



Sopot

03-04 December 2015



AWAKE-2

Arctic climate system study of ocean, sea ice
and glaciers interactions in Svalbard area.

Second meeting



- **1. Introduction**
- **2. Organization of the meeting**
- **3. Project aims, hypothesis and structure**
- **4. AWAKE phases**
- **5. Project prolongation ?**
- **6. Additional measurements ?**
- **7. Papers !!!!!**
- **8. EGU 2015**
- **9. Financial issues (Sylwia) - absent**
- **10. WP1 (Gosia, Waldemar)**

Program for the AWAKE-2 meeting
03-04 December 2015, Sopot, POLAND



03.12.2015 PLENARY SESSION, SOPOT, IOPAN, Chair Waldemar

| <u>Time</u> | <u>Session</u> | <u>Topic</u> | <u>Responsible</u> |
|---------------|-----------------------------|--|--------------------------------|
| 10:00-11:00 | <u>Registration, coffee</u> | | |
| 11:00 – 11:45 | Session 1 | Introduction WP1 Project management and dissemination | Waldemar Walczowski |
| 11:45 – 12:30 | | WP2 Open ocean oceanography | Agnieszka Beszczyńska- Moeller |
| 12:30 – 13:30 | <u>Lunch</u> | | |
| 13:30 – 14:30 | Session 2 | WP3 Fjord oceanography | Eva Falck |
| 14:30 – 15:15 | | WP4 Sea Ice | Frank Nilsen |
| 15:15 – 16:30 | | WP5 Freshwater from the land | Mariusz Grabiec |
| 16:30 – 17:15 | | WP6 Atmosphere and climate change | Rajmund Przybylak |
| 17:15 – 18:00 | | WP7 Synthesis | Stein Sandven |
| 19:00 | <u>Conference Dinner</u> | | |

04.12.2015 Summary, SOPOT, IOPAN, Chair Waldemar

| <u>Time</u> | <u>Session</u> | <u>Topic</u> | <u>Responsible</u> |
|---------------|----------------|--------------------------|---------------------|
| 09:00 – 10:00 | Session 3 | Recommendations, summary | Stein Sandven |
| 10:00 – 12:00 | | Discussions with coffee | Waldemar Walczowski |
| 12:00 | <u>Lunch</u> | | |



Conference Dinner

19:00 Restauracja Smak Morza



The aim of the AWAKE-2 is to understand the interactions between the main components of the climate system in the Svalbard area: ocean, atmosphere and ice to identify mechanisms of interannual climate variability and long-term trends.



Ocean – glacier - atmosphere

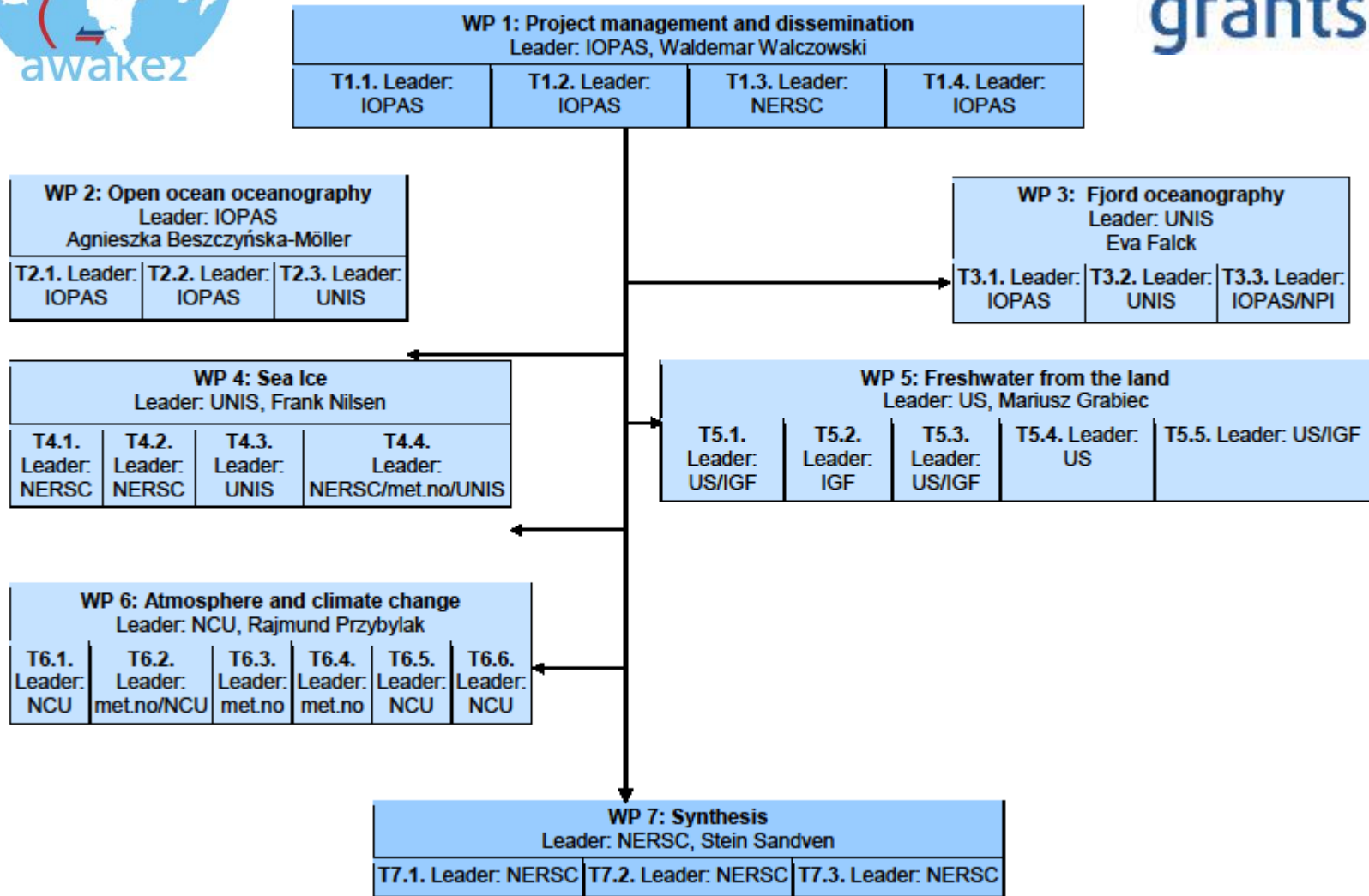
The leading hypothesis is that the acceleration and retreat of glaciers is a response to forcing in the maritime part of the glacier due to the variability of oceanic, atmospheric forcing, or both.

