



SKILLTRADE

Skilltrade Hydrography Training

Competent Surveyors in 2015 and beyond

ROPME 2015

Skilltrade brief history

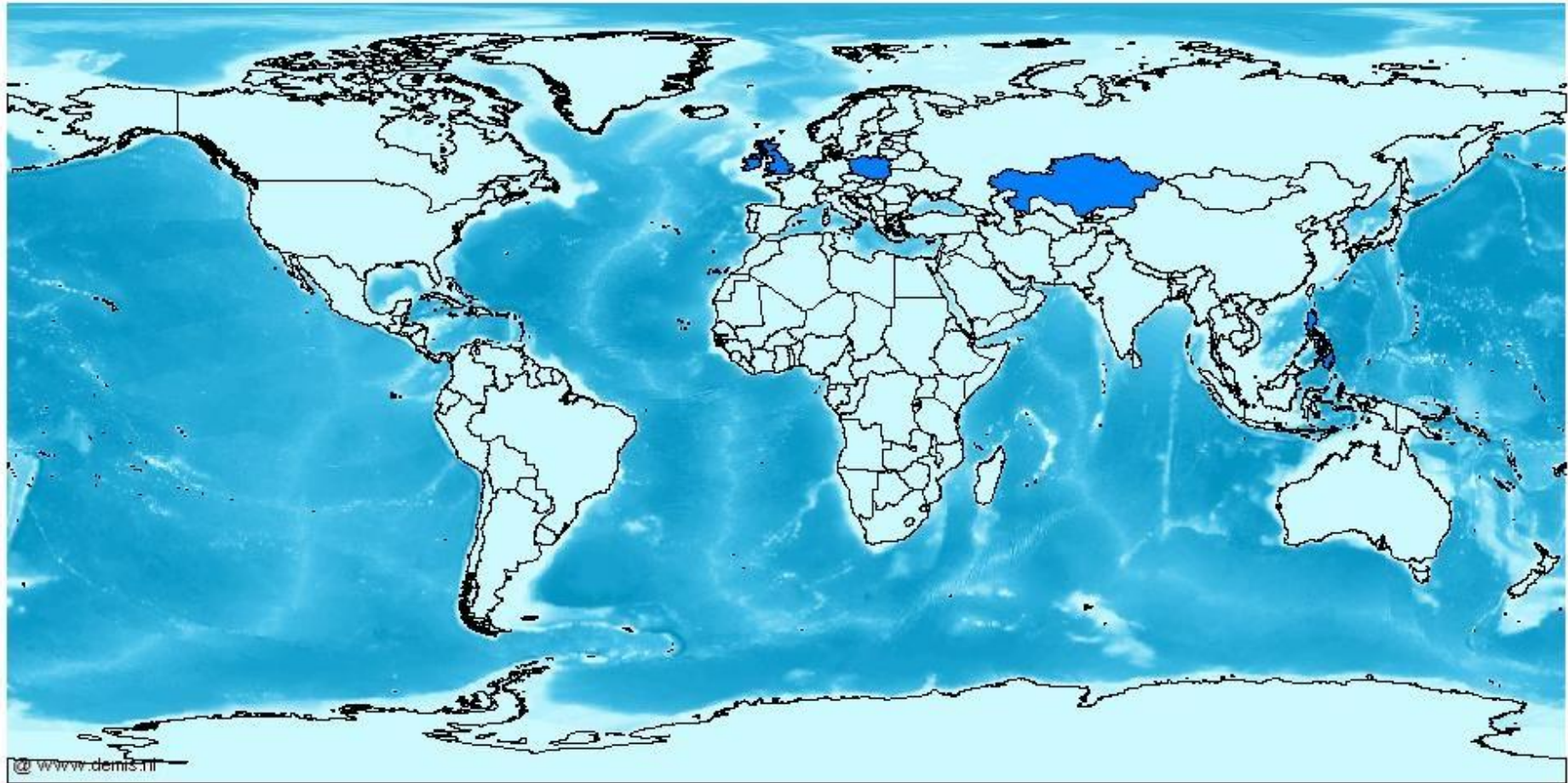
- Started in 2000 as part of DOOR agency
- In 2006 we composed the curriculum according to IHO guide lines aiming to certify the “Hydrographic Surveyor”
- Accredited in 2008 by IHO for “Hydrographic Survey Category B” including Offshore Construction - and Coastal Zone management
- We have trained since 2007 over 137 students from all over the world for Category B
- Since 2000 Skilltrade lectured the Introduction Hydrography Course, approximately 50 students a year



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Our “International” Approach

