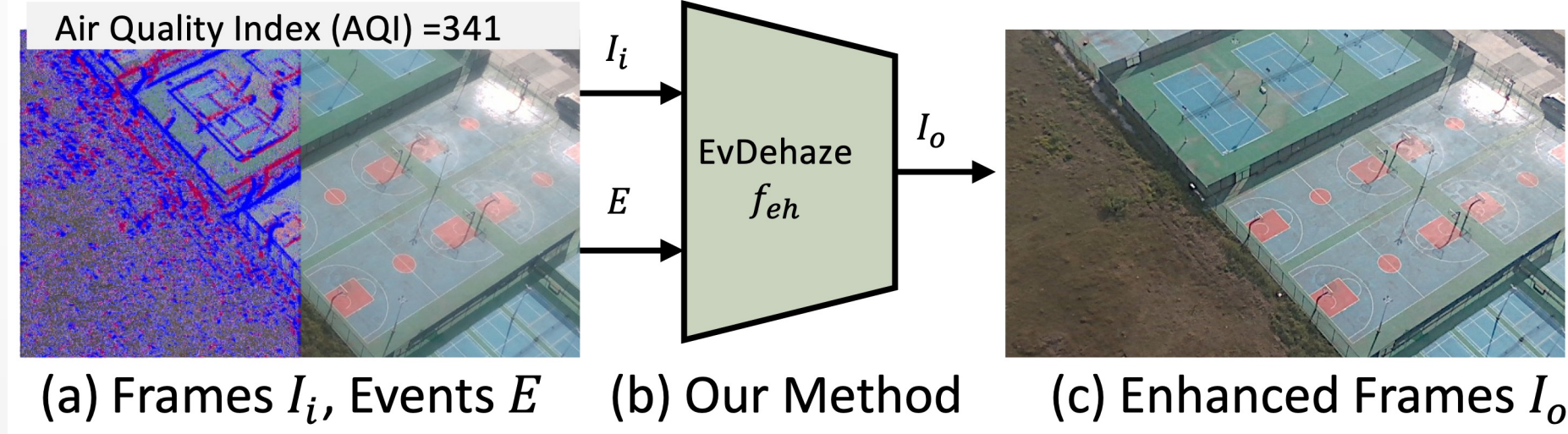
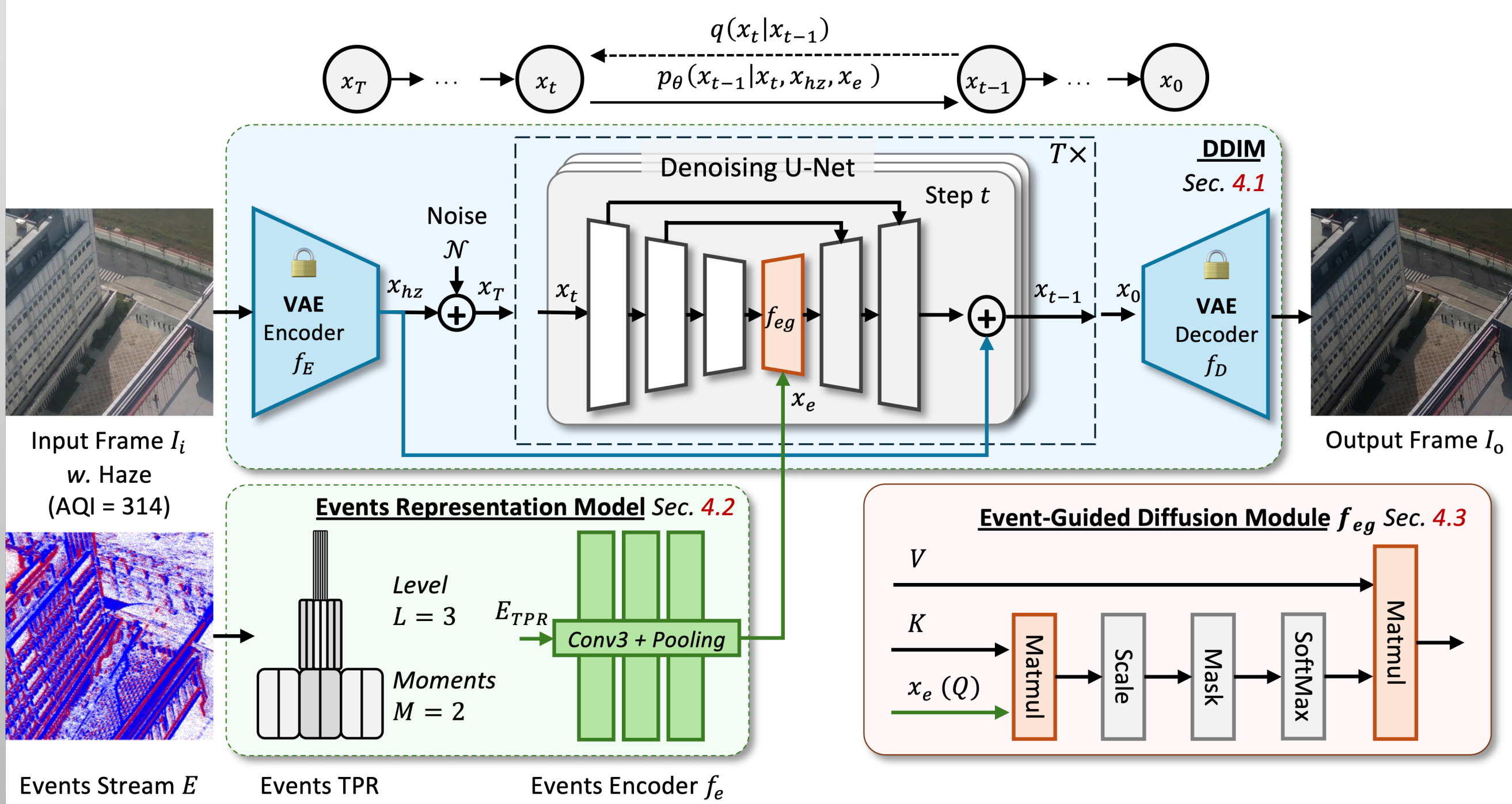
