

A short CV

Name: Johnny A. Johannessen
Born: 9 December 1953
Nationality: Norwegian
Present position: Vice Director

Academic degrees:

1997: Dr. Philos., University of Bergen, Norway
1979: Cand. Real., Physical Oceanography, Geophysical Institute, University of Bergen, Norway.
1977: Cand. Mag., Mathematics and Natural Sciences, University of Bergen, Norway.

Work experience:

2010: Vice director Nansen Environmental and Remote Sensing Center
2008-2010. Research Director Mohn-Sverdrup Center at Nansen Environmental and Remote Sensing Center (NERSC), Bergen, Norway.
1999-2007: Research Director in Ocean Remote Sensing Section, Nansen Environmental and Remote Sensing Center (NERSC), Bergen, Norway.
2000: Appointed Professor 2 in Satellite Oceanography, Geophysical Institute, University of Bergen, Norway.
1994-1999: Head of Ocean and Sea Ice Unit, Earth Sciences Division, European Space Agency (ESA) ESTEC, Noordwijk, The Netherlands.
1992-1994: Research Director, Marine Monitoring and Remote Sensing Unit, Nansen Environmental and Remote Sensing Center (NERSC), Bergen, Norway.
1987-1991: Senior Scientist, Nansen Environmental and Remote Sensing Center (NERSC), Bergen, Norway.
1988-1989: Visiting Scientist at Environmental Research Institute of Michigan, Ann Arbor, Mi., US for 6 months from September 1988 to February 1989.
1983-1986: Research Scientist, Geophysical Institute, University of Bergen, Norway.
1981-1982: Research assistant to Arctic Chair hold by O.M. Johannessen at Naval Postgraduate School, Monterey, Cal., US from August 1981 to July 1982.
1979-1981: Research Assistant, Geophysical Institute, University of Bergen.

Fields of interest and present research activities

Johannessen has 35 years experience in satellite remote sensing in oceanography and sea ice research. In particular, he has focused on the use of synthetic aperture radar (SAR) to advance the understanding of mesoscale processes along the marginal ice zone and associated with open ocean fronts and eddies. In the last 10 years he has also been involved in development and

implementation of operational oceanography both at national and international level. This has included a central involvement in the development and implementation of the European Marine Service under the Global Monitoring for Environment and Security (GMES, *since 2013 renamed to Copernicus*) initiative. The operation of the Arctic Modelling and Forecasting component of the Copernicus resides jointly between the Nansen Center and the Norwegian Meteorological Institute (met.no).

Johannessen has authored/co-authored more than 150 scientific and technical publications, reports and book articles of which 85 papers are published (or in press) in International Review Journals and 22 are published in peer review book articles.

Johannessen has coordinated several national and international research projects on satellite retrieval methods and operational oceanography. He has participated in 15 international field campaigns and has been chief scientist on 10 of these cruises, predominantly in the Arctic Marginal Ice Zones and in the Norwegian Coastal Current.

Advances in operational oceanography are forming a major part of my present research and development activities. It is also shaping my future research direction with emphasize on satellite remote sensing. In particular there are significant needs to gather better understanding of: (i) mesoscale variability, frontal zone dynamics and eddy generations; (ii) effects of small-scale variations in meteorological forcing and its consequence for air-sea interaction; and (iii) generation of long-time series. The mesoscale and small scale processes typically occur at spatial resolutions from order 100 m to several kilometres. The imaging by synthetic aperture radar (SAR) is a major contribution to this research field and manifest a variety of mesoscale and sub-mesoscale surface features through wind-wave-current interactions. Finally the possibility to create long-time series (several decades) based on satellite data is now also making these data of uttermost value for seasonal to decadal variability and climate change studies.

Membership in academic and professional committees and other professional merits:

- Co-chairman of the Nansen-Tutu Center at University of Cape Town, South Africa.
- Member of ESA Science Strategy Review panel (2015-2016)
- Chairman of the ESA Science and Advisory Committee (2006-2010).
- Member of the MyOcean Board (terminated in 2013)
- Member of the Ocean Observing Panel for Climate (OOPC) under the Global Climate Observing System (GCOS).
- Member of EuroGOOS board.
- Member of GOCE Mission Advisory Group under ESA (up to 2012).
- Member of Sentinel-1 Mission Advisory Group under ESA.
- Member of EUMETSAT Advisory Expert Group for Ocean Topography and Ocean Imaging Satellite Missions.

