

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.

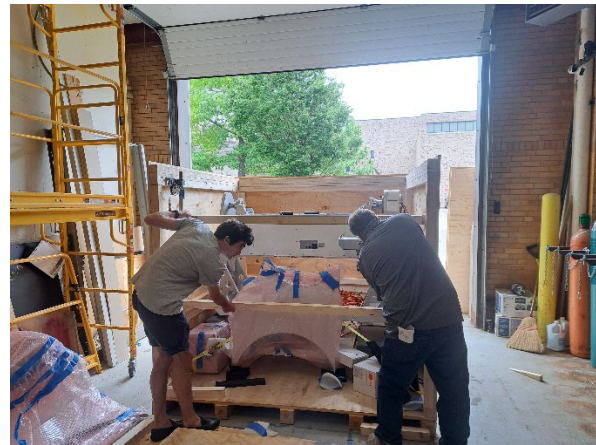


Figure 2: The black boxes contain the transmitter and receiver, and the wooden pallet contains the scanning platform.

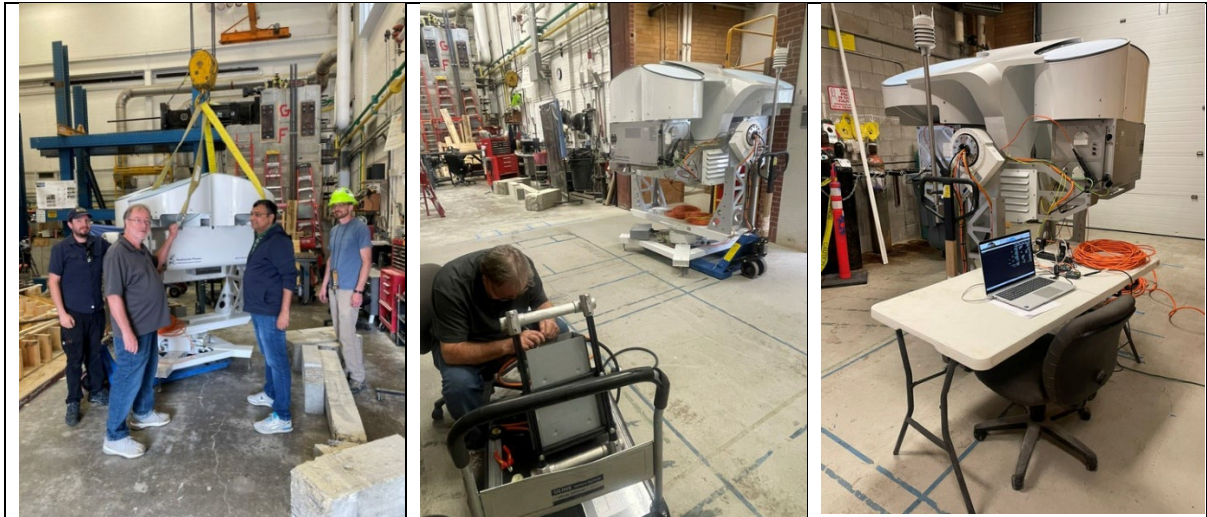


Figure 3: Assembly of the Ka-W radar system.

