

Curriculum Vitae

Swapan Mallick, PhD

Scientist,

SMHI / Swedish Meteorological and Hydrological Institute

601 76 Norrköping, SWEDEN

www.smhi.se

Mob:+46728419396

E-mail: swapan.mallick@smhi.se, smallick04@gmail.com

RESEARCH PUBLICATION:

- 1 **Swapan Mallick** 2022: *Impact of Adaptively Thinned GOES-16 Cloud Water Path in an Ensemble Data Assimilation System*. *Meteorology* 1, no. 4: 513-530. <https://doi.org/10.3390/meteorology1040032>.
- 2 **Swapan Mallick** and Thomas A. Jones 2022: *Impact of Adaptively Thinned GOES-16 All-sky Radiances in an Ensemble Kalman Filter based WoFS*. *Atmospheric Research*. <https://doi.org/10.1016/j.atmosres.2022.106304>.
- 3 **Swapan Mallick** and Thomas A. Jones 2020: *Assimilation of GOES-16 Satellite derived Winds into the Warn-on-Forecast System*, *Atmospheric Research*, Volume 245, doi: <https://doi.org/10.1016/j.atmosres.2020.105131>.
- 4 **Swapan Mallick**, D. Dutta, and K.-H. Min 2017: *Quality assessment and forecast sensitivity of global remote sensing observations*. *Adv. Atmos. Sci.*, 34 (3), 371-382 doi:10.1007/s00376-016-6109-8.
- 5 D Dutta, AJ Kasimahanthi, **Swapan Mallick**, JP George, PK Devarajan 2017: *Quality assessment of VVP winds from Indian Doppler weather radars: a data assimilation perspective*, *Journal of Applied Remote Sensing* 11 (3), 036021, doi: 10.1117/1.JRS.11.036021.
- 6 C.K. Unnikrishnan, John P. G., A. Lodh, D.K. Maurya, **Swapan Mallick**, E.N Rajagopal and Saji Mohandas, 2016: "Validation of two gridded soil moisture products over India with in-situ observations", *J. Earth. Syst. Sci.*, (Springer), 125(5), pp 935–944. doi 10.1007/s12040-016-0714-x.

- 7 D. Srinivas, Indira Rani S., **Swapan Mallick**, John P. George, 2016: *Impact of AIRS radiance in the NCUM 4D-VAR assimilation system. Proc. SPIE 9880, Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VI, 98800O*; <http://dx.doi.org/10.1117/12.2223516>

- 8 **Swapan Mallick**, Indira Rani S., D. Srinivas, John P. George, 2016: *Assimilation of CrIS hyperspectral radiances in a 4D-VAR assimilation system. Proc. SPIE 9880, Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VI, 98800Q*; doi: 10.1117/12.2222775; <http://dx.doi.org/10.1117/12.2222775>

- 9 Devajyoti Dutta, **Swapan Mallick**, K. A. Jyothi, John. P. George and D. Preveen. Kumar, 2016: *Wind from Indian doppler weather radars: a data assimilation viewpoint. Proc. SPIE 9876, Remote Sensing of the Atmosphere, Clouds, and Precipitation VI, 98760W*; doi:10.1117/12.2223691

- 10 Priti Sharma, Indira Rani S., **Swapan Mallick**, Desamsetti Srinivas, John P. George, Munmun D. Gupta, 2016: *IASI hyperspectral radiances in the NCMRWF 4D-VAR assimilation system: OSE. Proc. SPIE 9880, Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VI, 98800P*; doi:10.1117/12.2225868.

- 11 Vivek Singh, Ashish Routray, **Swapan Mallick**, John P. George, E. N. Rajagopal, 2016: *An effort to improve track and intensity prediction of tropical cyclones through vortex initialization in NCUM-global model. Proc. SPIE 9882, Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VI, 988210*; <http://dx.doi.org/10.1117/12.2223431>

- 12 S. Indira Rani, Desamsetti Srinivas, **Swapan Mallick**, John P. George, 2016: *Impact of advanced technology microwave sounder (ATMS) data in the NCMRWF 4D-VAR data assimilation system. Proc. SPIE 9882, Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VI, 98820F*; <http://dx.doi.org/10.1117/12.2223501>

- 13 John P George, S. Indira Rani, A. Jayakumar, Saji Mohandas, **Swapan Mallick**, A. Lodh, R. Rakhi, M. N. R. Sreevathsa and E. N. Rajagopal: 2016, “*NCUM Data Assimilation System*”. NCMRWF Technical Report No NMRF/TR/01/2016: Available at <http://www.ncmrwf.gov.in/NCUM-Data%20Assimilation.pdf>

- 14 Srinivas Desamsetti, S. Indira Rani, **Swapan Mallick**, Munmun Das Gupta, John P. George, and E. N. Rajagopal: 2016, “*Comparison of NCMRWF and ECMWF Archives of Conventional Meteorological Observations*”. NMRF/RR/03/2016. Available at http://www.ncmrwf.gov.in/NMRF_RR3_2016.pdf

