallman , Chantal Donelly, Karin Nyström, Charlotta Pers |
| 15:40 16:00 | Decision-support System for Urban Air Pollution under Future Climate Conditions, | Steen Solvang Jensen , Matthias Ketznel, Martin Hvidberg, Jorgen Brandt, Gitte Hedegaard, |
| 16:00 16:30 | Coffee break | |
| Hall B, 16:30 - 18:30, Climate Services and ICT Tools for Environmental Urban Planning, chairperson Sascha Schlobinski | | |
| 16:30 16:50 | Going public with advanced simulations | Niclas Hjerdt , Berit Arheimer, |
| 16:50 17:10 | Using a Commercial Optimisation Tool for Fine Tuning of Parameters of an Eutrophication Model | Albrecht Gnauck, Bernhard Luther , Wilfried Krug, |
| 17:10 17:30 | Modelling micro-climate characteristics for urban planning and building design, | Wolfgang Loibl , Tanja Tötzer, Mario Köstl, Johann Züger, Markus Knoflacher, |
| 17:30 17:50 | Towards User Requirements for an Information System of the Integrated Rhine Programme | Thomas Usländer , Rainer Junker, Ulrike Pfarr |
| 17:50 18:10 | The Lake Winnipeg Basin Initiative Information Portal with Integrated Modelling, | Isaac W. Wong , William G. Booty, Sarah Hall, Phil Fong, |
| 18:10 18:30 | New methods of flash flood forecasting in the Czech Republic, | Lucie Březková , Milan Šálek, Petr Novák, Hana Kyznarová, Martin Jonov, |

Annex 2: Abstracts of the SUDPLAN papers presented at ISESS 2011

SUDPLAN's experiences with the OGC-based model web services for the Climate Change usage areas

Peter Kutschera¹, Mihai Bartha¹ and Denis Havlik¹

¹ Austrian Institute of Technology - AIT, Donau-City-Straße 1, A-1220 Vienna, Austria

Abstract:

SUDPLAN is currently developing a technical solution for Model Web/ObservationWeb in the Climate Change usage area. Proposed solution is based on the Open Geospatial Consortium standards, and follows the ideas expressed in SANY Sensor Service Architecture (SensorSA). SUDPLAN also continued the development of the SANY software, resulting in native SOS, SPS and 2D coverage support in "Time Series Toolbox" framework for building sensor web applications. SUDPLAN re-uses much of the OGC SWE and SANY SensorSA functionality to:

- (1) configure and run the models;
- (2) provide the data (observations) required for model execution;
- (3) inform the user on model run progress and
- (4) access the model results.

In this paper, we shall describe the SUDPLAN's experiences with implementing of the interoperable Model Web using OGC standards, and discuss the advantages of various services from the OGC SWE suite as compared to non-SWE alternatives in the Climate Change context.

Keywords: *Environmental modelling; Open Geospatial Consortium; Sensor Web enablement; OGC SWE; Model Web; Observation Web; Time Series Toolbox; Sensor Service Architecture; SensorSA; workflow automation, data infrastructures, visualization, climate change*

Downscaling of Short-term Precipitation Time Series for Climate Change Impact Assessment

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² Tokyo Metropolitan University, 1-1 Minami-Osawa, Hachioji, Tokyo 192-0397, Japan

Abstract. A future increase of short-term precipitation intensities may lead to problems in sewer systems, such as increased overflow volumes and flood risks. To quantify the consequences, downscaling of climate model precipitation is required to the scales relevant in urban hydrology. In the SUDPLAN project, a system where users may upload historical time series to be used as a basis for such downscaling is being developed. In this paper, the method (Delta Change) is outlined along with brief descriptions of the technical solution and result visualization.

Keywords: *climate model, urban hydrology, SUDPLAN*

Web services for incorporation of air quality and climate change in long-term urban planning for Europe

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Abstract. Planning for sustainable cities requires the inclusion of environmental aspects like air quality. Within a planning perspective of 20-30 years, there are various factors influencing future air quality:

Worldwide: Climate change may change global background pollution levels and it will affect the atmospheric chemistry.