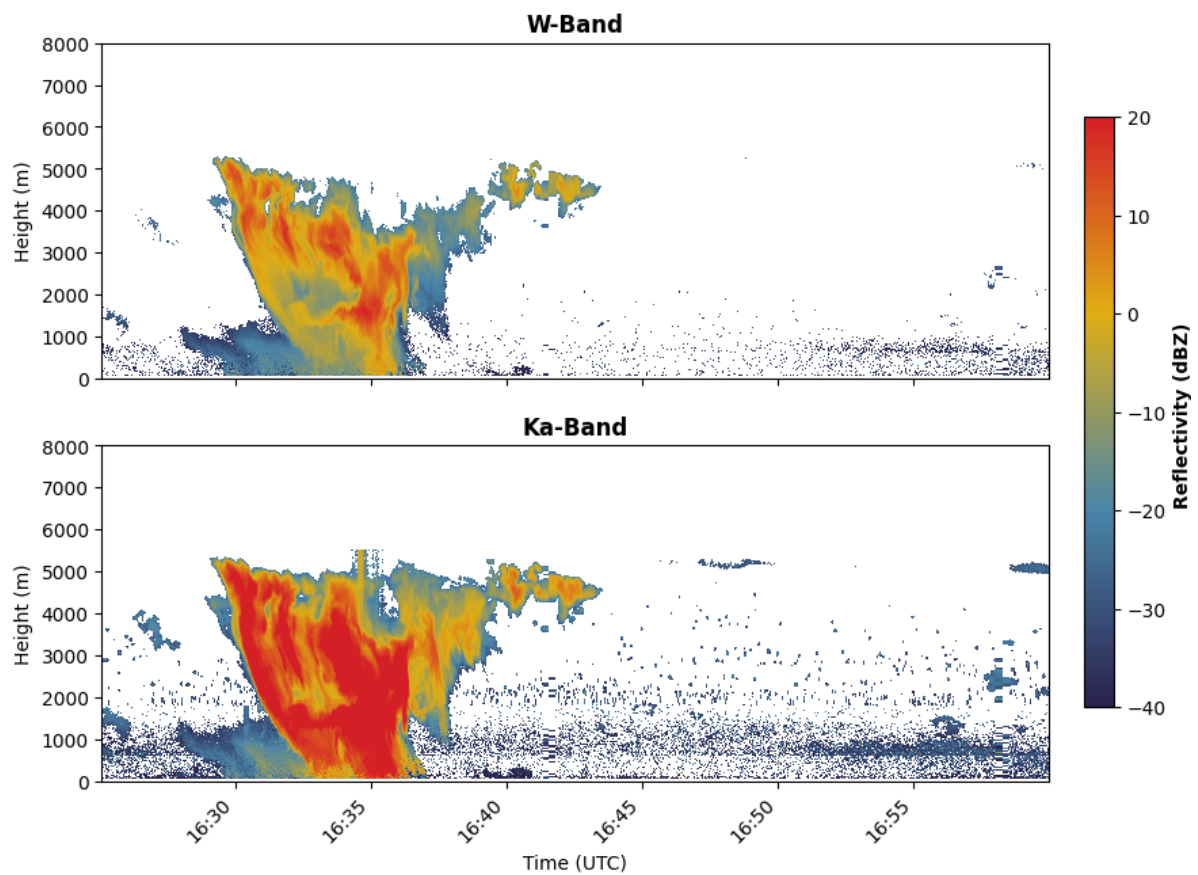


Figure 4: Radar reflectivity dBZ profiles ((plotted range: +20 to -40 dBZ) observed on 9 July 2026. The upper panel present the radar reflectivity measured by the W-band radar, while the lower panel show the corresponding reflectivity measurements obtained from the Ka-band radar.

