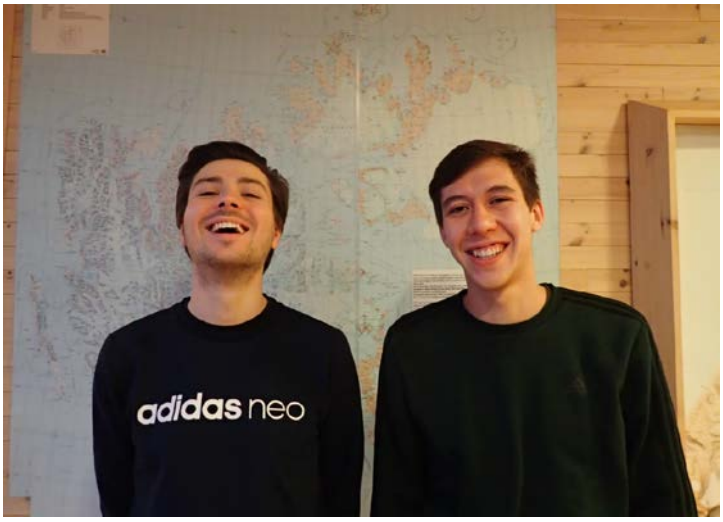
SITRA STUDENTS
Autumn 2017

This semester there are 6 students studying at UNIS under the support of the SITRA project, five of these students have arrived from Russia, with one originally from Ukraine and one from Kazakhstan; and one student from Canada. From Lomonosov Moscow State University, returning students Khabibulin Eldar and Shelenkov Alexander are back. There are two students from the Moscow Institute of Physics and Technology, Anna Lukina and Anna Pykhtina. Lastly, Sabina Idrissova, from the St. Petersburg Marine Technical Institute and Amanda Ryan from Memorial University of Newfoundland, Canada. All students have completed, or are currently taking, the AT-332 course, taught by Dr. Aleksey Marchenko.

LOMONOSOV MOSCOW STATE UNIVERSITY



Shelenkov Alexander	Khabibulin Eldar
Hometown: Moscow, Russia	Hometown: Moscow, Russia
Master's Thesis: Ice Interaction with a Row of Cylinder Vertical Piles	Master's Thesis: Failure Scenarios of the Sodhi Beam

Education: 2012-2018: 6-year student Faculty Mechanics and Math Lomonosov Moscow State University, Department of Plasticity

1) Autumn 2016

The purpose of our trip to UNIS in 2016 was to make two models for bending of sea ice beam in COMSOL software and Itasca PFC software, and then compare the result to experimental tests and to take the AT-332 course.

Our assignment period at UNIS had started on September 26, 2016 and ended November 13, 2016. We split our work time between studying for the AT-322 course and working with our task and software. In sea ice conditions, we cut out Pr. Sodhi's beam and loaded the beam in the center with normal force laying in the ice field space and fixing geometry of cracks. We are aiming to make two equivalent models showing us true geometry for cracks, which we already know from a large experiment session completed by our UNIS supervisor Pr. Marchenko.

2) Autumn 2017 and Spring 2018

This semester out goal is to set up parameters for sea ice and emulate different types of collision between sea ice and concrete structures using DEM Itasca PFC3D 5.0. We will run experiments for our master projects in case of spring field work in Sveagruva.

You may check our results from Autumn 2016 in the report on the SITRA project website.

Anna Lukina

Hometown: Moscow, Russian Federation

Education: 2013-2017 – Moscow Institute of Physics and Technology, Russian Federation

Bachelor Thesis: Correlation of early spring air temperatures to characteristics of winter water masses of the Baltic Sea

Specialization: Thermohydromechanics of the ocean

Supervisor: Nataly Stepanova, PhD in Physico-mathematical sciences

Current Position: Master student of Aerophysics and Space Research Department

Publications:

Рыков Н.А., Лукина А.А., Лысенко С.В., Куликов М.Е. **Многолетние изменения термохалинных характеристик водных масс Балтийского моря** // Труды 5-й Международной научно-практической конференции «Морские исследования и образование: MARESEDU-2016», 18-21 октября 2016 г. – г. Москва, Институт Океанологии РАН им. П.П. Ширшова// стр. 144.

А.А. Лукина, Н.Б. Степанова **Влияние ранневесенних климатических условий на характеристики ХПС Слупского желоба в летний период** //Труды 59-й Всероссийской научной конференции МФТИ, Долгопрудный, 21-26 ноября 2016 г. – Долгопрудный: МФТИ (ГУ). http://conf59.mipt.ru/ru/info/main/.