2008

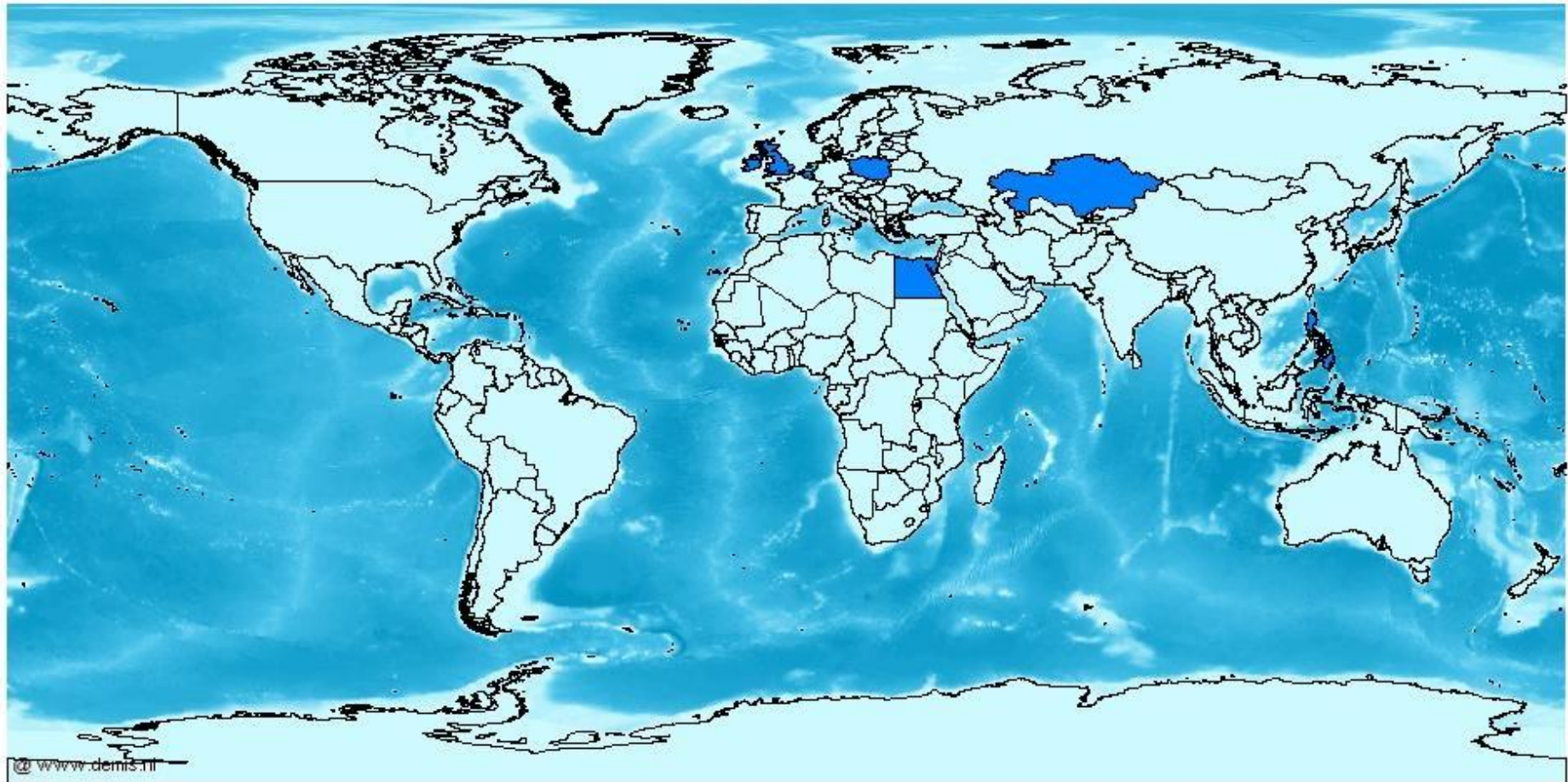




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Our “International” Approach

2009

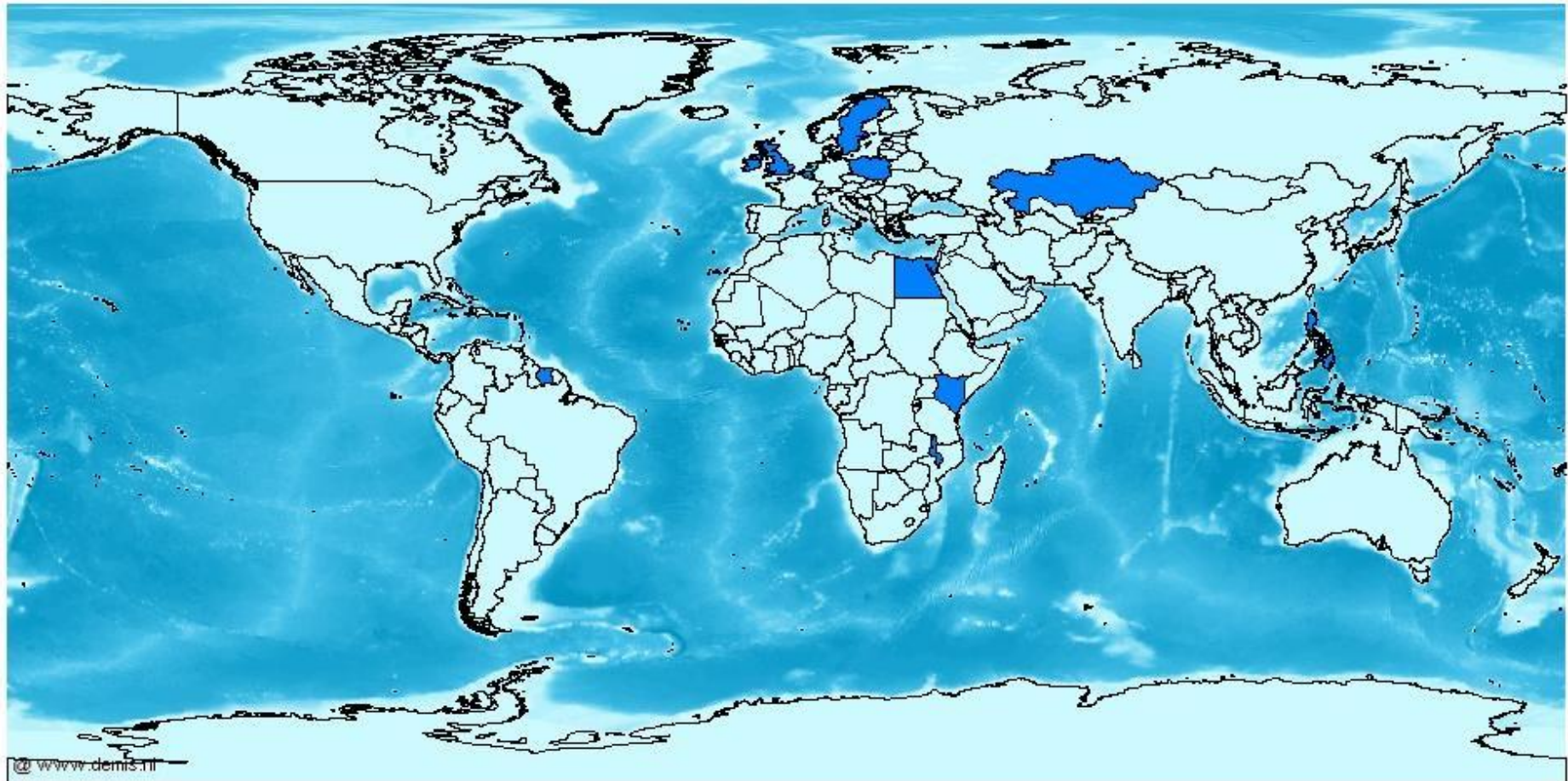




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Our “International” Approach

