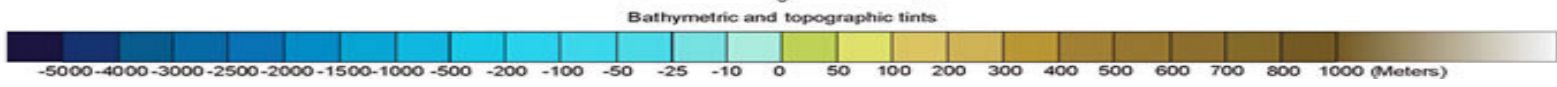




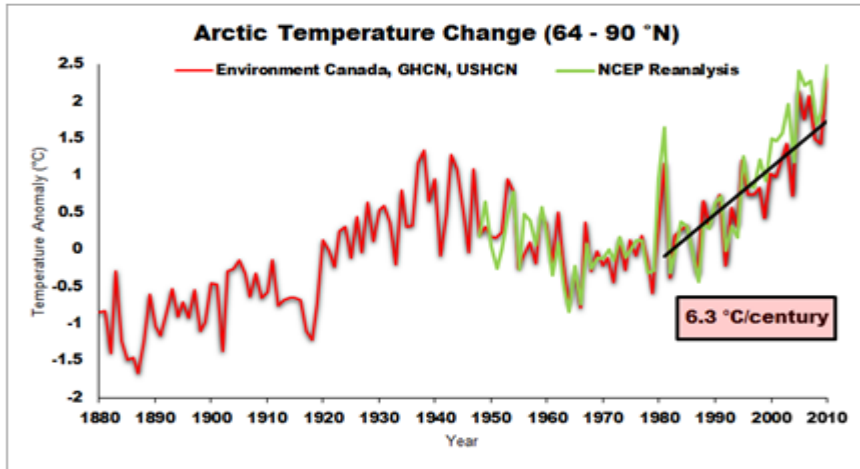
Malmo, ShipArc, 2015



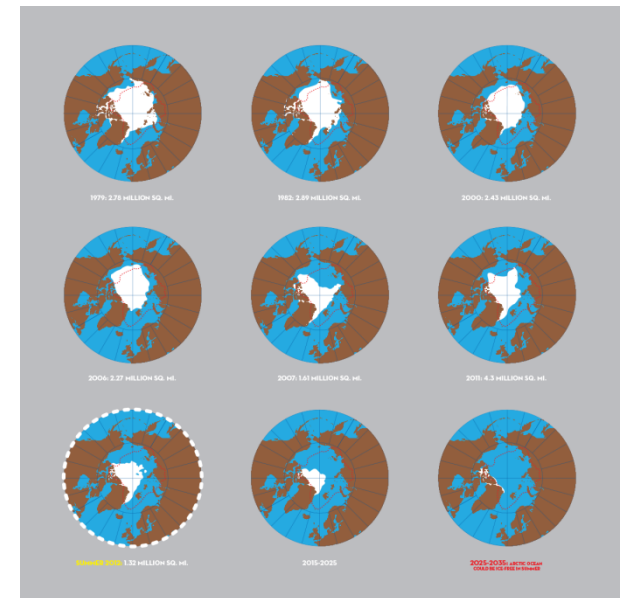
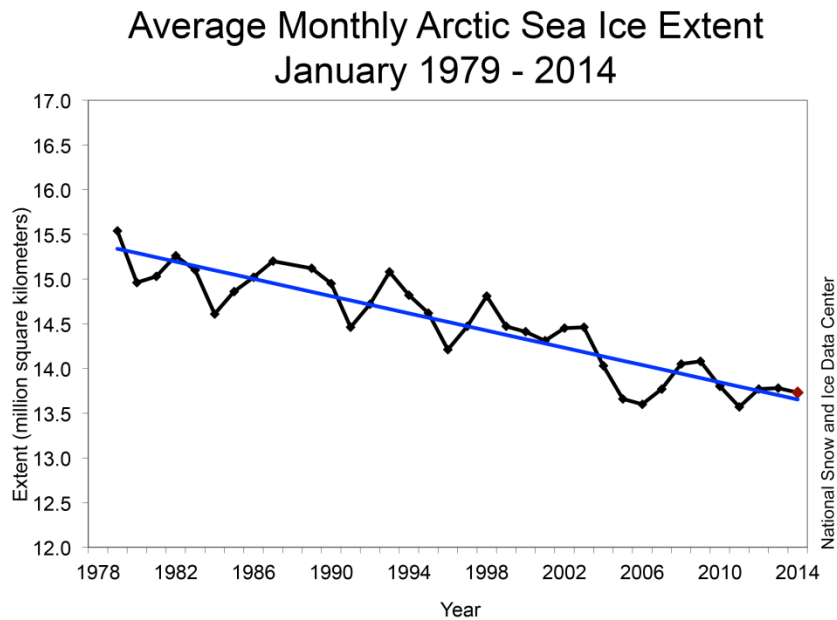
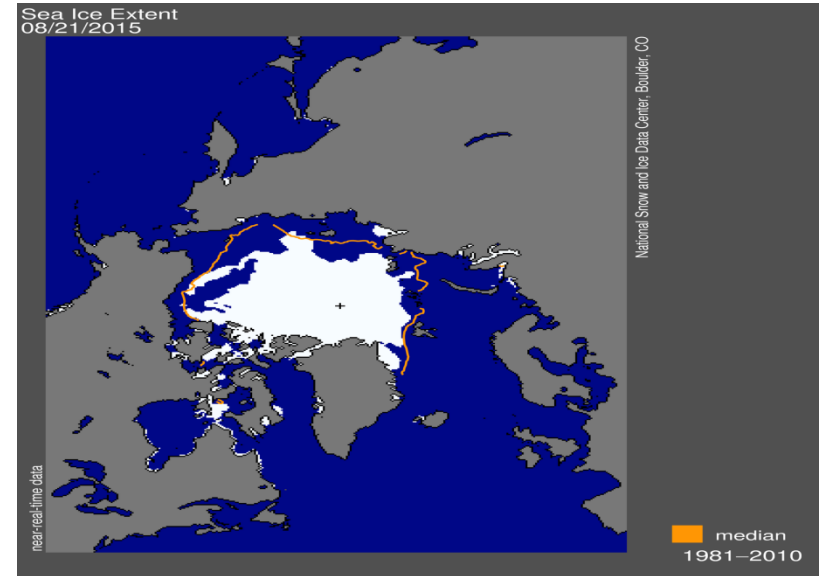
IPPI: PROGRESS IN DEVELOPMENT



