EXport Processes in the Ocean from Remote Sensing (EXPORTS)

EXPORTS North Atlantic - Operations, Health and Safety Plan

Revision History

Revision	Description of change	Author(s)	Effective date
	Initial Release	Cetinic	

CONTENTS

1. EXPORTS FIELD CAMPAIGN OVERVIEW

EXport Processes in the Ocean from Remote Sensing (EXPORTS) is a large-scale NASA-led and NSF co-funded field campaign that will provide critical information for quantifying the export and fate of upper ocean net primary production (NPP) using satellite information and state of the art technology. To develop this quantitative understanding, EXPORTS is measuring and modeling the export pathways that remove fixed organic carbon from the upper ocean and drive the attenuation of these vertical fluxes within the ocean interior. EXPORTS datasets will be used to develop and test numerical predictive and satellite-data diagnostic models of NPP fates and their carbon cycle impacts. EXPORTS builds on decades of NASA-funded research on developing and validating satellite data-driven models of regional to global NPP and hence, EXPORTS will contribute to NASA's upcoming Plankton, Aerosol, Cloud and ocean Ecosystem (PACE) mission.

Essential to this program are two field campaigns; first that took place in 2018 in North Pacific, and second, that was postponed from spring 2020 to spring of 2021 to take place in North Atlantic. Success of this field campaign requires: a) parallel scientific operations aboard two research vessels /NASA & NSF funded/, b) the suite of accompanying autonomous underwater vehicles /NASA funded/, and c) presence of additional research vessels through national/international collaboration (Ocean Twilight Zone/Woods Hole Institution).

The EXPORTS project is managed through HQ, with NASA GSFC and NASA AMES supporting the central operations. The work to support the EXPORTS North Atlantic campaign 2021 involves numerous university and government institutions, as well as the ship operators. The scope of this document will apply to all EXPORTS participants regardless of the funding source. Plans of the individual institutions, either Return to Onsite Work (RTOW) or travel plans will be provided (as they become available. If not available, institutions will adhere to the rules and regulations stated in this plan.

This document builds upon the lessons learned from the ARC approved S-MODE and IMPACTS RTOW plan, and due to the nature of the research heavily relies on UNOLS "Coronavirus (COVID-19) Considerations for Making Decisions Regarding Conducting Science Onboard U.S. Academic Research" (Appendix D).

1.1. PARTICIPATION

The NASA centers and universities whose employees are supporting EXPORTS by traveling and physically working on site at a NASA facility or elsewhere, are described in Table 1. Decisions in EXPORTS are made through the Project Office consisting of: Laura Lorenzoni (Program Scientists), Ivona Cetinic (Project Scientist), Quincy Allison (Logistics Lead), Dave Siegel (Science Lead), Inia Soto Ramos (Data management) and additional representatives of Science from different

universities participating in the roles of Chief Scientists aboard different vessels (2 each NASA vessel - Craig Lee & Dave Siegel, Deborah Steinberg & Jason Graff). As a representative of collaborator project is their Chief Scientist Ken Buesseler.

Table 1. EXPORTS Campaign Participants and Roles

Institution	Acronym	Role	Lead (POC)
NASA HQ	HQ	Program Scientist	Laura Lorenzoni
NASA Goddard Space Flight Center	GSFC	Project Scientist and science	Ivona Cetinic
NASA Ames Research Center	ARC	Logistics	Quincy Allison
Multiple Universities / Institutes	Uni	Science Lead and Science	David Siegel

1.2. CRITICALITY OF INVESTIGATION

On December 21st 2020, the NASA HQ Ocean Biology and Biogeochemistry Program Scientist Laura Lorenzoni, issued a letter classifying EXPORTS as a Major Impact project (Appendix A). This letter stated the importance of the continuation of planning for the March/April/May/June 2021 EXPORTS deployment.

With this support, this EXPORTS Operations and Health Safety Plan was created under the following purpose and scope:

2. PURPOSE AND SCOPE

The purpose of this document is to describe the EXPORTS-wide plan to mitigate the transmission risk of COVID-19 to and from personnel supporting EXPORTS field operations. EXPORTS management has already reduced the COVID-19 risk by limiting the number of personnel in the field to scientists and minimal support personnel (Table 2).

Table 2. Maximum number of EXPORTS team members at each location at a given time.

NASA GSFC

Participants	*Preparation*	*Deployment*	*Post deployment*
GSFC	*1*	*1*	*1*

NASA AMES

Participants	*Preparation*	*Deployment*	*Post deployment*
ARC	*3*	*3*	*3*

Research Vessels/Southampton

Participants	*Preparation*	*Deployment*	*Post deployment*

GSFC	*0*	*2(1)[#]*	*0*
ARC	*0*	*2*	*0*
HQ	*0*	*1*	*0*
UNI Science Team	*0*	*60**	*0*

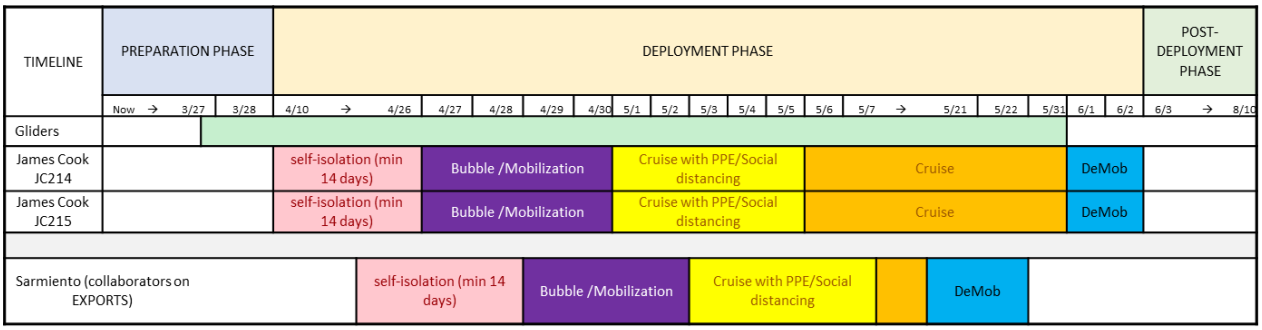
[*] Number of UNI participants during deployment phase is a current estimate of true participants (27 per R/V) and science alternates that will fly to Southampton and go through the process of pre-cruise self-isolation.

[#]GSFC team for the deployment phase consists of a member of the Science Team (that is sailing) and potential support from Project Scientist that might join in Southampton for a mobilization portion of the deployment phase (TBD). ARC and HQ role in deployment phase is for logistics and project support only, none of the ARC and HQ personnel are sailing (later referred to as non-sailing).

2.1. FIELD CAMPAIGN PHASES

EXPORTS operations are split into two distinct field campaign phases: preparation and field deployment phase. The *preparation phase* will take place at different NASA centers and universities. The *deployment phase*, which will occur in several different steps. First, Seagliders, shipped from University of Washington, will be deployed by the collaborators aboard the National Oceanography Centre' R/V Discovery during the DY130 cruise starting from Southampton UK, on 14th of April 2021. No EXPORTS personnel will be physically involved with the DY130. Second portion of the deployment phase will occur in Southampton prior to boarding the research vessels Discovery and James Cook and conclude with the research cruise (DY 131 and JC214 respectively) from May 1st to June 1st. Parallel to the last part of the deployment phase collaborator Ocean Twilight Zone cruise aboard the R/V Sarimiento de Gamboa (SdG05-2021) will be operating in the same area, sailing from Vigo, Spain on May 6th – May 18th. A detailed field campaign timeline is described in table below (Table 3).

