

## Curriculum Vitae

Name: **Lars Henrik Smedsrud**  
Born: 15.10.1969  
Position: Professor  
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### Coordination & leadership:

- 2015 - Member of the CliC Scientific Steering Group (Climate and the Cryosphere, WCRP)
- 2014 - Coordinating Chair of Arctic ECRA (European Climate Research Alliance)
- 2014 - Leader of the Polar Science Network at University of Bergen
- 2015 - 2018 Project leader TRACEICE: Trans-Arctic Change: Extending Interdisciplinary Collaborations on the Environment
- 2014-2017 Ocean Work Package Leader - Norwegian Young Sea Ice Cruise (N-ICE2015)
- 2013 - 2017 Coordinating PI: BCCR Research Group on Atmosphere, Cryosphere & Ocean
- 2007 Cruise leader, Coast Guard Svalbard, 2 weeks experiment, Barents Sea
- 2005 Leader of fieldwork, PROCLIM, Svalbard.

### Administration, Reviewing, Teaching, Supervision:

- 2014 - 2019 Professor II at University Centre in Svalbard (UNIS)
- 2007 - 2019 Teaching Master and Bachelor level: Data analysis (2007 and 2013), Polar Oceanography (2013 - 2018), Physics of the Atmosphere and Ocean (2014 - 2017)
- 2007 - 2019 Supervision of PhD and Master students:
  - Ongoing: 2 PhD students,
  - Finished: 5 PhD students (2011 - 2017), 7 Master students (2012 - 2018)
- 2006 Coordination, web pages, reporting, outreach  
(Norwegian Ocean Climate and Polar Ocean Climate projects)
- 2002 - 2018 Editorial work, Guest Editor:  
Forum for Research on Ice Shelf Processes, Annals of Glaciology, Oceanography
- 2000 - 2019 Reviewer for international scientific journals;  
Journal of Geophysical Research, Deep Sea Research, The Cryosphere,  
Geophysical Research Letters, Ocean Science, Annals of Glaciology
- 1994 - 1999 Student member of the Geophysical Institute board, University of Bergen.

## Education:

- 1988 Graduated at Kongsberg college, natural sciences
- 1990 Appointed second-lieutenant in the Royal Norwegian Navy
- 1996 Graduated as Master of Science in Physical Oceanography, Faculty of natural sciences, University of Bergen, March 26. (Thesis graded as 1.5 on a scale from 1.0 to 4.0)
- 2000 Graduated as a Doctor of Science in Physical Oceanography, Faculty of natural sciences, University of Bergen, March 17.

## Outreach & Media:

- 2006 Producer: The Svalbard collection - 4 films from freezing conditions
- 2008 Exporting Ice (Nature 23. October 2008)
- 2009 Pancake ice takes over the Arctic (Nature 23. March 2009)
- 2009 - 2010 Blog on forskning.no: <http://www.forskning.no/blog/larshsmedsrud>
- 2008 - 2019 Over 80 stories in Norwegian and International press, [see personal web page](#).

## Research Experience:

- 1994 CTD observations, two week cruise, R/V Håkon Mosby, the Norwegian Sea.
- 1995 Field assistant, current and CTD data, Norwegian Institute for Water Research.
- 1996 Observations of under ice topography using acoustic sonar, four weeks, R/V Lance, Barents Sea. ICE BAR 1996, Norwegian Polar Institute.
- 1996 - 1997 Participated in INTERICE I. Worked with salinity, temperature, frazil ice and current measurements. HSVA, Hamburg, Germany.
- 1998 Worked with numerical modelling at CSIRO - division of Marine Research, Hobart, Australia, for 5 months during the Ph.D.
- 1998 Participated in INTERICE II. Worked with salinity, temperature, sediment, frazil ice and current measurements. HSVA, Hamburg, Germany.
- 1999 - 2000 Worked with numerical modelling of sediment entrainment in the "Transport and faith of contaminants in the northern Seas" project. Norwegian Polar Institute.
- 2000 - 2001 Laboratory experiments, sea ice formation, Cosmos project, University of Bergen.
- 2001 - 2002 Marie Curie Fellow at the British Antarctic Survey, Cambridge, UK.  
Modelling frazil ice crystal formation below Antarctic ice shelves
- 2001 - 2004 Post Doc at the Geophysical Institute, University of Bergen.  
Dynamics of warming of the deep water in the Weddell Sea.
- 2003 - 2006 Researcher at the Bjerknes Centre for Climate Research, Bergen.  
Field work and numerical modelling, Polar Ocean Climate Processes.
- 2007 - 2013 Researcher at the Bjerknes Centre for Climate Research and Uni Research, Bergen.  
Numerical modelling and field work: Barents Sea, Arctic and Antarctica
- 2013 - 2014 Associate Professor at the Geophysical Intitute, Research based teaching.
- 2014 - 2019 Professor at the Geophysical Institute, Research based teaching and supervision