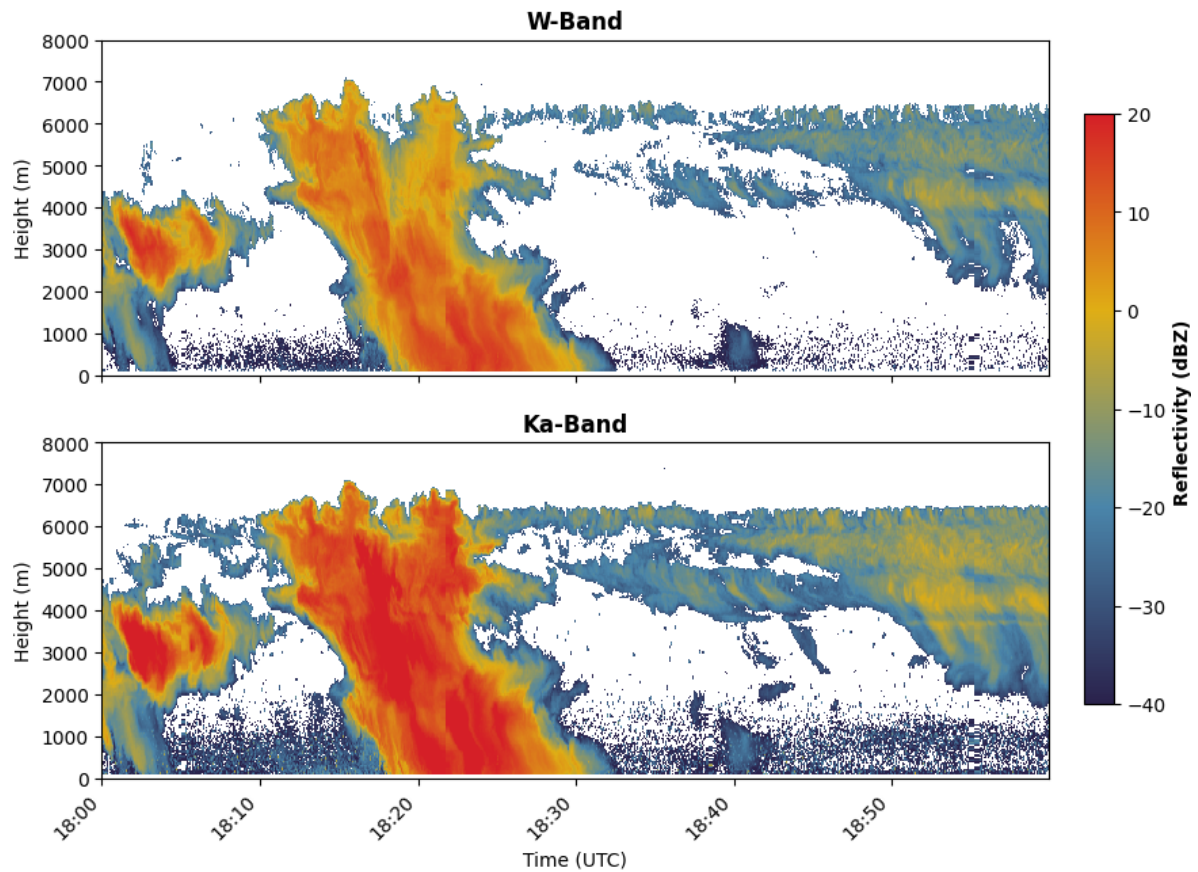


Figure 5: Same as for Figure 4, but for a different time period.

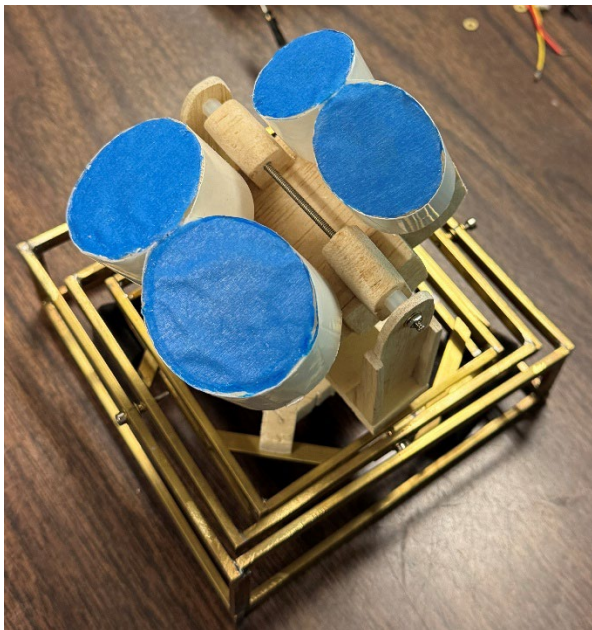


Figure 6: The miniature mock up physical model to help conceptualize the design.

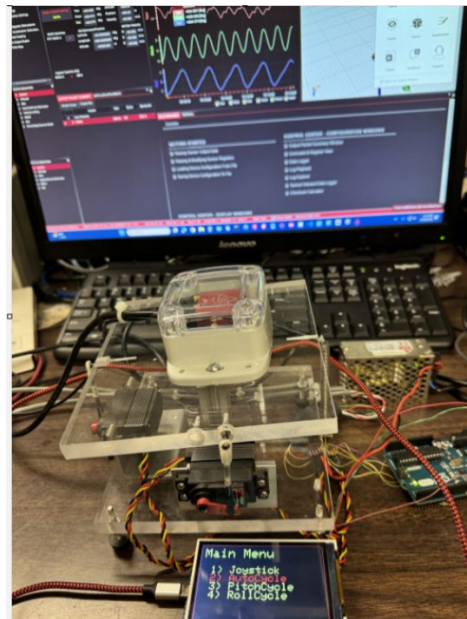


Figure 7: The ship simulator that helped develop the backbone of motion stabilization software.



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.

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.