Table 3. Timeline with detailed explanations. Note – Cruise abord R/V Sarimiento de Gamboa are collaborators that are not funded by NASA, but noted here due to the overlap in operation.



During any of the project phases, the RTOW plan that applies is described below.

While working at NASA centers all NASA personnel will comply with this plan (that adheres to the most current policies specified by the home institutions). Non-NASA personnel, while working at their home institutions should follow requirements of their home institutions. During the duration of the *deployment phase*, all deployed personnel should adhere to the rules stated in this document, as it is written to satisfy most restrictive COVID – safety rules as defined by all institutions participating in

EXPORTS. Non deployed personnel (remote support and project management) should adhere to the COVID-safety rules of their home institutions.

2.1.1. Preparation Phase

Project participants will prepare instruments and equipment to be deployed during the first (DY131) and second (DY131 and JC 214) part of the deployment phase. Project preparation phase also involves the participants of the collaborating cruise aboard the R/V Sarimiento de Gamboa. Shipments of the equipment will be directed to NASA Ames and University of Rhode island, from where they will be shipped to NOC, UK under logistical support by ESPO.

- **When: Now – April 10th, 2020**
- **Where:** This activity will take place at PIs home centers and institutions, shipping consolidation at NASA Ames and University of Rhode Island.
- **Who needs to participate:** NASA ARC, NASA GSFC, and University Participants.
- **What RTOW plan applies:** Each Center/Organization/University will follow their own RTOW plan. This plan covers work occurring at NASA GSFC and NASA ARC during this period.

2.1.2. Deployment Phase

Research will be conducted aboard two National Oceanography Centre vessels, research vessels Discovery and James Cook. Project science management and logistics will be done from NASA GSFC, NASA ARC or from NOC. Additional remote support will be provided by Universities.

- **When: April 10th, 2021 to June 3, 2021**
- **Where: NOC R/V Discovery and James Cook, NASA GSFC, NASA ARC**
- **Who needs to participate:** NASA HQ, NASA ARC, NASA GSFC, University Participants.
- **What RTOW plan applies:**
    - Operations aboard research vessels will follow this EXPORTS Operations Health and Safety Plan.
    - Remote support operations will follow institutional ROTW plans.
    - NASA support personnel traveling to NOC (but not being deployed) should adhere to this EXPORTS Operations Health and Safety plan.

2.1.3. Post-Deployment Phase

Participants will return to their home institutions and receive shipment of gear and samples. Gear will be shipped from UK to two centers, NASA Ames and University of Rhode Island, and further distributed to universities/participating institutions.

When: June 3rd – August 10th, 2021

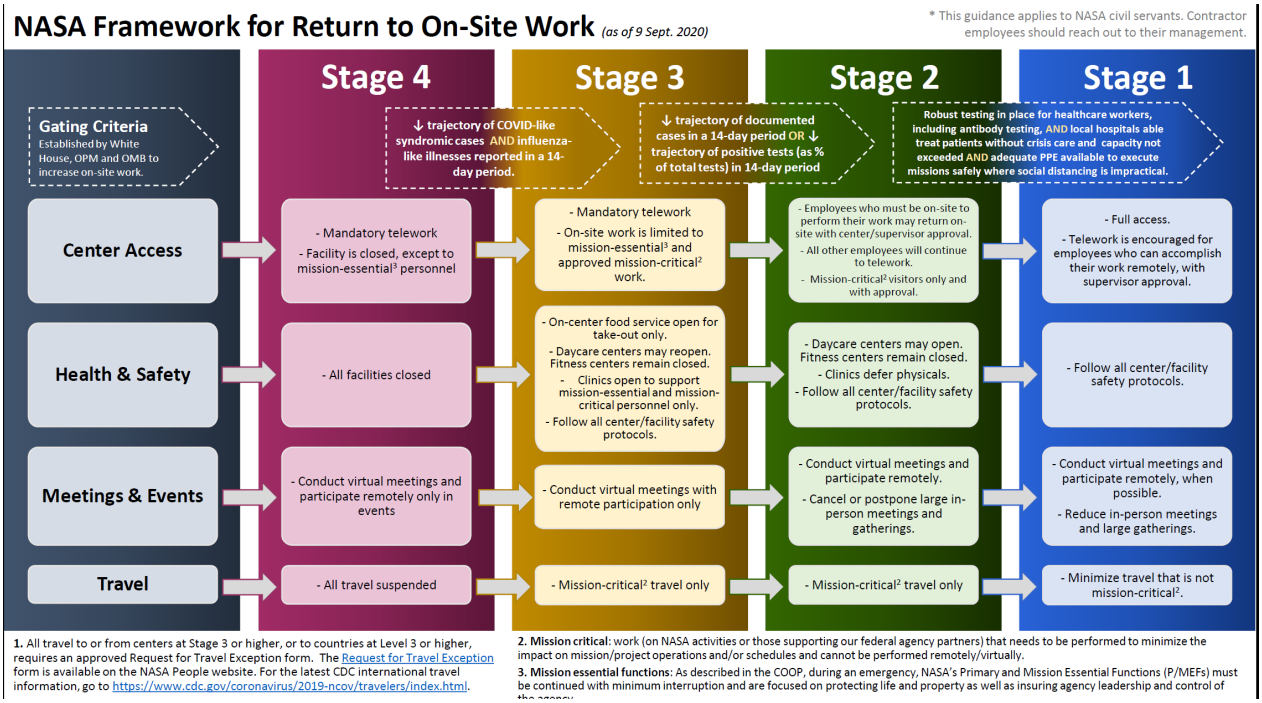
- **Where:** This activity will take place at PIs home centers and institutions, shipping consolidation at NASA Ames and University of Rhode Island.
- **Who needs to participate:** NASA ARC, NASA GSFC, and University Participants.

- **What RTOW plan applies:** Each Center/Organization/University will follow their own RTOW plan. This plan covers work occurring at NASA GSFC and NASA ARC during this period.

2.2 Additional RTOW Plans

This document intends to cover overall EXPORTS COVID-19 mitigation strategies. The latest version of the individual RTOW plans developed by the participant centers and universities are being or have been created in parallel and will be provided upon request. Furthermore, while the EXPORTS investigation is a cooperative effort among NASA GSFC, ARC and various universities, this document is limited to describing the field research and field support operations that will occur aboard the research vessels and in their direct support. All RTOW plans mentioned here that are outside the scope of this document will be made available by the EXPORTS project scientist by request. Note that requirements set by this plan take in consideration the strictest of the requirements set by any of the participating organizations (for which the documentation was available).

This plan is and will continue to be applicable to EXPORTS on-site operations during Stages 1-3 as defined by NASA's Framework for RTOW[1].



2.3 Travel Requests

NASA ARC personnel will request travel to and from the following locations for EXPORTS activities:

- UCSB, California – Shipping organization – preparation phase

[1] https://nasapeople.nasa.gov/coronavirus/rtow.html, accessed on Dec 21, 2020.

- WHOI, Massachusetts – Shipping organization - preparation phase
- URI GSO, Rhode Island – Shipping organization - preparation phase
- NOC, Southampton United Kingdom–Postcruise shipping organization - deployment phase

NASA GSFC

- NOC, Southampton United Kingdom– Pre-cruise, cruise, and postcruise - deployment phase

Travel specific plans (dates, locations and overall schedules) for NASA employees (ESPO, GSFC) will be added as an appendix in this document when become available.

3. COVID-19 Protocols and Mitigations

3.1. Health Monitoring

3.1.1. All personnel (including designated alternates) who plan to travel to support EXPORTS for any of the two distinct phases, and who fall into any one of the health risk categories listed by CDC (https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/index.html, accessed Dec, 1st 2019) will be discouraged from traveling. If any individual in this category still chooses to participate, it will be recommended to them that they consult their physician to understand the risks involved. The risk categories and recommendations will be sent via email to all potential travelers approximately one month prior to travel.