Europe: Many efforts are taken to reduce emissions of air pollutants and climate forcing agents. These efforts will contribute to changes in the levels of air pollution reaching European cities.

Locally: City populations will grow. The population growth, together with the design of transportation and energy production systems, influence the city's own contribution to air pollution.

The web-service presented allows end-users in an arbitrary European city to consider these factors impact on air quality. It also includes tools for visualization and standards for easy connection to existing local model systems in the cities.

Keywords: *climate change, climate services, climate scenario, air quality modeling, urban planning*

E-HypeWeb: Service for Water and Climate information - and Future Hydrological Collaboration Across Europe?

Berit Arheimer¹, Patrik Wallman¹, Chantal Donnelly¹, Karin Nyström¹, and
Charlotta Pers¹

¹ *Swedish Meteorological and Hydrological Institute, SE-601 76 Norrköping, Sweden*

Abstract:

The hydrological scientific and operational communities are faced with new challenges. There is a demand for detailed water information for large regions and new environmental issues to deal with, which request advanced technical infrastructure merged with up-dated hydrological knowledge. Traditionally, the hydrological community is disaggregated. In this paper we suggest a collaborative approach and invite both researchers and operational agencies to participate in the development of a common European core service providing free access to water information. We present the idea of starting from the new E-HYPE model and its advanced technological infrastructure and open source code, using a bottom-up approach.

Acknowledgements:

SUDPLAN is a Collaborative Project (contract number 247708) co-funded by the Information Society and Media DG of the European Commission within the RTD activities of the Thematic Priority Information Society Technologies.

Keywords: *catchment hydrology, modeling, pan-European, technical infrastructure, open source community, E-HYPE*

Integrating Climate Change in the Urban Planning Process - A Case Study

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² *DR. PECHER AG*
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Abstract:

The ongoing European collaborative project SUDPLAN is targeted on the development of a software framework that allows the integration of climate change aspects in urban planning processes. Besides the implementation of the generic modules SUDPLAN comprises the implementation of four tangible pilot applications of the framework, one of them in the German City of Wuppertal. This “Wuppertal pilot” deals with urban storm water management and the prevention of infrastructure damages under present and future climate conditions. It can be considered as a case study for the integration of climate change in an actual, long-term urban planning process. This article describes the basic conditions of the case study and the building blocks of the intended decision support environment for urban planners, including the local models used for the simulation of storm water runoff, both in the sewers and on the surface.

Keywords: *climate change downscaling, model integration, urban planning modelling experiments, SDI*

Vision and Requirements of scenario-driven Environmental Decision Support Systems supporting Automation for End Users

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Abstract:

This paper will discuss the vision and requirements of a highly-interactive workbench which supports end users of models in automation tasks. The concepts discussed are results of the SUDPLAN project, an EU FP7 project which aims at developing advanced tools for climate change adaptation for city planners and city managers (Denzer 2011). One core of SUDPLAN is the SUDPLAN Scenario Management System, which is implemented using the *cids* geospatial application framework of cismet GmbH.

The paper will be structured according to the following outline:

1. Brief overview of the SUDPLAN project, concept of the Scenario Management System and focus of this paper
2. Vision and requirements of an automation work bench
3. Examples of automation, first results
 - a. Common climate change scenario services
 - b. Services for precipitation downscaling
 - c. Services for air quality downscaling
 - d. Added value for end users
4. Generalisation of the concept, future work

Note that the paper is based on concrete results of the project, not on future work. The services described in chapter 3 are currently being finalized, and will be available as running software at the conference.

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Keywords: *workflow automation, data infrastructures, visualization, climate change*

Denzer, R. (2011), A Decision Support System for Urban Climate Change Adaptation, *Proceedings of the 44th Hawaii International Conference on System Sciences (HICSS-44)*, CDROM, IEEE Computer Society, January 2011.