Malmo, ShipArc, 2015



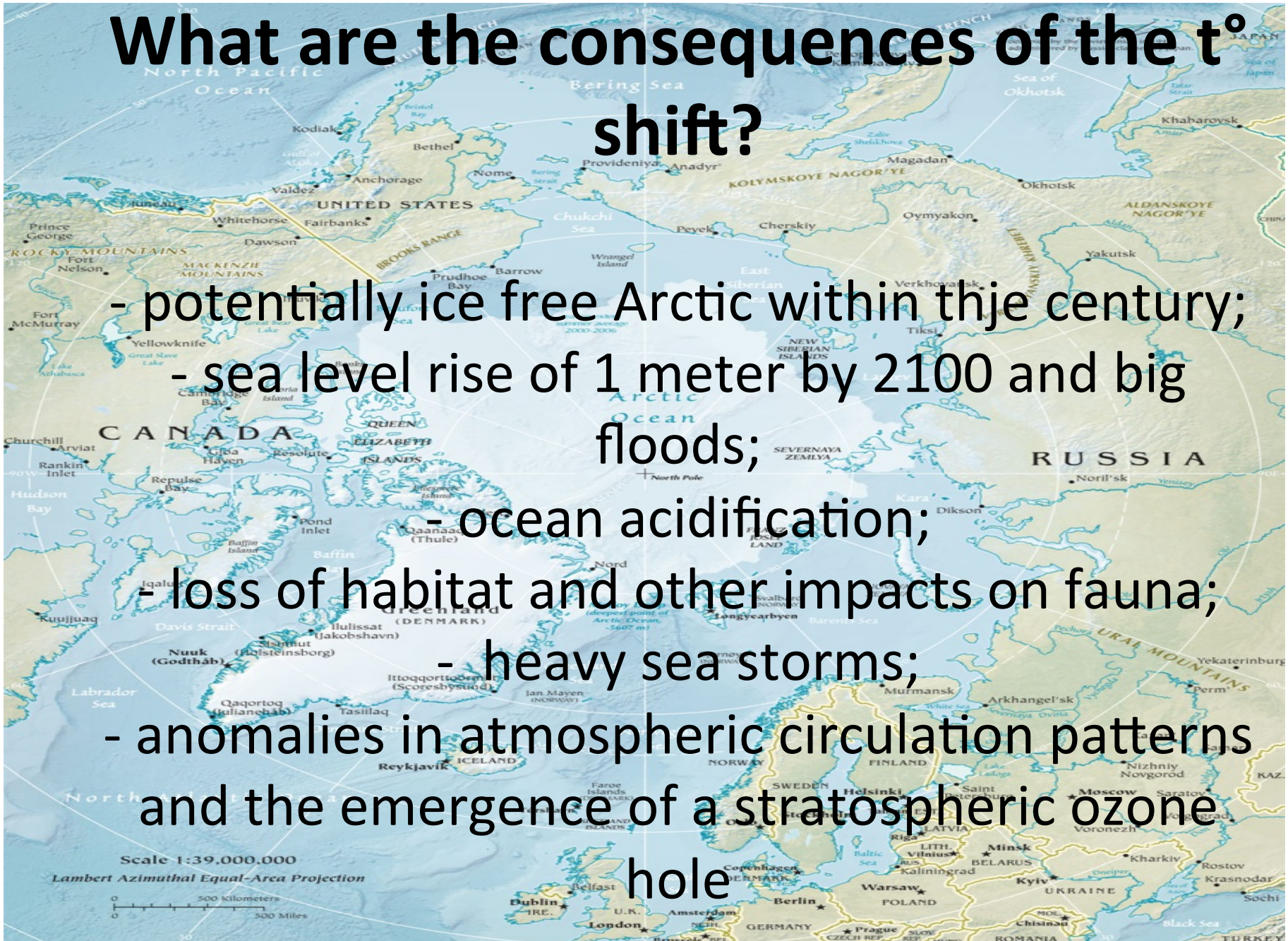
Master course, Malta, 2015



Malmo, ShipArc, 2015

What are the consequences of the t° shift?

- potentially ice free Arctic within thje century;
- sea level rise of 1 meter by 2100 and big floods;
- ocean acidification;
- loss of habitat and other impacts on fauna;
- heavy sea storms;
- anomalies in atmospheric circulation patterns and the emergence of a stratospheric ozone hole



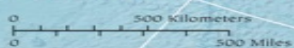
New economic opportunities:

- oil, gas, and minerals exploration and extraction;
- shipping, ports;
- industrial fishing;
- tourism.