3.1.2. Beginning 14 days prior to travel, during the pre-sail quarantine, all mission personnel will conduct a daily self-assessment of their health using the guidelines found at CDC (check list in Appendix C, based on https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html, accessed Dec, 1st 2019). Individuals who feel ill should follow the guidelines found in the COVID-19 Emergency Response Plan (Appendix B). The individual's daily health assessment completion will be reported back to EXPORTS Project Office via an electronic form (https://forms.gle/cyLQNXMwnQbgLxhb6) that will be available and accessed only by management. Actual health check information should be kept with individual and shared if needed.

3.1.3. If an individual fails a daily health self-assessment, the steps laid out in the COVID-19 Emergency Response Plan (Appendix B) will be utilized.

3.1.4. EXPORTS has reduced the number of science support personnel at deployment site. Backup support personnel are (will be) identified from the participating institutions and a detailed list of travelers is being developed in parallel with this document. This measure is necessary to mitigate the risk caused by the more urgent need to minimally staff the deployment for health safety considerations.

3.2. Prior to travel and travel to deployment location

3.2.1. Prior to traveling for EXPORTS activities, all project participants – to the greatest extent possible – will 1) wear facial coverings (cloth masks or non-sterile disposable masks) when outside of their home and 2) stay at least six feet apart from anyone outside of their household. In addition, all personnel will agree to strictly adhere to all applicable local public health orders and institutional rules designed to reduce the transmission risk of COVID-19.

3.2.2. Within 72 hours prior to traveling to UK, sailing participants are required to do a PCR based COVID-19 test.

3.2.3. Only essential personnel will travel to support EXPORTS operations, minimizing the personnel footprint. Currently support personnel is two NASA ARC and one NASA GSFC employee.

3.2.4. During the travel, all participants (including NASA and university participants) are suggested to, to the greatest extent possible to 1) wear facial coverings (cloth masks or non-sterile disposable masks), 2) wash their hands, and increase the awareness about personal hygiene. When possible, they should as well keep their distance at 6 feet or more apart from anyone.

3.2.5. All deployed NASA personnel and participants will be advised to book and utilize their own or rental car for the purposes of personal transportation.

- Carpooling is not advisable.
- Use of taxis and ride sharing services (e.g., Uber, Lyft) is not advisable prior to and during the deployment phase of EXPORTS campaign.
- EXPORTS will work on the details of the transport from the Heathrow/Southampton airport to the self-isolation location in Southampton.

3.2.6. While flying, it is advisable to book as direct as possible flight from the point of origin to a) Heathrow, London or b) Southampton Airport.

3.2.7. During the travel to Southampton, if overnight stop has to be made, participants and support personnel are restricted to utilizing single-occupancy accommodations.

3.2.8. Upon arrival to the Southampton, all non-sailing support personnel will be required to partake in self-isolation, as defined by the local government, project or RToW of individual institutions (which ever one is more conservative). Of January 2st, 2020, UK is requiring 10 days self-isolation for arrivals from US (most updated information can be found here).

3.2.9. Upon arrival to the Southampton, all sailing personnel will be required to partake minimum of 14-day individual self-isolation in hotel facilities in Southampton (exact location TBD by the EXPORTS project).

3.2.10. During the self-isolation period sailing and non-sailing participants will:

- Stay at the single occupancy location, pre-determined by project, without receiving any visitors
- No visitation to the public area, even for shopping, exercise, or open-air recreation
- Have their food, medication delivered
- Leaving the self-isolation accommodation or accepting visitation is allowed only for essential activities, as currently defined by the local government: https://www.gov.uk/government/publications/coronavirus-covid-19-how-to-self-isolate-when-you-travel-to-the-uk/coronavirus-covid-19-how-to-self-isolate-when-you-travel-to-the-uk.

3.2.11. During the self-isolation, sailing participants will be tested two more times for presence of the COVID-19, via project organized PCR testing on site of self-isolation. These are going to be taken on 7th day upon the arrival to UK, and on the 14th day of the self-isolation. Participants will stay in the self-isolation until the results of the 14th day are available.

3.3. DEPLOYMENT PHASE

3.3.1. Any ground support activities done during the deployment phase by the NASA personnel

back in US is covered under the respective RTOW plans of NASA GSFC and ARC.

3.3.2. Upon the finalization of the self-isolation, the sailing personnel will be transported to the sailing vessels (transport will be organized by the project, "Covid-19 secure bus"), and enter the "bubble". Bubble is here defined as two research vessels, R/V Discovery and R/V James Cook, onboard which the deployment will occur.

3.3.3. Upon the finalization of the self-isolation non sailing personnel will, following restrictions outlined in 3.2.1 and obeying the current local government protocols, proceed to support the deployment from the grounds of NOC, without the entering aboard the sailing vessels "bubble". They will continue to use single-occupancy accommodation only leaving your accommodations for work or for essential activities, which are defined by the prevailing local public health orders (see 3.2.10). For transportation purposes, they should follow directions as described in 3.2.5.

3.3.4. The crew of the research vessels, will be entering the bubble, following the protocols outlined by NOC (see Appendix NOC PROTOCOLS), partaking in shorter self-isolation and PCR COVID-19 testing.

3.3.5. During the mobilization phase no EXPORTS public events are planned at the NOC site. Signs will be posted around the research vessels by the NOC personnel noting that access to research vessels will be restricted to EXPORTS personnel. Virtual events guided by the PI team will be allowed (while following the protocols outlined in 3.3.6), and organized by the project office.

3.3.6. As negative tests don't completely eliminate the potential for COVID infection, during the mobilization part of the deployment phase, and beginning of the sailing phase itself (total of 4 days) all participants and ship's crew will follow the outlined protocols:

- No one can leave the bubble (except for the medical or similar emergency). Once out of the bubble, participant is not allowed to sail.
- Adjusting mealtimes to facilitate social distancing while eating
- Adjusting work schedules to enable proper distancing in laboratories
- Wear masks while indoors
- When possible, assign one person per stateroom
- Follow the rules outlined by the NOC operators for maximum number of people in exercising and lounge facilities (see Appendix NOC PROTOCOLS).
- Keep self-monitoring the health (with daily electronic reporting)
- When interacting with external, non-EXPORTS or non-ship's crew individuals, project participants are encouraged to follow normal social distancing protocols (e.g. use of cloth face masks and six-foot distancing between individuals). Examples of possible interactions include delivery personnel, refuel personnel, and installation personnel.

3.4. SAILING PHASE

MISSING THE NOC PART HERE - sailing phase –

3.5. PERSONAL PROTECTIVE EQUIPMENT (PPE)[1]

3.5.1. EXPORTS participants utilizing the NASA GSFC and NASA ARC facilities will adhere to the PPE rules of GSFC and ARC, respectively, when working at the site. When on site of other institutions or their home institutions (except the NOC ship bubble), field campaign participants will follow the PPE requirements will be governed by the respective institutional or center wide policies of respective facilities. During the two weeks prior to the travel, during travel to, self-isolation, mob and cruise period EXPORTS Operations Health and Safety rules apply.

3.5.2. All EXPORTS personnel will be required to wear face coverings (cloth masks or non-sterile disposable masks) at all times. Personnel will be instructed to bring a minimum of three appropriate face coverings each, but ESPO will have an available backup supply of appropriate face coverings.

