

Logistics Planning Outline for the 2010/2011 NBP/ODEN 2-boat Operation

In an attempt to coordinate the science between the ODEN and the NBP for next year's 2-boat operation, the information below will be compiled and passed out during the planning meeting in November.

Principal Investigator: Ala Aldahan, Xiaolin Hou, Göran Possnert
Project leader onboard NBP/ODEN (if other than P.I.): Peng He
Project title: Iodine isotopes (^{129}I and ^{127}I) and species (I^- and IO_3^-) as ultra sensitive tracers of ocean circulation
Participants onboard (tentative): Total: 3 persons Name and function: Peng He Peng Yi Keliang Shi

Please give a brief cruise synopsis. Include the following: research objectives and proposed cruise track.

<p>The objective of this project is to establish data sets for the radioactive isotope ^{129}I and stable isotope ^{127}I as well as their speciation in seawater along a transect across the Atlantic Ocean and into the Ross Sea (Antarctica) to serve as:</p> <ol style="list-style-type: none">1. Basic information (temporal and spatial) about pattern, sources and processes of water mass exchange routes and rates between the North and South Atlantic Oceans.2. First data set on the distribution of iodine isotopes and their speciation in the waters of the Southern Ocean, particularly the along the cruise track which cross the convergence zone, the marginal ice and the Ross Sea.3. A tool for estimating magnitude of the different vertical water parcels dominance that will eventually contribute to improve predictions of ocean circulation in this region of the world.4. Revealing dominant chemical speciation of ^{129}I in ocean water and bioavailability for ecological loading. Iodine resides in different speciation forms within the water mass and in the organic and inorganic molecules and will strongly be affected by the redox potential of the water parcels.5. First time series that will elucidate preservation, dissipation and cycling of radioactive ^{129}I within the Atlantic Ocean and into the Southern Ocean.
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Briefly describe sampling methods and major systems and equipment (collection method (i.e standard CTD, plankton nets, MOCness Nets, etc...))

1-Standard CTD or surface water sampling from the Oden lab intake system of 2-3 liter water at all possible stations including transect from Sweden to South America.

2- Filtration of water from the Oden lab intake system for suspended material

3-Sampling of ice core in cooperation with other ice sampling groups

4- Air sampling using a home made system to collect the air along the cruise from Sweden to South American and in the Antarctic.

Sampling methods and sites when ship in motion

Site/area/transect	Type of sampling to be performed, volume of H ₂ O collected
Onboard water sampling from the Oden water intake through the PCV or Teflon pipes at the on board laboratory Altanic surface water continuous sampling at varying sampling density depending on location	2-3 liter samples And water filtration for suspended material
Air sampling pump (home made) taking air sample for iodine in different forms.	

Sampling methods and sites from stationary ship

Sampling site	Type of sampling, weight/volume of samples and equipment, etc.	Time per station
Southern Ocean surface water	Surface water from ship lab intake system Or CTD	Depending on depth

Sampling method and sites away from the ship, on ice

Sampling site	No. of persons	Type of sampling, weight/volume of samples and equipment, etc.	Time per station
Water sampling	1	1 liter bottles	1 hour
Ross Sea	1	Ice cores, if possible	Selected st

Deployment/retrieval of equipment

Site	Type of equipment, weight/ volume, procedure, etc.	Time per station
non		

Which are the most prioritized sampling areas/methods?

Site/area	Method/type of sample	Other info

The following equipment needs to be installed onboard
(describe in detail, also needed connections to electricity, water, gas etc):

Air sampler, electricity (220 V) is needed.
Centrifuge (20 kg, 30X30X30 cm)

Lab space	Wet lab	Dry lab	Other / specify
Meters of bench space	2 m		
Power needs (VA) 220/380 V	Yes		
Cold water (yes/no)			
Hot water (yes/no)			
Sewage (yes/no)	yes		
Compressed air (yes/no)			
Gas (yes/no)			
Fume hood (yes/no)			
Sea water intake (yes/no)	yes		
Other (specify)			

Special lab areas needed:

Clean air room	
Other (specify)	

Storage of equipment and samples:

	Space needed (m ² /m ³)
Container	3 cubic +4°C
Cold +2°C	
Freezer -20°C	
Other (specify)	

The following chemicals, gases or other hazardous substances will be used, including radioisotopes or other substances which may constitute a threat of contamination for sensitive analyses:

Substance	Weight/vol.	To be used for:
AgNO ₃	100 g	AgI precipitation
NH ₄ OH	2 L	pH adjustment
HCl	2 L	pH adjustment
KHSO ₃	0.5 kg	Valence adjust of iodine
Iodine-125	50 mL	Chemical yield measurement

Hazardous waste:

Substance	Weight/vol.	Comments
Neutral solutions	10 liters	Low hazard waste

Disturbance to or sampling of organisms:

1. Species (scientific and English name)	
2. Handling/sampling method	
3. Storage or handling onboard	
4. Possible risks to health or environment	
5. Consideration required from the ship/other researchers	

Cargo to be taken onboard the ship:

Type, handling/storage	Weight (kg)	Volume (m ³)
Sampling bottles + minor instrumentation	100	3

Cargo and samples to be taken off the ship:

Type, handling/storage	Weight (kg)	Volume (m3)
Water samples	500	3

Other support needed onboard Oden, or in preparation phase:

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