



# **Conference and Workshop**

## **Climate Impacts on Glaciers and Biosphere in Fuego-Patagonia**

**July 14<sup>th</sup> to July 19<sup>th</sup> 2017, Berlin**



Humboldt-Universität zu Berlin  
Geographisches Institut  
Klimageographie



The GABY-VASA project, a joint project of University of Magallanes (Punta Arenas), the Instituto Antártico Chileno (INACH, Chile), and in Germany the Humboldt-Universität zu Berlin, the Universität Erlangen-Nürnberg and RWTH Aachen University on dendrochronology, climatology and glaciology in Southern Patagonia and the Cordillera Darwin provides the floor for the international Conference and Workshop

### **‘Climate Impacts on Glaciers and Biosphere in Fuego-Patagonia’**

July 14th to July 19th 2017, at Humboldt-Universität zu Berlin. GABY-VASA stands for

**„responses of GIACiers, Biosphere and hYdrology to climate  
VAriability and climate change across the Southern Andes“**

GABY-VASA is a Chilean-German cooperation project jointly funded by the Comisión Nacional de Investigación Científica y Tecnológica (Conicyt) in Chile and the Bundesministerium für Bildung und Forschung (BMBF), the Federal Ministry of Education and Research, Germany.

On Monday, 17th and Tuesday, 18th July, 2017, an open science meeting is held with sessions on dendro-ecology, climate variability and climate history, climate change, biological responses to climate forcing, glaciology, glacier change, glacio-isotasy and related topics in earth sciences.

The regional focus of this conference is Patagonia, Tierra del Fuego and adjacent islands, the sub-Antarctic islands and the Antarctic Peninsula.

On Wednesday, July 19th, 2017, GABY-VASA is hosting an internal workshop of the GABY-VASA project group with participants from Chile and Germany and additional participants from outside.

The official program starts with a reception on Friday, July 14th in the evening with a get-together. It continues with an organized visiting program in Berlin and Potsdam on the weekend July 15th/16th, 2017 (see following pages).

#### **Scientific Committee**

Matthias Braun, Univ. Erlangen-Nürnberg  
Gino Casassa, Univ. Magallanes, Punta Arenas  
Ricardo Jaña, INACH, Punta Arenas  
Juan Carlos Aravena, Univ. Magallanes, Punta Arenas  
Christoph Schneider, Humboldt-Universität zu Berlin

#### **Local Organising Committee**

Christoph Schneider, Humboldt-Universität zu Berlin  
David Steger, Humboldt-Universität zu Berlin  
Mahdi Motagh, Geoforschungszentrum Potsdam

Photo on front page: Christoph Schneider, 2015

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- **Federal Ministry of Education and Research, Germany (BMBF)**



Bundesministerium  
für Bildung  
und Forschung

- **Comisión Nacional de Investigación Científica y Tecnológica (Conicyt)**



- **International Glaciological Society (IGS)**



- **The Research Network for Geosciences in Berlin and Potsdam (Geo.X)**



## Conference 'Climate Impacts on Glaciers and Biosphere in Fuego-Patagonia'

### Information on the by-programme Friday, July 14th – Sunday, July 16th, 2017

**On Friday 14th July**, from 6 pm (18:00 to approximately 21:00), we welcome participants to Berlin and the Patagonia Conference with a casual open-air get-together. The venue is located at the inner yard behind “Haus 1” of Humboldt-Universität, Luisenstraße 56, 10117 Berlin, and the building of the famous “Tieranatomisches Theater”. You can enter the area from both sides but most easily through the neo-classical building at Luisenstraße 56.

**On Saturday, 15th July**, 9:30 am, we meet at Checkpoint Charlie, located in downtown Berlin on the corner of Friedrichstraße and Zimmerstraße (station Kochstraße on metro-line U6 or station Stadtmitte on metro-line U6 or U2 are close by) from where we will go for a longer walk to see some of Berlin's monumental sights. At 1 pm (13:00), we will take a boat trip through Berlin's city centre on the river Spree up to the famous East-Side-Gallery, a remnant of the Berlin Wall. Afterwards (in the afternoon) we will walk through the vibrant district Kreuzberg to finally arrive at a popular rooftop location ('Klunkerkranich') to end the day.

**On Sunday, 16th July**, we will meet in front of the train station 'Berlin Zoologischer Garten' at 9:00. At 09:17 we take the train RE 4 towards 'Magdeburg Hbf' from track 4. We'll get off at Potsdam Hbf (main station) at 09:36. You can as well board this train elsewhere in Berlin:

Berlin Ostbahnhof 08:59, track 6; Regional-Express towards 'Magdeburg Hbf'	
Berlin Alexanderplatz 09:03, track 2	Berlin Friedrichstraße 09:07, track 3
Berlin Hbf (main station) 09:11, track 14	Berlin Zoologischer Garten 09:17, track 4
Berlin-Charlottenburg 09:21, track 3	Berlin Wannsee 09:30, track 5
Potsdam Hbf (main station), 09:36, track 3	

(For those already in the train, or boarding it after 'Zoologischer Garten': we meet in the last coach.)