- Member of Editorial Board of Journal of Operational Oceanography, published by The Institute of Marine Engineering, Science and Technology, London, UK.
- Member of GlobeWave Steering Committee.
- Visiting Professor at Ocean University of China, Qingdao, 2006 to 2009.
- Award received in appreciation and recognition of the outstanding contribution to the success and achievements of the MOST/ESA Dragon Programme 2004 to 2007.

Lecturing, supervision and external examiner:

Johannessen is responsible for the lectures in satellite oceanography at Geophysical Institute, Univ. of Bergen, and is also involved with the content definition and lecturing in the course on operational oceanography at the Geophysical Institute. The courses include:

- GEOF 345: Satellite methods in Oceanography (fall semester)
- GEOF 334: Remote sensing using microwaves (spring semester)
- GEOF 231: Operational Oceanography (spring semester)

Johannessen has lectured at training courses in remote sensing and its application to oceanography and sea ice research at the Instituto Nacional de Pesquisas Espaciais (INPE) in Sao José dos Campos, Sao Paulo, Brazil in December 1999, and at Departamento de Oceanographica Fisica CICESE, Ensenada, Mexico in August 2000, 2002 and 2008. Johannessen has also lectured at the ESA Summer school in Frascati, Italy in August 2004. Since 2004 he has regularly participated and given lectures at the ESA-MOST Advanced training course in ocean remote sensing at Ocean University of China, Qingdao, China in October 2004, at University of Hamburg in September 2006, at the State Oceanic Administration (SOA) in Hangzhou, China in October 2007, at University of Bergen, Norway in September 2009, at East China Normal University, Shanghai, P.R. China in October 2011, at the National Marine College of Ireland in Cork in September 2013, at the Chinese University of Hong Kong in October 2013, at Ifremer, Brest, France from 7-11 September 2015.

Johannessen has supervised/co-supervised 8 Dr.Scient/PhD students and 7 Master students at the Geophysical Institute, University of Bergen. Currently he is supervising 1 PhD student at East China Normal University and 1 MSc student at the University of Bergen. He has also been external examiner for 8 PhD dissertations at University of Southampton, England (2), University of Oslo, Norway (1), University of Tromsø, Norway (1), University of Copenhagen, Denmark (2), University of Vigo, Spain (1), and University of Toulouse, France (1).

Invited Talks (since 2007)

- ESA Living Planet Symposium, Montreux, Switzerland, April 2007
- ESA GlobModel Meeting, Frascati, Italy, September 2007
- NCEO Launch Event, London, UK, April 2009
- EGU, Vienna, Austria, May 2009
- IGARSS, Cape Town, SA, July 2009

- ESA Living Planet Symposium, Bergen, Norway, June 28 2010
- Nordic Remote Sensing Days, Tromsø, Norway, 29-31 August 2011
- Anniversary of 20 years of ERS Missions – ERS Altimetry and SAR for Oceanography, ESA-ESRIN, 27 September 2011.
- An overview of the ERS missions scientific achievements, ESA-Council, 12 October 2011.
- Towards improved estimation of the dynamic topography and ocean circulation for the high latitude and Arctic Ocean, ISSI Workshop on the Earth's Hydrological Cycle, Bern, 6-10 February 2012.
- Identification of the overarching science challenges that the CCI will help to address - Theme: Ocean, CCI-CMUG Integration Meeting, Toulouse, France, 14-16 May 2012.
- EGU, Vienna, Austria, 2013
- Climate Symposium 2014, 13-17 October, Darmstadt, Germany.
- ESA Sentinel-3 for Science Meeting, 2-5 June, Venice, Italy, 2015.

