German Arctic expeditions
2010 - 2011

ASSW, March 27 – April 1, 2011, Seoul, Korea
Overview: Research facilities around the globe

- Research Vessels
- Polar aircraft
- Samoylov Station
- Neumayer Station III
- French German Arctic Research Base (AWIPEV)
- Dallmann Laboratory
- Kohnen Station
Northern Hemisphere
Cruise tracks

12/1982 to 02/2011

included
2010 tracks
ARK XXV 1-3
to
Greenland Sea
Fram Strait, Hausgarten
Baffin Bay
<table>
<thead>
<tr>
<th>Leg</th>
<th>Start</th>
<th>End</th>
<th>Days</th>
<th>Pers.</th>
<th>Person days</th>
<th>Programme name</th>
<th>Mission</th>
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<tr>
<td>ARK-XXV/1</td>
<td>10.06.10</td>
<td>29.06.10</td>
<td>19</td>
<td>72</td>
<td>1368</td>
<td>LOTEVA-GS/PEBCAO</td>
<td>Long term changes in biological and physical properties in the Greenland Sea</td>
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<td>ARK-XXV/2</td>
<td>30.06.10</td>
<td>29.07.10</td>
<td>29</td>
<td>90</td>
<td>2610</td>
<td>ACOBAR/HAUSGARTEN/PEBCAO</td>
<td>Long term changes in biological physical properties and the deep sea environment in Fram Strait</td>
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<td>ARK-XXV/3</td>
<td>31.07.10</td>
<td>10.10.10</td>
<td>71</td>
<td>90</td>
<td>6390</td>
<td>Northern Baffin Bay</td>
<td>Geoscientific investigations to explain the structural and tectonic evolution of the crust in the northern Baffin Bay</td>
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<td>13.07.11</td>
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<td>2072</td>
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<td>03.08.11</td>
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<td>2037</td>
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<td>05.08.11</td>
<td>07.10.11</td>
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<td>97</td>
<td>6111</td>
<td>TranArc</td>
<td>Sea ice/ocean/biosphere interactions in the changing Arctic Ocean</td>
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</table>
Alaska (Barrow and Fairbanks) Permafrost history

Yukon Coast Coastal erosion, Permafrost history

Chukotka Permafrost history Deep permafrost borehole

Samoylov Station Gas flux, energy and water balance, recent cryogenesisis

Polar Bear Pass Gas flux, energy and water balance, recent cryogenesisis

Tibetan Plateau Lake sediments, hydrology, energy and water balance, palaeo permafrost

Ny Alesund (year round)

AWI land based Arctic activities Since 1992
Research platform Ny Alesund

International Cooperation
Russian-German Research Station Samoylov, Lena Delta/Siberian Arctic
<table>
<thead>
<tr>
<th>Leg</th>
<th>Start</th>
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<th>Pers. Days</th>
<th>Nations</th>
<th>Mission</th>
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</table>
| LENA 2010           | Jul 12   | Nov 22   | 4704       | Russia, Germany    | Long term studies of energy and water balance, carbon turnover, greenhouse gas emission in permafrost  
Transport of water and sediment  
Lake sediment sampling and limnology |
| Yukon Coast 2010    | Jul 21   | Aug 17   | 243        | Canada, Germany    | Coastal erosion and permafrost geomorphology  
Permafrost cores → reconstruct paleogeography  
Sediment and nutrient fluxes  
Bacterial activity and methan fluxes |
| LENA 2011           | April 15 | Sep 01   | 6348       | Russia, Germany    | Long term studies of energy and water balance, carbon turnover, greenhouse gas emission in permafrost  
Coastal dynamic and subsea permafrost study  
Hydrological, sedimentological and biological studies in shoreface transects |
| Yukon Coast 2011    | Jul 01   | Aug 07   | 456        | Canada, Germany    | Coastal erosion and permafrost geomorphology  
Permafrost cores → reconstruct paleogeography  
Sediment and nutrient fluxes  
Bacterial activity and methan fluxes |
Arctic flight tracks
<table>
<thead>
<tr>
<th>Leg</th>
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<th>Institutions</th>
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<th>Mission</th>
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<tr>
<td>SORPI C</td>
<td>April 30</td>
<td>May 19</td>
<td>220</td>
<td>Uni Leipzig LAMP Clermont AWI</td>
<td>Solar Radiation and Phase Discrimination in Arctic Clouds</td>
<td>Ice and liquid water content in planetary boundary layer</td>
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<td>Sea ice thickness</td>
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<td>IKAPPOS</td>
<td>June 8</td>
<td>June 28</td>
<td>140</td>
<td>Uni Trier</td>
<td>Investigation of Katabatic winds and Polynyas during Summer</td>
<td>Katabatic wind over glaciers in northwest Greenland and the air sea interaction processes in the stable atmospheric boundary layer</td>
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<td>Aug 12</td>
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<td>ESA AWI</td>
<td>North Eemian Ice</td>
<td>Ice internal structure and thickness at ice core drill site</td>
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<td>CryoSat Cal/Val</td>
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<td>TIFAX</td>
<td>Aug 13</td>
<td>Aug 24</td>
<td>108</td>
<td>AWI</td>
<td>Thick Ice Feeding Arctic Export</td>
<td>Sea ice thickness and roughness and radiation above SMOS, CryoSat Cal/Val</td>
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<td>PAM ARC MIP</td>
<td>March 24</td>
<td>May 06</td>
<td>482</td>
<td>many see next slide</td>
<td>Polar Airborne Measurements and Arctic Regional Climate Model Simulation Project</td>
<td>Black carbon in atmosphere and deposition to snow/ice surfaces and climatic impacts Sea ice thickness CryoSat Cal/Val</td>
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<td>NOGRAM</td>
<td>Jul 06</td>
<td>Jul 29</td>
<td>161</td>
<td>BGR AWI</td>
<td>Northern Gravity and Magnetics</td>
<td>Geological evolution of the Arctic basin by mapping anomalies of local earth magnetic and gravity field</td>
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</table>
OBJECTIVE:
PAMARCMiP will provide a unique snapshot of Arctic trace gases and aerosol distributions, meteorological conditions, and sea ice distribution

PARTNER:  
- Environment Canada  
- University of Alberta  
- York University  
- University of Fairbanks AL  
- NOAA, Boulder CO  
- NASA LaRC, Hampton VA  
- European Space Agency  
- AARI St. Petersburg

ROUTE [March 24, 2011 – May 6, 2011]:
Map dated 29.3.2011

just these days

Polar 5 at NP 36
Thank you