



Fall 2020 September—December Newsletter



Energy Sustainability Research at Dalhousie University

Energy research is a primary focus of the Basin and Reservoir lab, and this includes energy sustainability and alternative energy sources. Some of the topics our members have investigated include:

- Carbon Capture Utilization and Storage (CCUS)
- Geothermal Energy in Nova Scotia Onshore and Offshore and Off-shore UK
- Methane release from legacy oil and gas wells, and the potential for mitigation
- Compressed Air Energy Storage (CAES)

Professor Wach is a member of, and expert advisor to the United Nations Economic Commission for Europe (UNECE) Committee on Energy Sustainability; the committee aims to improve access to affordable and clean energy for all, while helping reduce greenhouse gas emissions as well as the carbon footprint of the energy sector in the region (see UN sustainable development goals, top right).

To read more about our sustainable energy research and initiative, visit our Sustainable Energy Research webpage (pictured, right):

www.dal.ca/sites/sustainable-energy.html



Atlantic Geoscience Socie-

Greening of the Maritimes— The Energy Transition



Prof Grant Wach, pGeo
October 2020



On October 22, 2020, Grant Wach delivered his lecture, *Greening the Maritimes—The Energy Transition* as part of the AGS Talk/Webinar series. Professor Wach discussed nonrenewable and renewable energy sources, including oil & gas, wind, geothermal, hydrogen, tidal and other energy sources, energy storage, sustainability and the unique energy opportunities in Canada's Maritime provinces. If you are interested viewing this webinar, a recording of the presentation, with captions is available [here](#), or by visiting our Energy Sustainability Research webpage:

www.dal.ca/sites/sustainable-energy.html

Welcome Back!

We would like to welcome Carla Skinner back to the Basin & Reservoir Lab! Carla completed her M.Sc. here at the lab in 2016 and after spending 4 years as an Execution Geologist and later Production Geologist at Shell, she started her Ph.D. degree in September. Carla is also one of the chairs of the 2022 Halifax GAC-MAC-CSPG Conference. Welcome back, Carla!



CBC Land & Sea

On November 16, members of the Basin & Reservoir Lab were interviewed by documentarian Nance Ackerman for an episode of CBC's *Land and Sea*. The team travelled to the core repository in Stellarton (Mick O'Neill, Supervisor) to view cores and discuss salt utilization, from historic commercial reserves to present-day energy storage in salt.



Early exploration for oil focused on salt structures and associated seeps migrating along the salt walls. We would like to thank Mick O'Neill and the Department of Energy and mines for hosting this interview. **Above:** The team poses with the Land and Sea crew. L to R: Nance Ackerman, Grant Wach, Scott Berrington, Lauren Morris and Trevor Kelly. **Right:** Lauren Morris and Trevor Kelly examine the salt cores. Watch for this episode of *Land and Sea* in 2021.



Geoconvention 2020: A Virtual Event

Geoconvention was held online as a virtual event this year. From September 21-23, 2020 Prof. Wach and members of the BRL took in many of the online presentations.

Congratulations, Max!

Basin and Reservoir Lab alumnus Max Angel has been accepted into the M.Sc. program in Applied Geoscience (Energy and Mineral Resource stream) at RWTH Aachen University, Germany, which will commence in Spring 2021. Congratulations, Max!



Impacts of Covid-19: BRL Works from Home

Due to Covid-19 restrictions, research at the Basin & Reservoir lab is carried out a bit differently this term, however the team is adaptable and have been able to continue with their projects. Several members are back in the lab, working on graduate projects and teaching. Others are working from home, in Nova Scotia, Ontario, Alberta and British Columbia. Despite the challenges this year has presented, we have been able to continue with our projects.

To ensure research is progressing and to check in with those working from home, we hold a weekly virtual team meeting via Microsoft Teams. If you would like to participate in a team meeting, please email kristie.mcvicar@dal.ca for an invitation. We would love to hear updates from our colleagues in Canada and around the globe!