3.5.3. ESPO has a large inventory of the following PPE and cleaning supplies available for use:

- Disposable face masks
- Hygiene supplies (sanitizer, soap, paper towels, tissues, etc.)
- EPA-approved[2] disinfectant wipes or spray
- Non-sterile nitrile gloves (for cleaning surfaces)

In addition, ESPO will be sending PPE to EXPORTS deployment site at NOC.

3.3.6. During the deployment phase of EXPORTS (upon the entry to bubble), Chief Scientists and research vessel appointed personnel will monitor and enforce the PPE and social distancing rules as described in this plan. During the self-isolation period Individuals in violation of field campaign rules can be subject to removal from the campaign. The team will also be briefed on an "if you see something, say something" policy and can report observations to the EXPORTS project office and/or Chief Scientists.

3.6. CLEANING/HYGIENE PROTOCOLS[2]

3.6.1. Cleaning/hygiene protocols at field campaign participants' home institutions or at NASA centers during the preparation phase will be governed by the respective institutional or center wide policies.

3.6.2. Cleaning/hygiene protocols aboard the NOC research vessels (within the bubble, deployment phase) will be governed by the NOC (National Oceanic Centre) policies (Appendix XX), and will follow minimum cleaning guidelines:

- Surfaces frequently touched by multiple people, such as door handles, desks, phones, light switches, and faucets, will be cleaned and disinfected at least daily. More frequent cleaning and disinfection may be required based on level of use.
- All EXPORTS personnel will be supplied with the PPE and cleaning supplies listed in Section 3.4.3 to aid in the cleaning of their personal property and workspaces.

3.6.3. All personnel will be reminded to wash their hands frequently with soap and warm water for at least twenty seconds, especially after being in a public place or after eating,

[2] A list of EPA-approved disinfectants for use against COVID-19 can be found at https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2 [3]

using the restroom, blowing their nose, coughing, or sneezing[3]. If soap and water are not readily available, deployed personnel should use a hand sanitizer that contains at least 60% alcohol. If additional hand sanitizers are needed for the duration of the deployment phase (provided by NOC). ESPO will ensure that EXPORTS deployment locations are well stocked with hand sanitizer.

3.6.4. In collaboration with NOC, EXPORTS Project Office will post signs and posters reminding people to frequently wash their hands and to practice good hygiene as recommended by the CDC[4].

3.6.5. Safe disposal of PPE, wipes, etc. while aboard the NOC vessels will be done following the local regulations as prescribed by the vessels operator (NOC).

3.7. COMMUNICATION AND COVID-19 EMERGENCY PREPAREDNESS/RESPONSE

3.7.1. First and foremost, all field campaign participants will be instructed early and often to **STAY HOME** if they begin experiencing any of the symptoms listed in Appendix B.1 or if their pre-travel COVID-19 test is positive.

3.7.2. EXPORTS will provide all field campaign participants with a deployment guide that will include a contact list and this deployment health safety plan that will address the following topics:

3.7.2.1. Each field campaign participant will be provided information on what to do if they get sick. Reference Appendix B – COVID-19 Emergency Response Plan.

3.7.2.2. Field campaign participants who begin to feel sick during the deployment phase should follow Appendix B – COVID-19 Emergency Response Plan.

3.7.2.3. Each field campaign participant will be provided information on what to do if other team members get sick. Reference Appendix B – COVID-19 Emergency Response Plan.

3.7.2.4. Each field campaign participant deployed will be provided information on how to communicate concerns and issues.

3.7.3. NOC vessel crew members who begin to feel sick while in deployment phase should follow the rules from the NOC plan (Appendix XX).

3.7.4. EXPORTS sailing personnel that comes in close contact with another person who is sick or has a confirmed case of COVID-19, during the period of 14 days prior to travel, during the travel or self-isolation period in Southampton, will notify EXPORTS Project office immediately and remain in their accommodations while waiting for further instructions.

3.7.5. EXPORT Project office will monitor the guidance from all local public health offices in deployment area and alert field campaign participants to any changes in guidance.

3.7.6. EXPORTS Project office will disseminate a daily Context Situational Awareness plan which will include any necessary updates regarding COVID-19, institutional access, local restrictions, etc.

3.8. FACILITIES

3.8.1. EXPORTS Project office will verify that NOC management has completed their walkthrough and assessment of the Research Vessels Discovery and James Cook prior to the arrival of

[3] https://www.cdc.gov/handwashing/when-how-handwashing.html

[4] https://www.cdc.gov/handwashing/materials.html

the participants aboard the vessel.

3.8.2. EXPORTS Project office will verify that the field campaign facilities to be used by field campaign participants (hotel and Research Vessels) are adequately set up to implement the safety measures outlined in this document and provide a safe work environment.

3.9. Train / Inform field campaign Participants

The EXPORTS Operations Health and Safety Plan, along with all rules and regulations governing the field campaign, will be first disseminated electronically to all personnel participating in EXPORTS. It should be noted that anyone found in violation of these rules and regulations may be prohibited from participating in the field deployment and sent home from their deployment (e.g. during the self-isolation or mobilization/bubble portion of deployment phase). All participants will be asked to acknowledge (via online form: https://forms.gle/HaGdLjipfzvShyQ59) receipt of said training and agreement to adherence to the EXPORTS Operations Health Safety Plan.

3.9.1. All EXPORTS personnel will receive virtual COVID-19 related safety briefing approximately one month before the deployment phase, followed by a refresher class one week before the deployment phase. Attendance on this training will be mandatory for all participants. This briefing will COVID-19 protective measures and mitigations discussed in this plan (e.g., social distancing, proper use of PPE, disinfecting high-touch areas, handwashing, etc.) with particular emphasis on the measures that will be the individual responsibility of all deployed personnel (e.g., **STAY HOME** if you start to feel ill, what to do if a teammate starts to feel ill, etc.). A draft of this briefing will be sent to all the EXPORTS participants for review.

3.9.2. Project office will make sure that all field campaign participants receive any additional safety plans and information from other centers when applicable. In addition, all EXPORTS personnel will be briefed on which institutions' guidelines apply as described in Section 2.1.

3.10. Travel

3.10.1. Travel for university participants to and from England will be handled by individual institutions. Travel for all NASA center employees (see 2.3, contractors and partners, no civil servants on projects) will be handled through individual NASA' home center/contracting organizations, and travel requests will adhere to the appropriate NASA/NASA center policy.

3.10.2. Hotels: EXPORTS project office will recommend hotels to project participants that implement the CDC guidelines for cleanliness and infection prevention: https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html or UK government standards https://www.gov.uk/guidance/working-safely-during-coronavirus-covid-19/hotels-and-other-guest-accommodation#section-5-1 and https://www.ukhospitality.org.uk/page/COVID19SecureGuidelines . Whenever possible, EXPORTS Travelers will be encouraged to use extended stay accommodations to allow each individual access to a private kitchen.

Appendix A. Major Impact/Mission Critical Designation of EXPORTS field campaign

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

TO: Ryan Spackman, Chief, Earth Science Division, Ames Research Center
James Irons, Director, Earth Sciences Division, Goddard Space Flight Center

FROM: Laura Lorenzoni, Program Scientist, Earth Science Division, Science Mission Directorate

SUBJECT: Major Impact/Mission Critical Designation of EXPORTS field campaign

As the Ocean Biology and Biogeochemistry (OBB) Program Scientist, I would like to declare the EXPORT Processes in the Ocean from Remote Sensing (EXPORTS) North Atlantic field campaign as an activity with "major impact" to NASA's research program if not held in the Spring of 2021. EXPORTS is a ~$25M NASA-funded field campaign to quantify the pathways and controls of the export flux of carbon in the ocean and collect an extensive optical field database critical for validation and algorithm development of on orbit and upcoming satellite missions such as PACE. With more than 100 scientists and crew from nearly 30 research institutions, EXPORTS is the first coordinated multidisciplinary science campaign of its kind to study the pathways, fates and carbon cycle impacts of microscopic organisms and plankton. EXPORTS supports the Science Mission Directorate's Earth Science Division mission by focusing on the observation and modeling of the pathways that export organic carbon from the upper ocean to depth through two dedicated field campaigns, each using two research vessels, a range of underwater robotic platforms, and satellite imagery. The first field campaign was completed in the late summer of 2018, and took place in the North Pacific. The second and last field campaign is planned for the North Atlantic in the Spring of 2021. Initially, the North Atlantic field campaign had been planned for the Spring of 2020, and was postponed due to COVID-19.

