

## NOTIFICATION OF PROPOSED RESEARCH CRUISE

### Part A: GENERAL

1. Name of research ship: **RV Pelagia** Cruise number: **64PE425**

2. Cruise dates: 19 July – 18 August 2017. Cruise title: Stratiphy-17

3a. Operating authority: NIOZ Royal Netherlands Institute for Sea Research  
Telephone: (+31) (0)222-369300  
Telefax: (+31) (0)222-319674

3b. Operating agent: NIOZ Royal Netherlands Institute for Sea Research  
Telephone: (+31) (0)222-369300  
Telefax: (+31) (0)222-319674

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: PGRO  
IMO nr: 9001461

6. Crew: name of master: J.C. Ellen / P. Kuijt  
number of crew: 11

7. Chief scientist: name: Prof dr Corina Brussaard  
addresses: NIOZ  
telephone: +31 222 369513  
e-mail address: corina.brussaard@nioz.nl

**8. Geographical area in which the ship will operate:  
(with reference in latitude and longitude)**

From south of Iceland (around 62°N 21°W) to Canary Islands (28°N, 15°26'W).

**9. Brief description of purpose of cruise:**

The cruise has several goals, amongst which testing the hypothesis that transparent exopolymer particles are reducing the viral infection of phytoplankton by passive absorption of algal viruses to these particles (Mojica et al. 2016, where we showed that the ratio of viral lysis to microzooplankton grazing of the different phytoplankton groups (<20um diameter) during summer changes with vertical stratification along a latitudinal transect). The northern region of the transect was grazing dominated, whereas the more stratified southern region is viral lysis dominated. The Northeast Atlantic Ocean is a key area in global ocean circulation and an important sink for atmospheric CO<sub>2</sub>. In addition, stratification varies in the North Atlantic from strong permanent stratification in the (sub)tropics to weak seasonal stratification in the North and thus provides an ideal model system to investigate the role of vertical stratification in structuring microbial communities. Moreover, we will be sampling for metagenomics analysis of the microbial community, including marine viruses along this latitudinal transect, which has not been reported before. Furthermore, the northeast Atlantic comprises two contrasting biogeochemical regimes where the northern region is characterized by relatively low dust loading and deep mixed layers whereas the southern region has a relatively high dust loading and shallow mixed layers. The contrasting biogeochemical regimes affect the concentrations and cycling of trace metals and metal-binding ligands, which has not been investigated in detail. It is largely unknown how this affects the metal-macronutrient and metal-metal ratios in the microbial community as well as the export of particles below the mixed layer. Lastly, we aim to study the distribution and biological sources of archaeal membranes lipids in the marine realm as these can be used to track both the present, but most importantly, the past presence of archaea in marine settings. Previous studies carried out by our group indicate that marine pelagic archaea are more diverse than previously thought and have a specific niche occupancy in the marine water column.

**10. Names and dates of intended ports of call:**

19 July Texel – 18 August Las Palmas (Canary Islands)

**11. Any special logistic requirements at ports of call: -**

## Part B: DETAIL

1. Name of research ship: **RV Pelagia**

2. Cruise dates:

19 July – 18 August 2017

3. Purpose of research and general operational methods:

Sampling for microbial community composition and abundances in the water column (analysis performed by flow cytometry, molecular techniques, pigment and lipid analysis). Potentially, sediment samples will be taken (top 40cm) for lipid analysis. Sampling will be performed by automated bottle sampling (CTD rosette with bottles), in situ pumping, and potentially box coring. Additionally, surface water sampling by neuston net (150 um pore size) for microplastics.