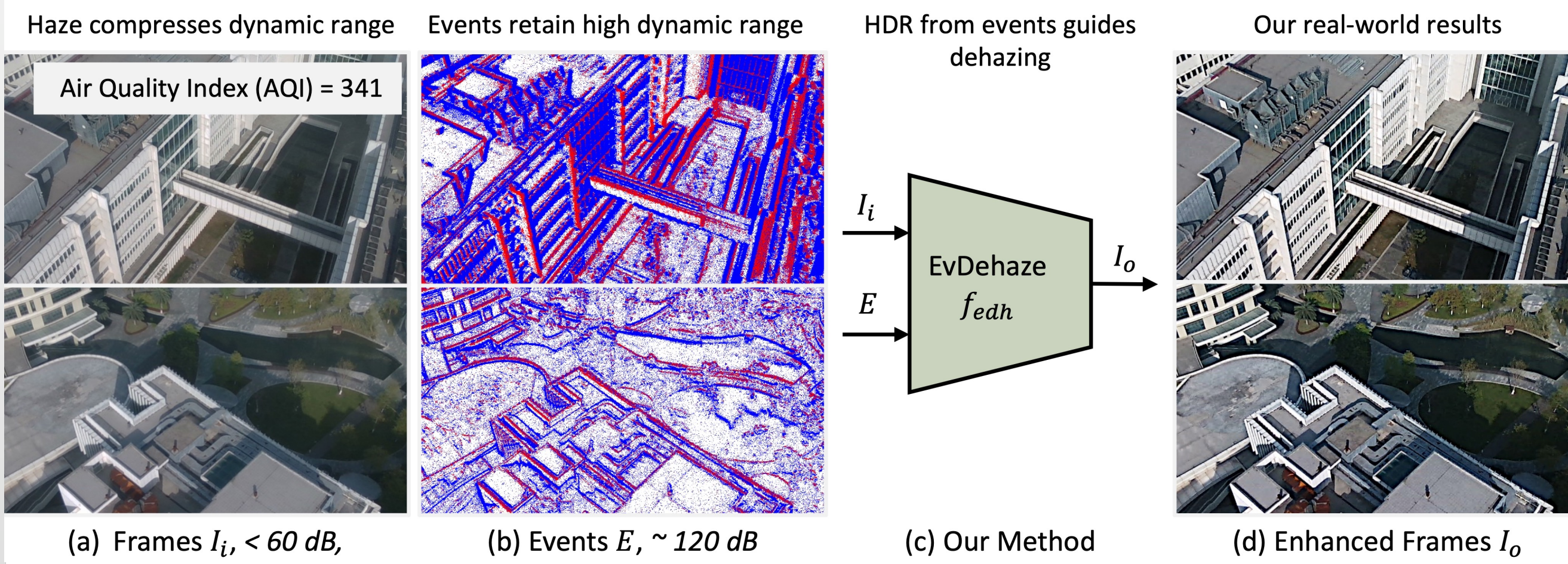


Motivation and Contribution

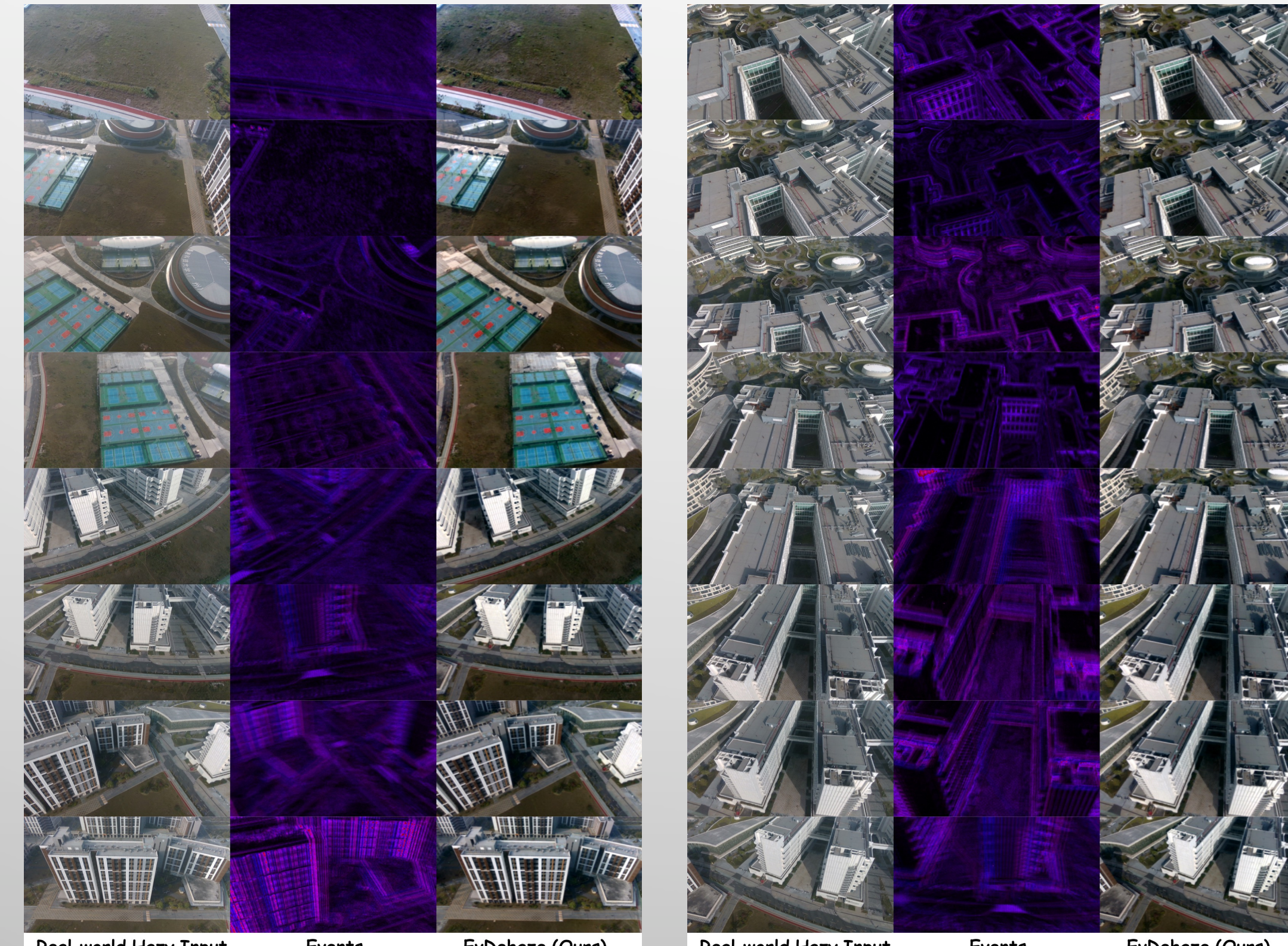
