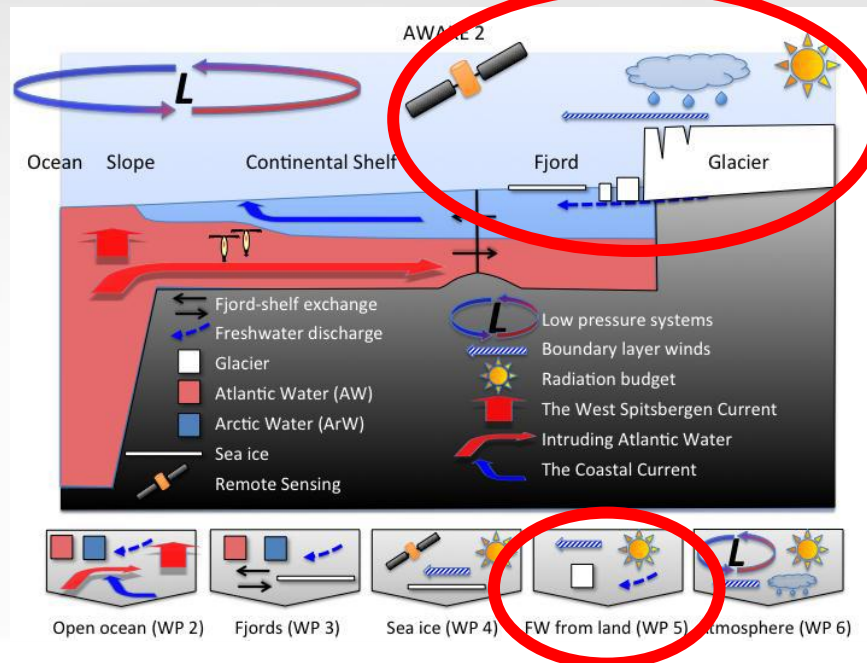


# WP 5 Freshwater from the land



## Objectives:

- To identify main features of the Hornsund hydro-glaciological basin and functioning of its drainage systems.
- To define the key factors of tidewater glaciers dynamics and calving intensity
- To estimate the total freshwater supply to the Hornsund from glaciers and unglaciated catchments as a model example for other Arctic fiords.



Task 5.1. Detailed mapping and evaluation of features of the current state and main features of glaciated and unglaciated catchments within the Hornsund hydro-glaciological basin

Task 5.2. Studies of factors and regimes of outflow from specific terrestrial sources i.e. partly glaciated and unglaciated catchments

Task 5.3. Building of conceptual and semi-quantitative model of water drainage system and discharge from tidewater glaciers emptying into Hornsund fiord

Task 5.4. Identification of key factors of the tidewater glacier's dynamics and calving intensity to the fiord

Task 5.5. Elaboration of the total water budget of the Hornsund hydro-glaciological basin including surface mass balance and icebergs production by tidewater glaciers

## Deliverable:

- 5.1.1. Collection and compilation of historical data and modern state (by field survey and remote sensing analyses) of Hornsund hydroglaciological system. Cartographic and GIS presentation. (31)
- 5.1.2. Spatial distribution of precipitation and snow cover in the Hornsund area. (31)
- 5.2.1. Processed results of studies on discharge from partly glaciated and unglaciated catchments. (30)
- 5.3.1. Data collection on glaciers' internal composition and bed properties with respect to analysis of hydrothermal structure and drainage system of glaciers and detection of possible long-term changes (20)
- 5.4.1. New data set on glacier velocity and seasonal/interannual front position changes of Hornsund tidewater glaciers (30)
- 5.5.1. Observational data on superficial mass balance of Hansbreen and estimation of glacier mass balance over entire Hornsund basin. (34)
- 5.5.2. Quantification of icebergs production from tidewater glaciers (36)

# PUBLICATIONS (printed and submitted)

No.	Tytuł	Autorzy	Wydawnictwo	Rok publikacji
1.	Changes of altitudinal zones of Werenskioldbreen and Hansbreen in period 1990-2008, Svalbard	Ignatiuk D., Piechota A., Ciepły M., Luks B.	AIP Conference Proceedings 1618(275), 275-280.	2014
2.	Fluctuations of tidewater glaciers in Hornsund Fiord (Southern Svalbard) since the beginning of the 20th century.	Błaszczyk M., Jania J.A., Kolondra L.,	Polish Polar Research.	2013
3.	Klucz do zrozumienia Arktyki. Fiord jako ogniwo integrujące ocean, ląd i atmosferę. (The key to understand the Arctic. Fjord as an integrating ocean, land and atmosphere system.)	Grabiec M.	Problemy Środowiska i Jego Ochrony 22, 51-66.	2014
4.	Spatial distribution of air temperature on Svalbard during 1 year with campaign measurements	Przybylak R., Araźny A., Nordli Ø. Finkelnburg R., Kejna M., Budzik T., Migąła K., Sikora S., Puczek D., Rymer K., Rachlewicz G.	International Journal of Climatology 34, 3702-3719	2014
5.	Seasonal and interannual variability in runoff from the Werenskioldbreen catchment, Spitsbergen	Majchrowska E., Ignatiuk D., Jania J., Marszałek H., Wąsik M.	Polish Polar Research 36, 197-224	2015
6.	Nowoczesne metody pomiarowe i analityczne w glaciologii (Novel investigation and analytical methods in glaciology)	Ignatiuk D., Błaszczyk M., Grabiec M., Majchrowska E., Pętlicki M., Piechota A.M.	[in:] Absalon D., Matysik M., Ruman M. (eds.) Nowoczesne metody i rozwiązania w hydrologii i gospodarce wodnej (Novel methods and solutions in hydrology and water management), 227-246.	2015
7.	Calving of a tidewater glacier driven by melting at the waterline	Pętlicki M., Ciepły M., Jania J.A., Promińska A., Kinnard Ch.	Journal of Glaciology	2015
8.	Overview on radon measurements in Arctic glacier water	Kies A., Hengesoch O., Tosheva Z., Nawrot A.P., Jania J.	The Cryosphere	2015 (submitted)
9.	Stan i współczesne zmiany systemów lodowcowych Svalbardu (The state and contemporary changes in glacial systems)	Grabiec M.	University of Silesia Press	2015 (submitted)