EXPORTS represents a significant investment by NASA. The effort has been in development since 2014, and the research has been developed and is supported in collaboration with NSF and other national/international partners (National Oceanography Centre, Southampton, and the Ocean Twilight Zone – part of the international Audacious Project). Without the North Atlantic field campaign, the objectives of the research project will not be achieved. In addition, the field data to be collected is absolutely critical for validating on orbit sensor data including MODIS (Aqua), VIIRS (Suomi NPP and JPSS) and the upcoming PACE missions. Timing is of the essence: measurements need to be taken in the Spring in the North Atlantic to ensure the right conditions are present for observing the export pathways of carbon under specific biological conditions. The more than 50 scientists involved in the North Atlantic field campaign will sail from Southampton, UK, and return to the same departure port upon completion of the 30-day cruise. It is tremendously difficult to secure two research vessels to carry out the EXPORTS operations, and the project has been fortunate to be able to do it for

the spring of 2021. It is unlikely that this will be the case in future years, should the project be further delayed.

The EXPORTS project office, which manages the project, includes personnel from NASA's GSFC's Ocean Ecology Lab (OEL), NASA Ames Earth Science Project Office (ESPO), and NASA Headquarters (HQ). Therefore, an Operations, Health and Safety Plan for the upcoming EXPORTS field campaign has been drafted which includes COVID-19 protocols and mitigations for NASA centers, as well as for international travel, since the cruise is set to sail from the UK. Because the EXPORTS deployment in 2021 involves NASA Centers and Universities, all participating universities and/or institutions will adhere to the rules and regulations stated in this plan, unless a more stringent plan is developed by individual institutions, and that plan has been approved by the EXPORTS Project Office.

It is important that EXPORTS be considered "mission critical" and of "major impact" to NASA so that personnel from ESPO and OEL can support the field deployment adequately. Please feel free to contact me if you have any questions

Thank you,
Laura

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ESD/Sandra Cauffman
ARC/Marilyn Vasquez
ARC/Florian Schwandner
GSFC/Carlos del Castillo

Appendix B. COVID-19 Emergency Response Plan

This guidance has been developed in order to conduct the EXPORTS campaign with the highest level of regard to the safety of the participants. However, despite the development and implementation of measures to mitigate the risk of COVID-19 infection, the risk still exists.

B.1. COVID-19 Symptoms

The following symptoms may appear 2-14 days after exposure (see appendix C)[1]

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

B.2. Sickness or Confirmed COVID-19 Test Prior to Travel

Starting 14 days prior to travel to the deployment site, all primary and alternate field campaign participants will conduct daily health self-assessments (Appendix C). If a participant begins to feel ill prior to traveling to deployment sites, then the participant should take the following steps:

- Stay at home and self-isolate
- Seek medical guidance from their personal physician – if recommended take a PCR COVID-19 test
- Notify their supervisor and the EXPORTS project scientist

All participants sailing will have to take a PCR COVID -19 test prior to traveling to the deployment phase. Project office will have the most up to date information on free COVID-19 testing sites, many of which are drive through facilities. Please contact your Project office personnel to get that information.
If the participant falls ill (or tests positive for COVID-19), then a previously identified alternate will deploy instead (if necessary), provided there has been no close contact with the ill participant or with anyone else who has been diagnosed with COVID-19. To the greatest extent possible, risk of spread between primary participants and alternate participants during the last 14 days prior to deployment phase should be minimized.

[1] https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html

For any travel during the preparation phase, NASA and other participants will follow the rules as set in their respective institutions ROTW plans.

B.3. Sickness or Confirmed COVID-19 Test During Deployment Phase

B.3.1. During quarantine

During this period, all primary and alternate field campaign participants will conduct daily health self-assessments (Appendix C). During this time, participants will be required to take 2 PCR COVID-19 tests (organized by Project office in collaboration with NOC through Remote Medical International, within the place of quarantine). If a participant starts to feel ill while at work, then the participant should take the following steps:

- Seek medical guidance from the recommended physician (TBD through NOC and the Remote Medical International)
- Notify their supervisor and the EXPORTS project scientist

If a participant (primary or alternate) has a positive COVID-19 test, it will prevent him/her from participating in the cruise. In collaboration with NOC, EXPORTS project office will track the progress of illness and assist with repatriation of the participant.

B.3.2. During mobilization/bubble phase

During this period, all field campaign participants will conduct daily health self-assessments (Appendix C). During this phase, all participants should still be wearing PPE and adhere to the social distancing protocols to the furthest extent possible. NOC Covid-19 Onboard Outbreak Management Plan (Appendix NOC PROTOCOLS) will be followed to manage any suspected onboard outbreak either alongside or at sea. If a participant starts to feel ill while in bubble/mobilization phase, then the participants should take following steps:

- Immediately leave the work site and go back to their assigned room to self-isolate
- Notify the Chief Scientist (who will notify the research vessel captain/designated medical point person aboard the research vessel, and EXPORTS project scientist)
- Follow the medical guidance provided by the RV crew and Remote Medical International

If a participant after falling ill has a positive COVID-19 test, it will prevent him/her from participating in the cruise. In collaboration with NOC, EXPORTS project office will track the progress of illness and assist with repatriation of the participant. In collaboration with NOC and based on their Covid-19 Onboard Outbreak Management Plan (Appendix NOC PROTOCOLS) EXPORTS Project office will decide on the path forward.

B.3.3 During cruise

NOC Covid-19 Onboard Outbreak Management Plan will be followed to manage any suspected onboard outbreak either alongside or at sea. If a participant starts to feel ill while at sea, then the participant should take the following steps:

- Immediately leave the work site and go back to their assigned room to self-isolate

● Notify the Chief Scientist

The Chief Scientist will then notify the Research Vessel captain and EXPORTS project scientist. While no Doctor or paramedic will be carried on either ship, NMF Shore management and ship's Captains are all suitably qualified, experienced and well versed in contingency planning and decision making. Remote medical advice and guidance will be provided by NMF's 24/7 telemedicine provider (Remote Medical International). Decisions on diversion ports to land suspected cases once at sea will be made on a case-by-case basis factoring in the many variables at play, not least ship's position, medevac provision and proximity to medical facilities (likely Eire or SW England).
Other participants should start implementing PPE and social distancing rules, while following the direction of the Research Vessel's captain.
In case of confirm COVID-19 case during the cruise, in collaboration with NOC, EXPORTS project office will track the progress of illness and assist with repatriation of the participants.

B.3.4. While Waiting for Test Results

While waiting for a test result, either planned or due to the appearance of the symptoms, participant should follow the directions defined by CDC: https://www.cdc.gov/coronavirus/2019-ncov/downloads/3key-steps-when-waiting-for-COVID-19-results_508.pdf. For the contact tracing reasons, it is advisable for participants to have list of contacts (to the best of their abilities) during the period of 2-3 days prior to testing/symptoms appearance.