Recent Publications

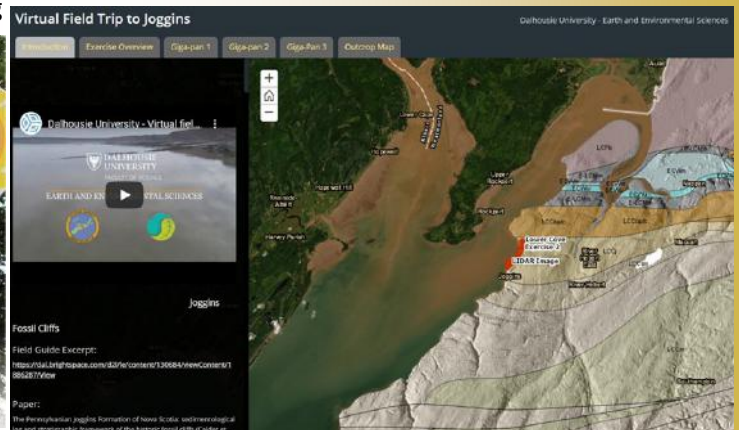
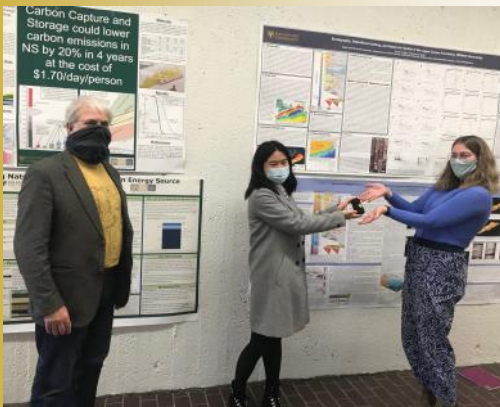
Kelly, T.B., and Wach, G.D. 2020. Analysis of factors influencing the interpretation of a digitally examined fluvial meanderbelt system: Joggins Formation, Nova Scotia. *Canadian Journal of Earth Sciences*, 57(4): 524-541. DOI:10.1139/cjes-2018-0263

Silva, R.L., Duarte, L. V., Wach, G. D., Morrison, N., and Campbell, T. (2020) Oceanic organic carbon as a possible first-order control on the carbon cycle during the Bathonian–Callovian. *Global and Planetary Change* 184:103058 DOI: 10.1016/j.gloplacha.2019.103058

Back to Class—Online Learning at Dalhousie

The fall term this year was like no other, with the majority of courses at Dalhousie University moving to online delivery due to Covid-19 restrictions. Particularly challenging was the online delivery of field trips and core description labs. The Petroleum Geoscience and Stratigraphy courses were led by Professor Grant Wach and TA Lauren Morris. Highlights from the term include:

- Guest lecturers in **Stratigraphy** included Dr. Marcos Zentilli (Professor Emeritus), Dr. Naomi Plummer Nichols (Alumnus; University of Texas), Dr. Victoria Arbour (Alumnus; Curator of Palaeontology, Royal BC Museum), Dr. Hasley Vincent (Alumnus), Dr. Ricardo Silva (Trinity College Dublin), Maya Soukup (Alumnus; Memorial University of Newfoundland), and Heather Cross (Alumnus).
- Guest lecturers in **Petroleum Geology** included Dr. Dave Mosher (Geological Survey of Canada), Dr. Morgan Sullivan (Chevron), Kenn Martyns-Yellowe, (M.Sc. Candidate) and Natasha Morrison (Alumnus; NS Dept. of Mines and Energy).
- In September, students were asked to make a prediction for what the common petroleum product prices would be at the end of the course. Tianqi Liu had the closest prediction, announced at the final lecture, and was awarded with a handmade felt oil barrel (sustainable) for her efforts (Photo L-R Grant Wach, Tianqi Liu, and Lauren Morris)
- The Stratigraphy course ended on a high note, with students participating in two separate debates, one on **Climate Change in the Maritimes & Natural Resource Policy**, the other on **Should the Anthropocene be a Geological Time Period?** Both courses were focused on practical assignments more so than theoretical, with the lab and field trip components aiming to prepare students for real-world problem solving and assessment.



Forensic Geology

The team has been involved in a number of forensic geology projects this year. In the spring, the team assisted law enforcement with geoforensic work in central Nova Scotia. In addition, the team has submitted their study, *A novel approach to 3D modelling ground penetrating radar (GPR) data – a case study of a cemetery and applications for criminal investigation*, for publication in Forensic Science International.

Save the Date

GAC- MAC- CSPG	AGC- AMC- SCGP	<i>Riding the waves of change</i> <i>Surfer sur la vague du changement</i>	
May 15-18	15-18 mai		



The Basin & Reservoir Team would like to thank you for your continued support!

Please contact kristie.mcvicar@dal.ca with inquiries about our research and activities