Malmo, ShipArc, 2015

Scale 1:39,000,000

Lambert Azimuthal Equal-Area Projection





Oil and gas in the Arctic

Area north of the Arctic Circle has an estimated 90 billion barrels of undiscovered oil.

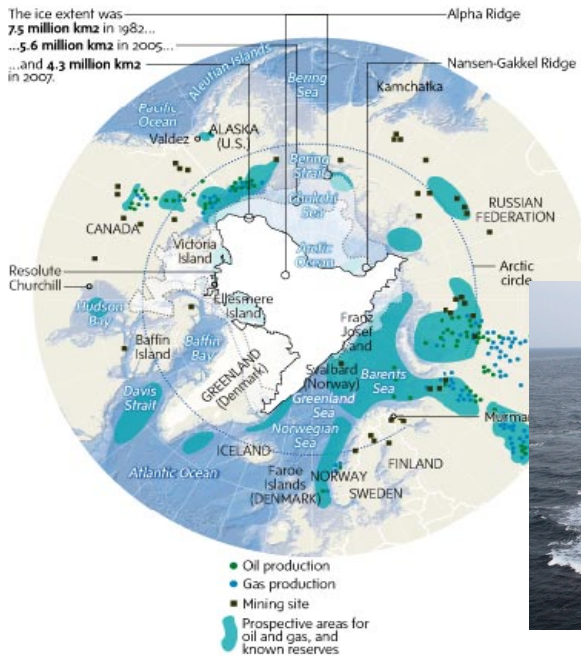
Probability of finding oil, gas

50-100%



Arctic accounts for 13% of undiscovered oil, 30% of undiscovered natural gas, 20% of undiscovered natural gas liquids

The ice extent was
7.5 million km² in 1982...
...5.6 million km² in 2005...
...and 4.3 million km² in 2007.



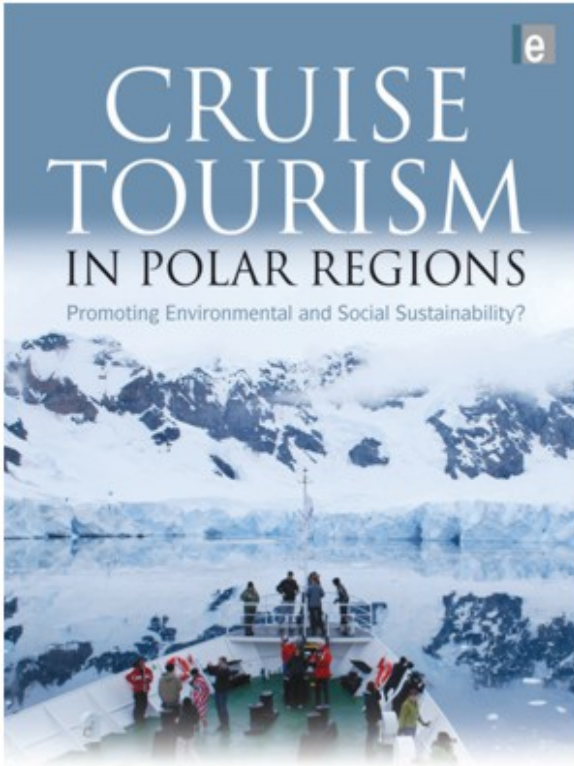
95%
of Russian natural gas reserves are in the Arctic