From Potsdam main station, we continue on Tram line 96 at 09:41. We'll get off the tram at station 'Puschkinallee' in Potsdam at 09:51.

We will have a pleasant walk up to the Belvedere on Pfingstberg (800 m distance) with hopefully pleasant weather and marvellous views over some of the glacier-shaped landscapes of the Berlin-Brandenburg area. After a nice walk back through a park area we head on to Potsdam City Centre by tram where you might grab a sandwich for lunch.

After midday we get back to Potsdam Main station by Tram. From there it is a walk of about 30 minutes up to the famous Telegrafenberg with its impressive large refractometer, an astronomical device from the late 19th century and the “Einstein Tower”. We'll be getting a tour offered on Telegrafenberg that lasts about 1.5 hours. After returning to Potsdam Main Station by foot we take any regional train or S-Bahn to bring us back to Berlin Centre.

### **Additional Information on the by-programme Friday, July 14th – Sunday, July 16th, 2017**

Please have your train and tram tickets purchased and stamped by yourselves before boarding public transport. For Sunday the most convenient will be a day ticket for zones ABC for 7.70 EUR of VBB. (VBB: public transport in the Berlin & Brandenburg area; AB covers most of Berlin, the additional zone C covers all of Potsdam as well.) You can get that combination ticket from any ticket machine in Berlin or Potsdam or from the BVG/VBB shops in the major stations.

(We will not visit the very touristic, world-famous Park and Castle Sanssouci in Potsdam but rather like to show you sights off the beaten track. However, you are always free going wherever you like by yourselves.)

We are very much looking forward to welcoming you to Berlin for this by-programme and of course the following conference and workshop. Please don't hesitate to contact the conference convenors in case of any questions or inquiries.

**Conference Programme, Monday July, 17th – Tuesday, July 18th, 2017**  
**Monday, July, 17th, 2017 - starting Berlin Mitte - Unter den Linden 6**

08:30	Registration (Senate Hall)
09:00	Opening speeches
09:00	Welcome by the Scientific Convenor (Christoph Schneider)
09:05	Welcome address: Vice President for Academic Affairs, Humboldt-Universität zu Berlin (Eva Inés Obergefell)
09:15	Welcome address: Chargé d'Affaires, Embassy of Chile (Víctor Abujatum)
09:25	Welcome by the GABY-VASA project Principal Investigators (Gino Casassa)
09:30	Schneider, C. et al.: Climate Impacts on Glaciers and Biosphere in Fuego-Patagonia
09:40	Izagirre, E. at al.: Incognita Patagonia (documentary film presentation)
10:10	Short Coffee Break
10:30	<i>Session 1: Glacial Geology; Chairperson: Matthias Braun</i>
10:30	Davies, B. et al.: Dynamics and fluctuations of the Patagonian Icefields from the LGM to present: A review of glacier extent and chronologies
10:50	Bravo, C. et al.: Air temperature differences and melt estimated from a weather station network in the South Patagonian Icefield
11:10	<i>Session 2: Glacier Remote Sensing I; Chairperson: Matthias Braun</i>
11:10	Wilson, R. et al.: Evolution of glacial lakes in the central and Patagonian Andes between 1985 and 2016: Implications for GLOF risk assessment
11:30	Malz, P. et al.: Geodetic Mass Balance From TanDEM-X In The Southern Andes, Patagonia
11:50	Floricioiu, D. et al.: Geodetic mass balance of the Patagonia Icefields derived from SRTM and TanDEM-X data
12:10	Blindow et al.: Ice thickness and bed topography from airborne GPR measurements on Glaciers Tyndall and Grey
12:30	Lunch Break & Transfer to Berlin-Adlershof
14:30	<i>Session 3: Lake sediments; Chairperson: Jussi Grießinger</i>
14:30	Mayr, C. et al.: Oxygen isotopes from Patagonian lakes as palaeoclimate proxies
14:50	Roberts, S. et al.: Developing quantitative Southern Hemisphere temperature reconstructions from Antarctic & sub-Antarctic lakes
15:10	Jouve, G. et al.: Lake level reconstruction since the AIM4 inferred from micro-scale sedimentological, geochemical and biological analyses of Potrok Aike lake sediments
15:30	Kilian, R. et al.: Holocene glacier fluctuations in the sw Patagonian Andes and their forcing
15:50	Coffee Break
16:20	<i>Session 4: Biological Indicators &amp; paleo climate; Chairperson: Christoph Mayr</i>
16:20	Grießinger, J. et al.: Disentangling moisture origins in $\delta^{18}\text{O}$ tree-ring time series from Lago Argentino
16:40	Meier, W. et al.: A history of the oscillations of Schiaparelli glacier since the Little Ice Age derived from tree-ring based moraine dating
17:00	Hebel, I. et al.: Moraine ecology and genetic diversity: A comparison of the moss colonization after glaciers retreat in Southern Patagonia
17:20	Soto-Rogel, P. & J.C. Aravena: Dendroclimatic analysis of Nothofagus betuloides forests from Cordillera Darwin, Tierra del Fuego, Chile (presenting author: Aravena, J.C.)
17:40	Rodríguez-Catón, M. & R. Villalba: Droughts as triggers of Nothofagus pumilio growth decline in northern Patagonia, Argentina (presenting author: Rodríguez-Catón, M.)