## 45 Publications in International Journals: h-index of 26, and 1949 citations in January 2019

- Hoke, W., T. Swierczynski, P. Braesicke, K. Lochte, L. Shaffrey, M. Drews, H. Gregow, R. Ludwig, J. E. Ø. Nilsen, E. Palazzi, G. Sannino, **L. H. Smedsrud**, and the ECRA network (2019) The European Climate Research Alliance (ECRA): Collaboration from bottom-up, *Advances in Geosciences*, adgeo-2018-63, In Press.
- Muilwijk, M., **L. H. Smedsrud**, M. Ilicak, and H. Drange (2018) Atlantic Water heat transport variability in the 20th century Arctic Ocean from a global ocean model and observations, *Journal of Geophysical Research: Oceans*, 123, doi:10.1029/2018JC014327
- Onarheim, I., T. Eldevik, **L. H. Smedsrud**, and J. Stroeve (2018) Seasonal and regional manifestation of Arctic sea ice loss, *J. Climate*. 31, 12, 4917-4932, doi:10.1175/JCLI-D-17-0427.1
- L. H. Smedsrud**, M. H. Halvorsen, J. C. Stroeve, R. Zhang, and K. Kloster (2017) Fram Strait sea ice export variability and September Arctic sea ice extent over the last 80 years. *The Cryosphere*, 11, 65-79, 2017, <http://www.the-cryosphere.net/11/65/2017/> doi:10.5194/tc-11-65-2017
- A. Meyer, A. Sundfjord, I. Fer, Ilker, C. Provost, N. Villacieros Robineau, Z. Koenig, I. H. Onarheim, **L. H. Smedsrud**, P. Duarte, P. A. Dodd, R. M. Graham, S. Schmidtke and H. M. Kauko (2017) Winter to summer oceanographic observations in the Arctic Ocean north of Svalbard, *Journal of Geophysical Research: Oceans*, 2169-9291, doi: 10.1002/2016JC012391
- P. Assmy, and 39 co-authors (2017) Leads in Arctic pack ice enable early phytoplankton blooms below snow-covered sea ice, *Scientific Reports*, 7:40850, doi: 10.1038/srep40850
- T. Krumpfen, R. Gerdes, C. Haas, S. Hendricks, A. Herber, V. Selyuzhenok, **L. Smedsrud**, and G. Spreen (2016) Recent summer sea ice thickness surveys in Fram Strait and associated ice volume fluxes. *The Cryosphere*, 10, 523-534, <http://www.the-cryosphere.net/10/523/2016/> doi:10.5194/tc-10-523-2016
- A. Nummelin, M. Ilicak, C. Li and **L. H. Smedsrud** (2016) Consequences of Future Increased Arctic Runoff on Arctic Ocean Stratification, Circulation, and Sea Ice Cover, *Journal of Geophysical Research, Oceans*, 121, 617-637, doi:10.1002/2015JC011156, 2016.
- V. Ivanov, V. Alexeev, N. V. Koldunov, I. Repina, A. B. Sandø, **L. H. Smedsrud** and A. Smirnov (2016) Arctic Ocean heat impact on regional ice decay - a suggested positive feedback, *Journal of Physical Oceanography*, 46, 1437-1456, doi: 10.1175/JPO-D-15-0144.1, 2016
