

Section 2 Work packages progress during the reporting period of February 1st 2008 to 31st of January 2009

Disseminating the knowledge

Period: 2.year = 1.Febr 2008 – 31.Jan. 2009

Non-WATCH Conferences & Workshops (WATCH has been referred to)

Planned/ actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
26-28 Febr. 2008.	UNESCO Workshop on Trends in low flows and droughts in small undisturbed rivers across Europe, Paris, France	Scientific community	International	~10	UiO, NVE, WUR, NERC-CEH
6-7 March 2008	COST733 WG4 Workshop, Brussels, Belgium	COST733 members, scientific community	International	~20	UiO, NERC- NERC-CEH
March 2008	Conference on Modelling floods and droughts - uncertainty estimates for water resources management, Prague, Czech Republic	UNESCO EURO-FRIEND workshop	International	~30	TGM-WRI
14-17 April 2008.	Conference Water down under 2008, Adelaide, Australia	Scientific community /higher education	International	~250	WUR
14-18 April 2008	Conference: EGU, Vienna, Austria	Scientific community /higher education	International	~500	UiO, UC
6 May 2008	EC-FP7 XEROCHORE kickoff meeting, Brussels, Belgium	Scientific community	International	~20	WUR, UiO, NERC-CEH
9-10 May 2008	COST 733 6 th Management Committee meeting and WG4 meeting, Ioannina, Greece	COST733 scientific community	International	~30	UiO, NERC-CEH
19-23 May 2008	International conference on Ecohydrological processes and sustainable floodplain management: opportunities and concepts for water hazard mitigation, and ecological and socioeconomic sustainability in the face of global changes, Lodz, Poland.	Scientific community	International	~100	PAS
23-24 May 2008	Workshop on Hydrology of a small catchment 2008, Prague, Czech Republic.	Scientific community	International (Central European)	~ 30	UC
28-30 May 2008	Workshop on European Water Archive, Koblenz, Germany	UNESCO EURO-FRIEND workshop	International	~20	WUR, NVE, NERC-CEH
30 May	Meeting of COST C22 on Urban	Scientific	International	~40	PAS

Planned/ actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
2008	flood management, Warsaw, Poland	community			
1-8 June 2008	Summer school on Climate change and the hydrological cycle (see WP 7.2)	Under- graduate students	International	40	ICTP,WUR, NERC-CEH, MPI
8 June 2008	Press conference at the closer of above summer school (see WP 7.2)	Local authorities and research institute directors	Italian and EU	40	ICTP,WUR, NERC-CEH, MPI
2-4 June 2008	24 th Conference of the Danubian Countries on Hydrological forecasting and hydrological bases of the water management, IHP UNESCO, Bled, Slovenia.	Scientific and water manage- ment community	International (Danubian countries)	~80	UC
June 2008	Second annual NUFU meeting, Gaborone, Botswana.	Scientific community	Botswana, Malawi, Norway		UiO
22-27 June 2008	Summer school on Hydrological drought and global change (see WP 7.2)	PhD students and young postdocs	International	~30	resp WUR, UiO and ICTP; cont NVE, NERC-CEH, TGM-WRI
20-23 July 2008	Water and climate session, EXPO 2008, Zaragoza, Spain	Scientific community and general audience	International	~80	PAS
8-9 Sept 2008	UNESCO workshop on Adapting to the impacts of global changes on river basins and aquifer systems, Paris, France	UN officials, science community	International	~25	UiO
18-20 Sept 2008	ERB international conference on Hydrological extremes in small basins, Cracow, Poland.	Scientific community	International	~100	PAS
12-16 Oct 2008	Joint meeting of Russian Academy of Sciences and Polish Academy of Sciences, days of Polish science in Russia, Moscow, Russia	Scientific community	Bi-national (Polish and Russian)	~100	PAS
22-24 Oct 2008	COST733 Mid-term conference on Advances in weather and circulation types classifications and applications, Cracow, Poland	Scientific community /higher education	International	~100	NERC-CEH, UiO
10-12 Nov. 2008.	UNESCO EURO-FRIEND. workshop on Low flow and drought, Bratislava, Slovakia	Scientific community /higher education	International	~40	UC (resp.) NERC-CEH, UiO, WUR,
24-26 Nov 2008	Workshop on Water and climate change, Beijing, China	Scientific community /higher education	International	~30	NERC-CEH (resp.), WUR