Publication List: International Review Journals

1. J. Bukley, T. Gammelsrød, **J.A.Johannessen**, O.M.Johannessen and L.P.Røed, Upwelling: Oceanic structure at the ice edge of the Arctic ice pack in winter, *Science*, 12, vol. 203, 165 167, January 1979.
2. E. Svendsen, K.Kloster, B. Farrelly, O.M.Johannessen, **J.A.Johannessen**, W.J.Campbell, P.Gloersen, D.Cavaliere and C. Matzler, Norwegian Remote Sensing Experiment: Evaluation of the Nimbus 7 Scanning Multichannel Microwave Radiometer for sea ice research, *Journal of Geophys. Res.*, 88, C5, March 1983.
3. NORSEC Group. The Norwegian remote sensing experiment (NORSEX) in the marginal ice zone north of Svalbard, *Science*, vol. 220, 781-787, 20 May 1983.
4. O.M.Johannessen, **J.A.Johannessen**, J. Morison, B. Farrelly and E.Svendsen, Oceanographic conditions in the Marginal Ice Zone north of Svalbard in early fall 1979 with emphasis on Mesoscale Processes, *Journal of Geophys. Res.*, 88, C5, March 1983.
5. **J.A.Johannessen** and H. Gade, A case study of the variations in the upper ocean at Ocean Weather Ship Mike (66°N, 2°E) in the Norwegian Sea, *Geophysica Norwegica*, vol. 32, no. 5, 1984.
6. D.C.Smith, J.Morison, **J.A.Johannessen** and O.M.Johannessen, Topographic generation of an eddy at the edge of the East Greenland Current, *Journal of Geophys. Res.*, vol. 89, September 1984.
7. **J.A. Johannessen**, O.M., Johannessen, E. Svendsen, R. Shuchman, T. Manley, W.J. Campbell, E.G. Josberger, S. Sandven, J.C. Gascard, T. Olaussen, K. Davidson and J.Van Leer, Mesoscale Eddies in the Fram Strait Marginal Ice Zone during the 1983 and 1984 Marginal Ice Zone Experiments, *Journal of Geophys. Res.*, vol. 92, no. C7, 6754-6772, June 30, 1987.
8. **J.A. Johannessen**, O.M. Johannessen and P.M. Haugan, Remote sensing and model simulation studies of the norwegian coastal current during the algal bloom in May 1988, *International Journal of Remote Sensing*, vol. 10, no. 12, 1893-1906, 1989.