2010

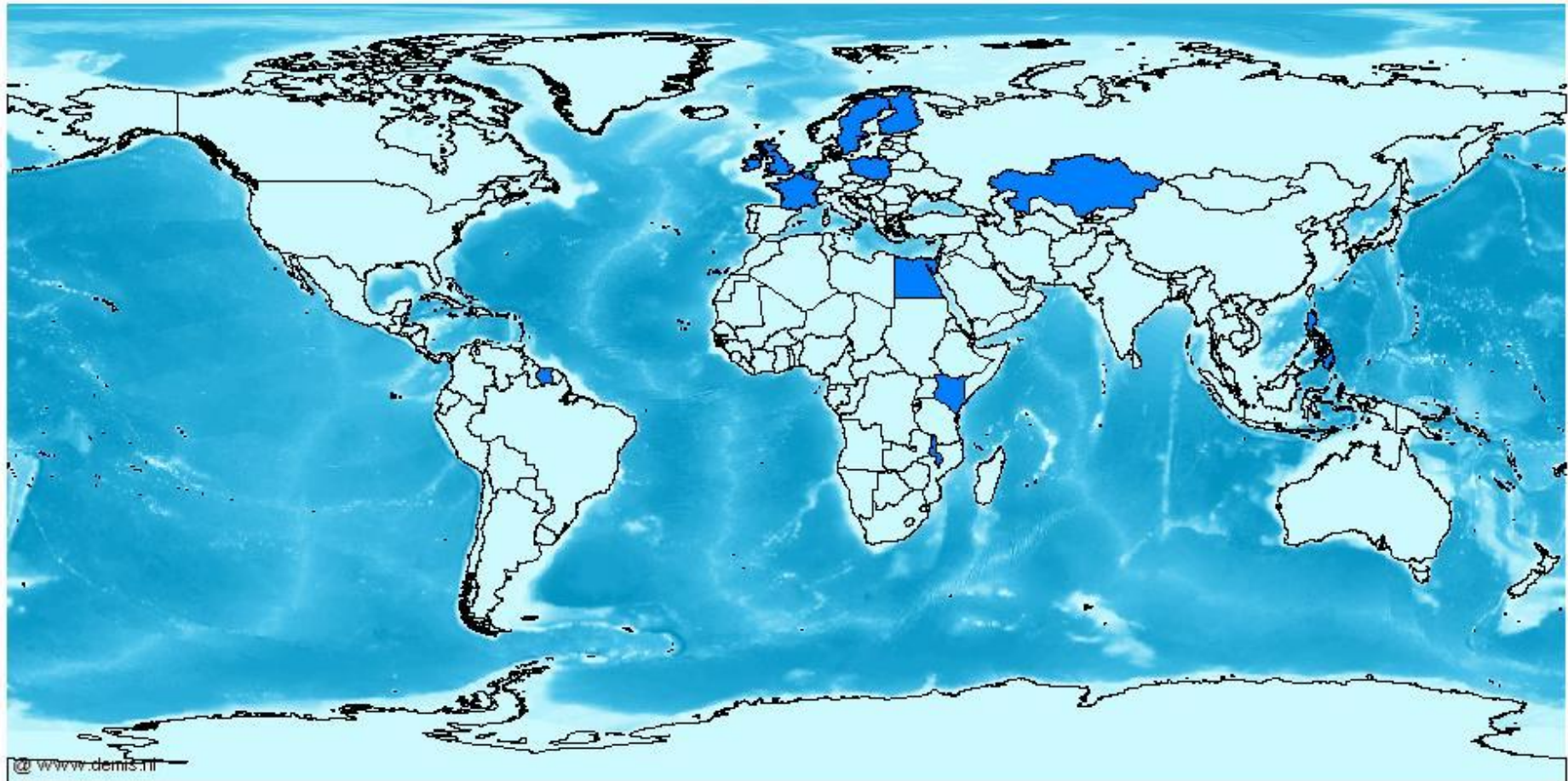




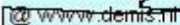
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Our “International” Approach

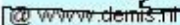
2011



2012



2013

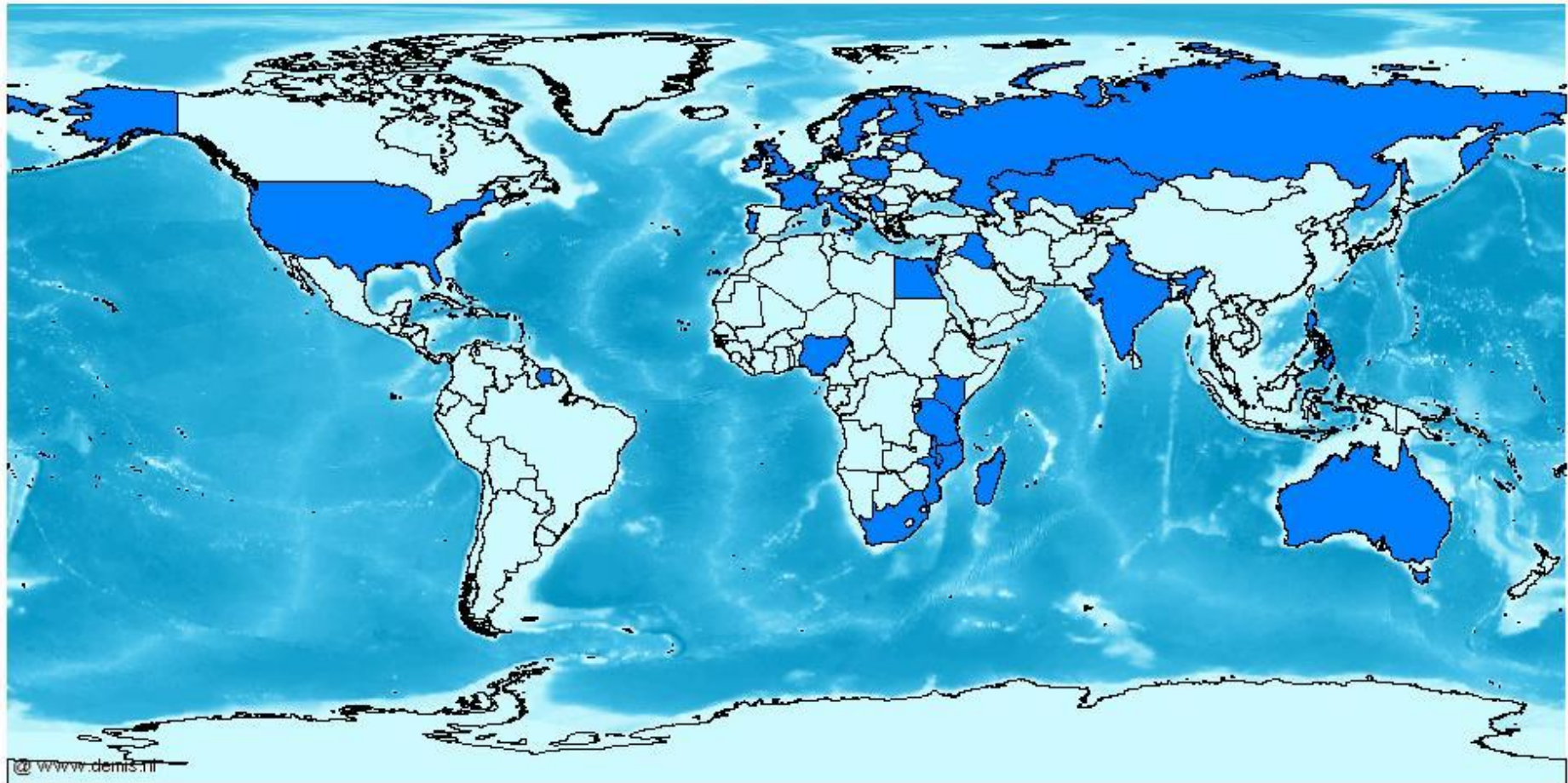




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Our “International” Approach