Non-WATCH Conferences & Workshops (*Short description of major activities if relevant*)

At the COST733 WG4 Workshop in March, studies applying Weather Type Classifications (WTCs) to different purposes including air quality, hydrology, climatological mapping, forest fires, climate change and variability and risks and hazards were presented. On the basis of the presentations possible evaluation methods to compare the applicability of different WTCs were discussed, and similarities and differences as well as advantages and disadvantages of various WTCs were compared.

The purpose of the UNESCO workshop in September, was for UNESCO to be informed about the latest developments and research questions concerning water and climate change. Their interest was twofold, on the one hand to strengthen their basis to prepare a contribution to the World Water Forum 2009, on the other hand to review their programmes in light of current scientific issues.

At the COST733 Mid-term conference in November ‘Advances in weather and circulation types classifications and applications’ various sessions on the theory and development of weather type classification (WTC) methods as well as on the COST733 WTC database and various WTC applications were held, including contributions from WATCH partners.

Presentations (oral and posters)

- Demuzere, M. *et al.* (23 authors) (2008) COST 733 -WG4: *applications of weather type classifications, Advances in weather and circulation types classifications and applications* (poster). Abstract in: COST733 conference on Advances in weather and circulation types classifications and applications, Cracow, 22-25 October 2008, pp. 32.
- Fleig, A.K., Tallaksen, L.M., Hisdal, H., Hannah, D.M. & Stahl, K. (2008) *Regional hydrological droughts and weather types in north-western Europe* (oral presentation) Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Fleig, A.K., Tallaksen, L.M., Hisdal, H., Hannah, D.M. & Stahl, K. (2008) *Application of COST-733 WTCs: Associations between weather types and hydrological drought in north-western Europe* (oral presentation). Abstract in: COST733 conference: on Advances in weather and circulation type classifications & applications, Cracow, 22-25 October 2008, pp. 38.
- Fleig, A. K. (2008) *Test-application of COST-733 WTCs: Hydrological drought in North-Western Europe* (oral presentation). WG4 meeting of COST733, Brussels, 6-7 March 2008.
- Gudmundsson, L., Lange, H. & Lischeid, G. (2008) *Regionale auswirkung der klimavariabilität auf Abflussganglinien* (poster). Abstract in: Forum für Hydrologie und Wasserbewirtschaftung, Vol. 23.
- Gudmundsson, L., Lischeid, G. & Lange, H. (2008) *In phase or not in phase? Exploring the spatial structure of long term components of multivariate hydrological time series* (poster). Abstract in: EGU Geophysical Research Abstracts, Vol. 10, Vienna, 11-14 April 2008.

