# 2026 RPPR Interim Progress Report

**Agreement Number:** N000142512021

**Principal Investigator:**

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**Organization:** University of Notre Dame

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**Title:** DURIP A Dual Frequency Ka-W Band FMCW Scanning Rad ar for Hydrometeorological Research

**Submitter Email:** fernando.10@nd.edu **Submitted By:** Dr. Harindra J. Fernando

**Distribution Statement:**

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**Major Goals:**

This is a project funded under the FY-2025 DURIP Program to acquire an amalgamated Ka-band/W-band radar (Ka-W Combo) to enhance the utility of the extant W-band radar at University of Notre Dame (UND). The latter was purchased through a FY-2019 DURIP grant, and was successfully deployed on an in-house developed motion stabilized platform during the Fog and Turbulence Interactions in the Marine Atmosphere (Fatima) field campaigns conducted in Grand Banks in July 2022 (Fatima-GB) and Yellow Sea in June-July 2023. Since the W-band was in hand, only the Ka-band and a dual scanner were requested to complete the Ka-W band dual-frequency system. This acquisition was the first of its kind in the USA produced by a commercial manufacturer.

A parameter routinely measured by W and Ka-band radars is the radar reflectivity factor. It allows retrieval of scatterer properties which are a function of size, concentration, shape, density and orientation of particles. The US Department of Energy Atmospheric Radiation Measurement (ARM) program and the European Union CloudNet project of the ACTRIS Pan-European Research Infrastructure Program successfully operate several fixed and mobile, individual Ka- and W-band radars, and they feed [quasi-continuous] data streams into dedicated repositories. Together with complementary instruments, CloudNet radars retrieve vertical profiles that are untenable by current satellite sensing techniques. ARM data are used for understanding and modeling of processes that affect atmospheric radiation, and thus useful for developing better global models. Owing to large variability of hydrometeors in clouds, precipitation, fog and ice crystals, measurements at a single wavelength is often ambiguous, calling for two wavelength and polarimetric measurements.
Polarimetric measurements, however, are not very effective at vertical soundings because of scattering symmetry, and thus depolarization measurements have been employed to distinguish between droplets and crystals while removing clutter from insects and birds. To this end, two-wavelength technique is an attractive approach, although it requires two radars with carefully collocated beams. Most attractive in hydrometeorological research are the dual-frequency Ka-W band radars, which are commercially available at present with the advantages of enhanced performance, low power and cost, and light weight. Techniques are available to derive enhanced microphysics and dynamics of small water droplets in the atmosphere using dual-frequency Doppler spectra.

The dual frequency radar (Ka-W Combo) acquired under this grant offers the advantages of W-band probing into smaller droplet sizes with higher space/time resolution in a smaller (several km) spatial domain while extending the probing range of liquid water path (LWP) and liquid water content (LWC) over much larger distances under precipitation conditions by incorporating a Ka-band. Owing to different absorptions by liquid water at Ka and W bands, the dual wavelength ratio not only identify and quantify the presence of supercooled liquid layers in mixed-phase clouds, but also provide LWC and LWP. Both radars have a passive channel, with the one in W-band radar having strong sensitivity to liquid water but reaches saturation at LWP values of ~ 2 kg. The channel in Ka-band has lower sensitivity to liquid but has a larger dynamic range. Thus, retrievals at two frequencies in Ka-W radars are

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used to improve the LWP retrieval. The dual wavelength configuration also characterizes the size and shape of particles that produce non-Rayleigh scattering. Furthermore, each of the radars can be operated in a standalone configuration with one of the transceivers of the scanners properly discontinued. The proposed dual frequency system became available recently, and the acquisition by University of Notre Dame (UND) is expected to be deployed in several future field campaigns on air-sea interactions funded by ONR and other agencies such as NOAA and DOE.

The advantages of Ka-W radar systems include: Reduction of the weight of Ka-band radars via solid state power amplifier technologies has enabled their utility in mobile platform applications, such as deployment on research vessels and aircraft; the solid-state signal of FMCW is cost effective and more reliable, especially in high moisture environments, vis-à-vis tube-based alternatives; a combination of frequencies allows longer probing range for hydrometeor properties (LWP, LWC); recently developed novel retrieval techniques enable evaluation of rain drop size distribution (DSD), retrieval of numerous microphysical properties (e.g., ice particle identification), evaluation of air state variables (e.g., vertical wind and air broadening by turbulence and wind shear), exploitation of special features observed in Doppler spectra caused by wavelength dependence of scattering and absorption and application of advanced mathematical inversion techniques like total variation regularization; validated Ka-W retrievals by comparing with other hydrometeor sensors; lighter weight of Ka-W combo FMCW radars favorable for usage with mobile platforms.