Лукина А.А. **Исследование характеристик ядра холодного промежуточного слоя юго-восточной Балтики и их зависимости от ранневесенних климатических условий** // Сборник тезисов конференции КИМО-2017. II Всероссийская конференция молодых ученых «Комплексные Исследования Мирового Океана». 10 - 15 Апр 2017. Москва, Институт Океанологии РАН им. П.П. Ширшова

Lukina, A., Stepanova, N. Impact of early spring weather conditions on the characteristics of the CIL on field data 2004-2008. Abstract of poster P94, BSSC-2017, Rostock, Germany, June 12 – 16, 2017;

Anna Pykhtina

Hometown: Kharkiv, Ukraine

Education: 2010-2014 – V.N. Karazin Kharkiv National University, Department of Physics of Alternative Energy Technologies and Ecology (Bachelor of Science, Applied Physics)

2014-2016 – Moscow Institute of Physics and Technology, Department of Problems of Physics and Energetics (Master of Science, Applied Mathematics and Physics)

2014-2017 – Skolkovo Institute of Science and Technology, Department of Energy Science and Technology (Master of Science, Energy Systems)

Specialization: Renewable Energy, Energy Storage, Materials

Current Position: MIPT PhD Student of Thermal Physics and Theoretical Heat Engineering

Projects:

1) 09/2016 - 06/2017 Center for Energy Systems, Skolkovo Institute of Science and Technology (http://crei.skoltech.ru/energysystems/)

Investigation and development of backup power supply system based on reversible metal hydride system for hydrogen storage and proton exchange membrane fuel cell

2) 06/13/2016 - 08/08/2016 Electrochemical Research Group, InEnergy (http://www.inenergy.pro/)

Investigation on electrochemical characteristics of polymer electrolyte fuel cells

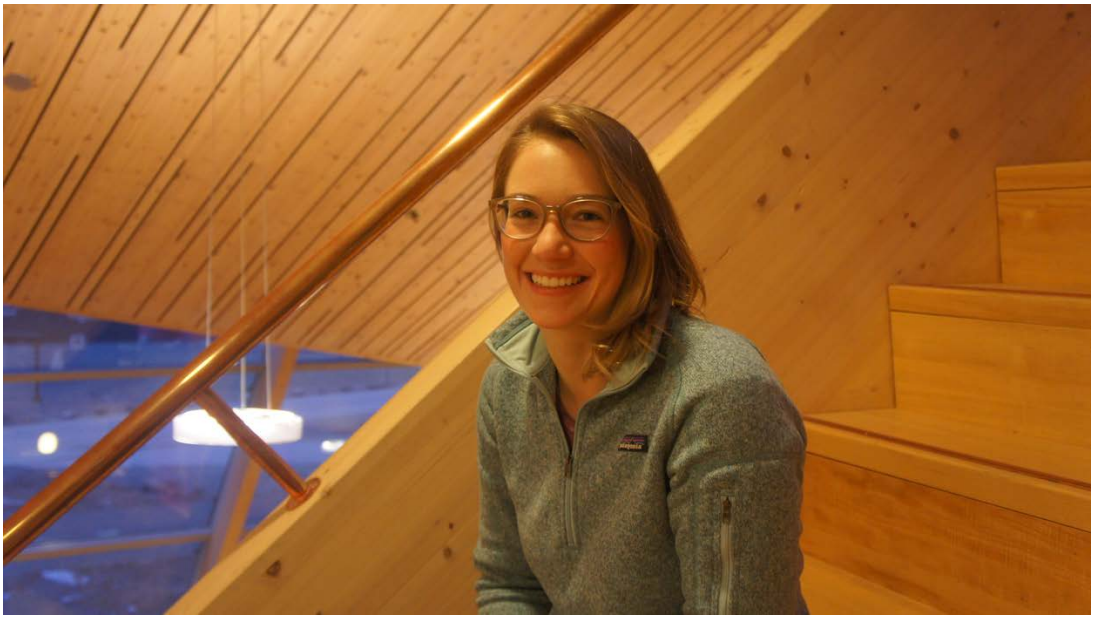
3) 09/2014 - 06/2016 Hydrogen Energy Technology Laboratory, Joint Institute for High Temperatures of Russian Academy of Sciences (http://h2lab.ru/)

Study of scale effects in hydrogen-absorbing LaNi5-based materials for hydrogen storage

