

NOTIFICATION OF PROPOSED RESEARCH CRUISE**Part A: GENERAL**

1. Name of research ship: **RV Pelagia** **Cruise number: 64PE309**

2. Cruise dates: 14 July 2009 - 11 August 2009

3a. Operating authority: NIOZ Royal Netherlands Institute for Sea Research
Telephone: (+31) (0)222-369300
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3b. Operating agent: NIOZ Royal Netherlands Institute for Sea Research
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4. Owner: NIOZ Royal Netherlands Institute for Sea Research

5. Particulars of ship:

name: Pelagia
nationality: Dutch
overall length: 66.00 meters
maximum draught: 4.00 meters
nett tonnage: 1553 NRT
propulsion: 2 diesel electric Elliot White Gill
Bow Truster
call sign: PGRQ

6. Crew: name of master: J.C. Ellen/C.G. de Graaff
number of crew: 11

7. Chief scientist: name: Dr. C Brussaard
addresses: NIOZ Royal Netherlands Institute for Sea
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**8. Geographical area in which the ship will operate:
(with reference in latitude and longitude)**

Northeast Atlantic Ocean. The cruise goes from Las Palmas (28° 34' 0" North, 16° 9' 0" West), Gran Canaria to Reykjavik (64° 9' 0" North, 21° 57' 0" West), Iceland.

9. Brief description of purpose of cruise:

The cruise is the first of two cruises (a year apart from each other) of one month each with RV *Pelagia*, covering a transect in the Northeast Atlantic from Canary Island to Iceland (Canary Island - Ireland, Ireland - Iceland). The cruises are part of a larger project, STRATIPHYT, with main goal to study the impact of water column vertical stratification on phytoplankton communities.

Global warming will change physical, chemical and biological processes in the oceans. Ocean-climate model predict that heating of the surface layer may yield a stronger vertical stratification, which starts earlier in spring and lasts longer in autumn. This results in suppressed upward mixing of nutrients from the deep ocean. Changes in stratification will have major effects on the production and species composition of phytoplankton. This will subsequently impact grazing, viral lysis and sedimentation rates, with cascading effects on ecosystem functioning and biogeochemical fluxes. Little is known, however, of the exact implications of global warming for these fundamental processes.

We propose to investigate how changes in vertical stratification affect phytoplankton communities along a north-south gradient in the Atlantic Ocean. Our study will be based on oceanographic cruises from Iceland to the Canaries, advanced models of hydrodynamics and plankton growth, and detailed laboratory experiments with representative phytoplankton species. We have chosen for the Northeast Atlantic Ocean, because it is a key area in global ocean circulation, a large sink for atmospheric CO₂, and a major determinant of the climate in Western Europe. Furthermore, the Atlantic Ocean offers a gradient from weak seasonal stratification in the North to strong permanent stratification in the (sub)tropics. This gradient offers ideal opportunities for the comparative study of different stratification regimes. Our integrated approach of physical, chemical, and biological processes will enable a better understanding of the implications of global warming for plankton growth in the North Atlantic Ocean.

The project is funded through the Netherlands Organisation for Scientific Research (NWO) and the NIOZ.

10. Names and dates of intended ports of call:

From Las Palmas, Gran Canaria to Reykjavik, Iceland

11. Any special logistic requirements at ports of call:

na

Part B: DETAIL

- 1. Name of research ship:** RV Pelagia
- 2. Cruise dates:** 14 July – 11 August 2009
- 3. Purpose of research and general operational methods:**

Study effect of vertical stratification of the water column on total phytoplankton community.

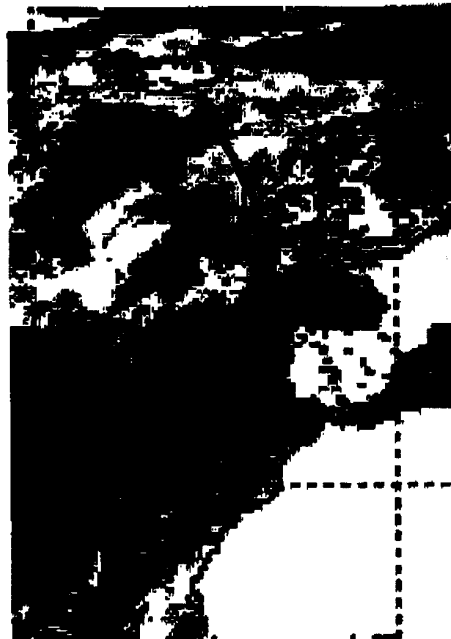
Stations will be samples for physical parameters (temperature, salinity, turbulence etc), chemical parameters (nutrient concentrations, dissolved organic matter etc) and biological parameters (abundance and community diversity of algae, grazers and microbes (bacterial and viral community). The main stations will have a more extensive sampling program, including process assays; production and health of phytoplankton, grazing and viral lysis mortality.

Sampling gear will involve mainly CTD, aquapump and multineets. Additionally instruments to measure light and turbulence will be used.

Operational methods upon sampling: (ultra)filtration to concentrate samples for diversity analysis, direct counting, fixation of samples for analysis at home lab, primary and secondary production and mortality assays, autoanalysis for nutrient concentrations.

- 4. Attach chart showing (on an appropriate scale) the geographical area of the intended work, positions of intended stations/hydrographic sections:**

Stations are scheduled at constant distances over the length of the transect: every 10-20 miles a short station and every 100 miles a main station with a more extensive sampling program. See figure: red line indicates cruise track.



5a. Type of samples required:

water samples

5b. Methods by which samples will be obtained (including dredge/core/drill techniques):

CTD rosette sampling, aquaflo pump system of the ship, vertical nets for zooplankton

6. Details of moored equipment:

na

7. Explosives:

No explosives.

8. Detail and reference of:

a. Any relevant previous/future cruises:

na

b. Any previous published research data relating to the proposed cruise:

(Attach separate sheet if necessary)

na

9. Names and addresses of scientists of the coastal state in whose waters the proposed cruise takes place with whom previous contact has been made:

Na

10. State:

a. Whether visits to the ship in port by scientist of the coastal state concerned will be acceptable:

Yes

b. Whether it will be acceptable to carry on board an observer from the coastal state for any part of the cruise and dates and ports of embarkation/-disembarkation:

Yes.

c. When research data from intended cruise is likely to be made available to the coastal state and if so, by what means:

The data will be made available through a scientific publication.

COASTAL STATE: Iceland

SCIENTIFIC EQUIPMENT

11. Complete the following table - include a separate copy for each coastal state (indicate "Yes" or "No" if applicable)

Marine scientific equipment used	water depth (m)	fisheries research	distance of research to coast in nautical miles			
				< 3	3-12	12-50
CTD-rosette sampler	Upper 300 m	no	no	no	yes	yes
SCAMP, measures turbulence	Upper 300 m	no	no	no	yes	yes
Light meter	Upper 300 m	no	no	no	yes	yes
Aquapump	Upper 300 m	no	no	no	yes	yes
Multinets	Upper 300 m	no	no	no	yes	yes

List of intended sampling stations during Pelagia cruise

Every 10-20 miles.

References

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