- 9 **J.A. Johannessen**, E. Svendsen, S. Sandven, O.M. Johannessen and K. Lygre, Three Dimensional Structure of Mesoscale Eddies in the Norwegian Coastal Current, *Journal of Phys. Oceanography*, Vol.19, No. 1, 3-19, January, 1989.
- 10 M. Ikeda, **J.A.Johannessen**, K. Lygre and S. Sandven, A process study of mesoscale meanders and eddies in the Norwegian Coastal Current, *Journal of Phys. Oceanography*, Vol.19, No. 1, 20-35, January, 1989.
- 11 P.M. Haugan, **J.A. Johannessen**, K. Lygre, S. Sandven and O.M. Johannessen, Simulation experiments of the evolution of mesoscale circulation features in the Norwegian Coastal Current, *Mesoscale/synoptic coherent structures in geophysical turbulence*, 303-313, Elsevier Science Publishers, The Netherlands, 1989.
- 12 **J.A.Johannessen**, The Norwegian Continental Shelf Experiment (NORCSEX) Prelaunch ERS-1 Investigation, *Journal of Geophys. Res.*, vol. 96, 10409-10410, June 1991.
- 13 **J.A. Johannessen**, Shuchman, R.A., Johannessen, O.M., Davidson, K.L., Lyzenga, D.R. Synthetic aperture radar imaging of upper ocean circulation features and wind fronts, *Journal of Geophys. Research*, Vol. 96, No. C6, 10411-10422, 1991.
- 14 P.M. Haugan, G. Evensen, **J.A.Johannessen**, O.M. Johannessen, and L. H. Pettersson, Modeled and observed mesoscale circulation during NORCSEX'88, *Journal of Geophys. Res.*, Vol. 96, 10487-10506, 1991.
- 15 N. Mognard, **J.A.Johannessen**, C. Livingstone, D. Lyzenga, R. Shuchman and C. Russel, Simultaneous observations of ocean surface winds and waves by GEOSAT radar altimeter and airborne SAR during NORCSEX'88, *Journal of Geophys. Res.*, Vol. 96, 10467-10486, 1991.
- 16 C. Rufenach, R.A. Shuchman, N. Malinas, **J.A. Johannessen**, Ocean wave spectral distortion in airborne SAR imagery during NORCSEX'88, *Journal of Geophys. Res.*, Vol. 96, 10453-10466, 1991.
- 17 R.B.Olsen, C.L.Rufenach, R.A.Shuchman and **J.A.Johannessen**, Aircraft SAR and buoy ocean wave measurements off the coast of Norway, *International Journal of Remote Sensing*, vol. 12, no.1, 199-206, 1991.
- 18 S. Sandven, O.M.Johannessen and **J.A.Johannessen**, Mesoscale eddies and chimneys in the marginal ice zone, *Journal of Marine Systems*, 2, 195-208, 1991.
- 19 O.M.Johannessen, W. Campbell, R.A.Shuchman, S.Sandven, P.Gloersen, **J.A.Johannessen**, E. Josberger, P.M.Haugan, Microwave Study Programs of Air-Sea Ice-Ocean interactive processes in the seasonal ice zone of the Greenland and Barents Seas, *Microwave Remote Sensing of Sea Ice*, pp. 261-289, American Geophysical Union, 1992.
- 20 **J.A. Johannessen**, Røed, L.P. and Wahl, T, "Eddies detected in ERS-1 SAR images and simulated in reduced gravity model", *International Journal of Remote Sensing*, Vol. 14, No. 11, 2203-2213, 1993.
- 21 **J.A. Johannessen**, Røed, L.P., Johannessen, O.M., Evensen, G., Hackett, B., Pettersson, L.H., Haugan, P.M., Sandven, S., and Shuchman, R.A., Monitoring and modelling of the marine coastal environment, *Photogrammetric Engineering and Remote Sensing*, Vol. 59, No. 3, 351-361, March 1993.
- 22 P.W. Vachon, O.M.Johannessen and **J.A.Johannessen**, An ERS-1 SAR image of Atmospheric Lee Waves, *Journal of Geophys. Res.*, vol. 99, No. C11, 22483-22490, Nov. 15, 1994.