2014

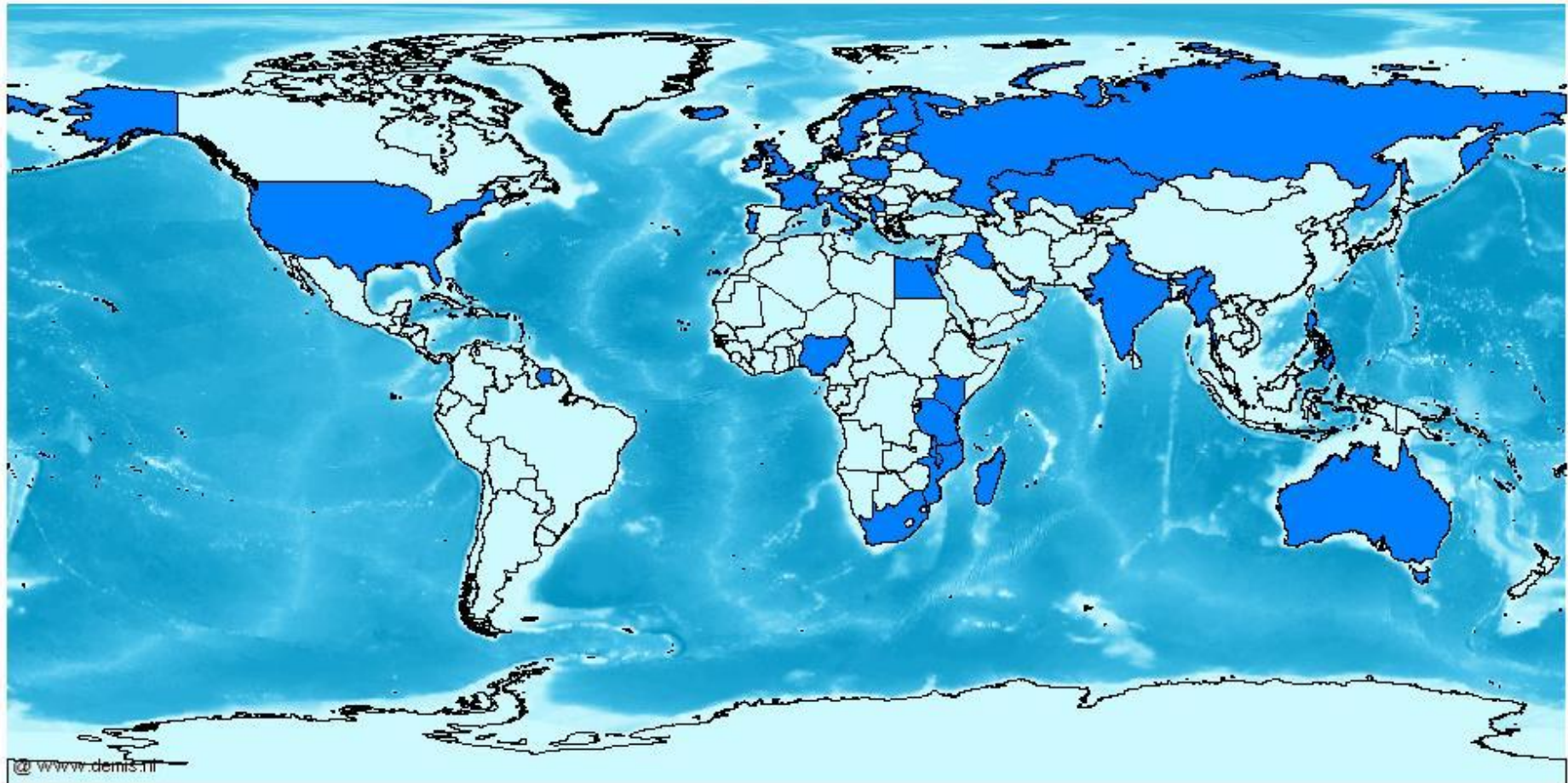




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Our “International” Approach