**Tuesday, July, 18th, 2017 - full day at Campus Berlin-Adlershof, Rudower Chaussee 26**

09:00	<i>Session 5: Glacier energy balance and atmospheric sciences; Chairperson: Gino Casassa</i>
09:00	Sauter, T.: Moisture transport mechanisms in Patagonia
09:20	Weidemann, S. et al.: Comparison of modeled surface energy and mass balance variations of Grey and Tyndall Glacier at the Southern Patagonia Icefield
09:40	Schaefer, M. et al.: The Energy Balance of Chilean Glaciers
10:00	<i>Poster Short Presentations</i>
10:40	<i>Poster Session I &amp; Coffee Break</i>
12:00	<i>Session 6: Glacier mass balance I; Chairperson: Gino Casassa</i>
12:00	Jaña, R. et al.: Surface altitude change assessment by means of DGPS measurements at Grey and Schiaparelli glaciers
12:20	Minowa, M. et al.: Changes in calving glaciers and glacier-lake interaction in the Southern Patagonia Icefield
12:40	Fürst, J.J. et al.: Mapping glacier thickness in Patagonia using a mass conservation approach
13:00	<i>Lunch Breack</i>
14:00	<i>Session 7: Antarctic peninsula; Chairperson: Ricardo Jaña</i>
14:00	Marinsek, S. et al.: Significant mass loss recorded in Glaciar Bahía del Diablo, Vega Island, Antarctic Peninsula
14:20	Szilo, J. et al.: Climate impact on Baranowski Glacier and its reaction to hydrological conditions (King George Island, W Antarctica)
14:40	Braun, M. et al.: Changes in glacier dynamics and mass budgets of the Antarctic Peninsula
15:00	<i>Session 2 continued: Glacier Remote Sensing II; Chairperson: Ricardo Jaña</i>
15:00	Le Bris, R. et al.: Glaciers of Patagonia in 2016: A new inventory from Landsat 8 and analysis of changes
15:20	<i>Poster Session II &amp; Coffee Break</i>
16:20	<i>Session 8: Glacier mass balance II; Chairperson: Marius Schäfer</i>
16:20	Casassa, G. et al.: Evolution and fate of remnant ice detached from Marinelli Glacier, Cordillera Darwin
16:40	Espinoza, D. et al.: Recent behavior of the Amalia and Grey glaciers and its relation with a possible activity of the Reclus volcano and the local environmental conditions
17:00	Weidemann, S. et al.: Recent work on surface energy and mass balance modelling using meteorological and glaciological observations at Schiaparelli Glacier, Cordillera Darwin (presenting author: Schneider, C.)
17:20	Scheiter, M. et al.: Implementing a Parametrization for Snow Drift on Mocho Glacier (40°S, Chile)
17:40	Conference summary & outlook to Wednesday's meeting



## **Workshop Programme, Wednesday, July, 19<sup>th</sup>**

Campus Berlin-Adlershof, Rudower Chaussee 26, Conference Hall

Preliminary tentative open schedule:

9:00: Welcome

9:00: Introductory remarks by the project PIs (Gino Casassa, Ricardo Jaña, Juan Carlos Aravena, Ingrid Hebel & Christoph Schneider)

9:15: Achievements of the GABY-VASA Project

9:15: Overview Fieldwork: campaigns 2015, 2016, 2017 and planned ones in 2017 & 2018 (Ricardo Jaña)

9:40: Overview over results and remaining/continued work programme of dendro-ecological work in GABY-VASA (Juan Carlos Aravena & Wolfgang Meier)

9:40: Results and remaining/continued work programme of mosses (Ingrid Hebel)

9:50: Results and remaining/continued work programme of glacier remote sensing work (N.N., FAU Erlangen)

10:05: Results and remaining/continued work programme of glacier mass balance (Stephanie Weidemann/Christoph Schneider) and glacier bedrock topography (Gino Casassa)

### **10:20: Coffee Break**

11:00: Further steps for the GAYB-VASA consortium (all PIs and scientists in the programme)

11:20: Next generation scientific questions (open panel discussion)

12:00: Funding opportunities for follow-up activities for an extended GABY-VASA project?