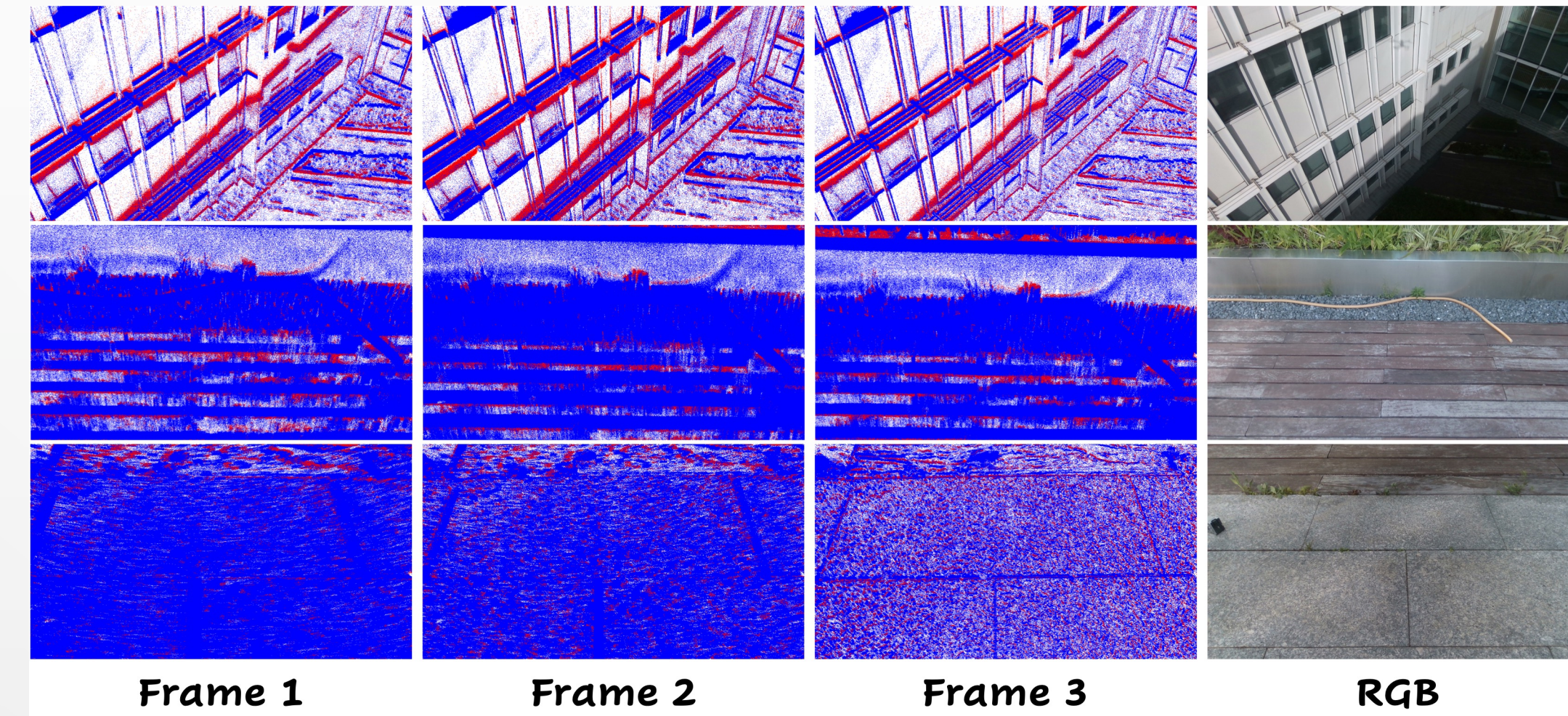
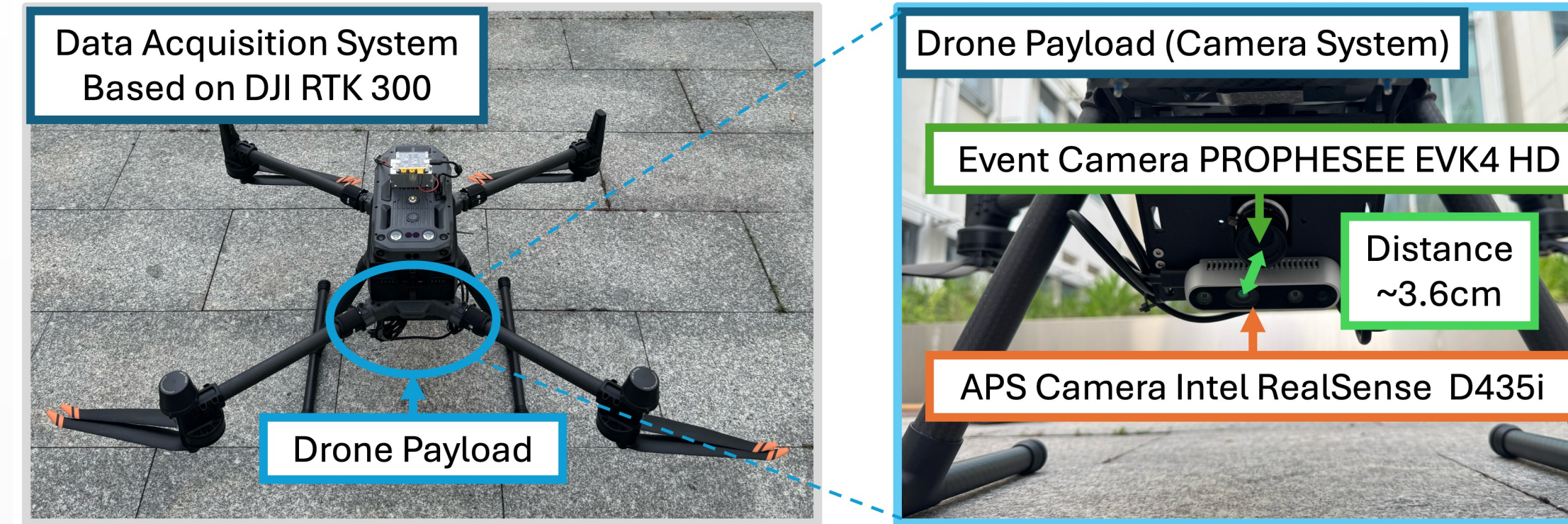
- Problem:** RGB-only dehazing is **ill-posed** in dense haze because conventional frames have limited dynamic range and lose fine edges, illumination changes, and distant structures.



