

## ISRaCML

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Accurate and continuous monitoring of precipitation and extreme weather events, such as heavy rainfall and flooding, is essential for mitigating their devastating impacts on both natural and built environments. The increasing frequency and intensity of such hydrometeorological events, exacerbated by climate change, necessitate the development of innovative and cost-effective observational methodologies to complement traditional ground-based measurement networks. Opportunistic sensors (OS), which leverage existing infrastructure for environmental monitoring, provide a valuable alternative for enhancing spatial and temporal precipitation assessments, particularly in regions with limited meteorological instrumentation. Cellular microwave links (CMLs), a prominent example of OS, offer an extensive and high-resolution dataset for rainfall estimation, making them particularly useful in diverse climatic regions such as Israel, which spans from hyper-arid zones in the south to temperate conditions in the north.

In this study, we will present ISRaCML dataset which includes frequencies ranging (17 - 23GHz) K-Band, path lengths varying (0.5 - 16km), presenting observations from CMLs deployed across Israel, sourced from a number of telecommunications providers, Cellcom, Pelephone and Orange, over the period of January 1, 2017, to August 31, 2017. The dataset is structured to include multiple temporal resolutions: 15-minute and 24-hour instantaneous values, min-max aggregates for 15-minute and 24-hour intervals, and min-max aggregates for 7-day 24-hour periods. Additionally, it integrates ground-based precipitation measurements from 85 rain gauges maintained by the Israel Meteorological Service (IMS), thereby furnishing a complementary dataset for validation and cross-referencing. This dataset constitutes a critical resource for enhancing precipitation retrieval algorithms, as it consists of, for the first time, CML measurements with different protocols by different network operators within the same time frame and area.

### **Are you an Early Career Scientist ?**

Yes

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