12:20: Prospects of joint European Union funding opportunities for integrated geo-system research in Patagonia, Tierra del Fuego and the Antarctic Peninsula

12:40: Open discussion on further strategies and options for joint international research on Climate, Hydrosphere, Glaciers & Biosphere/Ecology in Patagonia

13:00: Concluding remarks & closing of the workshop (Gino Casassa & Christoph Schneider)

13:15. End of GABY-VASA workshop

## Poster Presentations

Glacial Geology		
1	Jacob Bendle et al. (presenting author: Varyl Thorndycraft):	Reconstructing the dynamics of ice marginal processes during Late Quaternary deglaciation of the Northern Patagonia Icefield
2	Claire Donnelly et al.:	Estimating the ice thickness of the Patagonian Icefields through mass conservation
3	Guisella Gacitúa	First results of ice thickness measurements of Schiaparelli glacier
4	Eñaut Izagirre et al.:	Glacier change and concurrent GLOF events in southernmost South America, Tierra del Fuego, Chile
5	Erling Johnson et al.:	An algorithm for calving flux retrieval, applied to mayor outlet glaciers from South Patagonia Icefield
6	Ryan Wilson et al.:	Glacial Hazards in Chile: Processes, assessment, mitigation and risk management strategies
Glacier Remote Sensing		
7	Francisco Aguirre et al.:	Snow variability in Southwestern Patagonia from MODIS satellite data
8	Jorge Arigony-Neto et al.:	First results of UAV surveys at Schiaparelli and Grey glaciers
9	Rubén Carvallo et al.:	Real-time transmission of time-lapse imagery in Fuego-Patagonia and central Chile
10	Inti Gonzáles et al.:	Gaby-VASA multidisciplinary geographic platform for data integration
11	Andrés Lo Vecchio et al.:	Estimation of speed and surface temperature from optical satellite imagery at Viedma glacier, Argentina
12	Wolfgang Meier et al.:	A new multi-temporal glacier inventory for Southern America (49°S-55°S)
13	Julia Neelmeijer et al.:	Sentinel-1-based measurements of loading effects: an example from the Toktogul Water Reservoir, Central Asia
Paleo-climate		
14	María Lujan García et al.:	Palaeoenvironmental changes in southern Patagonia inferred from the Lake Gemelas Este record
15	Melina Mauad et al.:	The project OXICLIM – synthesis of oxygen isotope proxies for climate reconstruction in southern Patagonia
16	Neil L. Loader et al.:	Stable isotopic analysis of a late-Holocene peat sequence from Patagonia
17	Ana M. Srur et al. (presenting author: Milagros Rodríguez-Catón):	Establishment of Nothofagus pumilio at upper treelines across precipitation gradients. Part II: The Southern Patagonian Andes
Atmospheric Sciences		
18	Villalba, R. et al.: (presenting author: Rodríguez-Catón, M.)	Contrasting precipitation and temperature patterns in the Southern Andes related to the recent shift in the Antarctic Oscillation Index
19	Katherine Raquel Gaete Beltrán et al.:	Regional Climate Models performance by precipitation and temperature analysis in Fuego – Patagonia
20	Lukas Langhamer et al.:	Lagrangian Moisture Source Detection of the Southern Patagonia Icefield
21	Matthias Scheiter et al.:	Implementing a Parametrization for Snow Drift on Mocho Glacier (40°S, Chile)
22	Guilherme Tomaschewski Netto et al. (presenting author: Jorge Arigony-Neto):	Low-cost autonomous stations for measuring glacier ablation and meteorological parameters on Patagonian glaciers
Glacier energy and Mass balance		
23	Claudio Bravo et al.:	Air temperature differences and melt estimated from a weather station network in the South Patagonian Icefield
24	Gabriela Collao Barrios et al.:	Ice-flux and regional climate modeling to constrain the surface mass balance and ice discharge of San Rafael Glacier, northern Patagonia
25	Ines Dussailant et al.:	Geodetic Mass Balance of the North Patagonian Icefield (46 - 47°S) during 2000-2012. Comparison of two independent estimates based on satellite data.
Antarctic Peninsula		
26	Marta M. Caballero et al.:	Effects of clouds on the energy balance of the Antarctic Peninsula Ice Sheet
27	Fernandoy Francisco et al. (presenting author Guisela Gacitúa):	40 year firn core record from the Schanz-Schneider glaciers divide, Ellsworth Mountains, Antarctica
28	Kirstin Hoffmann et al.:	High-resolution isotope-geochemical records of firn cores from the northern Antarctic Peninsula as tools for studying climate variability