APPENDIX C - EXPORTS COVID-19 self-checklist

(Modified after CDC "Symptoms of Coronavirus" website)[1]

People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. Symptoms may appear **2-14 days after exposure to the virus.** Please use following check list daily to check for symptoms that indicate that you might have COVID-19, and upon finish log to https://forms.gle/cyLQNXMwnQbgLxhb6 :

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

This list does not include all possible symptoms. Update to this list will be done based on updates provided by CDC. If you fail daily health self assessment, refer to Appendix B.

When to seek emergency medical attention

Look for **emergency warning signs*** for COVID-19. If someone is showing any of these signs, **seek emergency medical care immediately:**

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion
- Inability to wake or stay awake
- Bluish lips or face

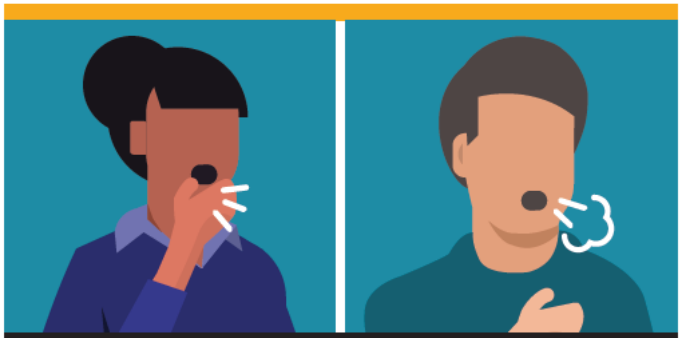
*This list is not all possible symptoms. Please call your medical provider for any other symptoms that are severe or concerning to you.

Call 911 (USA) or 999 (UK) or call ahead to your local emergency facility: Notify the operator that you are seeking care for someone who has or may have COVID-19.

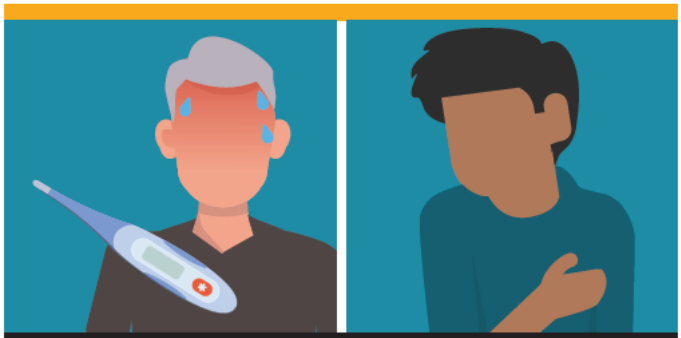
[1] https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html, accessed on January 3rd 2021

Symptoms of Coronavirus (COVID-19)

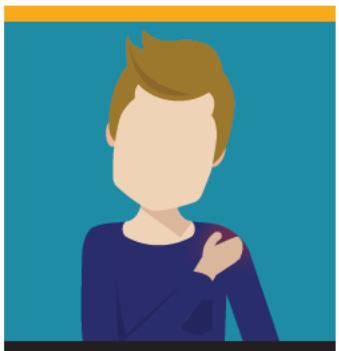
Know the symptoms of COVID-19, which can include the following:



Cough, shortness of breath or difficulty breathing



Fever or chills



Muscle or body aches

Vomiting or diarrhea

New loss of taste or smell

Symptoms can range from mild to severe illness, and appear 2–14 days after you are exposed to the virus that causes COVID-19.

Seek medical care immediately if someone has Emergency Warning Signs of COVID-19

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion
- Inability to wake or stay awake
- Bluish lips or face

This list is not all possible symptoms. Please call your healthcare provider for any other symptoms that are severe or concerning to you.

Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases

cdc.gov/coronavirus

CS-317142-E

Coronavirus (COVID-19) Considerations for Making Decisions Regarding Conducting Science Onboard U.S. Academic Research Fleet Vessels

Executive Summary

This document provides considerations and guidelines for Marine Superintendents and Chief Scientists to take into account in preparation for restarting seagoing science operations onboard U.S. Academic Research Fleet vessels. This guidance serves to address a number of important factors related to COVID-19 and the issues that must be addressed when conducting sea-going research during the current pandemic. As the nation begins to recover and restart from the Coronavirus pandemic it is important to prepare the Fleet for return to operations. This document provides a framework for assessing and mitigating the risks associated with resuming sea-going science. Safety of crew and science parties remains paramount and is thus the driving force for ensuring risks are as low as possible. Marine Superintendents and Chief Scientists are charged with considering the many elements that influence the risk of returning to sea to produce an overall risk assessment specific to each mission. This document outlines steps for producing an assessment and communicating its findings. UNOLS will continue to update this document to reflect the best available guidance for vessel operators and scientists as the pandemic unfolds and testing, both antibody and viral, becomes more widely available.

References

1. George Washington Medical Faculty Associates (GW MFA) recommended list at:https://www.unols.org/news/ships-news/unols-update-coronavirus-covid-19-and-considerations-scientists-and-operators
2. International Chamber of Shipping (ICS) – Coronavirus (COVID-19) Guidance for Ship Operators for the Protection of the Health of Seafarers https://www.ics-shipping.org/docs/default-source/resources/coronavirus-(covid-19)-guidance-for-ship-operators-for-the-protection-of-the-health-of-seafarers.pdf?sfvrsn=6
3. Centers for Disease Control (CDC) Maritime Recommendations https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html
4. CDC COVID-19 Travel Recommendations by Country https://www.cdc.gov/coronavirus/2019-ncov/travelers/map-and-travel-notices.html

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Introduction

Safety of crew and science party members is paramount in determining whether at-sea science operations can recommence on research vessels of the U.S. Academic Research Fleet (ARF). Financial considerations will not be the driving factors in making decisions related to restarting operations.

It is the intent of UNOLS and the Federal agencies to re-start seagoing oceanographic science operations as soon as they can be conducted with low risk to scientists and ship crews. This document seeks to provide guidance to ARF vessel operators and Chief Scientists regarding considerations to take into account in assessing the risk to crew and science party safety in determining whether to proceed with science cruises.

Many factors must be taken into consideration as UNOLS ship operators and Chief Scientists work together to determine whether oceanographic science can resume on ARF vessels. The Marine Superintendent and the Chief Scientist have many similar but also some different issues to consider in determining whether each feel that the risks are so great that a cruise cannot be conducted safely. It is reasonable and expected that the Marine Superintendent and the Chief Scientist may have differing opinions as to whether a science cruise can be carried out safely. As always, **either has the authority to veto a cruise after careful consideration of all appropriate factors and assessing the risk** of unsuccessful completion of science and/or adverse impacts to the ship's crew, the science party members, and the ships.

If a Chief Scientist and/or a Marine Superintendent makes the determination that the risks are unacceptable and a cruise should be postponed or canceled, they shall document the basis for that decision in writing and communicate it not only to each other but also to the UNOLS Office, NSF Ship Operations, ONR (for Navy-owned research vessels and for ONR-funded science), NSF Science Program Manager (for NSF funded science), and other agencies/institutions that fund the affected science program. Further details of this process are provided below.

As of this date – the current anticipated pause in ARF science operations continues until 1 July 2020. However, in those cases where cruises are deemed High Priority (Priority1) and the risk is determined to be Low (as discussed later in this document) the ship operator can communicate a plan for conducting science prior to 1 July with the UNOLS Office and the appropriate Federal agency to seek concurrence. Low-risk, priority 2 and 3 cruises will be considered as consistent with easing of regional restrictions on business activity. The 1 July 2020 goal of restarting science operations was established after careful consideration of the pandemic "curve" as of 6 April 2020 and the need to continue with social distancing for a sufficient period to enable "flattening" of the curve. The UNOLS Office and the Federal agencies will continue to re-evaluate progress in the battle to contain and reduce the impacts of the virus outbreak as it pertains to the safe restart of oceanographic science operations. **This document will be updated as new developments arise that further inform decision making and risk assessment related to science operations.** Updates to the document will be communicated to the UNOLS community. It is anticipated that only cruises that start and finish at U.S. ports will be permitted to proceed as science operations restart until the global pandemic is well under control and access to foreign ports can be assured.