- Gudmundsson, L., Tallaksen, L.M., Stahl, K. & Lange, H. (2008) *Exploring the space-time structure of observational European streamflow deciles* (poster). EU WATCH General Assembly Meeting, Bratislava, 4-8 November 2008.
- Gudmundsson, L., Tallaksen, L.M., Stahl, K. & Lange, H. (2008) *Spatiotemporal correlations of inter-annual variability in European stream-flow quantiles* (oral presentation). Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Gudmundsson, L., Tallaksen, L.M., Stahl, K. & Lange, H. (2008) *Spatiotemporal correlations of inter-annual variability in European stream-flow quantiles* (poster). 1st International Workshop on Data Analysis and Modelling in Earth Sciences (DAMES 2008).
- Kundzewicz, Z. W. (2008) *Climate change impacts on the hydrological cycle* (oral presentation). International Conference on Ecohydrological Processes and Sustainable Floodplain Management: Opportunities and Concepts for Water Hazard Mitigation, and Ecological and Socioeconomic Sustainability in the face of Global Changes, Lodz, 19-23 May 2008.
- Kundzewicz, Z. W. (2008) *Flood risk and vulnerability in the changing climate* (oral presentation). Meeting of COST C22 (Urban Flood Management), Warsaw, 30 May 2008.
- Kundzewicz, Z. W. (2008) *Heavy precipitation and floods* (oral presentation). Water and Climate Session, EXPO 2008, Zaragoza, 20-23 July 2008.
- Kundzewicz, Z. W. (2008) *Hydrological extremes in the changing world* (oral presentation). International Conference on Hydrological extremes in small basins, Cracow, 18-20 September 2008.
- Kundzewicz, Z. W. (2008) *Global climate change: impact, adaptation and vulnerability* (oral presentation). Joint Meeting of Russian Academy of Sciences and Polish Academy of Sciences, Days of Polish Science in Russia, Moscow, Russia, 12-16 Oct 2008.
- Lanen, H.A.J. van (2008) *Data needs and role of NE-FRIEND* (oral presentation). UNESCO EURO FRIEND Database Workshop, Koblenz, 28-30 May 2008.
- Lanen, H.A.J. van & Tallaksen, L.M. (2008) *Drought in Europe* (oral presentation). International Conference Water Down Under 2008, Adelaide, 14-17 April 2008.
- Lanen, H.A.J. van & Tallaksen, L.M. (2008) *Extremes: frequencies, severity and scale* (oral presentation). EU WATCH General Assembly Meeting, Bratislava, 4-8 November 2008.
- Lanen, H.A.J. van & Tallaksen, L.M. (2008) *Drought analysis at the regional and the catchment scale* (oral presentation). Workshop Climate Change & Global Water Cycle, Beijing, 24-26 November 2008.
- Lanen, H.A.J., van, ten Doeschate A., Oosterwijk J. & Tallaksen L.M. (2008) *Drought: climate and catchment control in various regions* (oral presentation). Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Loon, A.F., Rakovec, O., Horáček, S., Tallaksen L.M., Hisdal, H., Candel Pérez M., Lanen H.A.J., van & Novický, O. (2008) *Drought propagation in contrasting catchments in Norway, Czech Republic and Spain: preliminary results* (oral presentation). Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Machlica, A., Stojkovicova, M., Fendekova, M. (2008). *Assessment of hydrological drought occurrence in Nitra River catchment (Slovakia) in the period 1976 –*

- 2005 (poster) Abstract in: EGU Geophysical Research Abstracts, Vol. 10, EGU2008-A-09329.
- Prudhomme C., Fleig A.K., Schiemann R., Tallaksen L.M., Hisdal H.H. (2008) Hydrological applications in COST 733 (poster). Abstract in: *Advances in weather and circulation types classifications and applications*, Krakow, Poland, 22-24 October 2008, pp. 76.
- Prudhomme C. & Geneviev M. (2008) *Links between Circulation Types and Flood events in Europe*. Abstract in: COST733 conference on Advances in weather and circulation types classifications and applications, Cracow, 22-25 October 2008.
- Querner, E., Rhebergen, W. & Lanen, H.A.J. van (2008) *Drought analysis using the Regional Hydrological Model SIMGRO* (oral presentation). Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Stahl, K., Hisdal, H., Tallaksen, L.M., van Lanen, H.A.J., Hannaford, J., Sauquet, E. & Demuth, S. (2008) *Trends in low flows and droughts in small undisturbed rivers across Europe* (oral presentation). Abstract in: Geophysical Research Abstracts, Vol. 10, EGU2008-A-04801.
- Stahl, K., Hisdal, H., Tallaksen, L.M., Lanen, H.A.J., van, Hannaford, J., Saquet, E. & Demuth S. (2008) *Trends in low flows and droughts from streamflow records of an updated European Water Archive* (oral presentation). Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Tallaksen, L.M. (2008) *Space-time analysis of drought* (oral presentation). EU WATCH General Assembly Meeting, Bratislava, 4-8 November 2008.
- Tallaksen, L.M., Stahl, K. & Lanen, H.A.J., van (2008) *Climate change impacts on low flow and drought – an overview* (oral presentation). Abstract in: UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Tallaksen, L.M., Lanen, H.A.J. & Stahl, K. (2008) *Global change impacts on low flow and droughts* (oral presentation). Extended abstract in: UNESCO workshop: Adapting to the impacts of global changes on river basins and aquifer systems, Paris, 8-9 September 2008, 8 pp.