2015



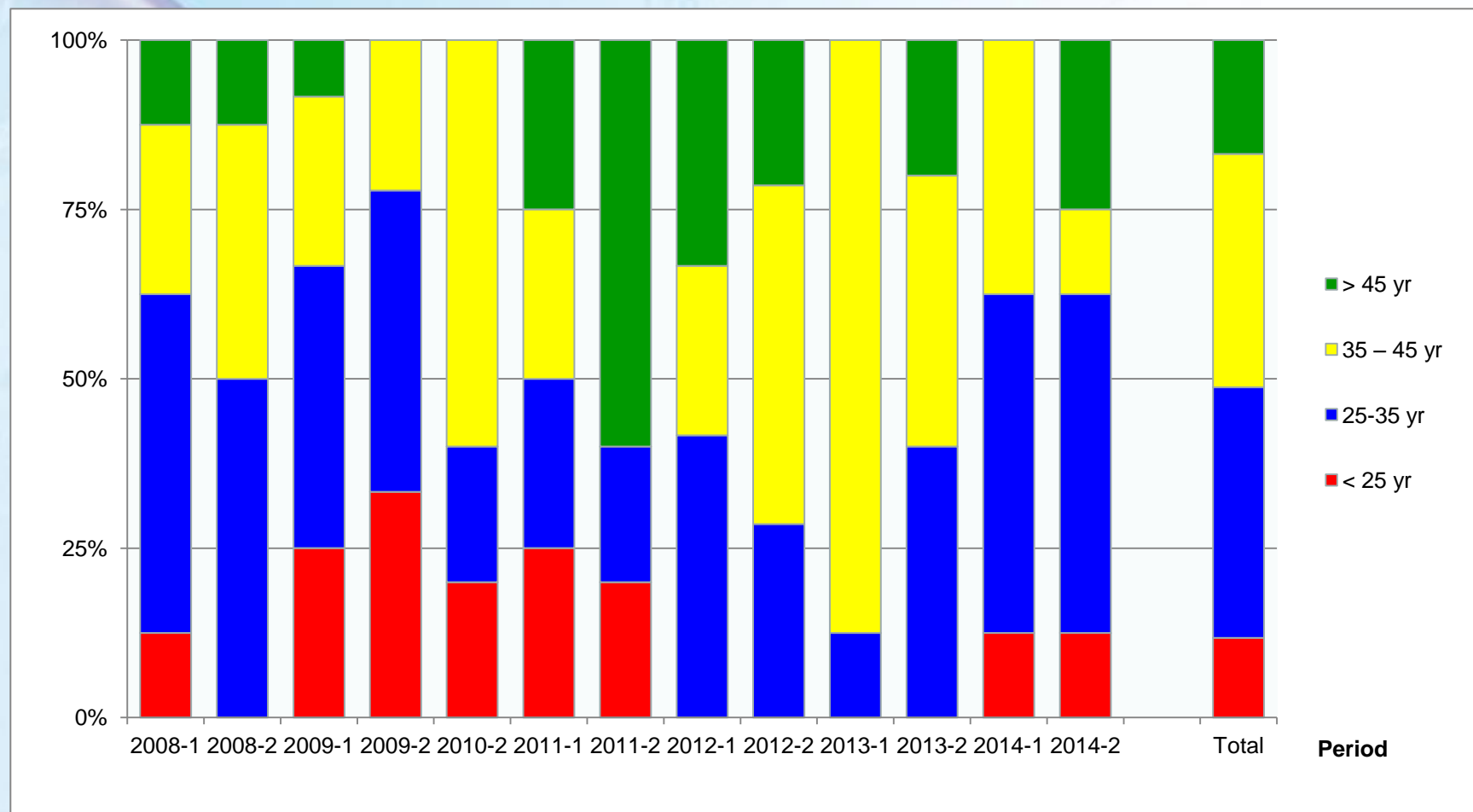
Category B 2008-2014

- Our 2008 curriculum has been accredited by IHO for 13 weeks
 - Safety according STCW
 - Workshops in cooperation with Dutch industry
 - Exams for Basics, Essentials and project exercise
 - Course fee 12.250 Euro incl lunch & lecture material
 - 12 week (to comply with Schengen visa), which results in a certificate
 - Logbook, according to IHO and IMCA standards, which results in an international recognized diploma



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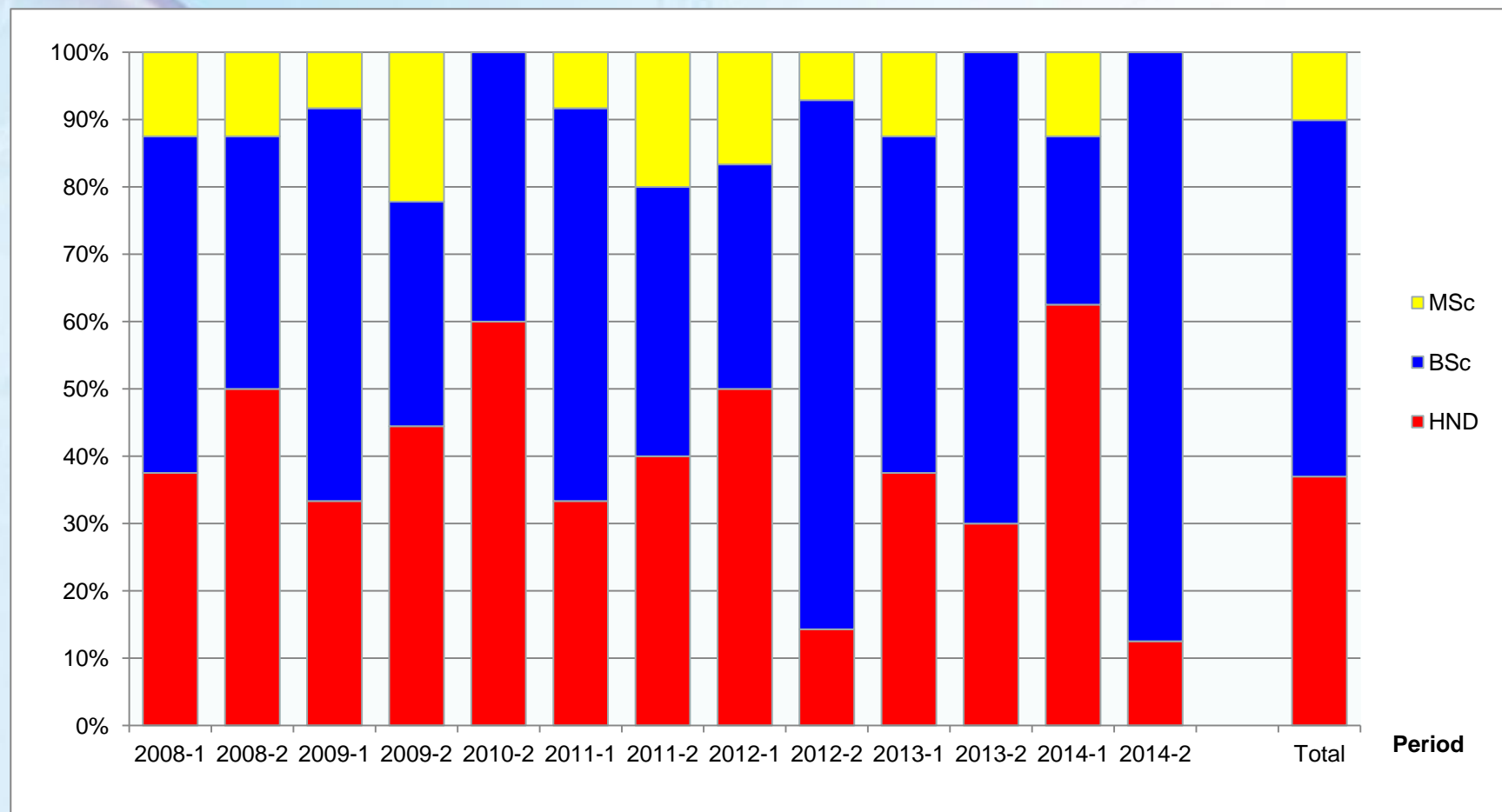
Statistics Age Students





