CURRICULUM VITAE – Ånund Killingtveit

Name:	Ånund Killingtveit
Born:	18.10.1946 in Vinje, Norway
Nationality:	Norwegian
Present pos:	Professor, Department of Hydraulic and Environmental Engineering, Faculty of Engineering Science and Technology, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Degrees:

1969	Master of Science (Siv.ing.) in Civil Engineering, Norwegian Institute of Technology (NTH), The University of Trondheim
1976	Doctor of Engineering (Dr.ing) in Civil and Environmental Engineering, Norwegian Institute of Technology (NTH), The University of Trondheim

Work experience:

1970-76	Research assistant Division of Hydraulic Engineering, NTH
1977-81	Senior engineer, Trondheim Municipal Power Company (TEV)
1981-85	Senior Research Engineer, Norwegian Hydrodynamic Laboratory, SINTEF
1985-today	Professor in Hydrology, NTH (name changed to NTNU in 1995)
1985-89	Research Manager, Hydrology research group, SINTEF
1995-96	Visiting Professor, Centre for Environment and Development, NTNU
1996-98	Head of Department, Department of Hydraulic and Environmental
and 2001-02	Engineering, Faculty of Civil and Environmental Engineering, NTNU
1997-today	Visiting Professor, University of Dar es Salaam, Tanzania
1998-2001	Professor II, Arctic Hydrology, University Courses on Svalbard (UNIS)
2000-2001	Professor in Charge, MSc Programme in Hydropower Development, NTNU
2000-today	Managing Director, Hydroinformatikk AS, Trondheim, Norway
2002-2003	Sabbatical leave - Norwegian Water Resources and Energy Directorate (NVE)

Membership in academic and professional committees:

Member of the board Norwegian Hydrologic Committee, 1985 - 1993
Member of technical advisor group for flood computation for The Norwegian Committee for developing of technical guidelines for dams, 1979 - 1981 and in 1994-
Member of several working groups and steering committees appointed by and working for NFR
Member of the steering committee (board) for the HYDRA research project
Member of the board and Vice-Chairman in Nordic Association for Hydrology (until 2002)
Member of the NUFU-board 1999-2002 .(NUFU: Norwegian Council for Higher Education's programme for Development Research and Education)
Member of NTNU's working group "Program for Development Cooperation" (PRODEC) since 2005

MSc Thesis supervised:
Norway, approximately 40 Diploma/MSc Thesis at NTNU since 1986
UNIS, Svalbard, 2 MSc thesis since 1999
HPD International MSc-course at NTNU, 18 MSc Thesis since 1995

Doctoral students (Dr.ing/PhD) supervised:
Sand, K. (1990): *Modelling snowmelt runoff processes in temperate and Arctic environments*
Winther, J-G. (1993): *Snow and glacier ice characteristics measured using Landsat TM data*
Stokseth, S. (1994): *Hydrofysiske forhold og begroing i naturlige elver*
Rinde, T. (1998): *A flexible hydrological modelling system developed using an object-oriented methodology*
Alfredsen, K.T. (1999): *An object-oriented framework for application development and integration in hydroinformatics*
Bruland, O. (2002): *Dynamics of seasonal snowcover in the Arctic*
Røhr, P. (2003): *A hydrological study concerning the southern slopes of Mt Kilimanjaro, Tanzania*
Marchand, W. (2003): *Application and improvement of a georadar system to assess areal snow distribution for advances in hydrological modelling*
Borsanyi, P. (2005): *A classification method for scaling river biotopes for assessing hydropower regulation impacts" (2005)*

Co-supervisor/External supervisor for:
Matheussen, B.V. (NTNU, 2004): *Effect of anthropogenic activity on snow distribution and melt in urban environment*
Mangeni, B.T. (Makarere University, Uganda, graduation 2006): *Improvement of Lake Victoria water balance modelling and output using remotely sensed data*
Ndomba, P.D. (University of Dar es Salaam, graduating 2007): *Catchment erosion and reservoir sedimentation studies in Pangani river, Tanzania*
Malisa, J. (University of Dar es Salaam, graduating 2007): *Dam safety risk analysis and management-Tanzania case study*