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

From south of Iceland (around 62°N 21°W) to Canary Islands (28°N, 15°26'W). Map below shows roughly the cruise track. Expected positions of stations (locations from 2011 Stratiphyt-II cruise, however, locations of current Stratiphyt-17 cruise may change somewhat):



Station	Latitude <i>degrees decimal</i>	Longitude
0	28.999.982	-14.999.994
1	30.018.594	-15.070.508
2	31.220.091	-14.870.195
3	32.820.495	-14.590.394
5	34.719.725	-14.260.068
6	35.529.688	-14.110.193
7	36.529.698	-13.939.981
8	37.279.965	-13.800.038
9	38.420.489	-13.575.978
10	39.499.900	-13.390.100
11	40.529.594	-13.190.131
12	41.249.872	-13.049.851
13	42.340.079	-12.879.929
14	43.079.889	-1.277.936
15	44.279.789	-1.260.983
16	44.914.194	-12.517.894
17	45.529.783	-12.430.106

18	47.570.082	-12.110.403
20	49.915.062	-16.356.662
22	52.621.788	-16.497.225
23	54.633.279	-16.508.962
25	58.000.163	-16.520.083
26	58.650.223	-17.179.777
27	59.500.026	-18.069.873
28	60.119.958	-18.729.966
29	60.680.043	-19.340.095
30	61.710.326	-20.490.256
31	62.299.777	-21.159.864
32	62.800.035	-21.740.748

**5a. Type of samples required:**

Water samples (over entire water column with focus on top 250 m), potentially also sediment samples

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

Sampling will be performed by automated bottle sampling (CTD rosette with bottles), in situ pumping, and potentially box coring.

**6. Details of moored equipment:**

N.a.

**7. Explosives:**

N.a.

**8. Detail and reference of:**

**a. Any relevant previous/future cruises:**

Stratiphyt I and Stratiphyt II cruise reports 64PE309 and 64PE334, respectively

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

**(Attach separate sheet if necessary)**

Mojica, K.D.A.; Huisman, J.; Wilhelm, S.W.; Brussaard, C.P.D. (2016). Latitudinal variation in virus-induced mortality of phytoplankton across the North Atlantic Ocean. *ISME J.* 10: 500-513. [dx.doi.org/10.1038/ismej.2015.130](https://doi.org/10.1038/ismej.2015.130)

Mojica, K.D.A.; van de Poll, W.H.; Kehoe, M.; Huisman, J.; Timmermans, K.R.; Buma, A.G.J.; Van der Woerd, H.J.; Hahn-Woernle, L.; Dijkstra, H.A.; Brussaard, C.P.D. (2015). Phytoplankton community structure in relation to vertical stratification along a north-south gradient in the Northeast Atlantic Ocean. *Limnol. Oceanogr.* 60: 1498–1521. [dx.doi.org/10.1002/lno.10113](https://doi.org/10.1002/lno.10113)

van de Poll, W.H.; Kulk, G.; Timmermans, K.R.; Brussaard, C.P.D.; van der Woerd, H.J.; Kehoe, M.J.; Mojica, K.D.A.; Visser, R.J.W.; Rozema, P.D.; Buma, A.G.J. (2013). Phytoplankton chlorophyll *a* biomass, composition, and productivity along a temperature and stratification gradient in the northeast Atlantic Ocean. *Biogeosciences* 10(6): 4227-4240. [dx.doi.org/10.5194/bg-10-4227-2013](https://doi.org/10.5194/bg-10-4227-2013),

**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:**

-

**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:**

No port call is foreseen in Iceland. Any observer would thus have to embark in the Netherlands. Because the number of cabins on board the vessel is limited we would require to know well in advance if an observer from Iceland will join the cruise.

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

Initially preliminary data can be found in the cruise report (within 1 month after the cruise), and later on in scientific publications

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 sampler	Up to 24 depths over entire water column	no				yes
Box core	bottom	no				yes
In situ pumps	3-5 depths over entire water column					yes
Neuston net	surface					yes

List of intended sampling stations during Pelagia cruise

Station	Latitude <i>degrees decimal</i>	Longitude
0	28.999.982	-14.999.994
1	30.018.594	-15.070.508
2	31.220.091	-14.870.195
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30	61.710.326	-20.490.256
31	62.299.777	-21.159.864
32	62.800.035	-21.740.748

## References

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