4) 09/01/2013 - 07/01/2014Sci. & Production Establishment "Renewable Energy Sources & Sustainable Technologies" Nat. Sci. Center "Kharkiv Institute of Physics & Technology" of National Academy of Sciences of Ukraine (http://resst.kipt.kharkov.ua/)

Virtual water molecule dissociation in external electric fields

Amanda Ryan



Hometown: St. John's, Newfoundland, Canada

Education: 2009-2015 – Bachelor of Civil Engineering from Memorial University, Newfoundland, Canada

2015-2017 Master of Civil Engineering Candidate

Master's Thesis: Abrasion of Marine Concrete in Pack-ice Conditions

Supervisors: Dr. Stephen Bruneau and Dr. Bruce Colbourne

Projects:

1) Offshore drilling and production work in Grand Banks, Newfoundland
2) Construction and structural work in Calgary, Alberta
3) Structural analysis for offshore installations in Newfoundland
4) Volunteer reconstruction and disaster relief in New Orleans, USA

Publications:

Ryan, A., Bruneau, S., Colbourne, B. (2017). "Conceptual Design for Testing Ice Abrasion on Offshore Concrete Surfaces," Proceedings of the 27th International Ocean and Polar Engineering Conference.

Ryan, A., Smith, A., Spracklin-Reid, D. (2015). "Building Relationships between Engineering and the Trades through Service Learning," Proceedings of the Canadian Engineering Education Association Conference.

Ryan, A. (2017) "Ice Wear and Abrasion on Marine Concrete Surfaces: A Conceptual Test Design Study," Master's thesis (for review), Memorial University.

Sabina Idrissova

Hometown: Uralsk, The Republic of Kazakhstan

Education: 2013-2017: Bachelor of Science, offshore oil and gas constructions, Marine Technical University (SMTU), St. Petersburg, Russia.

Bachelor Thesis: The FEM application for design of offshore petroleum units. Award for bachelor thesis from Russian Maritime Register of Shipbuilding.

Current Position: Master student it the Shipbuilding and Ocean Technology Department (SMTU)

Projects:

1) February-March, 2016.

Participation in the II International Youth Forum "The Arctic. Made in Russia". Theme of the work is "The Development and Exploitation of Oil Deposits on the Arctic Shelf." Meet the challenges of construction and development of the Arctic sea gas field “Karskoe”.

2) May 2015 – November 2015. January 2016 - September 2016.

In cooperation with Krylov State Research Centre the theme of the work: maritime activity in the presence of ice; the fight against marine pollution from ships, drilling platforms and underwater pipelines.

3) June 2015 – June 2016. Student Design Bureau. Marine Technical University.

Design of the gear for waterbike to participate in the International Waterbike Regatta 2016 (international student project «Waterbike»).

4) February 2017. Far Eastern Federal University, Vladivostok.

Completed advanced educational program. Winter course in Ice Mechanics.

Internship:

July 2016 - August 2016. June 2017 – September 2017. Internship at JSC CNIIMF in the department of structural reliability and corrosion protection of ships.

Publications:

S. Idrissova (2017). Ispol'zovanie szhizhennogo prirodnogo gaza dlja jelektrogeneracii na shel'fe, Scientific conference “Morskie neftegazovye sooruzhenija tekushhee sostojanie i perspektivy razvitija”, St. Petersburg, Russia.

S. Idrissova (2017). Bor'ba s zagrjazneniem morja s sudov burovyh platform i podvodnyh truboprovodov, The Fifth All-Russian Interbranch Scientific and Technical Conference “Aktual'nye problemy morskoj jenergetiki”, St. Petersburg, Russia.

S. Idrissova (2016). Analysis of loading operating on a submarine gas pipeline, for the region of Kara sea, Russia in the global world № 9 (32), St. Petersburg, Russia.

S. Idrissova (2017). Data analysis of ice inhomogeneity on the polygon. III International Youth Scientific Conference “YOUTH IN SCIENCE: NEW ARGUMENTS”, Lipetsk, Russia.

S. Idrissova (2017). Modern technologies of liquidation oil spills in arctic areas. International electronic scientific and practical journal “Modern scientific research and development”, Moscow, Russia.

S. Idrissova (2017). The applying of finite elements method for designing of marine engineering facilities, Scientific journal “MARINE INTELLECTUAL TECHNOLOGIES”, St. Petersburg, Russia.

S. Idrissova (2017) Experimental investigation of ice structure, XI International Scientific and Practical Conference “Word science: problems and innovations”, Penza, Russia.