Selected academic and professional publications 1999-2005

Killingtveit, Å., Sannes, T.O., Alfredsen, K., Vaskinn, K.. and Hvidsten, N. 1999: Hydroelectric use and fluvial planning in Norway: The Orkla River. In: Urena, J.M.: River Design and Environmental Protection in Europe. Universidad de Cantabria, ISBN 84-8102-202-0, 1999 (667-749)

Harby, A., Alfredsen, K., Erlandsen, A.H., Halleraker, J.H., Heggenes, J., Killingtveit, Å.,Lingaas, O.,Saltveit, S.J. and Vaskinn, K.A. 1999. Methods and applications of fish habitat modelling in Norway. Presented at 3rd International Symposium on Ecohydraulics, Salt Lake City, USA

Bruland, O., Sand., K., Killingtveit, Å., 2000: HBV-model applied to calculate freshwater discharge to Kongsfjorden. Kongsfjord Ecosystem Workshop 2000. Longyearbyen, Svalbard October 31-November 5, 2000

Killingtveit, Å., Alfredsen, K. and Rinde, T. 2000: Modelling the anthropogenic influence on flood regimes in Norway – Results from analysis of three major flood events in the Glomma river. Nordic Hydrological Conference, 26-30 June, 2000, Uppsala, Sweden

Aanes, K.J., Daae. T.C. and Killingtveit, Å. 2000: River restoration in Børselva, Northern Norway. Adapting a regulated river to a new regime. Conference River Restauration 2000, May 15th till May 19th, Delft, The Netherlands, 15-16 May 2000

Killingtveit, Å. and Borsanyi, P. 2000: River basin management in Norway – a brief

summary. ERWG-EWRA-TECHWARE 3rd Inter-Regional Conference on Environment-Water, International Conference on Resources Management in the 21st century with particular reference to Europe. 1-3 June 2000, Budapest, Hungary

Marchand, W., Bruland, O., Killingtveit, Å., 2001: Improved Measurements and Analysis of Spatial Snow Cover by Combining a Ground Based Radar System with a Differential Global Positioning System Receiver. Nordic Hydrology, 32(3)

Bruland, O., Sand, K. and Killingtveit, Å. 2001: Snow distribution at a High Arctic site at Svalbard. Nordic Hydrology 32(1) 2001, 1-12

Bruland, O., Marechal, D., Sand, K., Killingtveit, Å. 2001: Energy and water balance studies of a snow cover during snowmelt period at a high Arctic site. Theoretical and Applied Climatology, 70, pp. 53-63 (2001)

Røhr, P.C. and Killingtveit, Å., 2001: Hydrologic Modelling in the Upper Pangani River Basin – Some Examples From the Past and Description of a New Approach. Chapter 7 in: Ngana, J.O., 2001: Water Resources Management in the Pangani River Basin, Challenges and Opportunities. Dar es Salaam University Press, ISBN 9976-60-356-8

Borsanyi, P., Killingtveit, Å., Alfredsen, K., 2001: A Decision Support System for Hydropower Peaking Operation. The 4th International Conference on Hydropower Development, Hydropower '01, Bergen, Norway 20-22 June, 2001

Amenu, G.G. and Killingtveit, Å., 2001: Real-time Inflow Forecasting for Gilgel Gibe Reservoir, Ethiopia. The 4th International Conference on Hydropower Development, Hydropower '01, Bergen, Norway 20-22 June, 2001.

Bruland, O. and Killingtveit, Å., 2002: An energy balance based HBV-model with application to an Arctic watershed on Svalbard, Spitsbergen. Nordic Hydrology, Vol 33(2)

Nie, L., Schilling, W., Killingtveit, Å., Sægrov, S., Selset, I., 2002: GIS Based Urban Drainage Analyses and Their Preliminary Applications in Urban Stormwater Management. The Ninth International Conference on Urban Drainage. Portland, Oregon, USA. 8-13 September 2002

Sæther, O.M., Storrø, G., Hilmo, B.O., Iden, K., Eriksen, D.Ø., Killingtveit, Å., 2002: Isotope levels in river waters of central Norway in 2000/2001. Nordic Hydrological Conference, 4-7 August 2002, Røros, Norway