In summary, the Ka-W Combo (both FMCW) enhances radar [remote sensing] research capabilities by conjoining the existing RPG W-band radar with a new Ka-band radar (both FMCW) on a common scanning platform; see Figure 1. One Radar will be the ‘Master’, the other the ‘Slave’, with synchronization between the two accomplished through special hardware/software via an ethernet connection. The manufacturer Radiometer-Physics GmbH (RPG) carried out the necessary upgrades at their facility. The purchase through this DURIP grant included (i) RPG-FMCW-35-DP Ka-band radar (35 GHz), (ii) common scanner for the integrated system, and (iii) system integration. The Ka-band radar unit from RPG has the same features as the W-band unit, viz., an active rain mitigation system including hydrophobic radomes and the blower, absolute calibration with accuracy of +/-1 dB, dual-polarization capabilities, and an embedded passive channel for LWP and LWC retrievals. Three such Ka-W band radars are currently operational in the Netherlands (TU Delft and KNMI), Karlsruhe Institute of Technology KIT (Germany) and University of Cologne (Germany). A motion stabilization platform has been designed and constructed in-house, following the success of a kindred platform that was developed for Fatima-GB/YS field campaigns for the W-Band system.

**Accomplishments:**

The PI received the grant approval notification on 11/21/2024, with start and end dates of 12/1/2024 and 11/30/2025, respectively. The procurement process had internal complications regarding sole sourcing and foreign funds transfer, and eventually funds were transferred to the north American agent, ATS Services in Ottawa, Canada on 03/07/2025, which, in turn, transmitted to RPG (manufacturer) in Germany. The sole sourcing was based on: (i) infeasibility of integrating the existing W-band Radar manufactured by RPG with a Ka- band of another manufacturer to achieve same functionality, (ii) the capability of RPG dual radar scanner to extend retrievals for low elevation angles, which is hardly possible with two standalone radar systems due to difficulties of accurate pointing and synchronization, and (iii) a comparison of off-the-shelf Ka-band radars offered by three major manufacturers, METEK GmbH, ProSensing Inc. and RPG, indicated RPG system is most suitable for operating on a motion stabilized platform aboard a research vessel as it is of compact, solid-state, FMCW type.

Despite the initial delay, the construction proceeded as planned, and RPG prioritized the Notre Dame Ka-W band Combo Radar in their product line. Another delay occurred, however, since Notre Dame group could not return the W -Band until the end of October 2025 to amalgamate with the new Ka Band radar. This was due to the late arrival (10/10/2025) of W-Band after the ONR ASTraL-2025 field campaign in the Bay of Bengal. Finally, the combo radar was delivered to Notre Dame on 4 June, 2026, and several photos of delivery are given in Figure 1. Owing to the imposition of 10% tariff, the final payment was higher, but ONR graciously provided 50% of the tariff whereas RPG absorbed the rest.

Figures 2 and 3 show the delivery and assembly of the Ka-W band system. The K-band was calibrated using the clear-sky background to determine the radiometric calibration factor. For the updated calibration procedure, a compact calibration toolkit provided by RPG was employed to establish the receiver response by comparing measurements of the clear-sky background with a liquid-nitrogen reference. This approach enabled the calibration of the radar’s radiometric response under well-defined reference conditions. The calibration procedure was conducted online with the support and supervision of an RPG expert. The complete W band calibration kit is still under construction and expected to reach UND soon.

The system was set up outdoors, and trial measurements were conducted under clear sky for calibration and in situ weather front conditions; see Figures 4 – 5. A post-doctoral fellow, graduate student and a research engineer participated in trial measurements. Figure 4 shows an initially isolated convective system with clouds reaching up to

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5 km, followed by a mostly cloud-free atmosphere. A vertically developed convective core extending to approximately 6–7 km, followed by an extended weaker reflectivity at upper levels, is seen in Figure 5. In both cases, the Ka-band observations exhibit more extensive regions of high reflectivity within the main convective cores, whereas the W-band measurements display greater spatial variability since W-Band responds to smaller droplets. These inter-band differences may be influenced by wavelength-dependent scattering and attenuation, particularly in regions of intense precipitation. Ka-band generally exhibits broader regions of enhanced reflectivity within the main precipitation cores, whereas the W-band displays a more heterogeneous reflectivity distribution. These differences are consistent with the distinct wavelength-dependent scattering characteristics of the two radars and may also reflect stronger attenuation in W-band, particularly within regions of intense precipitation. Given the next confirmed field project will be in early 2028, current radar activities at UND are confined to system testing, learning the system as well as development of motion stabilized platform for future deployment of Ka-W Combo.

A new in-house motion platform has been designed and finalized to accommodate the increased weight and footprint of the instrument. A miniature physical mockup was first constructed to visualize various constraints encountered on operating such a system (Figure 6), and a ship simulator was designed and constructed to help design and testing of platform software features (Figure 7). Therein, VectorNav inertial measurement unit (IMU), which is normally attached to the radar/Lidar for detecting ship motion and providing feedback for motion corrections, is executed in pitch and roll axes using microprocessor-controlled RC servos, of which the motion patterns are simulated using data taken onboard research vessels that span a range and frequencies encountered during ship motion. The stabilization platform reacts to these inputs by actuating the platform motors.