- 23 P.W.Vachon, **J.A.Johannessen**, D.P.Browne, ERS-1 SAR images of atmospheric gravity waves, *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 33, No. 4, July 1995.
- 24 **J.A.Johannessen**, R.A. Shuchman, G. Digranes, D. Lyzenga, C. Wackerman, O.M.Johannessen and P.W.Vachon, Coastal ocean fronts and eddies imaged with ERS-1 SAR, *Journal of Geophys. Res.*, Vol 101, C3, March 1996.
- 25 **J.A.Johannessen**, P.W.Vachon and O.M.Johannessen, ERS-1 SAR imaging of marine boundary layer processes, Study of Earth System from *Space-Journal of Earth Observation and Remote Sensing* (refereed Journal of the Russian Academy of Science), No. 3, 1996.
- 26 C. Wackerman, C. Rufenach, R. Shuchman, **J.A.Johannessen** and K. Davidson, Wind vector retrieval using ERS-1 Synthetic Aperture Radar Imagery, *IEEE Transactions on Geoscience and Remote Sensing*, vol.34, pp. 1343-1352, 1996.
- 27 J. Grandell, **J.A.Johannessen**, and M. Hallikainen, Comparison of ERS-1 AMI Wind Scatterometer and SSM/I Sea Ice Detection in the Baltic Sea, *The Photogrammatic Journal of Finland*, vol 15, no. 1, 6-23, 1996.
- 28 **J.A.Johannessen**, P. Jansen, J.F. Minster, I. Robinson, D. Rothrock and P.W. Vachon, Preface: Advances in Oceanography and Sea Ice Research Using ERS Observations, *Journal of Geophys. Res.* Vol. 103, no. C4, April 15, 1998.
- 29 Erik Korsbakken, **J.A.Johannessen** and O.M.Johannessen, Coastal wind field retrievals from ERS SAR images, *Journal of Geophys. Res.* Vol. 103, no. C4, April 15, 1998.
- 30 R. Shuchman, E. Josberger, C. Russel, K. Fischer, O.M. Johannessen, **J.A.Johannessen** and P. Gloersen, Greenland Sea Odden sea ice feature: Intra-annual and interannual variability, *Journal of Geophys. Res.* Vol. 103, no. C6, June 15, 1998.
- 31 **J.A.Johannessen**, E. Attema and Y.-L. Desnos, Wind field retrievals from SAR, *Earth Observation Quarterly*, No. 59, June 1998.
- 32 Espedal H.A., Johannessen O.M., **Johannessen J.A.**, Dano E., Lyzenga D. and Knulst J.C., COASTWATCH'95: A tandem ERS-1/2 SAR detection experiment of natural film on the ocean surface, *J. Geophys. Res.*, 103 (C11), pp.24969-24982, 1998.
- 33 P.L. Woodworth, **J.A.Johannessen**, P. Le Grand, C. Le Provost, G. Balmino, R. Rummel, R. Sabadini, H. Sünkel, C.C. Tscherning and P. Visser, Towards the definitive space gravity mission, *International WOCE Newsletter*, No. 33, December 1998.
- 34 J. Grandell, **J.A.Johannessen** and M. Hallikainen, Development of a Synergetic Sea Ice Retrieval Method for the ERS-1 AMI wind scatterometer and SSM/I Radiometer, *IEEE Transactions on Geoscience and Remote Sensing*, Vol 37, No 2, March 1999.
- 35 A. Resti, J. Benveniste, M. Roca, G.Levrini and **J.A.Johannessen**, The Envisat Radar Altimeter System (RA-2), *ESA Bulletin* No. 98, June 1999.
- 36 R. Rummel and **J.A.Johannessen**, The Science and Research Element of ESA's Living Planet Programme: Theme 1 - Earth Interior, *Earth Observation Quarterly*, No. 63, October 1999.
- 37 **J.A. Johannessen**, Coastal Observing Systems: The Role of SAR, In Emerging coastal and marine applications of wide swath SAR, Johns Hopkins *APL Technical Digest*, editor R. Beal, Vol. 21, No. 1, January-March 2000.
- 38 **J.A.Johannessen**, R. Garello, B. Chapron, R. Romeiser, P. Pavlakis, I. Robinson, N. Connolly, K. Nittis, T. Hamre, S. Ufermann, W. Alpers, H.