- Nummelin, A., C. Li and **L. H. Smedsrud** (2015) Response of Arctic Ocean stratification to changing river runoff in a column model, *Journal of Geophysical Research, Oceans*, volume 119, doi:10.1002/2014JC010571.
- Onarheim, I. H., T. Eldevik, M. Årthun, R. B. Ingvaldsen and **L. H. Smedsrud** (2015) Skillful prediction of Barents Sea ice cover, *Geophysical Research Letters*, 42, 5364-5371, doi:10.1002/2015GL064359, 2015
- Smedsrud, L. H.** and T. Martin (2015). Grease ice in basin-scale sea-ice ocean models. *Annals of Glaciology* 56 (69), doi: 10.3189/2015AoG69A765.
- Hattermann, T., **L. H. Smedsrud**, O. A. Nøst, J. M. Lilly and B. K. Galton-Fenzi (2014). Eddy-resolving simulations of the fimbul ice shelf cavity circulation. *Ocean Modelling*, 82 (2014), 28-44, <http://dx.doi.org/10.1016/j.ocemod.2014.07.004>
- Onarheim, I. H., **L. H. Smedsrud**, R. B. Ingvaldsen, and F. Nilsen (2014). Loss of sea ice during winter north of svalbard. *Tellus A* 66 (23933), doi:10.3402/tellusa.v66.23933.
- Zygmuntowska, M., P. Rampal, N. Ivanova, and **L. H. Smedsrud** (2014) Uncertainties in arctic sea ice thickness and volume: new estimates and implications for trends. *The Cryosphere* 8, 705 – 720.
- Langehaug, H. R. and. Geyer, F., **L. H. Smedsrud**, and Y. Gao (2013). Arctic sea ice decline and ice export in the CMIP5 historical simulations. *Ocean Modelling* 71, 114-126. doi: 10.1016/j.ocemod.2012.12.006.
- McPhee, M. G., R. Skogseth, F. Nilsen, and **L. H. Smedsrud** (2013). Creation and tidal advection of a cold salinity front in Storfjorden: 2. supercooling induced by turbulent mixing of cold water. *J. Geophys. Res.* 118, doi:10.1002/jgrc.20261.
- Skogseth, R., M. G. McPhee, F. Nilsen, and **L. H. Smedsrud** (2013). Creation and tidal advection of a cold salinity front in Storfjorden: 1. polynya dynamics. *J. Geophys. Res.* 118, doi:10.1002/jgrc.20231, 2013.
- Smedsrud, L. H.**, I. Esau, R. B. Ingvaldsen, T. Eldevik, P. M. Haugan, C. Li, V. S. Lien, A. Olsen, A. M. Omar, O. H. Otterå, B. Risebrobakken, A. B. Sandø, V. A. Semenov, and S. Sorokina (2013). The role of the Barents Sea in the Arctic climate system. *Reviews of Geophysics* 51, doi:10.1002/rog.20017.
- Årthun, M., T. Eldevik, **L. H. Smedsrud**, R. Ingvaldsen, and Ø. Skagseth (2012). Quantifying the influence of atlantic heat on Barents Sea ice variability and retreat. *J Climate* 25, 4736-4743. doi:10.1175/JCLI-D-11-00466.1.

