

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

- 1. Name of research ship:** **RV Pelagia** **Cruise number:** **64PE**
- 2. Cruise dates:** 4 April 2011 – 4 May 2011
- 3a. Operating authority:** NIOZ Royal Netherlands Institute for Sea Research
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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 / I. Burkhard |
| number of crew: | 11 |
- 7. Chief scientist:**
- | | |
|-----------------|--|
| name: | Dr. C Brussaard |
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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 second 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: 4 April – 4 May 2011

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 heath of phytoplankton, grazing and viral lysis mortality.

Sampling gear will involve mainly CTD, aquapump and multinetts. 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:

We will largely follow the sampling scheme of the first summer cruise in 2009; 32 stations distributed largely evenly over the cruise track. Every other station will be a main station with a more extensive sampling program. Figure shows cruise track first cruise in 2009.



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:

Depending on maximum number of participants, 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	50-200
CTD-rosette sampler	Upper 500 m	no	no	no	yes	yes
SCAMP, measures turbulence	Upper 300 m	no	no	no	yes	yes
Light meter	Upper 500 m	no	no	no	yes	yes
Aquapump	Upper 50 m	no	no	no	yes	yes
Multinets	Upper 500 m	no	no	no	yes	yes

List of intended sampling stations during Pelagia cruise

We plan to largely copy the cruise track of the STRATIPHYT - 64PE309 cruise with R/V Pelagia that took place in summer 2009.

Station/ Track	Date/ Time (UTC)	Lat	Lon
1	Jul 17 2009 05:05:07	30.01492	-15.06905
2	Jul 18 2009 05:02:58	31.22085	-14.86552
3	Jul 19 2009 04:58:43	32.82408	-14.58918
4	Jul 19 2009 19:12:43	33.58052	-14.45793
5	Jul 20 2009 05:07:43	34.71928	-14.25802
6	Jul 20 2009 21:04:58	35.52918	-14.11427
7	Jul 21 2009 05:06:38	36.52605	-13.93472
8	Jul 21 2009 20:32:43	37.27735	-13.79655
9	Jul 22 2009 04:59:20	38.424	-13.58622
10	Jul 22 2009 20:02:24	39.48843	-13.3876
11	Jul 23 2009 05:20:17	40.52753	-13.1907
12	Jul 23 2009 20:37:41	41.24687	-13.05223
13	Jul 24 2009 05:06:28	42.3373	-12.88325
14	Jul 24 2009 20:29:03	43.08168	-12.7787

15	Jul 25 2009 05:01:20	44.28242	-12.60548
16	Jul 26 2009 07:40:33	45.91702	-12.36342
17	Jul 26 2009 11:03:58	45.52638	-12.42627
18	Jul 28 2009 05:05:42	47.56735	-12.11408
19	Jul 29 2009 05:05:04	49.38245	-11.82932
20	Jul 29 2009 20:00:16	50.1759	-11.70073
21	Jul 30 2009 04:59:38	51.00037	-11.56683
22	Aug 02 2009 07:31:05	53.63667	-12.35428
23	Aug 02 2009 20:00:36	54.94998	-13.55343
24	Aug 03 2009 04:58:48	55.71382	-14.28072
25	Aug 04 2009 04:59:58	58.0019	-16.52033
26	Aug 04 2009 19:59:10	58.65352	-17.18172
27	Aug 05 2009 04:58:56	59.49987	-18.06988
28	Aug 05 2009 20:00:24	60.11648	-18.72702
29	Aug 06 2009 05:03:40	60.68382	-19.33963
30	Aug 07 2009 09:07:19	61.713	-20.4867
31	Aug 08 2009 19:23:11	62.30007	-21.1555
32	Aug 09 2009 05:00:49	62.79987	-21.736

References

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