Publications (Papers and Reports)

- Bates B., Kundzewicz Z.W., Wu S. & Palutikof J. (Eds.) (2008) *Climate Change and Water*. Technical Paper of the Intergovernmental Panel on Climate Change, IPCC Secretariat. Geneva, 210 pp.
- Berg, P., Haerter, J. O., Piani, C., Thejll, P., Hagemann, S. & Christensen, J. S. Modulation of daily precipitation by surface temperature: applicability of the Clausius-Clapeyron equation. *Theor. and Appl. Clim.* (submitted, 2009).
- Colleuille, H., Beldring, S., Mengistu, Z., Haugen, L.E., Øverlie, T., Andersen, J & Wong, W.K. (2008) *Monitoring system for groundwater and soil water based on simulations and real-time observations: the Norwegian experience*. In: Sveinsson, Ó.G.B., Gardarsson, S.M. & Gunnlaugsdóttir, S. (Eds.) Northern hydrology and its global role. NHP Report no. 50, Vol. 2, 329-339.
- Colleuille, H., Holmqvist, E., Beldring, S. & Haugen, L.E. (2008) Betydningen for grunnvanns- og markvannsforhold for tilsig og kraftsituasjonen (*the importance*

- of groundwater and soil moisture for discharge and hydropower*; in Norwegian, summary in English), NVE Report 12 2008.
- Fendeková, M. & Petrovic, P. (2008): Precipitation data homogeneity assessment for hydrological drought modelling in the Nitra basin. *Meteorological Journal*, **11**: 147-151. ISSN 1335-339X.
- Kašpárek, L. & Novický, O. (2008) *Approaches for drought analysis and their application*. In: Proceedings Conference on Modelling Floods and Droughts - Uncertainty estimates for Water Resources Management, Prague, March 2008.
- Kundzewicz Z. W. (2008) Hydrological extremes in the changing world. *Folia Geographica (Series Geographica-Physica)* **XXXIX**, 37-52.
- Kundzewicz Z.W. (2008) Flood risk and vulnerability in the changing climate. *Ann. Warsaw Univ. of Life Sci. – SGGW. Land Reclam.*, **39**: 21-31.
- Kundzewicz Z.W. (2008) Konsekwencje globalnych zmian klimatu. *Nauka*, **1**: 103-118 (in Polish).
- Lanen, H.A.J. van & Tallaksen, L.M. (2008) *Drought in Europe*. In: Lambert, M., Daniell, T. & Leonard, M. (Eds.). Proceedings Water Down Under 2008, Adelaide, Australia, 14-17 April 2008, pp. 98-108.
- Lanen, H.A.J. van & Fendeková, M. (2008) *Low Flow and Drought Research in Europe: Achievements and Future. Conclusions and Recommendations*. UNESCO EURO-FRIEND International Workshop on Low Flows and Drought, Bratislava, 10-12 November 2008.
- Lanen, H.A.J. van, Tallaksen, L.M., Candel, M., Carrera, J., Crooks, S., Engeland, K., Fendeková, M., Haddeland, I., Hisdal, H., Horacek, S., Jódar Bermúdez, J., van Loon, A.F., Machlica, A., Navarro, V., Novický, O. & Prudhomme, C. (2008) *Database with hydrometeorological variables for selected river basins: Metadata Catalogue*. WATCH Technical Report No. 4, 86 pp.