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- 40 T. Furevik, M. Bentsen, H. Drange, **J.A. Johannessen** and A. Korabely, Spatial and temporal variability of the sea surface salinity in the Nordic Seas, *Journal of Geophysical Research-Ocean*, Vol. 107, No. C12, 2002.
- 41 R. Rummel, G. Balmino, **J.A. Johannessen**, P. Visser and P. Woodworth, Dedicated gravity field missions - Principles and Aims, *Journal of Geodynamics*, 33 (2002), 3-20.
- 42 M. Berger, A. Camps, J. Font, Y. Kerr, J. Miller, **J. A. Johannessen**, J. Boutin, M.R. Drinkwater, N. Skou, N. Floury, M. Rast, H. Rebhan and E. Attema, Measuring Ocean Salinity with ESA's SMOS Mission – Advancing the Science, *ESA Bulletin*, vol. 111, August, 2002.
- 43 Bousinac, C., J. Font and **J.A. Johannessen**, The annual cycles of sea level and sea surface temperature in the western Mediterranean Sea, *Journal of Geophys. Res.-Ocean*, Vol. 108, No. C3, 2003.
- 44 **Johannessen, J.A.**, G. Balmino, C. Le Provost, R. Rummel, R. Sabadini, H. Sünkel, C.C. Tscherning, P. Visser, P. Woodworth, C. W. Hughes, P. LeGrand, N. Sneeuw, F. Perosanz, M. Aguirre-Martinez, H. Rebhan, and M. Drinkwater, The European Gravity Field and Steady-State Ocean Circulation Explorer Satellite Mission: Impact in Geophysics, *Survey in Geophysics*, 24, 339-386, 2003.
- 45 H.-H. Essen, Ø. Breivik, H. Günther, K.-W. Gurgel, **J. Johannessen**, H. Klein, T. Schlick and M. Stawarz, Comparison of remotely measured and modeled currents in coastal areas of Norway and Spain, *The Global Atmosphere and Ocean System*, Vol. 9, No. 1–2, pp. 39–64, March–June 2003.
- 46 L. Bertino, N. Winther and **J.A. Johannessen**, Real time marine monitoring systems: Forecasting the oceans and regional seas. *Hydro International*, June 2004.
- 47 V. Kudryavtsev and **J.A. Johannessen**, On effect of wave breaking on short wind waves, *Geophysical Research Letter*, Vol. 31, L20310, 2004.
- 48 V. Kudryavtsev, D. Akimov, **J.A. Johannessen** and B. Chapron, On Radar Imaging of Current Features: Part 1: Model and Comparison with Observations. *Journal of Geophysical Research*, Vol. 110, C07016, 2005.
- 49 **J.A. Johannessen**, V. Kudryavtsev, D. Akimov, T. Eldevik, N. Winther, and B. Chapron, On Radar Imaging of Current Features; Part 2: Mesoscale Eddy and Current Front detection. *Journal of Geophysical Research*, Vol. 110, C07017, 2005.
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- 51 Winther, N. G., and **J. A. Johannessen** (2006), North Sea circulation: Atlantic inflow and its destination, *J. Geophys. Res.*, 111, C12018, doi:10.1029/2005JC003310.
- 52 **J.A. Johannessen**, P.-Y. Le Traon, I. Robinson, K. Nittis, M. J. Bell, N. Pinardi, and P. Baharel, 2006, Marine Environment and Security for the European Area

- (MERSEA) - Towards operational oceanography, American Meteorological Society, *BAMS*, pp. 1081-1090.
- 53 Frank Siegmund, **Johnny A. Johannessen**, Helge Drange, Kjell Arne Mork, Alexander Korablev, Steric height variability in the Nordic Seas, *Journal of Geophysical Research*, vol. 112, C12010, doi:10.1029/2007/JC004221, 2007.
- 54 Backeberg, B., **J.A. Johannessen**, L. Bertino, C.J. Reason, (2008), The greater Agulhas Current system: An integrated study of its mesoscale variability, *Journal of Operational Oceanography*, volume 1, No. 1, February 2008.
- 55 **J.A. Johannessen**, B. Chapron, F. Collard, V. Kudryavtsev, A. Mouche, D. Akimov, and K.-F. Dagestad (2008), Direct ocean surface velocity measurements from Space: Improved quantitative interpretation of Envisat ASAR observations, *Geophysical Research Letter*, 28 November, 2008.
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- 59 Berger, Michael, Einar-Arne Herland, Josef Aschbacher, Stephen Briggs, **Johnny A. Johannessen**, Roman Hanssen, Jose Moreno, D. Hauglustaine, New possibilities for Science : ESA's operational Sentinel missions, *ESA Bulletin*, 140, 2009.
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- 62 Igor E. Kozlov, Vladimir N. Kudryavtsev, **Johnny A. Johannessen**, Inga Dailidienė, Alexander G. Myasoedov, (2011) Envisat ASAR imaging of coastal upwelling in the Baltic Sea: case study with modeling, *Elsevier Advances in Space Research*, doi:10.1016/j.asr.2011.08.017.
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- 66 Vladimir Kudryavtsev, Alexander Myasoedov, Bertrand Chapron, **Johnny A. Johannessen**, Fabrice Collard, (2012), Imaging mesoscale upper ocean dynamics using SAR and optical data, *Journal of Geophysical Research*, Vol. 117, C04029, 2012.
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