60%
of Russian oil reserves are in the Arctic

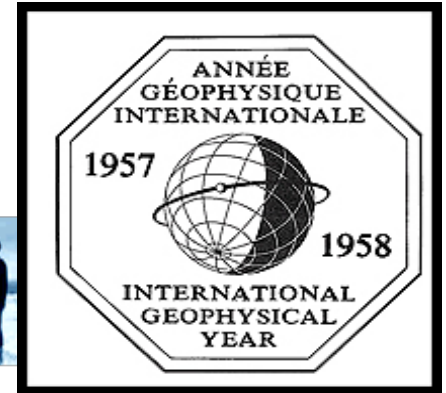
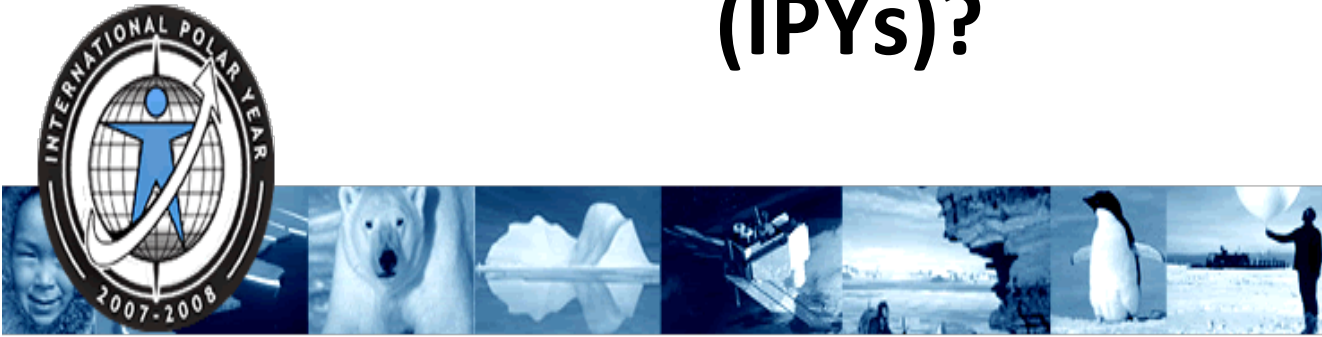
Source: State Duma of the Russian Federation

Malmö, ShipArc, 2015



Malmö, ShipArc, 2015

What are the International Polar Years (IPYs)?

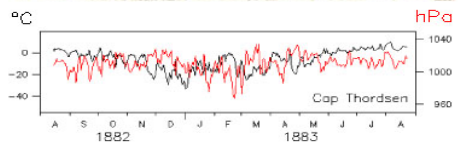
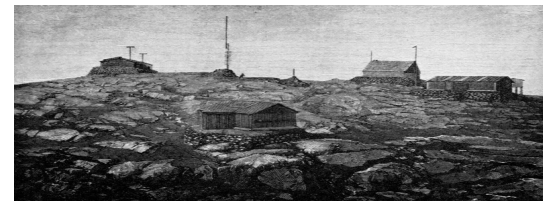


- *IPYs are large scientific initiatives with a history that spans more than a century.*
- *It is a year or so during which many nations coordinate their polar expeditions, observations and analyses.*
- *It is a collaborative international effort of researching the polar regions.*

First International Polar Year (IPY) 1882 - 1883

The First International Polar Year
1882-1883

12 Expeditions to the Arctic;
7 States from the Arctic Region participated;
14 Met.stations operated around the N.Pole;
Operations of the IPY-1 were at extreme
conditions

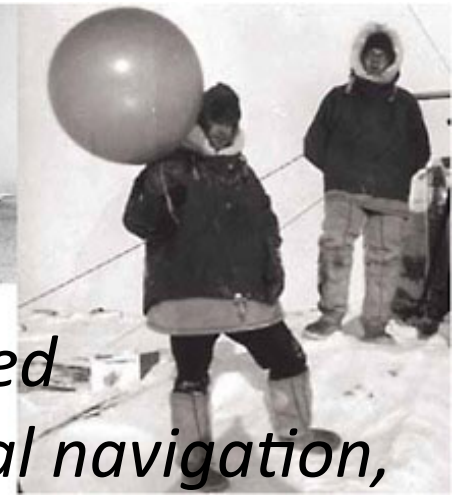


IPY-2 1932-1933

Goal-gain knowledge of practical application to problems connected with terrestrial magnetism, marine and aerial navigation, weather forecasting and wireless telegraphy.