Design and fabrication of the prototype have now entered the testing and validation phase. The basic design followed that was used and refined for the Doppler Lidars, but modifications were required to account for increased weight (400 kg vis-à-vis 200 kg) and power (2.5 kW versus 3.5 kW). Thus, the new platform (Figure 8) incorporates 2 kW brushless (BL) motors, proximity sensors and IMU, all integrated onto a 6.25 m² metal support platform. The mechanical design has been optimized to provide required structural support while enabling controlled motion of the instrument. The control is effectuated by a Raspberry Pi–based software and control system, which interfaces with IMU and motor-drive systems to regulate the platform's motion. The IMU feedback is used to monitor and control the pitch and roll angles of the ship, enabling the platform to compensate for the ship motion. Proximity sensors are incorporated as a safety and position-limiting mechanism. These sensors monitor the displacement of moving components and provide limits to prevent excessive travel and potential mechanical interference or failure. The completed motion stabilized system will undergo functional and performance testing following completion, including verification of motor operation, sensor response, IMU feedback, motion range, displacement limits, and overall pitch and roll-control operation and performance. The initial deployment of the Ka-W band radar has been confirmed for February 2028 during the TEPEX-C field campaigned funded by NOAA, to be conducted in central Pacific (see the link below). Earlier deployments are sought, however, through other DOW programs.
https://cpo.noaa.gov/climate-variability-and-predictability-cvp-program-tepex-c/

**Training Opportunities:**

Between late June and early July 2026, five online training sessions were conducted for the Notre Dame team comprising of two graduate students, research associate, and a research engineer, with RPG experts joining virtually. The training program was designed to provide both theoretical foundation and practical understanding required for radar-based remote sensing and data acquisition.

The training began with an introduction to fundamental principles of remote sensing, including underlying theoretical concepts and commonly used methodologies. This was followed by a detailed examination of the radar equation and its application to different radar architectures, including pulse-repetition and frequency-modulated continuous-wave (FMCW) systems. Emphasis was placed on the differences in signal-processing approaches associated with these architectures, as well as on the major functional blocks and subsystems that comprise radar instrumentation.

Subsequent sessions focused on operational aspects of FMCW radar systems. Topics included the construction and implementation of chirp tables, as well as the practical advantages, limitations, and trade-offs associated with different chirp configurations. Radar scanning operations were then examined in detail, with emphasis on scanning strategies and their implications of data collection and measurement quality. The training program concluded with a dedicated session on radar calibration methods, covering the importance of calibration for obtaining reliable and quantitatively meaningful radar measurements.
Following the training, Ka-W band measurements were collected using a range of system configurations and scanning patterns to evaluate the performance and measurement characteristics under different operating conditions. Examples of radar data collected during this activity are shown in Figures 4 and 5. A passage of cold front over the university campus gave an opportunity to observe, via Ka-W band combo, the evolution of hydrometeors during the passage of a convective system. The vertically pointing W- and Ka-band radars reveal similar precipitation structures with different granularity.

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**Results Dissemination:**

Since Ka–W-band radar was delivered only after the conclusion of three FATIMA field campaigns (Fatima Grand Banks in 2022, Fatima Yellow Sea in 2023 and Fatima Ice Fog in 2025; Fatima-GB, Fatima-YS and Fatima-IF, respectively), and that there were not follow up campaigns in 2026, no publications were resulted from Ka-W band at the time of this report. The lone W-band radar system, before shipping back to RPG, was however used for Fatima-GB and Fatima-YS oceanic campaigns on a first-generation radar motion stabilization platform, where a valuable dataset covering a range of atmospheric conditions were obtained. In data analysis, particular emphasis was given to characterize temporal evolution of microphysical properties and their relationship to vertical structure of visibility under marine fog conditions. The Ka-W band data combined with those from other instruments elicited new information on fog microphysical properties during formation, maturation, and dissipation phases of observed fog events. Several archival journals have been published or submitted based on these results (see below). Analyses continue and are expected to produce several publications. (publication list is also in the attached pdf file).

Papers Submitted or Published During 2025-2026:
Lee, S., Gultepe, I., Fernando, H.J.S. Gaberšek, S., Lenain, L., Wang, Q., Pardyjak, E., Creegan, E.D., Dorman, C., Lozovatsky, I., Ortiz-Suslow, D.G., Ruiz-Plancarte, J., Yamaguchi, R., Gultepe, E., Hoch, S., Perelet, A., Singh, D., Cha, J-W., Shen, L., Barve, A., Dowling, A., Wang, S., Giacosa, G., Grare, L., Taylor, P., Chen, Z., Chang, R. Y.-W., Teeloku, P., Gapp, N., Lee, S.-W., Jeong, J-M., Kim, H-J., Jeong, J-Y., Heo, K-Y., Kim, M., Park, M-S., Oh, K-H., Park, J-S., Jeon, D-C., Song, K-M., Kim, J-Y., Jung, D., Chang, K.I., Lee, J.-H., Kim, K.M., Yu, D., Yum, S-C., Heymsfield, A.J., Agelin-Chaab, M., Goo, T-Y., Ryu, D-G., 2025: A review of FATIMA Yellow Sea field campaign research Quarterly Journal of the Royal Meteorological Society, QJ-24-0380. In Press. DOI: 10.1002/qj.70157
Dowling, A., Lee, S., Ohb, K-H, Leeb, S.W., Lozovatsky, I., Ruiz-Plancartec, J., Ortiz-Suslow, D., Wang, S., Huang, K., Phadtre, J., Nagare, B., Thompson, E., Chang, E., and Fernando, H.J.S., The Role of Tidal Boundary Mixing in the Formation of Yellow Sea Fog, Submitted to (AMS) Journal of Hydrometeorology.

