

## Objectives

- Foster the science-policy dialogue to improve sustainable water management
- Enable participants to select adequate methods to assess Andean catchments for long and short-term discharge predictions
- Understand key aspects about monitoring and modelling in mountainous catchments

## Training methods

- Input lectures
- Exercises and group work
- One day field trip

## Key topics

1. Characteristics of Andean glaciated and non glaciated high elevation catchments, climate variability and climate change projections, role of groundwater
2. Spatial and temporal hydro-meteorological monitoring (satellite based in situ)
3. Open source drought and hydro-meteorological information platforms and data management
4. Long term and seasonal water availability predictions
5. Introduction to site specific modelling

## Learning Outcomes

- Understand the relevance of the mountainous cryosphere for water availability
- Be aware of how key climate and hydrological parameters are monitored and how data and information need to be managed
- To be able to select the appropriate model or assessment tool for hydrological forecasting in dependence of the catchment environment, data availability and questions raised
- Know how to use available open source climate and drought information

**The official language of the symposium and the training course is Spanish**

## Venue

Centro de Estudios Avanzados y Extensión, PUCV  
Antonia Bellet 314 | Providencia | Santiago de Chile

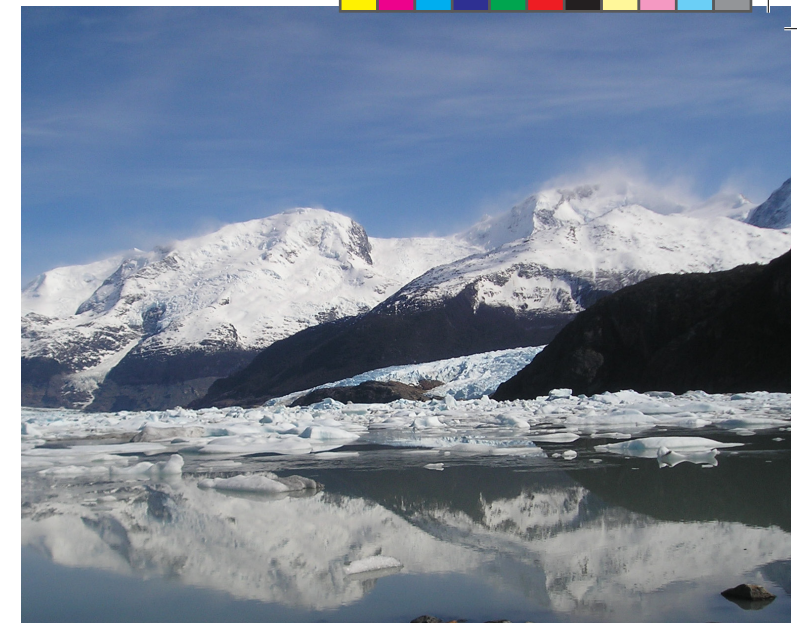
## Contact

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ITT | alexandra.nauditt@th-koeln.de

## Organizing Institutions and lecturers

- Unesco International Hydrological Programme (IHP), Santiago de Chile,  
*Koen Verbist*
- Institute for Technology and Resources Management in the Tropics and Subtropics (ITT), TH Köln - University of Applied Sciences, Cologne, Germany,  
*Alexandra Nauditt*
- Department of Civil Engineering, University of Chile,  
*James McPhee*
- Department of Civil Engineering, University de La Frontera,  
*M. Zambrano-Bigiarini*
- Center for Advanced Research in Arid Zones, La Serena, Chile,  
*Eric Sproles*
- Escuela de Geografía, San José, Costa Rica,  
*Christian Birkel*
- Faculty of Agriculture, Pontifical Catholic University of Valparaiso, Chile,  
*Eduardo Salgado*
- Water Center for Arid and Semi-Arid Zones in Latin America and the Caribbean (CAZALAC), La Serena, Chile

The symposium and training is funded by:



# SYMPOSIUM AND PROFESSIONAL TRAINING

**Understanding the role of central Andean climate and hydrology for water management: tools and concepts**

**17<sup>th</sup> – 20<sup>th</sup> November 2015**  
**Santiago, Chile**

## Background

The ongoing drought disaster in some parts of the Central Andean region urges the need for seasonal and long term water availability predictions. Reliable discharge simulations are especially important for irrigation management in the intensively cultivated regions of central Chile and central western Argentina, but also for the water supply of Megacities as Santiago and Lima, as well as for industrial purposes. Water related decision makers and water users want to be enabled to select adequate tools for the provision of such predictions and to evaluate existent prognostics. Hence the symposium and training aims at increasing the knowledge about hydro-meteorological studies contributing to such predictions in the vulnerable Andean region.

Different monitoring, assessment and prediction tools are introduced to while highlighting the pros and cons of each method. Training units on the application of several of the tools is offered accompanied by a field trip to the Mapocho basin.

The symposium and training will intensify the science-policy dialogue regarding future availability of water resources in the Central Andean region.

## Target Group

- Water related decision makers and water users dealing with water availability predictions
- Scientists working in the field of water resources in the Central Andean region



## Training Workshop

Tuesday	Wednesday	Thursday	Friday
<p>Opening Session (PUCV, UNESCO, ITT):</p> <ul style="list-style-type: none"> <li>• Role of the mountainous cryosphere for water availability, challenges and opportunities for mountain catchments</li> <li>• Monitoring, modeling, data analysis and management</li> </ul>	<p><b>Field Trip:</b></p> <p>Addressing issues of data monitoring and analysis, hydrological modeling, streamflow forecasting, monitoring, catchment assessment:</p> <ul style="list-style-type: none"> <li>• Mapocho basin</li> <li>• Visit Valle Nevado Snow monitoring and climate station</li> <li>• DGA stream gages</li> </ul>	<p>General introduction to hydrological modeling approaches: Spatial distribution, parameters</p> <p>Introduction to key features of:</p> <ul style="list-style-type: none"> <li>• J 2000</li> <li>• HBV light</li> <li>• WEAP</li> <li>• CRHM</li> <li>• SWAT</li> </ul> <p>Discussion: suitability of models for different cryospheric environments</p>	<p>Introduction to tracer applications in hydrology</p> <p>Application in the Maipo and Aconcagua (including glacier sources)</p> <p>Applications in Limarí and Elqui</p>
<p>Introduction to relevant open source information related to climate and water in the Central Andes</p> <ul style="list-style-type: none"> <li>• Hydrometeorological data using CEAZAMET</li> <li>• Chilean Climate Data Library/ Agroclimatic Observatory</li> <li>• Remote sensing</li> <li>• Open source spatial data</li> </ul>		<p>Parallel guided working groups:</p> <ul style="list-style-type: none"> <li>• Hydrological forecasting</li> <li>• Rainfall and snow-cover estimates from satellite images</li> <li>• Tracer analysis</li> </ul>	
Lunch		Lunch	
<p>Andean work progress in catchments: Argentina, Peru, Chile</p> <p>Working group introduction and software installation</p>		<p>Parallel guided working groups:</p> <ul style="list-style-type: none"> <li>• Data management and analysis, available information platforms: IRI, Agrocl. Obs. RBIS</li> <li>• Hydrological modeling: applications of real data to CRHM and HBV light</li> </ul>	<p>Working group discussion of the results, recommendations, need for additional material/training</p>
<p>Field trip preparation:</p> <p>The Maipo basin: hydro-meteorological monitoring</p>			<p>Presentation of group discussion outcomes</p> <p>Conclusions and evaluations</p>