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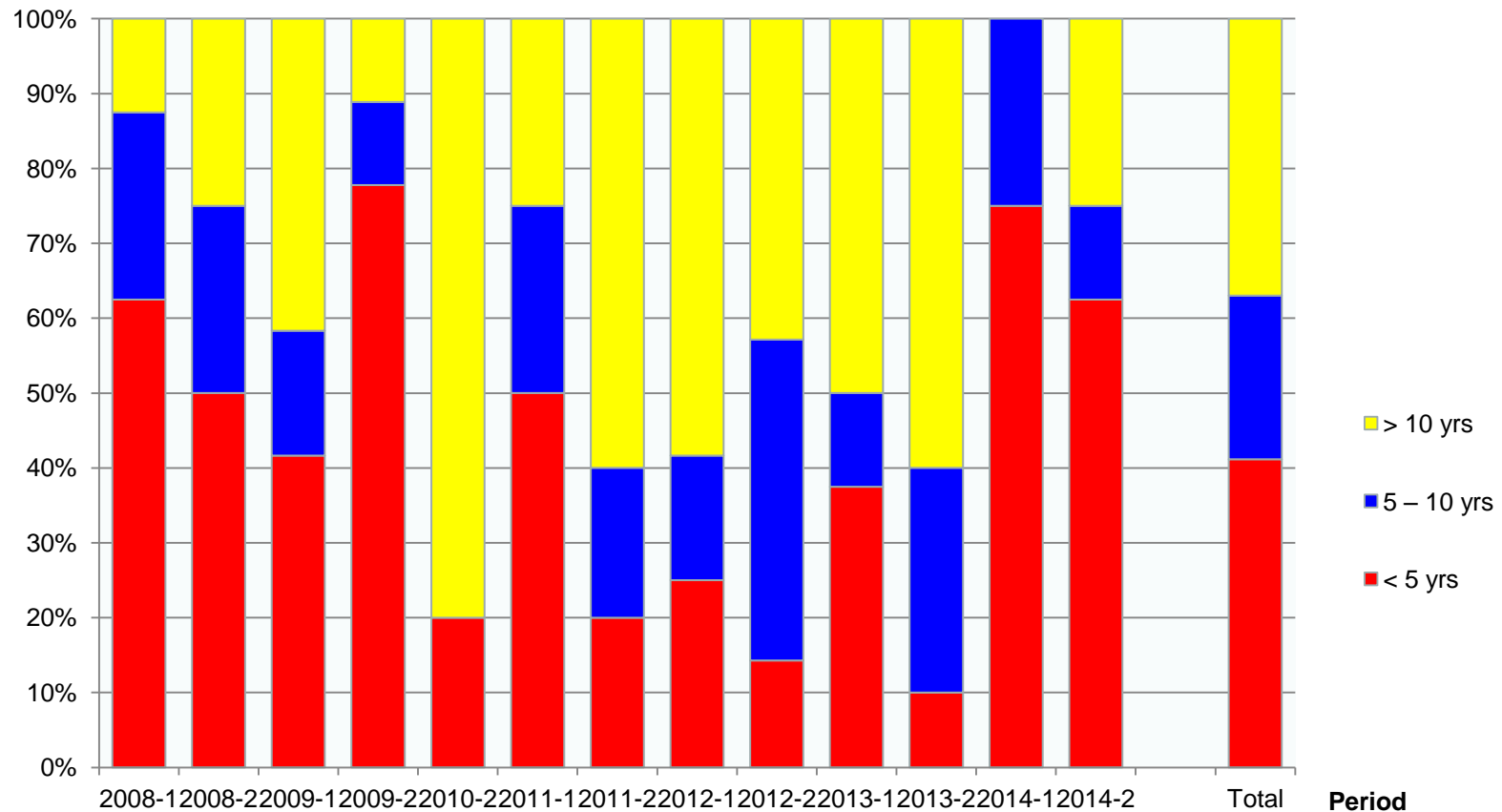
Statistics Educational Level





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Statistics Work Experience





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15th Class Category B



A

B

C



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Roll of Course Coordinator

- Nova College and Skilltrade will guide and monitor the students on a daily basis. There is a constant interaction between lecturer, course coordinator and student.

Should a student not be able to understand the curriculum, we will offer the student remedial teaching to bring the level of understanding to the required level.



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Results

Up to and including the 15th class		
Numbers of students	137	
Failed and/or stopped	18	13,1%
Category B Certificates Issued*	119	86,9%
*15 students (10,9%) succeeded after resits		
Logbook completed and Category B Diploma Issued	49	35,8%
Working on logbooks	30	21,9%
No logbook	40	29,2%



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Quality Control

- Yearly evaluation course results to IHO
- Evaluation students every 6 weeks
- Conclusion:
 - Market requirements change(government sub contracting), resulting in diff. directions of education of interest in hydrography
 - These differences need more attention prior to start CAT B(explanation to follow)



New IHO Category B Submission 2015-2021

Block	I	II-0	II-1
Week	1 - 13	14	15 - 20
Topic	E-learning	Safety course	Basic topics

II-2	II-3	III
19 – 25 Essential and optional topics	25 - 26 Final project	27 - 135 Traineeship / Field experience (logbook)



E-learning

- Bathymetry
- Geodesy
- GNSS
- Mathematics and Physics in cooperation with Khan University, India
- Supported with our Handbooks and GPS
- All exams to be taken during Category B curriculum



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E-learning Module Bathymetry

Bathymetry

Number of modules	7
Total duration of modules	Approx. 6 hours
Required pre-knowledge	Mathematics: logarithms, goniometry
Proposed lecture book	Handbook of Offshore Surveying, part 3 (Skilltrade, 2011)

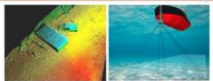
Short description

In this module the student learns about the physics of sound underwater as used for bathymetry. The focus of the module is the background, installation, calibration and operation of echo-sounders. Both Singlebeam and Multibeam echo sounders are discussed, including their calibration methods. Finally, other depth measuring systems are briefly discussed including multi-channel echo-sounders and scanning profilers.


Modules

1. Physical parameters of sound
2. Speed of sound and ray bending
3. Transducers and beam angles
4. Sonar equation for echo-sounders
5. Singlebeam echo-sounders including their installation, calibration and operation
6. Multibeam echo-sounders including their installation, calibration and operation
7. Other depth measuring systems (bar sweep, multi-channel, bathymetric LIDAR, scanning profiler, remote sensing techniques)

Primary methods of depth measurement



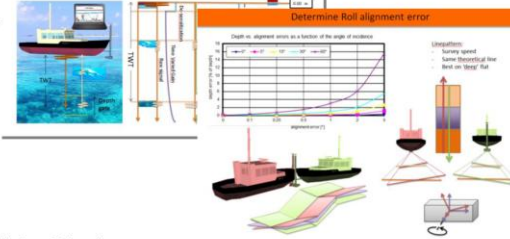
1800s



Detection threshold

- Echo sounder actively 'looks' for bottom
- ☐ Signal strong enough to exceed threshold and
- ☐ Correct type of signal (width, form) and
- ☐ Within accepted depth range and
- ☐ Within filters (if set) such as depth (time / range) gate

Determine Roll alignment error



Examples as licensed to Ohio State University



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E-learning

- Instruction video courses, including
 - study guide
 - queries and support via email
 - questions and tasks to be carried out, including feedback
- Registration for our E-learning courses is € 3.000
- After successful completion of E-learning program the student will get a discount of € 1.500 on the Category B Course



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E-learning

- Bathymetry



Menu

▼ ST-Bathy-Examples

Bathymetry

Primary methods of depth mea...

Detection threshold

Determine Roll alignment error

You have finished this module

Menu

▼ ST-Bathy-Examples

Bathymetry

Primary methods of depth mea...