Conference Papers in 2005-2006:

Fernando, H.J.S., Marine Atmospheric Boundary Layer: Some Recent Developments. Presented at the: Marine Atmospheric Research on Boundary Layers over East China/Yellow Seas (MARBLES), ONR-G Workshop, Oakwood Premier COEX Center, Seoul, Republic of Korea, June 25-26, 2025.
Gultepe, I., Fernando, H.J.S., Pardyjak, E., Wang, Q., Hoch, S., Perelet, A.O., Lee, S., Gabersek, S., Shen, L., Barve, A., Ortiz-Suslow, D.G., Ruiz-Plancarte, J., Yamaguchi, R., and Chang, K.I., Marine Fog Microphysics and Dynamics during the FATIMA GB and YS Campaigns, Paper # A21O-2207, AGU2025 Annual Meeting in New Orleans, Louisiana, 15-19 December 2025.
Dowling, A., Fernando, H.J.S., Lee, S., Ortiz-Suslow, D.G., Ruiz-Plancarte, J., Oh, K., Lee, S-W., Kim, M., Gabersek, S., Chang, K.I., and Thompson, E.J., The Influence of Tidal Mixing Fronts on the Evolution of the Marine Atmospheric Boundary Layer and Fog Lifecycle, Paper # A21O-2212, AGU2025 Annual Meeting in New Orleans, Louisiana, 15-19 December 2025.
Gultepe, I., Fernando, H.J.S., Pardyjak, E., Dexheimer, D., Sparks, V., Hoch, S., Perelet, A., Shen, L., Barve, A., China, S., Dunbar, M.N., Nagare, B., Chabert d'Hieres, and Glen, A., Ice Fog Observations During Fatima-IF and IFFExO Field Campaigns at NSA, 2026 ARM/ASR Joint User Facility and PI Meeting, virtual, July 21-23 2026
Fernando, H.J.S. and Fatima-IF team, Fatima Ice-Fog Field Work, SA3NDBAR - Sensing in-situ, Aerosols, Arctic, Air -sea interaction, NWP, and atmospheric Dynamics Basic and Applied Research, Naval Postgraduate School, 8 - 12 December 2025.
Fernando, H.J.S., Dorman, C., Dowling, A., Wang, S., Wang, Q., Pardyjak, E., Shen, L. and Gultepe, I., Rethinking of Marine Fog Genesis: The Role of Synoptic Weather Systems, Paper # A21O-2209, AGU2025 Annual Meeting in New Orleans, Louisiana, 15-19 December 2025.
Fernando, HJS, Dorman, C., Wang Q., Pardyjak, E., Shen, L, Creegan, E., Gultepe, I., Fatima: Fog and Turbulence in the Marine atmosphere, Invited Paper, paper # G01:1 , American Physical Society Fluid Dynamics Meeting, Houston, TX, November 23-25, 2025.
Gultepe, I, Ontario, H. J. S. Fernando, Q. Wang, E. R. Pardyjak, S. W. Hoch, A. O. Perelet, S. Lee, K. I. Chang, L. Shen, A. V. Barve, J. Ruiz-Plancarte, R. Yamaguchi, and D. G. Ortiz-Suslow, A Short Review of Fog and Integrated Visibility, Paper # 5.1, AMS 106th Annual Meeting, Houston, Texas, 25-29 January 2026.
Fernando, H.J.S., FATIMA: Fog And Turbulence Interactions in the Marine Atmosphere, Invited Paper, Optica's 2026 Propagation Through and Characterization of Atmospheric and Oceanic Phenomena (pcAOP) Topical Meeting, Maastricht, Netherlands, July 12-17, 2026.

**Plans Next Period:**

This DURIP project will end on the 11/30/2026 and is in the sunset phase. The first planned deployment of the Ka–W -band radar is scheduled for February 2028 in central Pacific. Dubbed TEPEX-C (see above), this deployment will provide a unique opportunity to investigate the properties and evolution of fog and clouds in an environment influenced by anthropogenic and oceanic aerosols. Such observations will greatly help improve understanding of

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aerosol–cloud interactions and their effects on cloud microphysical properties in a backdrop of passing Madden Julian Oscillations. An additional strength of TRPEX-C will be the availability of aircraft-based measurements of cloud properties. The coordinated sea-based radar and airborne observations will provide an opportunity to evaluate and validate radar-retrieved parameters against independently measured cloud microphysical quantities.

The combined dataset will be particularly valuable for assessing the performance of existing radar retrieval parameterizations under a range of atmospheric conditions. Comparisons between radar retrievals and aircraft observations will help identify potential sources of uncertainty and limitations in the extant parameterizations. The results may subsequently be used to refine existing retrieval approaches and develop improved parameterizations for estimating cloud and fog microphysical properties from Ka–W-band radars. UND Group plans to continue collaboration with NOAA and Argonne National Laboratory in application of radars for environmental detection.