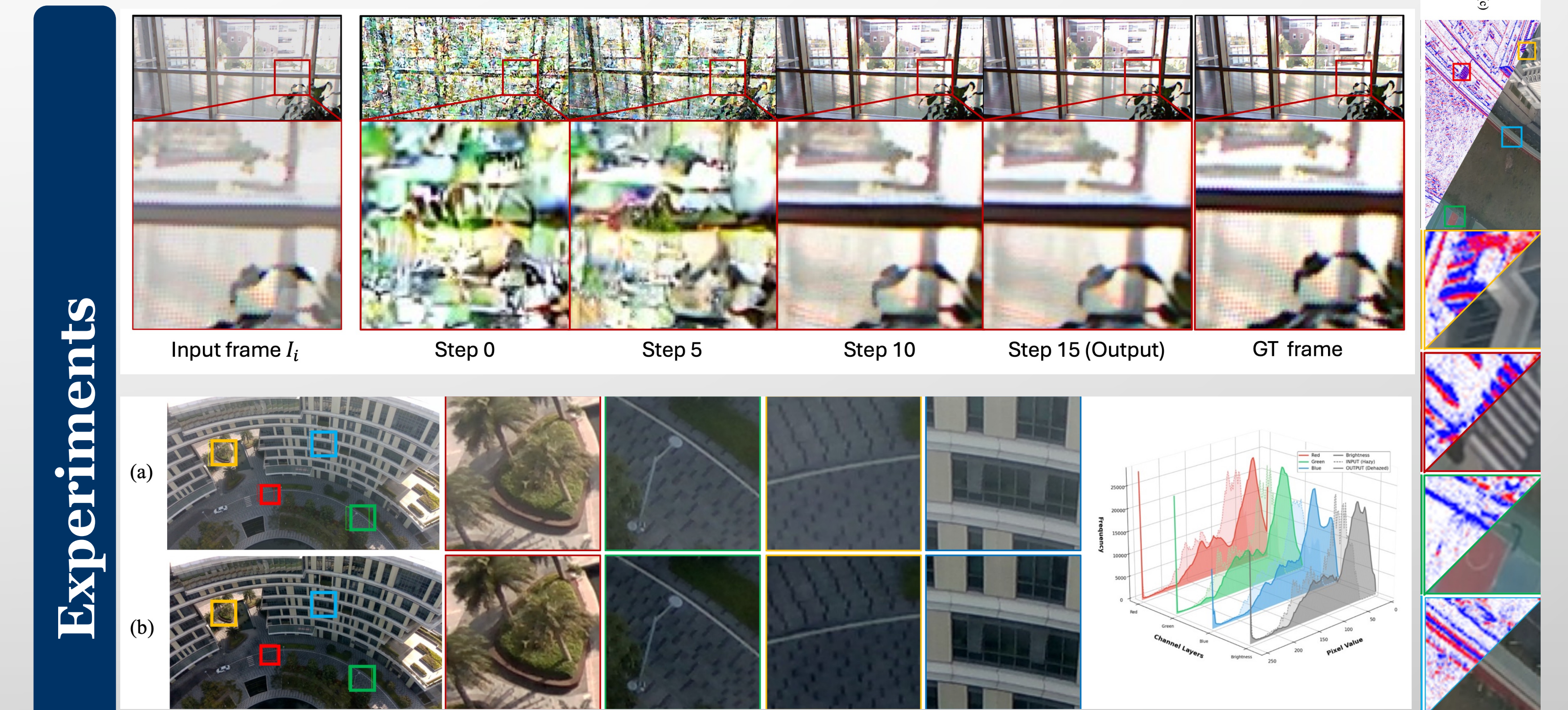
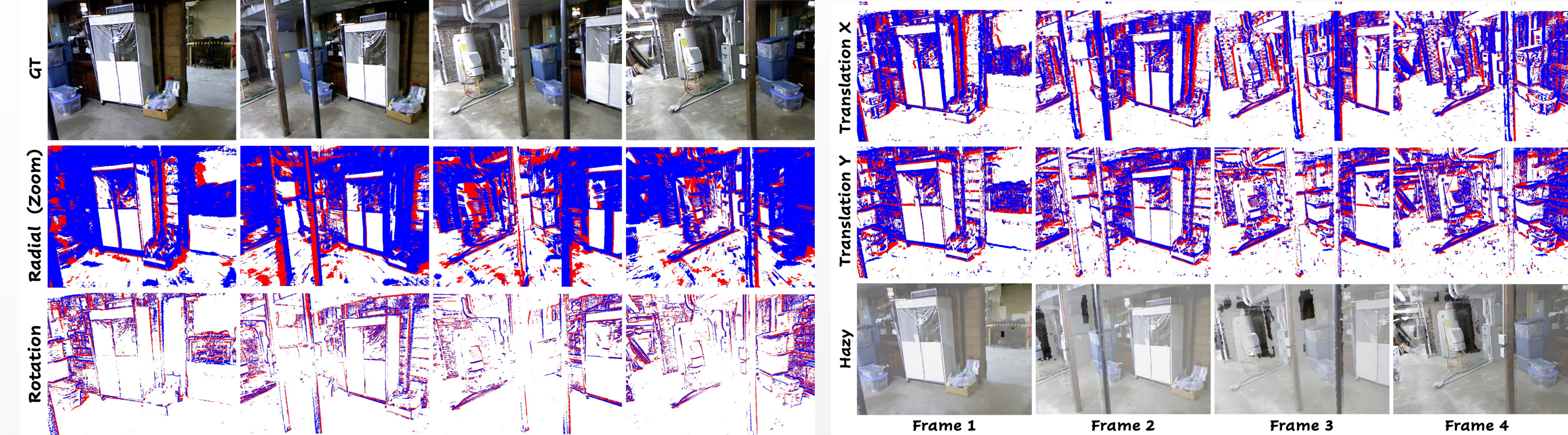
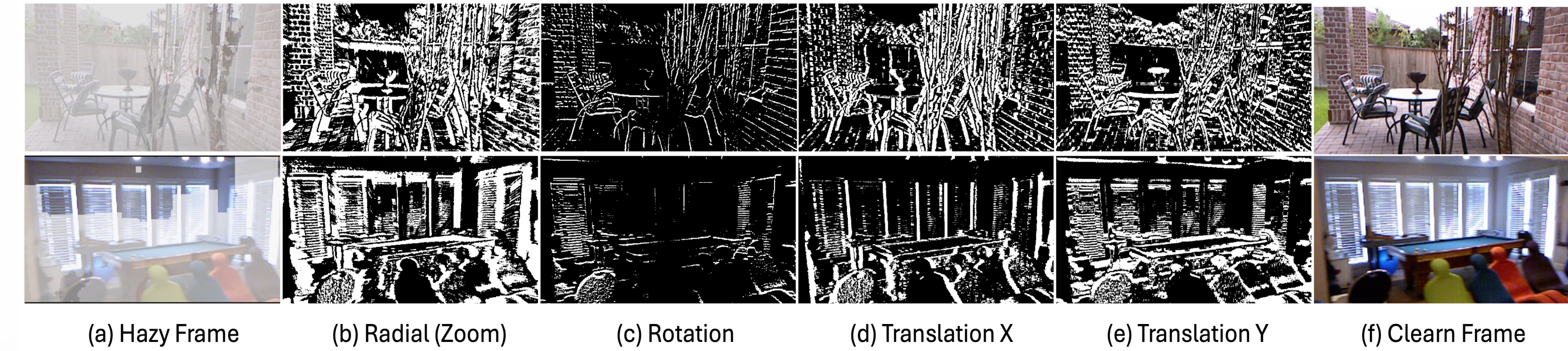
- Why it matters:** Reliable dehazing is critical for drone monitoring, photography, and autonomous perception in adverse weather, where visibility degradation can erase safety-critical cues.



Our Collected Real-world Event-RGB Data



Our Synthetic Event-RGB Data



Experiments

- Main result:** EvDehaze achieves the strongest performance among diffusion-based methods on SOTS and NH-HAZE, and event guidance also improves a strong Restormer baseline. For numerical results, to ensure a fair comparison between diffusion-based and transformer-based methods, we uniformly follow prior practice by downsampling the data to 128×128 for training and metric computation. For the final visualizations, however, we consistently use the original resolution.

One-sentence takeaway: EvDehaze is the first event-guided diffusion framework for image dehazing, using HDR event cues to recover lost by RGB cameras.

Conclusion: Events provide a practical HDR structural prior for real-world haze removal, enabling clearer edges, wider usable dynamic range, and more realistic dehazed outputs.

<https://evdehaze.github.io/>