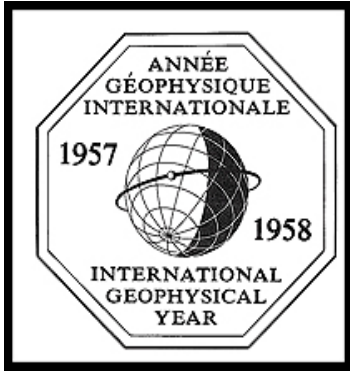
44 Nations;

40 observations and analyses centers participated in data collection



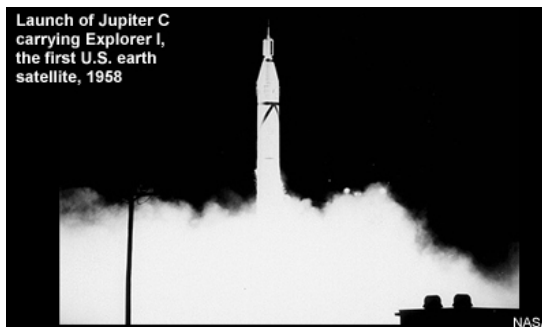
IPY-3 (ICSU and WMO) – IGY

VI, 1957-XII 1958



67 Nations;
164 Activities;

- *Main objective: observe geophysical phenomena and secure data from all over the world in coordinated manner and in space and time so that results could be collated in a meaningful manner*
- *Discoveries in the fields of cosmic ray research, climatology, oceanography, the nature of the earth's atmosphere and magnetic field.*



LaCour Magnetometer in Norwegian Research Station under the Antarctic ice

Malmo, ShipArc, 2015



IPY-4 (ICSU and WMO) III, 2007-III, 2009

- *Goal – explore new frontiers in polar science, improve our understanding of the pivotal role of the polar regions in global processes, and educate the public about polar regions.*
- *60 Nations; 50,000 Scientists; over 200 Projects.*



2007 - 2008



Photo: Alicia Navada, CSIRO



Malmö, ShipArc, 2015

IPPI (WMO, ICSU, UNEP, IOC, Arctic Council, others 2016-...

Goal – based on polar research and observations, and service development provide a platform for an efficient and economic way of the Arctic Development.

5 Main areas have been identified for planning and implementation: observing systems, data management, scientific cooperation, capacity development and polar communities.

IPPI Planning Stage

Steering Group:

Representatives of almost 20 GO and NGOs;

Involvement of scientists of different disciplines.

Principles:

Be firmly in the family of existing scientific programmes;

Sharing and accessibility to collected data is a priority need;

Agreed upon data exchange policy.

IPPI Planning Stage (continued)

Identified obstacles/limits IPPI can encounter:

political sensitivity;

legal problems related to making observations and data exchange;

need to simplify procedures for moving samples, equipment and people across the borders with national jurisdiction;

lack of necessary funding;

shortage of trained personnel;

lack of awareness .

Aims of the IPPI concept paper:

- identify strategy and ways for a long-term cooperative international polar initiative;
- provide a clear understanding of the reasons for scientists and industries to participate and support IPPI;
- encourage social and economic development and regulatory improvements;
- help Arctic peoples to be adapted to climate change challenges;
- ensure that sensitive ecosystems are protected for future generations



Latest WMO and IOC decisions relevant to IPPI (May-June 2015)



- WMO endorsed its « *participation in the further development of the IPPI concept.* »

Resolution 6.5/1 of the WMO 17 Congress

- IOC encouraged the IPPI Interagency Steering Group « *to develop a clear framework of the partnership, acting in close coordination and consultation and respecting the interests and obligations of the consultative parties to the Antarctic Treaty and similar interests of the Members of the Arctic Council.* »

Decision 10,3 of the 28th Session of the IOC Assembly

**THANK YOU, MERCI, GRACIAS,
СПАСИБО, DANKE SCHON, OBRIGADO**



Malmo, ShipArc, 2015