- Hattermann, T., O. A. Nøst, J. M. Lilly, and **L. H. Smedsrud** (2012). Two years of oceanic observations below the fimbul ice shelf, antarctica. *Geophys. Res. Lett.* 39 (L12605), doi:10.1029/2012GL051012.
- Årthun, M., R. Ingvaldsen, **L. H. Smedsrud**, and C. Schrum (2011). Dense water formation and circulation in the barents sea. *Deep-Sea Res* 58, 801817. doi:10.1016/j.dsr.2011.06.001.
- Hendricks, S., S. Gerland, **L. H. Smedsrud**, C. Haas, A. A. Pfaffhuber, and F. Nilsen (2011). Sea ice thickness variability in storfjorden, svalbard archipelago. *Annals of Glaciology* 52 (57), 61–68.
- Nøst, O. A., M. Biuw, V. Tverberg, C. Lydersen, T. Hattermann, Q. Zhou, **L. H. Smedsrud**, and K. M. Kovacs (2011). Eddy overturning of the antarctic slope front controls glacial melting in the Eastern Weddell Sea. *J. Geophys. Res.* (C11014).
- Risebrobakken, B., T. Dokken, **L. H. Smedsrud**, C. Andersson, E. Jansen, M. Moros, and E. Ivanova (2011). Early holocene temperature variability in the nordic seas: The role of oceanic heat advection versus changes in orbital forcing. *Paleoceanography* 26 (PA4206). doi:10.1029/2011PA002117.
- Smedsrud, L. H.** (2011). Grease ice thickness parametrisation. *Annals of Glaciology* 52 (57), 77–82.
- Smedsrud, L. H.**, A. Sirevaag, K. Kloster, A. Sorteberg, and S. Sandven (2011). Recent wind driven high sea ice area export in the fram strait contributes to arctic sea ice decline. *The Cryosphere* 5, 821–829.
- Geyer, F., I. Fer, and **L. H. Smedsrud** (2010). Structure and forcing of the overflow at the stor-fjorden sill and its connection to the arctic coastal polynya in storfjorden. *Ocean Science* 6 (1), 401–411.
- Smedsrud, L. H.**, R. Ingvaldsen, J. Nilsen, and Ø. Skagseth (2010). Heat in the Barents sea: Transport, storage and surface fluxes. *Ocean Science* 6 (1), 219–234.
- Timmermann, R., A. Le Brocq, T. Deen, E. Domack, P. Dutrieux, B. Galton-Fenzi, H. Hellmer, A. A. Humbert, D. Jansen, A. Jenkins, A. Lambrecht, K. Makinson, F. Niederjasper, F. Nitsche, O. Nøst, **L. H. Smedsrud**, and W. Smith (2010). A consistent dataset of antarctic ice sheet topography, cavity geometry, and global bathymetry. *Earth System Science Data - Discussions* 3, 231–257.
- Darelius, E., **L. H. Smedsrud**, S. Østerhus, A. Foldvik, and T. Gammelsrød (2009). Structure and variability of the filchner overflow plume. *Tellus A* 61 (3), 446–464.
- Skogseth, R., F. Nilsen, and **L. H. Smedsrud** (2009). Supercooled water in an Arctic polynya: Observations and modeling. *Journal of Glaciology* 55 (189), 43–52.
- Skogseth, R., **L. H. Smedsrud**, F. Nilsen, and I. Fer (2008). Observations of hydrography and downflow of brine-enriched shelf water in the storfjorden polynya, svalbard. *J. Geophys. Res.* 113 (C08049).
- Smedsrud, L. H.**, A. Sorteberg, and K. Kloster (2008). Recent and future changes of the Arctic sea ice cover. *Geophys. Res. Lett.* 35 (L20503).
- Smedsrud, L. H.**, W. P. Budgell, A. D. Jenkins, and B. Ådlandsvik (2006). Fine scale sea ice modelling of the Storfjorden polynya. *Annals of Glaciology* 44, 73–79.
- Smedsrud, L. H.** (2006). Causes of deep-water variations: Reply to comment by E. Fahrbach, M. Hoppema, G. Rohardt, M. Schroder and A Wisotzki. *Deep-Sea Res Part I* 53 (3), 578–580.
- Smedsrud, L. H.** and R. Skogseth (2006). Field measurements of Arctic grease ice properties and processes. *Cold Regions Science and Technology* 44 (3), 171–183. doi:10.1016/j.coldregions.2005.11.002.
- Smedsrud, L. H.**, A. Jenkins, D. M. Holland, and O. A. Nøst (2006). Modeling Ocean Processes below the Fimbul Ice Shelf. *J. Geophys. Res.* 111 (C01007), doi:10.1029/2005JC002915.
- Smedsrud, L. H.** (2005). Warming of the deep water in the Weddell Sea along the Greenwich meridian: 1977 - 2001. *Deep-Sea Res Part I* 52 (2), 241–258. doi:10.1016/j.dsr.2004.10.004.
- Smedsrud, L. H.** and A. Jenkins (2004). Frazil Ice Formation in an Ice Shelf Water Plume. *J. Geophys. Res.* 109 (C3), C03025, doi:10.1029/2003JC001851.
- Smedsrud, L. H.** (2003). Formation of turbid ice during the autumn freeze up in the Kara Sea. *Polar Res* 22 (2), 267–286.
- Smedsrud, L. H.**, T. M. Saloranta, P. M. Haugan, and T. Kangas (2003). Sea Ice Formation on a Very Cold Surface. *Geophys. Res. Lett.* 30 (6), 1284, doi:10.1029/2002GL016786.
- Smedsrud, L. H.** (2002). A model for entrainment of sediment into sea ice by aggregation between frazil ice crystals and sediment grains. *Journal of Glaciology* 48 (160), 51–61.
- Smedsrud, L. H.** (2001). Frazil ice entrainment of sediment: large tank laboratory experiments. *Journal of Glaciology* 47 (158), 461–471.
- Smedsrud, L. H.** (1998). Estimating aggregation between suspended sediment and frazil ice. *Geophys. Res. Lett.* 25 (20), 3875 – 3878