- Lanen, H.A.J. van, Tallaksen, L.M., Piani, C. & Pieri, P. (2008) *International Summer School on Hydrological Drought and Global Change, Trieste, Italy, 22-27 June 2008*. WATCH Technical Report No. 8, 45 pp.
- Lanen, H.A.J. van, Kundzewicz, Z. W., Tallaksen, L.M., Hisdal, H., Fendeková, M. & Prudhomme, C. (2009) *Indices for different types of droughts and floods at different scales*. WATCH Technical Report No. 11, 17 pp.
- Machlica, A. & Stojkovicova M. (2008). *Groundwater drought in different geological conditions*. Proceedings 24th Conference of the Danubian Countries on the hydrological forecasting and hydrological bases of the water management, Bled, Slovenia, 2-4 June 2008, pp 1-10. CD: ISBN 978-961-91090-2-1; published in IOP Conf. Series: Earth and Environmental Science 4 (2008) 012010, doi: 10.1088/1755-1307/4/1/012010. Full text accessible at: <http://www.iop.org/EJ/toc/1755-1315/4/1>.
- Milly P.C.D., Betancourt J., Falkenmark M., Hirsch R.M., Kundzewicz Z.W., Lettenmaier D.P. & Stouffer R.J. (2008) Stationarity is dead: whither water management? *Science*, **319**: 573-574.
- Piani, C., Haerter, J. O. & Coppola, E. Statistical bias correction for daily precipitation in regional climate models over Europe. *Theor. and Appl. Clim.* (submitted, 2009).
- Radziejewski, M. & Kundzewicz, Z.W. (2009) *Intercomparison of methods for trend detection in hydrological extremes derived from gridded data*. WATCH Technical Report No. 13, 16 pp.

- Rauscher, S.A., Coppola, E., Piani, C. & Giorgi, F. Resolution Effect on Regional Climate Model Simulation of Precipitation over Europe: Part I: Seasonal (to be submitted, 2009).
- Ruti, R.T., Piani, C., Dell'Aquila, A., Raucher, S. & Aina, T. Grand Ensemble Surface Extremes in current and future climate: the Euro-Mediterranean case (to be submitted, 2009).
- Rysava, Z., Fendekova, M., Pekarova, P. (2008) Rezim hladiny podzemnej vody v casti Zvolenskej kotliny medzi Banskou Bystricou a Zvolenom [Groundwater level regime in the part of Zvolen basin between Banska Bystrica and Zvolen]. *Podzemna voda*, **XIV** 2/2008: 159-171, Slovak Association of Hydrogeologists, Bratislava, ISSN 1335-1052.
- Stahl, K., Hisdal, H., Tallaksen, L.M., van Lanen, H.A.J., Hannaford, J. & Sauquet, E. (2008) *Trends in low flows and streamflow droughts across Europe*. UNESCO Report, Paris, 39 pp.
- Stojkovicova, M., Machlica, A., Fendekova, M. (2008) Hodnotenie vyskytu hydrologickeho sucha a jeho vplyvu na zlozky vodnej bilancie v povodi hornej Nitry (Assessment of hydrological drought and its influence on elements of water balance in the Upper Nitra catchment). Proc. Hydrologie maleho povodi 2008 (Hydrology of a small catchment 2008), Prague, Czech Republic, 23-24 May 2008, pp. 269-276.
- Tallaksen, L.M., Hisdal, H. & van Lanen, H.A.J. van. Space-time modelling of catchment scale drought characteristics (submitted to *J. of Hydrol.*, October 2008).