**Honors and Awards:**

(i) Springer-Nature Publishing Editor of Distinction Award 2025
(ii) Delivered the Invited Keynote Address at the Sixteenth (16) International Conference on Hydrodynamics, April 14 -18, Macau Institute of Technology 2026 – an International Association of Hydro-environment Engineering and Research (IAHR) Conference.
(iii) Delivered an Invited Lecture at the Seventy Eighth (78) American Physical Society, Fluid Dynamics Meeting, Houston, TX, November 23-25, 2025.

**Technology Transfer:**

Nothing to Report

**Participants:**

- Harindra Fernando (Co PD/PI) - 1 month(s)
- Matthis Chabert d'Hieres (Graduate Student (research assistant)) - 1 month(s)
- Baban Nagare (Postdoctoral (scholar, fellow or other postdoctoral position)) - 2 month(s)
- Jay Hyde (Technician) - 2 month(s)
- Ronald Coppersmith (Other Professional) - 3 month(s)

**Partners:**

No partners found.

**Other Collaborators:**

Nothing to Report

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## Figure and Publication-List Files



Figure 1: The Ka-W Combo (both FMCW) system being assembled and tested after arrival in UND. This off-the-shelf system enhances radar [remote sensing] research capabilities by conjoining the existing RPG W-band radar with a new Ka-band radar (both FMCW) on a common scanning platform. The radar attracted a lot of attention when it was placed outside, with many people stopping to ask about the equipment and its purpose. The second picture shows the radar set up outside on a cloud-free day for calibration against the sky.

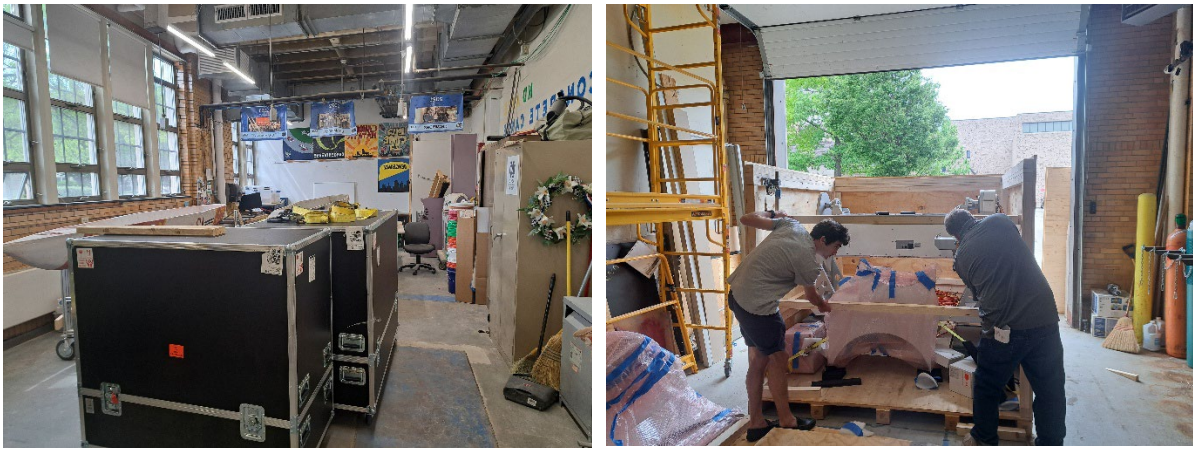


Figure 2: The black boxes contain the transmitter and receiver, and the wooden pallet contains the scanning platform.

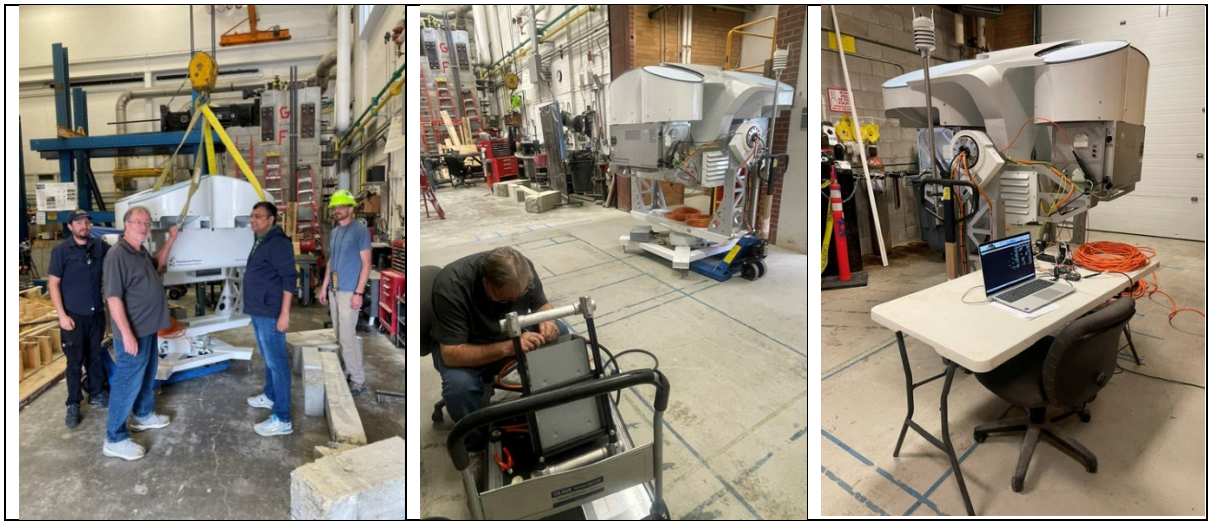


Figure 3: Assembly of the Ka-W radar system.

