Infrastructure (short name)	Norwegian Ferrybox Network (NorFerry)	
Installation (short name)	M/S Color Fantasy	
Location	Oslo fjord, Skagerrak, Kattegat, and Kiel bight.	
Route	Oslo –Kiel	
Legal name of organization	Norsk Institutt for Vannforskning, NIVA	
Location of organization	Oslo, Norway	
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Web site address	www.ferrybox.no	

Description

The Norwegian Ferrybox network (NorFerry) consists of three ships operated by the Norwegian Institute for Water Research (NIVA). Together, these vessels cover 80% of the Norwegian coast.

M/S Color Fantasy is operated by Color Line and is the world's largest cruise ship with a car deck. The ship cruises between Oslo (Norway) and Kiel (Germany) in the Oslo fjord, Eastern Skagerrak, Kattegat and Baltic Sea entrance regions. One return trip lasts for about 44 hours.

The Ferrybox core installations include the following sensors: thermosalinograph, inlet temperature, AADI oxygen, Polymetron turbidity sensor and TriOS Chl-a fluorescence. M/S Color Fantasy is equipped in addition with TriOS yellow substance, TriOS cyanobacteria fluorescence, and TRIOS hydrocarbon sensors. NIVA is also involved in the development of a new type of pCO2 sensor with Franatech for integration on the same ferrybox platform during the first part of 2013. Also one photometric pH system will be installed in early 2013. A system for automatic extraction and pre-concentration unit of chemical compounds in water was installed in the end of 2012. An automatic water sampler of 24*1 liter is also installed. Finally, TriOS radiance and irradiance sensors are mounted on deck for the measurements of solar irradiance, sky and water-leaving radiance.

Service offered

Users are invited onboard for one or repeated periods of trips (days to weeks, for installation and testing of new sensors (contaminants, carbon cycle, acidification, algae discrimination), inter-calibration of sensors, as well as testing of new monitoring approaches, taking advantage of the high-frequency 2D sampling of the infrastructure.

We invite in particular (but not only) researchers interested in investigating methods for vertical profiling from ferries (e.g. XBT/XCTD experts) to apply for accessing the infrastructure and take part in gathering a unique dataset of simultaneous Ferrybox and underway profiles.

Access to the ferry requires that NIVA personnel, both scientific and technical, are on-board with

the guest scientists. Personnel from NIVA will be in charge of the integration of guest's sensors into the NIVA's Ferrybox system. Inter-calibration, data acquisition and other experiments will preferably be jointly made by NIVA and guest users.

The access to the ship is simple and can be done both in Oslo and Kiel. One can bring the equipment with own car onboard the ship and there are easy access to the installation. A small laboratory bench with warm and cold water, refrigerator and freezers are available as well as tools for repair of instruments e.g. there are also internet access by the system. The accommodation onboard is excellent with good capacity.

Instruments/Sensors

The following instrumentation is already onboard the ferry and will be available to the JERICO users

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Transmission frequency
SBE45	Temperature	4m depth	1 minute under normal conditions. Can be increased up to 10s for a short period if required.	Once a day. Can be improved to real time transmission for a short period if required.
SBE38	Inlet temperature	4m depth		
SBE45	Salinity	4m depth		
AADI optode	Dissolved oxygen	4m depth		
AADI optode	Inlet dissolved oxygen	4m depth		
Polymetron	Turbidity	4m depth		
TriOS	Chl-A fluorescence	4m depth		
TriOS	Yellow substance fluorescence	4m depth		
TriOS	Cyanobacteria fluorescence	4m depth		
TriOS	Hydrocarbon	4m depth		
TriOS	Irradance	4m depth	1 minute under normal conditions. Can be increased up to 30s for a short period if required.	
TriOS	Sky radiance starboard	30m above sealevel		
TriOS	Sky radiance port	30m above sealevel		
TriOS	Water leaving radiance starboard	30m above sealevel		
TriOS	Water leaving radiance starboard	30m above sealevel		
ISCO-sampler	Water samples	4m depth	Not relevant	

The following instrumentation will be installed during 2013 and will also be made available to the JERICO users.

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Transmission frequency
Franatech/NIVA	pCO2	4m depth	1 minute (TBC)	Once a day. Can be improved to real time transmission for a short period if required
NIVA	Photometric pH	4m depth	1 minute (TBC)	Once a day. As above

Additional services/data

Routine discrete samplings for long-term series

The following parameters are obtained from regular automatic sampling onboard and laboratory analysis and will be available to the JERICO users on specific request.

Parameter(s)	Elevation/Depth	Sampling frequency	Sampling Technique/Analytical method
Phytoplankton	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	Phytoplankton counting on some station
Particulate (TSM)	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	On request and are done for satellite calibration
Nutrients	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	Standard water sampling and analysis in NIVA laboratory on request.
Contaminants	4 m depth	TBD	Automatic extraction and pre-concentration unit of chemical compounds
Chlorophyll (Other pigments on request). Pigment and detrital absorption spectra	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	HPLC and/or spectrophotometric Absorption spectra on water samples on request.

Special owner rules

NIVA's personnel will join the trips as a minimum of the installation and introduction to the ship, crew and system.