Testing is one of the most important tools for assessing risk of infection to crew and science team. Availability and efficacy of testing for personnel sailing on an ARF vessels, and the approaches for employing testing as one element of a multi-pronged approach for minimizing risk, are still evolving. We anticipate separate guidance to come out later as more information is collected and assessed by UNOLS in concert with the Federal agencies and ship operators.

Chief Scientists and Marine Superintendents shall take the following into consideration in determining whether risk is at an acceptable level for conducting a scheduled science cruise on an ARF vessel.

Pre-Cruise Planning - Cruise Risk Assessment

Cruise Logistical Considerations

- Is effective COVID-19 testing available and in place?
- What are the virus infection rates for the port of origin and any anticipated port(s) of call?
- Where on the "epidemic curve" are load and unload port(s) and the home of crew / science party? Is it now safe to work in that port? Have Shelter in Place orders been lifted? Can necessary crew and science party personnel safely travel to the port?
- What are current rules (federal, state, local) for sheltering in place, and/or essential services that may not permit oceanographic science operations? Have those rules been lifted for the port of origin for the cruise and the end-port?
- What are institutional requirements regarding personnel working onboard ships in light of the pandemic?
- What are the current U.S Coast Guard (USCG) regulations regarding seagoing operations nationally or in that particular region?
- Domestic or foreign port? Are there potential access issues (both for air travel and for the vessel)?
- What is the distance from port? Is it possible to come into port nightly?
- What is the length of cruise?
- For longer duration deep water cruises more than a two-day steam from a US port – would a qualified medical person onboard (e.g. nurse, a physician's assistant, or a doctor) be helpful?
- Are there potential access issues for surrounding countries where the ship might need to transfer personnel ashore in the event of a medical emergency?
- Have Marine Scientific Research (MSR) clearances been obtained, and do they remain unchanged by the pandemic? The State Department has indicated that all new MSR requests will require 6 months processing, as a minimum, as a result of the virus outbreak.
- Can the cruise operate with fewer personnel to help lower the population density and increase the possibility of social distancing?
- How much travel is required by science and crew to reach the vessel? Air travel? How many different locations? Are personnel originating from or transiting through regions with significant rates of infection?

- Can Telepresence be used to reduce the number of required onboard participants? If so, what resources are necessary to increase bandwidth? What equipment?

Chief Scientist Considerations

Instrumentation and Equipment

- Can all aspects related to conducting the science be ready to support the cruise?
    - Instrumentation
    - Sampling equipment
    - Lab equipment
    - Essential systems / equipment – examples include:
        - ROV, AUV
        - Gliders
        - OBS, OBN
        - Lab or other specialized vans
        - Winches, spoolers
        - Coring
        - Portable Multi-channel Seismic
    - Can instruments be prepared in time for a cruise while there are restrictions to onsite work?
    - Can equipment be shipped in time for cruise?

Science Party

- Can the cruise operate with fewer personnel to allow for a lower density of people and higher ability to socially distance?
- Are there sufficient science personnel to complete the science mission?
  Having insufficient science party could be due to the following:
    - Institutional and/or governmental travel restrictions preventing work onboard or travel to the vessel.
    - Individuals in crew who have a high or medium risk profile, including:
        - Older Adults – age 65 or older
        - People with moderate to severe asthma
        - People with HIV
        - Groups at Higher Risk for Severe Illness, these include:
            - Those with Chronic lung disease or moderate to severe asthma
            - Serious heart conditions
            - Conditions that can cause a person to be moderately immunocompromised
            - Severe obesity
            - Diabetes
            - Chronic kidney disease and who are undergoing dialysis
            - Liver disease

      Any individuals meeting any of these criteria shall be required to stay home.

- Science Party members personal safety concerns or care/concerns for their families.

Marine Superintendent Considerations

Crew

- Are there sufficient crew to complete the cruise?

  Having insufficient ship's crew could be due to the following:
  - Institutional and/or governmental travel restrictions preventing work onboard or travel to the vessel.
  - Individuals in crew who have a high or medium risk profile, including:
    - Older Adults – age 65 or older
    - People with moderate to severe asthma
    - People with HIV
    - Groups at Higher Risk for Severe Illness, these include:
      - Those with Chronic lung disease or moderate to severe asthma
      - Serious heart conditions
      - Conditions that can cause a person to be moderately immunocompromised
      - Severe obesity
      - Diabetes
      - Chronic kidney disease and who are undergoing dialysis
      - Liver disease

    Any individuals meeting any of these criteria shall be required to stay home.
  - Crew members personal safety concerns or care/concerns for their families.

Preparing for Operations

- Establish an Outbreak Management Plan (see Chapter 4 of Reference 2). This shall include having a Social Isolation Plan to include single berths or an available stateroom in case personnel need to be isolated. If possible, these staterooms should have the ability to isolate airflow from the rest of the vessel.
- Establish a Screening process. See appendix B of Reference 2
  - Conduct initial screening 3 weeks prior to cruise mobilization using Annex B of Reference 2 as reference to identify personnel who have had or been exposed to COVID-19
  - Conduct a follow-up screening prior to travel to meet the ship to verify and/or update the status of each participant and crew member.
- Establish an effective vessel cleaning protocol (see Chapter 18 of Reference 2) with emphasis on horizontal surfaces as well as common touch points (e.g. door handles, grab bars, frequently transited ladders).

- Where practicable, establish social distancing policies and procedures. Examples include:
    - Adjusting mealtimes to facilitate social distancing while eating
    - Shift galley operations away from self-service
    - Adjusting work schedules to enable proper distancing in laboratories
    - Wear masks while indoors
- Stock sufficient supplies for cleaning (see Annex C of Reference 2).
- Stock sufficient medical supplies onboard (see Reference 1 and Annex C of Reference 2).
- Display Coronavirus awareness and mitigation strategy posters throughout the vessel (see Annex A of Reference 2)

Self-isolation guidelines

These self-isolation guidelines will be used in the case of a participant/crew member whose cruise is more than 2 days offshore or if the participant/crew member must fly to the port of call. Testing is evolving and becoming more readily available in the community. We anticipate separate testing guidance to come out later as more information is collected and assessed by UNOLS in concert with the federal agencies and ship operators.

- Participant/crew member and family will self-isolate for at least 14 days prior to joining the vessel.
- If the participant/crew member must fly to join the vessel, the individual must self-isolate in the port of call.
- If an individual has already tested positive for IgG antibodies, the individual must send the test results to the Marine Superintendent and is free from any required self-isolation.

When Operations Moves Forward

Prior to traveling to the embarkation port

- Testing – Complete testing as outlined in the “Self-Isolation Guidelines” above.
- Pre-cruise Screening
    - Complete a screening of all personnel (crew and science party) per vessel’s established screening process (see Ship Operator Responsibilities above).
    - Require all personnel to provide a statement of their general health. This shall include affirmative statements as to whether they do or do not currently suffer from fever (above 100.4 deg F or 38 deg C), cough, sore throat, trouble breathing, fatigue, achiness, loss of smell or loss of taste.

Mitigation in Port

- Limit access to the ship. Restrict access to only those deemed essential. No public tours.