Mechanisms:

- The increase in the intensity of the underwater melting on the border of the ice/ocean.***
- Reduction and weakening of the ice pack on the forehead of the glacier;***
- Increasing the number of cracks, reduced structural integrity of glacier due to increased surface heating and melting.***



AWAKE-2 Project Structure



| Time | Session | Topic | Responsible |
|---------------|-------------------|--|-------------|
| 09:00 – 10:30 | Session 4, | Introduction WP1 Project management and dissemination | Waldemar |
| 10:30 | Coffee break | | |
| 11:00 12:00 | Session 5 | WP2 Open ocean oceanography | Agnieszka |
| 12:00-13:00 | | WP3 Fjord oceanography | Eva |
| 13:00-14:00 | | WP4 Sea Ice | Frank |
| | LUNCH | | |
| 15:00:16:00 | Session 6 | WP5 Freshwater from the land | Mariusz |
| 16:00:17:00 | | WP6 Atmosphere and climate change | Rajmund |
| 17:00-18:00 | | WP7 Synthesis | Stein |
| 19:00 | Conference Dinner | | |

For verification

Mechanisms:

- Check that the Atlantic water directly interacts with the glacier;*
- If so - how it contributes to the intensification of glaciers calving;*
- How important is the ocean-atmosphere heat exchange (dominant, subsidiary?)*
- What is the importance of freshwater runoff from the land.*



AWAKE-2 will focus on specific processes in the Svalbard area using historical data, new observations and dedicated model runs

- Impact of the Atlantic Water variability in the West Spitsbergen Current on the adjacent shelf- and fjord ocean climate;***
- Exchange processes between shelf and fjord;***
- Freshwater input and distribution in an Arctic fjord (Hornsund);***
- Sea ice variability and its impact on fjord circulation;***
- Glaciers dynamics and interactions between ocean and glaciers;***
- Atmospheric climate variability and trends in the coastal areas of the western Spitsbergen.***



AWAKE-2 is divided into four phases

2013 Preparatory Phase

- *Field measurements to extent the main meteorological, glaciological and oceanographic time series **OK***
- *Analysis of historical data **OK***
- *Preparatory phase for the core campaign **OK***
- *Recognition of a main features of the Hornsund hydro-glaciological basin **OK***



2014

The main campaign in fjords and in the open ocean

The main goal is to achieve a complete picture of all climatic components in Hornsund and in the region potentially influencing the Hornsund conditions, i.e. the West Spitsbergen Current, slope and shelf, the Spitsbergen Coastal Current.