- 15 Jemma Davie and **Swapn Mallick**, 2015: “*Comparing Surface and Upper Air Data against Model Background for the Indian Region*”. United Kingdom Met-Office (UKMO) Research Report. Available at <http://www.metoffice.gov.uk/media/pdf/p/e/FRTR602.pdf>
- 16 Prashant Goswami, **Swapn Mallick**, K. C. Gouda, 2011: *Objective Debiasing for Improved Forecasting of Tropical Cyclone Intensity with a Global Circulation Model*. *Mon. Wea. Rev.*, **139**, 2471–2487. doi: <http://dx.doi.org/10.1175/2011MWR3600.1>
- 17 Prashant Goswami, **Swapn Mallick**, 2011: *Objective Bias Correction for Improved Skill in Forecasting Diurnal Cycles of Temperature over Multiple Locations: The Summer Case*. *Wea. Forecasting*, **26**, 26–43. doi: <http://dx.doi.org/10.1175/2010WAF2222407.1>

RESEARCH SPECIALIZATION AND INTEREST:

- Numerical weather prediction, Severe weather prediction.
- Data assimilation with EnKF, 3D/ 4D-VAR, Hybrid methods.
- Data QC, Thinning, Analysis and Assimilation with Satellite, RADAR and conventional data.
- GOES-R all-sky radiances, CWP, AMVs and GLM lightning analysis and assimilation.
- Hyperspectral radiances (from AIRS, IASI, CrIS) assimilation.
- Operational real time data assimilation and monitoring, observation impact study
- Soil moisture assimilation, Tropical Cyclone Forecasts using GCM.
- Coupled modelling and Data Assimilation.
- Artificial Intelligence, Deep Learning (AI/ DL) for cloud pattern classification.

EDUCATION:

Ph.D. in Physics (Numerical Weather Prediction and Data Assimilation), 2012
CSIR Centre for Mathematical Modelling and Computer Simulation (C-MMACS)/ Mangalore University, INDIA

WORK EXPERIENCE:

10/2023 - Present	Scientist at SMHI, SWEDEN
03/2022 - 09-2023	Scientist at CMCC, ITALY
02/2017 - 01/2022	Research at NOAA-NSSL (CIWRO), USA
02/2016 - 01/2017	Research Associate at K.N. University, S. KOREA.
10/2012 - 01/2016	Project Scientist at NCMRWF, MoES, INDIA.

CONFERENCE PRESENTATION, REPORTS:

1. **Swapan Mallick** and Thomas A. Jones, “Impact of Adaptively Thinned GOES-16 All-sky Radiances and Retrievals Cloud Properties in an Ensemble Kalman Filter based WoFS, January 2022, at 102 American Meteorological Society, Annual Virtual Meeting.
2. **Swapan Mallick**, Thomas A. Jones, Kristopher Bedka, William Smith Jr., and Rabindra Palikonda, “Impact of GOES-R Nighttime Cloud Water Path Assimilation into the Warn-on-Forecast System” January 2021, at 101 American Meteorological Society, Annual Virtual Meeting.
3. **Swapan Mallick**, T. A. Jones, K. H. Knopfmeier, P. Skinner, and D. C. Dowell “Quality Assessment and Impact of High-Resolution *GOES-16* AMVs into the GSI-EnKF-Based WoFS,” January 2020, at 100 American Meteorological Society, Annual Meeting, Boston, MA. Recorded Presentation available at <https://ams.confex.com/ams/2020Annual/videogateway.cgi/id/516591?recordingid=51659>.
4. Thomas A. Jones (presenter), **Swapan Mallick**, K. H. Knopfmeier, D. C. Dowell, X. Wang, P. S. Skinner, P. Minnis, R. Palikonda, and W. L. Smith Jr., 2019: “Status of Satellite Data Assimilation in the NSSL Experimental Warn-on-Forecast System”. January 2019, American Meteorological Society, Annual Meeting,
5. Kent Knopfmeier, Nusrat Yussouf, Patrick Skinner, Thomas Jones, Jessica Choate, Katie Wilson, Junjun Hu, **Swapan Mallick**, Anthony Reinhart, and Gerald Creager (CIMMS at NOAA-NSSL) 2018: “Storm-Scale Data Assimilation and Ensemble Forecasting with the NEWS-e”, Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) Annual Report. PP 150-151, Available at https://cimms.ou.edu/largefiles/cimmsfy18_reduced.pdf.