Detection threshold

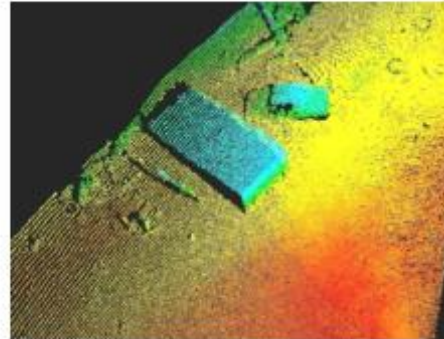
Determine Roll alignment error

You have finished this module

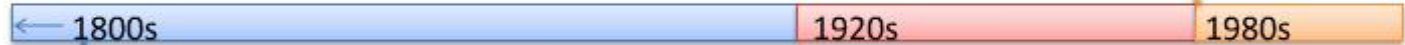


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Primary methods of depth measurement



MBES: MultiBeam EchoSounder



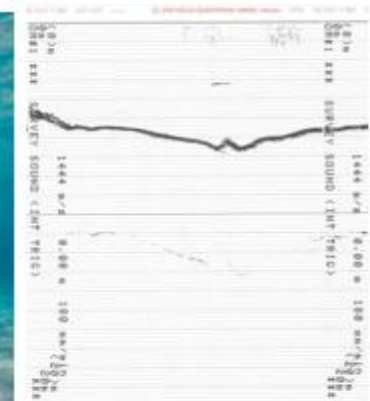
← 1800s

1920s

1980s

Lead and line

SBES: SingleBeam EchoSounder



Menu

▼ ST-Bathy-Examples

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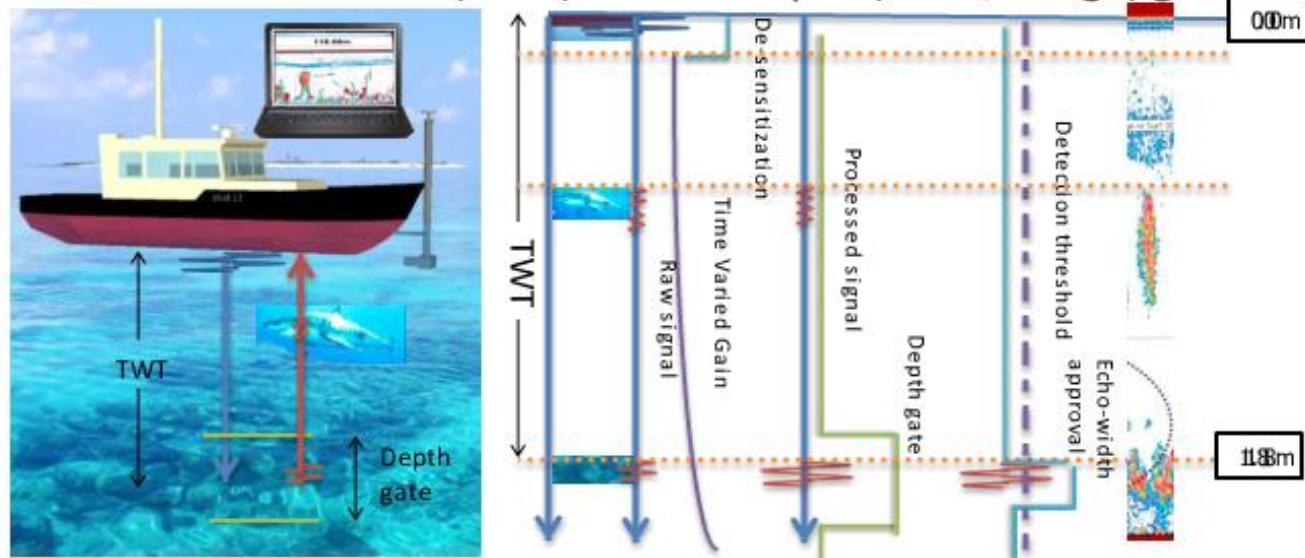
You have finished this module



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Detection threshold

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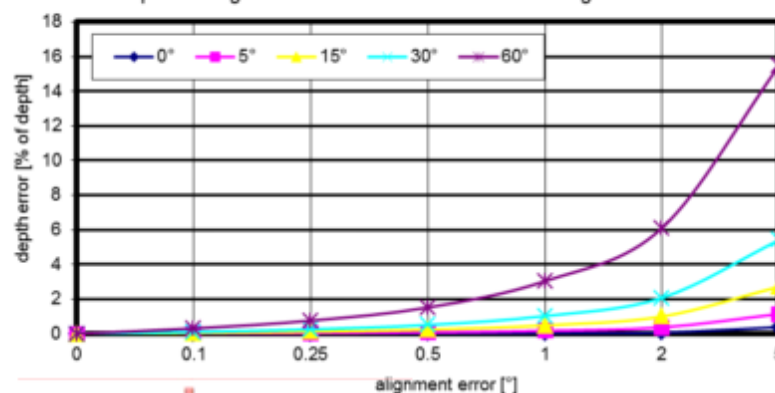
You have finished this module



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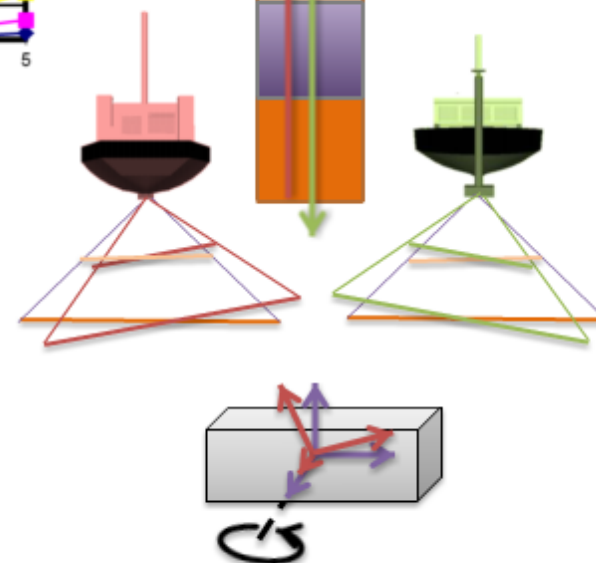
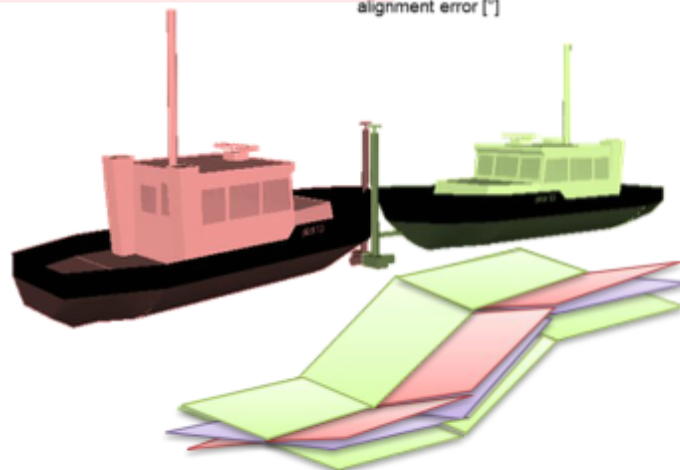
Determine Roll alignment error

Depth vs. alignment errors as a function of the angle of incidence



Linepattern:

- Survey speed
- Same theoretical line
- Best on 'deep' flat



Menu

▼ ST-Bathy-Examples

Bathymetry

Primary methods of depth mea...