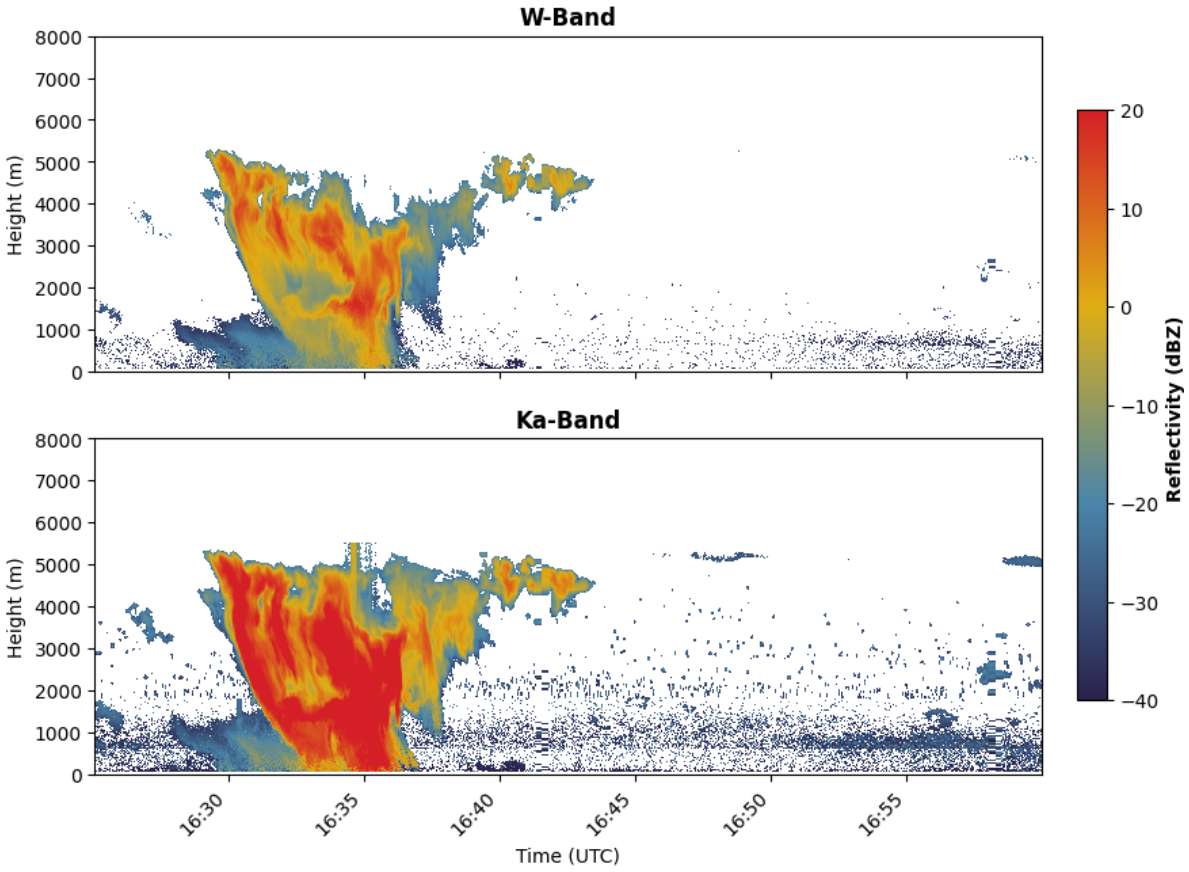



Figure 4: Radar reflectivity dBZ profiles ((plotted range: +20 to -40 dBZ) observed on 9 July 2026. The upper panel present the radar reflectivity measured by the W-band radar, while the lower panel show the corresponding reflectivity measurements obtained from the Ka-band radar.