6. **Swapan Mallick** and T. A. Jones, “Satellite Data Assimilation into the High-Resolution WoF GSI-EnKF system” Convective meteorology Seminar at School of Meteorology, The University of Oklahoma, Norman on 2nd November 2018.
7. **Swapan Mallick** and Thomas Jones, 2018 “Storm-Scale Assimilation of Hyperspectral Infrared Clear-Sky Radiances” Cooperative Institute for Mesoscale Meteorological Studies (CIMMS, NOAA-NSSL) Annual Report. Available at https://cimms.ou.edu/largefiles/cimmsfy18_reduced.pdf.
8. **Swapan Mallick** and Thomas Jones, 2018 “Assimilation of Satellite-Derived Winds from GOES-16 ABI into the High Resolution WoF GSI-EnKF system.” Cooperative Institute for Mesoscale Meteorological Studies (CIMMS, NOAA-NSSL) Annual Report. Available at https://cimms.ou.edu/largefiles/cimmsfy18_reduced.pdf.
9. **Swapan Mallick**, T. A. Jones, K. H. Knopfmeier, D. C. Dowell, X. Wang, P. Skinner, and P. Minnis, “*Storm-Scale Satellite Data Assimilation into the WoF GSI-EnKF System: Recent Results and Future Plans*” in the AMS 25th Conference on Numerical Weather Prediction June 2018, Colorado. Recorded Presentation available at <https://ams.confex.com/ams/29WAF25NWP/webprogram/Paper344834.html>
10. **Swapan Mallick** and Thomas A. Jones, “Impact of the Assimilation of Hyperspectral Infrared Radiances into the High-Resolution WoF GSI-EnKF System” in the AMS 98th Annual Meeting, Austin, during January 2018.
11. Thomas A. Jones and **Swapan Mallick**, 2017 “Impact of the Assimilation of Hyperspectral Infrared Radiances into the High-resolution WoF GSI-EnKF System” Cooperative Institute for Mesoscale Meteorological Studies (CIMMS, NOAA-NSSL) Annual Report. Page-66, Available at https://cimms.ou.edu/largefiles/cimmsfy17_newCAreduced.pdf
12. Ki-Hong Min (presenter), **Swapan Mallick**, J. C. Ha, J. Lee, J. Lee, and J. Bae “*Comparison of Multi-Model Microphysics Schemes using Radar Observations and Data Assimilation Method*” on AMS 38th Conference on Radar Meteorology, 28th August 2017.
13. **Swapan Mallick**, Ki-Hong Min and J. Bae, “Impact Study of Satellite-Derived Wind from Geostationary Satellite with Unified Model” on Asia Oceania Geosciences Society (AOGS) August 2016, Beijing.

14. **Swapan Mallick** and Ki-Hong Min, “Variational Data Assimilation” KMA International Data Assimilation workshop 2016 at Seoul, South Korea during 20-22nd April 2016.
15. **Swapan Mallick** “*Objective Bias Correction and Variational Assimilation Methods to Improve Skill of Tropical Cyclone Forecasts*” on 24th March 2016 at School of Earth System Sciences, Kyungpook National University, Daegu, South Korea.
16. Richard Renshaw E N Rajagopal, John P George, Munmun Das Gupta, S I Laskar, S Indira Rani, **Swapan Mallick**, Desamsetti Srinivas, Sana Mahmood, Jemma Davie, Peter Jerney, Amy Doherty, Dale Barker “IMDAA: Indian Monsoon Assimilation and Analysis” Available at https://www.tropmet.res.in/monsoon/monsoon2/Documents/MM_Review/19_Feb/RRenshaw_IMDAA.pdf
17. **Swapan Mallick** and John P. George “Study on the Quality of Marine Meteorological Observations over Indian Ocean: A Data Assimilation Perspective”. IO50-IIOE-International Symposium on Indian Ocean at NIO, Goa, INDIA, during 3^{0th} November to 4th December 2015.
18. Madhulatha, A. (presenter), **Swapan Mallick**, John P. George and E. N. Rajagopal, 2015: “Comparison of 4DVar and 3DVar assimilation technique on the numerical simulation of tropical cyclone Phailin”, National Symposium on Weather and Climate Extreme, TROPMET2015, IMS, during 15th18th February 2015, India.
19. **Swapan Mallick**, “Use of Satellite Soil Wetness Measurements in the Soil Moisture Analysis” National Symposium on Weather and Climate Extreme, TROPMET-2015, IMS, during 15th-18th February 2015, India.
20. **Swapan Mallick**, “4D-Var Assimilation with Unified Model in NCMRWF GCM system” an international conference on “Prediction of Weather and Climate Systems Seamlessly (PROWESS)” was organized during 17th-19th February 2014 at NCMRWF, India.
21. **Swapan Mallick** and Prashant Goswami “Improved forecasting skill of track and Intensity forecasting of Tropical Cyclone over North Indian Ocean” on 3rd March 2011 at CSIR C-MMACS, Bangalore, India.

22. **Swapn Mallick** “Validation of Algorithm for Objective Debiasing over India” in a task force meeting on “Integrated Analysis for Impact, Mitigation and Sustainability Development” held in 26th October 2010 at CSIR C-MMACS, Bangalore, India.
23. **Swapn Mallick** and Prashant Goswami “Four-Dimensional Variational Assimilation” in NDMA meeting held in CSIR C-MMACS, Bangalore, 2009.
24. **Swapn Mallick** and Prashant Goswami, “Four-Dimensional Variational Data Assimilation with Global Circulation Model” in National Brian storm meeting organized by Ministry of Earth Science (MoES), India during 19th to 21st February 2009.

SCIENCE JOURNAL REVIEWER:

- ★ Atmospheric Research (Elsevier)
- ★ Monthly Weather Review (American Meteorological Society)
- ★ Advances in Atmospheric Sciences (Springer)
- ★ Meteorology and Atmospheric Physics (Springer)
- ★ MPDI Journals.