- Limit crew activities while in port to essential ones.
- Screen personnel who may need to come onboard and require them to wear masks while onboard.
- Set up hand washing station to be used prior to entering the ship's envelope – preferably before crossing the brow.
- Clean items coming onboard including supplies and provisions.
- Monitor and encourage established social distancing policies.
- Complete established daily cleaning routines.
- Require masks while indoors.

Mitigation at Sea

- Monitor and encourage established social distancing policies.
- Complete established daily cleaning routines.
- Record daily temperatures and monitor symptoms for crew and science party.
- Require masks while indoors.
- If all embarked personnel show no symptoms of infection after 14 days at sea, mitigation measures may be relaxed until the next event that exposes the ship to potential new infection (for example, boarding new personnel or port stops that involve interaction with personnel from outside the ship's population).

If Someone Gets Sick Onboard

- Follow CDC guidelines (see Reference 3) to the greatest degree that is practicable
- Contract GW-MFA per normal procedures for Academic Research Fleet vessels. Follow direction provided by GW-MFA medical personnel.
- If someone is diagnosed with coronavirus - go directly to port to avail affected personnel to proper supportive medical care.
- Ship's Captain shall report onboard coronavirus cases to the local USCG Captain of the Port in accordance with current USCG directives

Marine Superintendent & Ship's Captain Considerations for Going to Port

- What port will allow the ship to enter?
- What is the current situation regarding the status of the virus outbreak in the port?
- Is there sufficient appropriate care available in the port?
- Will the ship be quarantined in port? If so, does the port have appropriate services to support the ship's presence for 2 weeks or more?
    - What are port requirements/guidelines for quarantine of a vessel?
        - How long? Is it for 14 days? 14 days from last infected person?
        - Will personnel be quarantined?
            - On the ship or off the ship?
            - Is space even available?
    - If delayed in port – is there science gear/systems that need to be offloaded and shipped elsewhere?
    - If delayed in port, will the port support travelers arriving / departing from the vessel (i.e. crew changeouts, science party members returning to home, etc.)

- If the ship can depart port without quarantine in place orders
    - Can the ship still meet USCG requirements for proper number and type of licensed personnel with those remaining onboard?
    - Can the science party continue with fewer people?

Upon Arrival in Port

- Where is the ship to be moored? The ship shall be moored in a secure location where access to the ship can be controlled to essential personnel
- Will the ship be quarantined?

COVID-19 Risk Determination

After taking all the above into account the vessel operator and chief scientist shall complete independent risk assessments. This will be done to determine whether the risk of successfully completing the research cruise without experiencing a COVID-19 outbreak is at a low enough level (see risk levels below). Also, consideration will be given to whether there is a strong management plan to effectively address any case(s) that may arise during a cruise.

Risk shall be assessed as **Low, Medium** or **High** using the following criteria.

Low Risk

- Science operations are strictly local – within a two-day transit back to a US port.
- Local/state COVID-19 regulations/guidelines do not prohibit personnel working on the ship nor the cruise departing the dock.
- Local crew and science personnel have strictly adhered to local governmental self-isolation guidelines/regulations.
- Non-local personnel (crew and science party who have traveled by air to the port of call) have successfully self-isolated (see Self-isolation guidelines above).
- Science party has been reduced to the minimum necessary to carry out the work and ideally the vessel is not at full berthing capacity.
- Policies and procedures outlined in the *Preparing for Operations* section above are in place and strictly adhered to.

Cruises assessed a **Low Risk** may be conducted. The Marine Superintendent and Chief Scientist shall communicate to the operating institution, the NSF Ship Operations Program Manager, the NSF Science Program Manager (for NSF funded science), the ONR Program Manager for cruises on ONR-owned ships and also for ONR funded science, and the UNOLS Office of the **Low** risk assessment and subsequent decision to conduct the cruise.

Medium Risk

- Science operations are <5 days from a US port.
- Local/state COVID-19 regulations/guidelines do not prohibit personnel working on the ship nor the cruise departing the dock.
- Local crew and science personnel have strictly adhered to local governmental self-isolation guidelines/regulations.

- Non-local personnel (crew and science party who have traveled by air to the port of call) have successfully self-isolated (see Self-isolation guidelines above)
- Science party has been reduced to the minimum necessary to carry out the work and ideally the vessel is not at full berthing capacity.
- Policies and procedures outlined in *Preparing for Operations* above are in place and strictly adhered to.

Cruises assess as **Medium Risk** may be conducted if sufficient risk mitigation strategies are identified and implemented. The Marine Superintendent and Chief Scientist shall communicate to the operating institution, the NSF Ship Operations Program Manager, the NSF Science Program Manager (for NSF funded science), the ONR Program Manager for cruises on ONR-owned ships and also for ONR funded science, and the UNOLS Office of the **Medium** risk assessment and subsequent decision to conduct the cruise. Risk mitigation strategies shall be identified, reported to all appropriate parties, and implemented.

High Risk

A cruise will be deemed high-risk if any of the below bullets apply

- Science operations are >5 days from a US port or intend to stop at a non-US port
- Participating local personnel (crew and science party) have not strictly adhered to local governmental self-isolation guidelines/regulations.
- Non-local personnel (crew and science party who have traveled by air to the port of call) have not or cannot successfully self-isolated (see Self-isolation guidelines above).
- Policies and procedures outlined in *Preparing for Operations* have not been established or adhered to.

Cruises assessed as **High Risk** will not be conducted until there is more clear information about how the pandemic is progressing. The Marine Superintendent and Chief Scientist shall communicate to the operating institution, the NSF Ship Operations Program Manager, the NSF Science Program Manager (for NSF funded science), the ONR Program Manager for cruises on ONR-owned ships and also for ONR funded science, and the UNOLS Office of the **High** risk assessment and subsequent Postponement or cancelation decision.

Decision Making

After the Marine Superintendent and the Chief Scientist have taken into account the considerations and completed their separate risk assessments – they shall review their assessments together. They will make a final, joint determination. The Marine Superintendent and Chief Scientist shall then make a joint recommendation as to whether the science cruise should proceed. If the Marine Superintendent and the Chief Scientist cannot agree on a singular recommendation, each shall report their recommendation and the basis of it to the appropriate entities – as noted below for the different risk assessment and cruise execution determinations. In cases where assessments differ, operations will follow the more conservative of the two recommendations.

Canceling or Postponing a Cruise

If a decision results in the cancellation/postponement of a cruise, both PI and ship operator must:

- Document in writing why it is canceled. Submit to:
    - Chief Scientist / Marine Superintendent
    - UNOLS Office: doug@unols.org, alice@unols.org
    - NSF Ship Operations: rdufour@nsf.gov
    - NSF Science Program Manager – for NSF-funded science
    - ONR – for ONR vessels and ONR-funded science: robert.sparrock1@navy.mil
    - Other agencies/institutions that fund the cruise
- Document cost impacts resulting from the cancellation/postponement in accordance with the funding agencies grant guidance

Financial Considerations of Mitigation Measures

Financial impacts to the vessel operator, science party and crew (e.g. dayrates, supplements, overtime) should only be considered after risk assessment for the safety of crew and science personnel. In cases where operations are impacted, the Marine Superintendent and Science Party must

- Maintain appropriate records and cost documentation to substantiate the charge for any cancellation or other fees related to interruption of operations or services.
- To the maximum extent practicable, invoke or institute any and all reasonable mitigation actions and practices to lessen the cost to the Government during the crisis period. Such actions may be part of an existing program created by the grantee or may be created to respond to this crisis.

Federal agencies will provide separate guidance to Ship Operators and Principal Investigators related to financial issues related to postponement or cancellation of science cruises.