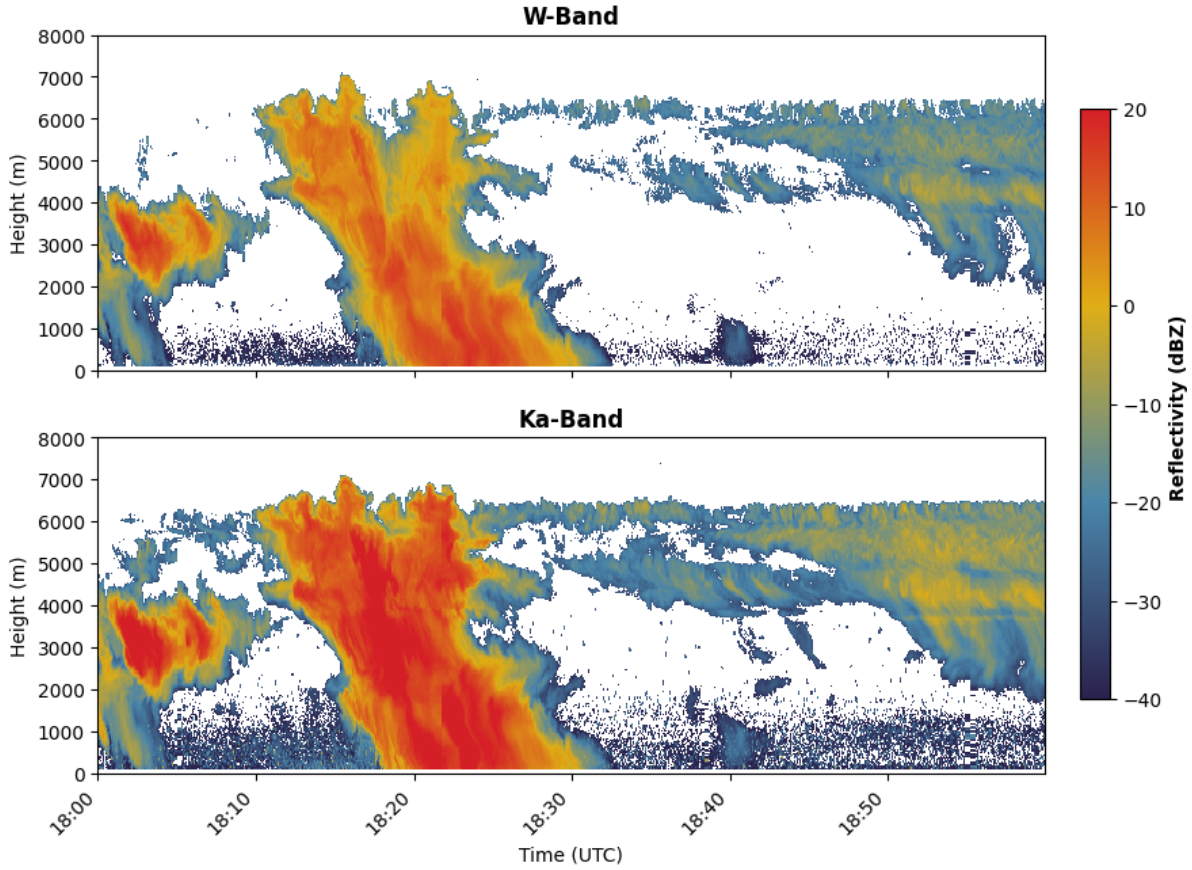



Figure 5: Same as for Figure 4, but for a different time period.

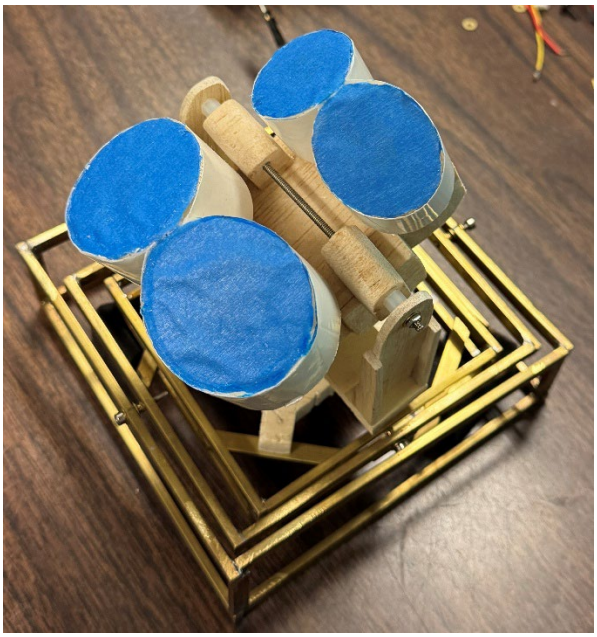


Figure 6: The miniature mock up physical model to help conceptualize the design.

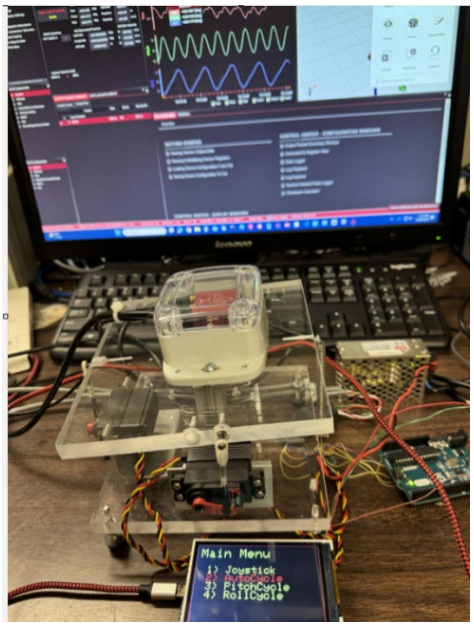



Figure 7: The ship simulator that helped develop the backbone of motion stabilization software.