WATCH Meetings

- Project meeting to finalize research plan for the Glomma basin, Oslo, Norway, 4-8 February 2008.
- Project meeting to finalize research plan for the Upper-Elbe and Nitra basins, Prague, Czech Republic, 20-21 February 2008.
- Field visit Metuje and Sázava sub-basins, Czech Republic, 20-21 February 2008.
- Project meeting to finalize research plan for the Upper-Guadiana basin, Ciudad Real, Spain, 10-11 March 2008.
- Field visit Upper-Guadiana basin, Spain, 12-14 March 2008.
- Field visit and project meeting, study basin Glomma, Røros, September 15-18 2008.
- WATCH General Assembly, Bratislava, Slovakia, 3-7 November 2008.
- Project administrative meeting WB4, Oslo, Norway, 11-14 January 2009.

Courses; organizing and lecturing

- WATCH International Summer School on Climate Change and the Water Cycle, Trieste, Italy, 1-8 June 2008.
- WATCH International Summer School on Hydrological Drought and Global Change, Trieste, Italy, 22-27 June 2008.

Courses; lecturing

- Intensive International Training Program on Disaster Prevention and Reduction with emphasis on floods and droughts, Prague, Czech Republic, 18-27 June 2008
- International Summer School on Coping with Climate Change in Integrated Water Management, Rolduc, the Netherlands, 30 June-9 July 2008.

Planned activities:

Overview table (next 18 months) WATCH meetings or meetings where WATCH will be referred to.

Planned/ actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
9-11 March 2009	COST733 WGs 3 & 4 Workshop, Brussels, Belgium	COST733 members	International	~30	UiO, NERC- CEH
16-17 March 2009	WB4 – WB6 Workshop on WATCH test basins, Wageningen, the Netherlands	WATCH community	International	~15	WUR, NVE, TGM-WRI, CSIC, UC
23-26 March 2009	IPCC scoping meeting on Extreme events and disasters: managing the risks, Oslo, Norway.	IPCC, scientific community	International	~50	WUR
26-27 March 2009	WB4 planning meeting, Oslo, Norway	WATCH community	International	~5	UiO, WUR
29 March - 3 April 2009	Field visit Nitra Basin, Slovakia and Upper-Elbe, Czech Republic	Scientific community	International	~10	UC, WUR, TGM-WRI
20-24 April 2009	Conference: EGU, Vienna, Austria	Scientific community /higher education	International	~50	NERC-CEH, UiO, WUR
May 2009	WATCH-Highnoon workshop, New Delhi, India	Scientific community	International	~30	WATCH partners
27-29 May 2009	WATCH intercomparison workshop	Scientific community	International	~25	WATCH partners
15-17 June 2009	XEROCHORE workshop on Drought and natural system, Noordwijkerhout, Netherlands	Scientific community	International	~60	WUR, UiO, NVE, UC, NERC-CEH
22-26 June 2009	Conference on Water policy (incl. drought and floods), Prague, Czech Republic	Scientific community /higher education	International	~100	WUR
August 2009	10 th Czech-Slovak hydrogeological conference, Ostrava, Czech Republic	Scientific community /higher education	International	~100	UC
Sept. 2009	IAHS&IAH congress, Hyderabad, India	Scientific community	International	~300	UC
30 Sept. -2 Oct 2009	WATCH, WB4 Scientific meeting, Oslo, Norway	Scientific community	International	~20	WB4 partners
5-7 Oct 2009	XEROCHORE workshop on Drought and impacts, Venice, Italy	Scientific community	International	~60	WUR, UiO, NERC-CEH
Sept. 2009	Workshop on Uncertainty and end users.	WATCH partners and end- users	International	30	ICTP, NERC-CEH all WATCH partners
2-6	WATCH General Assembly,	Scientific	International	~75	WATCH

Planned/ actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
Nov. 2009	Potsdam, Germany	community			partners