Røhr, P.C. and Killingtveit, Å., 2002a: Study of Two Catchments in the Hillside of Mt Kilimanjaro. In: Ngana, J.O., 2002: Water Resources Management - The Case of the Pangani River Basin, Issues and Approaches. Dar es Salaam University Press, ISBN 9976-60-373-8

Røhr, P.C. and Killingtveit, Å., 2002b: Rainfall-Runoff Modelling of Two Catchments in the Hillside of Mt Kilimanjaro. In: Ngana, J.O., 2002: Water Resources Management - The Case of the Pangani River Basin, Issues and Approaches. Dar es Salaam University Press, ISBN 9976-60-373-8

Røhr, P.C. and Killingtveit, Å. 2003: Rainfall distribution on the slopes of Mt Kilimanjaro Hydrological Sciences Journal, Vol 48 (1) pp. 65-78

Marchand, W., Killingtveit, Å., Wilén, P., Wikström, P., 2003: Comparison of Ground-Based and Airborne Snow Depth Measurements with Georadar Systems, Case Study. Nordic Hydrology, 34(5), pp. 427-448

Killingtveit, Å., Petterson, L.E., Sand, K., 2003: Water Balance Investigations in Svalbard. Polar Research 22(2) 2003, pp. 161-174 (Special Volume for Hydrology of Svalbard)

Mtalo, F. and Killingtveit, Å., 2003: Integrated water Management in the Pangani River – Use of Hydrological Models for Analysis of the Hydropower System and its Interaction with other Users. Hydro Africa 2003. International Conference on Hydropower. Arusha, Tanzania 17-19 November 2003.

Hamududu, B. and Killingtveit, Å., 2003: Runoff forecasting (HBV and Muskingum) for

Hydropower Generation. Kafue (flood plain) River, Itezhi-tezhi dam – Kafue Gorge dam, Zambia. Hydro Africa 2003. International Conference on Hydropower. Arusha, Tanzania 17-19 November 2003.

Røhr, P.C. and Killingtveit, Å., 2003: Competition between agriculture and hydropower – Impacts of Meteorological, Land and Water Use Changes on the Southern Hillside of Mt Kilimanjaro. Hydro Africa 2003. International Conference on Hydropower. Arusha, Tanzania 17-19 November 2003.

Killingtveit, Å., 2003: Norwegian perspective on hydropower – The book series Hydropower Development. Hydro Africa 2003. International Conference on Hydropower. Arusha, Tanzania 17-19 November 2003.

Killingtveit, Å., Engen, I. K., 2003: Nedbør, temperatur og tilsig i 2002/03 - en beskrivelse av klima og tilsigsforhold i Norge og Sverige. Oppdragsrapport A, Rapport Nr. 8. Norges vassdrags- og energidirektorat, Oslo Sidetall: 52 s. : ill.

Killingtveit, Å., Hisdal, H., Roald, L., Skaugen, T., Væringstad, T., Holmqvist, E., 2003: Tørrårsberegninger : Analyse av forløp, hyppighet og utbredelse av tørke i Norge og Sverige. Oppdragsrapport A, Rapport Nr. 10, Norges vassdrags- og energidirektorat, Oslo 2003. Sidetall: 60 s. : ill.

Bruland, O., Liston, G.E., Vonk, J., Sand, K. and Killingtveit, Å., 2004: Modelling the snow distribution at two high arctic sites at Svalbard, Norway, and at an alpine site in central Norway. Nordic Hydrology, Vol 35(3) pp 191-206

Killingtveit, Å., 2004: Water Balance studies in two catchments on Spitsbergen, Svalbard In: Kane, D.L. & Yang, D., Northern Research Basins Water Balance, IAHS Publication 290, ISBN 1-901502-82-1

Killingtveit, Å., 2004: Norwegian Perspective on Hydropower – The book series Hydropower Development. 13th International Seminar on Hydropower Plants, TU Wien, 24-26 November 2004. Proceedings published by Institute for Waterpower and Pumps, Karlsplatz 13/305, A-1040 Wien, Austria

Borsanyi, P., Alfredsen, K, Killingtveit, Å., 2004. A decision support system for balancing between environmental effects and hydro-economy under varying flow conditions Fifth International Symposium on Ecohydraulics; Madrid, Spain, 12.09.2004 - 17.09.2004.