Detection threshold

Determine Roll alignment error

You have finished this module



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You have finished this module



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E-learning Comments

- Prior to start of the course the current students have taken the E-learning modules. Some comments:
 - Very good preparation for all subjects, especially Maths and Physics
 - Theory is explained well
 - Good support by Mr. Lekkerkerk, quick response
 - Examples in Physics are sometimes difficult to understand (already adjusted)
 - A real good start as preparation for the Category B course, in my own time



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Present Course Schedule



A program which provides a practical comprehension of hydrographic surveying for individuals with the skill to carry out the various hydrographic surveying tasks



	19-jan-15 MonTueWedThuFriSatSun							26-jan-15 MonTueWedThuFriSatSun							2-feb-15 MonTueWedThuFriSatSun						
	course wk01							course wk02							course wk03						
Morning	Nautical Skills	Nautical Skills	Types of Hydrographic Surveys	Nautical Skills	practical exercises (Rides, level & positioning)	Social program		Nautical Skills	Mathematics	Physics	Mathematics	Physics			Exam - B1	Physics	Meteo	Nautical	practical - knots / splicing		
Afternoon	Mathematics	Mathematics	workshop Port of Rotterdam	Mathematics				Mathematics	Mathematics	Physics	Physics	Physics			Meteo	Physics	workshop - Meteo	Exam - B3 (part 1)	Law of the sea		
after 16:00											Teambuilding										
	9-feb-15 MonTueWedThuFriSatSun							16-feb-15 MonTueWedThuFriSatSun							23-feb-15 MonTueWedThuFriSatSun						
	course wk04							course wk05							course wk06						
Morning	Exam - B4	Physics II	Physics II	Theory of Errors & Geodesy	Guideway	Social program		Underwater acoustics & Singlebeam	Underwater acoustics & Singlebeam	Physics II	Online Survey software	Exam - B3 (part 2)			Tides	Tides	ICT - databases & GIS	ICT - Networking	Multibeam Echo - sounder		
Afternoon	Physics II	Physics II	workshop - STEMA					Workshop - Van Oord & Boskalis	Physics II			Workshop - Hydrographic Service					Rest exam B3 part 1 & 2				
after 16:00														←	Rest exam B1	NOVA	school	holiday	1st Course evaluation		→
	2-mrt-15 MonTueWedThuFriSatSun							9-mrt-15 MonTueWedThuFriSatSun							16-mrt-15 MonTueWedThuFriSatSun						
	course wk07							course wk08							course wk09						
Morning	Environmental Science	Acoustic Positioning (Atlas Service Guest speaker)	Side Scan Sonar	Exams - E2 & E7	Horizontal Positioning - GPS			Horizontal Positioning - (LMK theory and calculations)	Exam - E1	Earth Science	Horizontal Positioning - GPS - practical				Exam-E5	Online Survey software	Online Survey software	Waves, Streams and Currents	Workshop Peripus		
Afternoon				Workshop - Reson				Gyro, Pitch & Roll - E3							Workshop iBlue				Rijkswatersta at Northsea		
after 16:00	Rest exam B4																				
	23-mrt-15 MonTueWedThuFriSatSun							30-mrt-15 MonTueWedThuFriSatSun							6-apr-15 MonTueWedThuFriSatSun						
	course wk10							course wk11							course wk12						
Morning	Practical - Horizontal Control	Horizontal Control - calculations	Hydrographic Specifications & project preparations	Practical - soldering & fault finding & data telemetry	Survey for dredging Ops, inters, and Volume calc			Ripa, Platforms, Drilling Terminology	Exam E-4	Pipeline and Cable Operations & ROV	Survey Project - Singlebeam & Multibeam, FRK, HUL & JER - Group 1			Full day CARIS Workshop - (Bathymetry - group 1 JST)		Survey Project - Processing & Reporting	Software - Exam E5 (GPS)	Logbooks & 2nd Course Evaluation			
Afternoon		Exam - E3						VanOord workshop			Full day CARIS Workshop - (Bathymetry - group 2 JST)			Survey Project - Singlebeam & Multibeam, FRK, HUL & JER - Group 2				Certificate/ Diploma ceremony			
after 16:00														Easter			Evening program				
	13-apr-15 MonTueWedThuFri					20-apr-15 MonTueWedThuFri					27-apr-15 MonTueWedThuFri					4-mei-15 MonTueWedThuFri					
	wk13 - Module-4					wk14 - Module-4					wk15 - Module-4					wk16 - Module-4					
	SAIO safety training (Between 12th and 18th January 2016)																				
	Practical / Training / Trainee period																				

- Nova College

Practical Project

- Skilltrade own equipment / rented vessel
- The aim of the project is:
 - Gaining experience in all aspects of the job qualification in the real working environment on board survey vessels;
 - Testing and comparing the knowledge acquired with the daily practice on board
- Bonus is the students also learn about human interaction, working in a team



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Entry Requirements

- Minimum requirements are:
 - HNC level technical education with basic knowledge of mathematics and physics
 - Regular computer skills
 - decent command of the English language
- Course coordinators will assess all the required registration documents to determine their level of knowledge and understanding



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Proposal Preparation Course

When a candidate is not able to meet the necessary basic theoretical knowledge, Skilltrade offers the following course to bring the level of understanding to the required level with a 5-day course at clients location.

The course is an advantage to CAT B as to new interested surveyors or crew members

Preparation Course

- 2 days Introduction Hydrography
- 1 day visit to a survey vessel
- 1 day to take survey data with vessel
- Last day information about Category B, entrance level, academy location, course curriculum, tests of E-learning, practical task, logbook
- Lectured by Skilltrade own instructors
- Next preparation course in Abu Dhabi 12 May in cooperation with Bayanat



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Preparation Course

- Day 3, visit to a survey vessel
 - what equipment is used?
 - Where are things located?
 - What about safety?
- How do we take care of tides?
 - Tide gauge
 - Rtk GPS?
- Checking offsets
- Checking to a fixed structure



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Preparation Course

- Day 4, acquire survey data with survey vessel
 - Calibration check (in case of a MB system)
 - Latency check (in case of single-beam system)
 - Completing a small survey
 - Processing data
 - Produce a map/compute volumes
-
- This course is also supported by Capacity Building of IHO in 2016



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Future Options

- Regular visits to Middle East to discuss developments
- Present interest Municipality Dubai - and Abu Dhabi, Saudi Port, Abu Dhabi: Department of Transport and Bayanat, Bahrain and KSA
- In contact with NMDC, NPCC, Aramco and local individuals

Latest Developments

- MOU Agreement signed by MSD to train future students
- To use tablets on course or is paper still a preference?
- Trainee opportunity with Dutch Navy
- To consider E-learning for nautical study
- MOU signed with CHESS – Western Africa Education for Maritime Studies
- New 2 weeks course Basic Electronics for Hydrographic Surveyors in cooperation with the Dutch Industry (April)



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Questions ?

Visit our www.skilltrade.nl





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