Figure 8: While the radar was under construction by RPG, Research Engineer Scott Coppersmith designed and constructed a motion stabilizing platform for the Ka-W band radar. Upon delivery of the radar, the platform was adjusted to be fully compatible with the radar. The working miniaturized demonstrator (Figure 6) and simulator (Figure 7) helped the full-scale development.

## List of Publications (2025-2026) Relevant to Ka-W Band or W-Band Radar

Papers Submitted or Published During 2025-26:

Lee, S., Gultepe, I., Fernando, H.J.S. Gaberšek, S., Lenain, L., Wang, Q., Pardyjak, E., Creegan, E.D., Dorman, C., Lozovatsky, I., Ortiz-Suslow, D.G., Ruiz-Plancarte, J., Yamaguchi, R., Gultepe, E., Hoch, S., Perelet, A., Singh, D., Cha, J-W., Shen, L., Barve, A., Dowling, A., Wang, S., Giacosa, G., Grare, L., Taylor, P., Chen, Z., Chang, R. Y.-W., Teeloku, P., Gapp, N., Lee, S.-W., Jeong, J-M., Kim, H-J., Jeong, J-Y., Heo, K-Y., Kim, M., Park, M-S., Oh, K-H., Park, J-S., Jeon, D-C., Song, K-M., Kim, J-Y., Jung, D., Chang, K.I., Lee, J.-H., Kim, K.M., Yu, D., Yum, S-C., Heymsfield, A.J., Agelin-Chaab, M., Goo, T-Y., Ryu, D-G., 2025: A review of FATIMA Yellow Sea field campaign research *Quarterly Journal of the Royal Meteorological Society*, QJ-24-0380. In Press. DOI: 10.1002/qj.70157

Dowling, A., Lee, S., Ohb, K-H, Leeb, S.W., Lozovatsky, I., Ruiz-Plancartec, J., Ortiz-Suslow, D., Wang, S., Huang, K., Phadtre, J., Nagare, B., Thompson, E., Chang, E., and Fernando, H.J.S., The Role of Tidal Boundary Mixing in the Formation of Yellow Sea Fog, Submitted to (AMS) *Journal of Hydrometeorology*.

Conference Papers in 2005-6.

Fernando, H.J.S., Marine Atmospheric Boundary Layer: Some Recent Developments. Presented at the: Marine Atmospheric Research on Boundary Layers over East China/Yellow Seas (MARBLES), ONR-G Workshop, Oakwood Premier COEX Center, Seoul, Republic of Korea, June 25-26, 2025.

Gultepe, I., Fernando, H.J.S., Pardyjak, E., Wang, Q., Hoch, S., Perelet, A.O., Lee, S., Gabersek, S., Shen, L., Barve, A., Ortiz-Suslow, D.G., Ruiz-Plancarte, J., Yamaguchi, R., and Chang, K.I., Marine Fog Microphysics and Dynamics during the FATIMA GB and YS

Campaigns, Paper # A21O-2207, AGU2025 Annual Meeting in New Orleans, Louisiana, 15-19 December 2025.

Dowling, A., Fernando, H.J.S., Lee, S., Ortiz-Suslow, D.G., Ruiz-Plancarte, J., Oh, K., Lee, S-W., Kim, M., Gabersek, S., Chang, K.I., and Thompson, E.J., The Influence of Tidal Mixing Fronts on the Evolution of the Marine Atmospheric Boundary Layer and Fog Lifecycle, Paper # A21O-2212, AGU2025 Annual Meeting in New Orleans, Louisiana, 15-19 December 2025.

Gultepe, I., Fernando, H.J.S., Pardyjak, E., Dexheimer, D., Sparks, V., Hoch, S., Perelet, A., Shen, L., Barve, A., China, S., Dunbar, M.N., Nagare, B., Chabert d'Hieres, and Glen, A., Ice Fog Observations During Fatima-IF and IFFExO Field Campaigns at NSA, *2026 ARM/ASR Joint User Facility and PI Meeting, virtual*, July 21-23 2026

Fernando, H.J.S. and Fatima-IF team, Fatima Ice-Fog Field Work, *SA3NDBAR - Sensing in-situ, Aerosols, Arctic, Air-sea interaction, NWP, and atmospheric Dynamics Basic and Applied Research*, Naval Postgraduate School, 8 - 12 December 2025.

Fernando, H.J.S., Dorman, C., Dowling, A., Wang, S., Wang, Q., Pardyjak, E., Shen, L. and Gultepe, I., Rethinking of Marine Fog Genesis: The Role of Synoptic Weather Systems, Paper # A21O-2209, AGU2025 Annual Meeting in New Orleans, Louisiana, 15-19 December 2025.

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Gultepe, I, Ontario, H. J. S. Fernando, Q. Wang, E. R. Pardyjak, S. W. Hoch, A. O. Perelet, S. Lee, K. I. Chang, L. Shen, A. V. Barve, J. Ruiz-Plancarte, R. Yamaguchi, and D. G. Ortiz-Suslow, A Short Review of Fog and Integrated Visibility, Paper # 5.1, AMS 106th Annual Meeting, Houston, Texas, 25-29 January 2026.

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