Marchand, W. and Killingtveit, Å. 2004: Statistical Properties of Spatial Snowcover in Mountainous Catchments in Norway. Nordic Hydrology, Vol 35(2) pp101-117

Killingtveit, Ånund, 2004. From weather to water and energy: Hydrology - Inflow prognoses. In: Meteorology and Hydrology for players in the Northern European Power Markets; Radisson SAS Hotel, Oslo, 20.10.2004 - 21.10.2004

Killingtveit, Ånund, 2004. Groundwater and springs at the foot of Mt Kilimanjaro - Investigations of recharge mechanisms and water balance. Det 13. seminar om hydrogeologi og miljøgeokjemi NGU 4.-5. februar 2004 2004. Publisert i: NGU Rapport 2004:011 Program for "Det 13. seminar om hydrogeologi og miljøgeokjemi", NGU 4.-5. februar 2004

Killingtveit, Ånund, 2005. European Hydropower Capacity - A study of the Correlation Between the Scandinavian and the Alps Hydropower Systems. Hydropower'05; 23.05.2005 - 25.05.2005. Published in: Hydropower'05; 2005

Killingtveit, Ånund, 2005. Hydrology in the Nordic region - Inflow prognoses and HBV-calculations. Scenarios for autumn 2005. Power Market Drivers 2005-2006; 12.10.2005 - 13.10.2005

Ndomba, Praxedis Marco; Mtalo, Felix; Killingtveit, Ånund, 2005. The Suitability of SWAT Model in Sediment Yield Modelling for Ungauged Catchments. A case of Simiyu River Subcatchment, Tanzania. 3rd International SWAT Workshops & Conference; 11.07.2005 - 15.07.2005

Young, Kathy L.; Yang, Daquing; Killingtveit, Ånund; Bolton, Robert L.; Gieck, Robert E.; Shutov, Vladimir A., 2005: A Review: Precipitation, Snowcover in Nortern Circumpolar Basins as Related to Water Balance Studies [Vitenskapelig foredrag]. 15th International Nortern Research Basins Symposium and Workshop; 29.08.2005 - 02.09.2005. Publisert i: Proceedings of the 15th Nortern Research Basins International Symposium and Workshop

Killingtveit, Ånund. About Water, Trees Environment and Development in Africa. Global myths - local realities? (Re)exploring the links between Environment and Development in Africa.; AEGIS Conference in Trondheim 14.04.2005 - 15.04.2005

Kane, Douglas; Yang, Daquing; Prowse, Terry; Shiklomanov, Igor; Marsh, Philip; Ohata, Tetsuo; Killingtveit, Ånund, 2005. Synthesis of High Latitude Hydrologic Water Balances. 15th International Northern Research Basins Symposium and Workshop; 29.08.2005 - 02.09.2005. Publisert i: Proceedings of the 15th NORTHERN RESEARCH BASINS INTERNATIONAL SYMPOSIUM AND WORKSHOP

Hinzman, Larry; Bøggild, Carl; Janowicz, Richard; Kane, Douglas; Killingtveit, Ånund; Kodama, Yuji; Marsh, Philip; Prowse, Terry; Thorne, Garry; Woo, Ming.Ko; Young, Kathy L., 2005: An Assessment of the Storage Term in the Water Balance of Northern Research Watersheds. 15th International Nortern Research Basins Symposium and Workshop; 29.08.2005 - 02.09.2005. Publisert i: Proceedings of the 15th NORTERN RESEARCH BASINS INTERNATIONAL SYMPOSIUM AND WORKSHOP

Prowse, Terry; Bøggild, Carl; Glazovsky, Andrey F.; Hagen, Jon Ove; Hinzman, Larry D; Killingtveit, Ånund; Lettenmaier, Dennis P.; Nelson, Frederick E.; Young, Kathy L.; Rouse, Wayne R.; Shiklomanov, Igor; Kotlyakov, Vladimir M., 2005: ICARP II: WORKING GROUP 7 TERRESTRIAL CRYOSPHERIC & HYDROLOGIC PROCESSES AND SYSTEMS. International Conference on Arctic Research Planning (ICARP II); 10.11.2005 - 12.11.2005

Marchand, Wolf; Killingtveit, Ånund., 2005: Statistical probability distribution of snow depth at the model sub-grid cell spatial scale. Hydrological Processes;19(19):355-369

Field of interest and present research activities:

My field of interest and research activities can be divided into three main groups, though these groups have a significant overlap: 1) Mathematical models in Hydrology. 2) Cold Climate Hydrology and 3) Integrated Water Resources planning in Developing Countries

Since 2000 I have also been Editor for the Book series Hydropower Development, a comprehensive documentation of hydropower technology in 19 Volumes. Of these, 8 volumes have been finished during my time as editor, including an update I 2004/2005 of a previously published volume.