The main observed processes will include:

- *exchange of water masses between open ocean, shelf area and fjords; **OK***
- *ocean-atmosphere fluxes in the open ocean, shelf and in fjords; **OK***
- *melting and calving of glaciers, river discharge and precipitation/evaporation; **OK***
- *variability of sea-ice concentration on the shelf and in fjords. **OK***

2015

- *Further extension of the core parameters time series. **OK***
- *Analysis and synthesis of the new data provided by the core field campaign.*
- *Potential possibility to repeat measurements failed in 2014.*



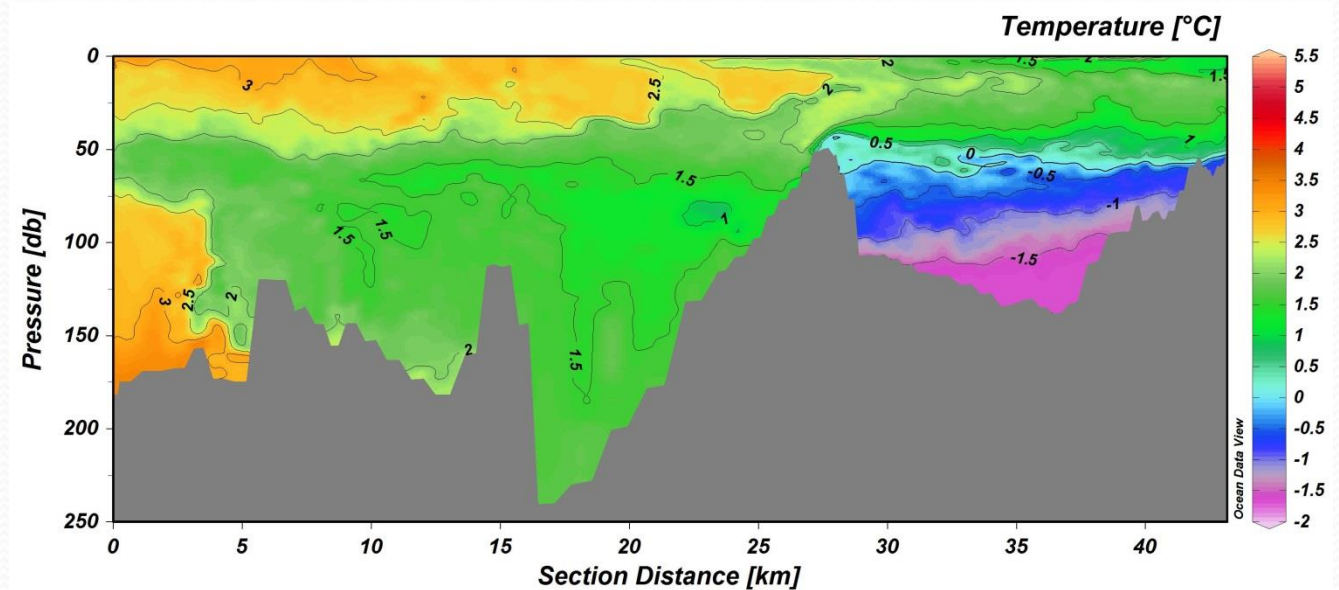
2015

- *Planned process oriented observations close to glaciers fronts – multibeam echosounder, ADCP*



2016

- *Joint analysis of the project data and a synthesis of the new results obtained in different spheres (hydro-, cryo- and atmosphere) of the studied fjord system.*



Do we need more time ?

Prolongation of the AWAKE to December 2016 ?

- ***More measurements ?***
- ***Time for data analysis/modelling***
- ***Common work (papers)***




***European Geosciences Union General Assembly
Vienna | 17–22 April 2016***

***OS1.10 Atlantic water in the main gateways to
the Arctic Ocean - impact on climate, sea ice,
tidewater glaciers and ecosystem***

<http://meetingorganizer.copernicus.org/EGU2016/session/20915?sesslogout>




- 
- ***Session together with the project PAVE
(Pathways of Atlantic Water in the Arctic)***
 - ***Submit own presentation (oral, posters) please***
 - ***Advertise the session***
 - **Deadline 13 January 2013**

Conclusions

- *The unique data were collected*
- *... but lack of database;*
- *Closer collaboration between partners is necessary;*
- *Complex papers (synthesis) – very needed*
- *Collaboration with other institutions , scientists*
- *Thanks of AWAKE other projects were developed:*
- *Tidewater Glacier Retreat Impact on*
- *Fjord Circulation and Ecosystems (TIGRIF) project.*



- 
- *Polish Polar Station opened Oceanographer position – whole year oceanographic observations of Hornsund started in 2015*
 - *NPI created Tidewater Glacier Retreat Impact on Fjord Circulation and Ecosystems (TIGRIF) project*

What next ?

- ***Further bilateral cooperation ?***
- ***National projects ?***
- ***International projects ?***
- ***Polish – Norwegian fund call in 2017 ?***