Within the topic “Mathematical models in Hydrology” my main work has been within Precipitation-Runoff modelling and Reservoir and Hydropower systems modelling. During the last 10-15 years I have been managing several large software/modelling projects for example 1)New generation Precipitation-Runoff model in Norway (1997-1999) 2)The River System Simulator project (1992-1996) 3) The system model in the HYDRA flood project (1996-2000) 4) Lake Malawi Level Control model for Lake Malawi and Shire river (2000-2004) 5) A flood forecasting model for Skiensvassdraget in Norway (2005-2006). I have developed precipitation-runoff models that are now used operationally by some of the largest power companies in Norway, for example Elkem, Lyse Kraft, Østfold Energi. The models have also been installed and used in Sweden and Iceland. During the 1990’s the new concepts

of Object-Oriented programming was introduced and two Dr.students developed modular software systems for modelling in hydrology and water resources. These modelling tools have later been used in a number of research projects (for example the HYDRA project) and for commercial projects, for example in the Lake Malawi Level Control project where I have the responsibility for modelling and analysis as a member of a team from Norconsult. Hydrological models can also be used to identify effects of human impacts, climate change and land use changes. The hydropower simulation model nMAG which I have developed in 1985 and improved up till today is used by many consulting companies and hydropower companies both in Norway and abroad. The runoff forecasting program system based on the HBV-model is also in daily use in some of the largest hydropower companies in Norway, and is also used for daily analysis of energy inflow in the 7 most important countries in the Nordic and European hydropower system, as mentioned below.

As a spin-off, the models have proved useful as tool for power analysis in the Nordic and European power markets. In 2000 I therefore founded a company (Hydroinformatikk AS) where hydrological models are used for analyzing and forecasting energy inflow and storage in the Nordic (Norway, Sweden) and Alpine hydropower systems (Germany, Austria, Switzerland, France, Italy, Spain). Results are used daily by analysts in Norway, Sweden and Germany and by several of the largest power companies in Europe (Statkraft, Vattenfall, EoN, EDF and more)

Within cold climate hydrology my main interest has been and continues to be snow hydrology. I have also since 1990 worked actively within polar hydrology especially at Svalbard. This work led to the start-up of a course in Arctic Hydrology at the University Courses on Svalbard (UNIS) where I was appointed as Professor II for 3 years during the start-up of this activity. I also have supervised four dr.ing students within snow hydrology and arctic hydrology. My main field of work will continue to be study of improved methods for snow measurements and statistical properties of snow-cover, and water balance methods including hydrological models for short-term water balance. In 2005 I was appointed as a member in the international group of hydrologists working out a plan for hydrological research in Arctic regions for the next decade (ICARP II). This report will be used for planning research also in the International Polar Year coming up next year.

My interest for work in developing countries started in 1985, and since then I have been active in supervising students, university cooperation projects or as member of consulting teams, in countries like Tanzania, Zambia, Malawi, Lesotho, Uganda and Ethiopia in Africa, and India, Nepal, Pakistan, Sri Lanka and Uzbekistan in Asia. Since 1996 I have been leading a 5+5 year cooperation project in Water Management at the University of Dar es Salaam. This project is funded by NUFU (Norwegian Council for Higher Education's programme for Development Research and Education). One Norwegian Dr-ing has completed, and two Tanzanians are working on their PhD in the project, focussing on topics like dam safety, reservoir sedimentation and hydrological modelling. Research in Pangani river and Nile basin will focus on conflicts in water use between traditional and industrial irrigation, hydropower and other users. Also changes in land use and changes due to climate change will be studied. From 2002 I also have accepted to be co-supervisor for one PhD student at the Makarere University in Uganda, who is working on the water balance on Lake Victoria.