

Connecting Models and Observations: Merging 3D-PAWS and Raspberry Pi-WRF Software Applications



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INSPIRED BY 3D-PAWS

- 3D-PAWS is a professional grade 3D Printed weather station deployed in 60+ locations globally.
- New IOT technologies can improve this standard design

IOTWX “NODES” + WRF COMPUTING PLATFORM.

- Modular, fast, click and play deployment with 3d printed parts
- Grove or Qwiic connectors – no soldering or custom wiring required
- WRF edge compute node with GUI for easy setup and model initialization

PROTOTYPE & DEMO

IoTwx Node		3D-Printed Node Housing Example (Anemometer)	
	1-4 sensors (Grove) Grove HAT Pi Zero WH 20000mAh USB Power Bank + 10W USB Solar Panel	\$10-50 \$10 \$15 \$30	
\$55 (without sensors)		\$15-30 (depending on print configuration)	

OBJECTIVES

- Observations and WRF forecast on same IoTwx station platform
- Initialize WRF from IoTwx observations
- NGSS project based education tool

CONCLUSION

- Increase data collection capacity in field programs and research
- UCAR SciEd teaching modules and class activities under development

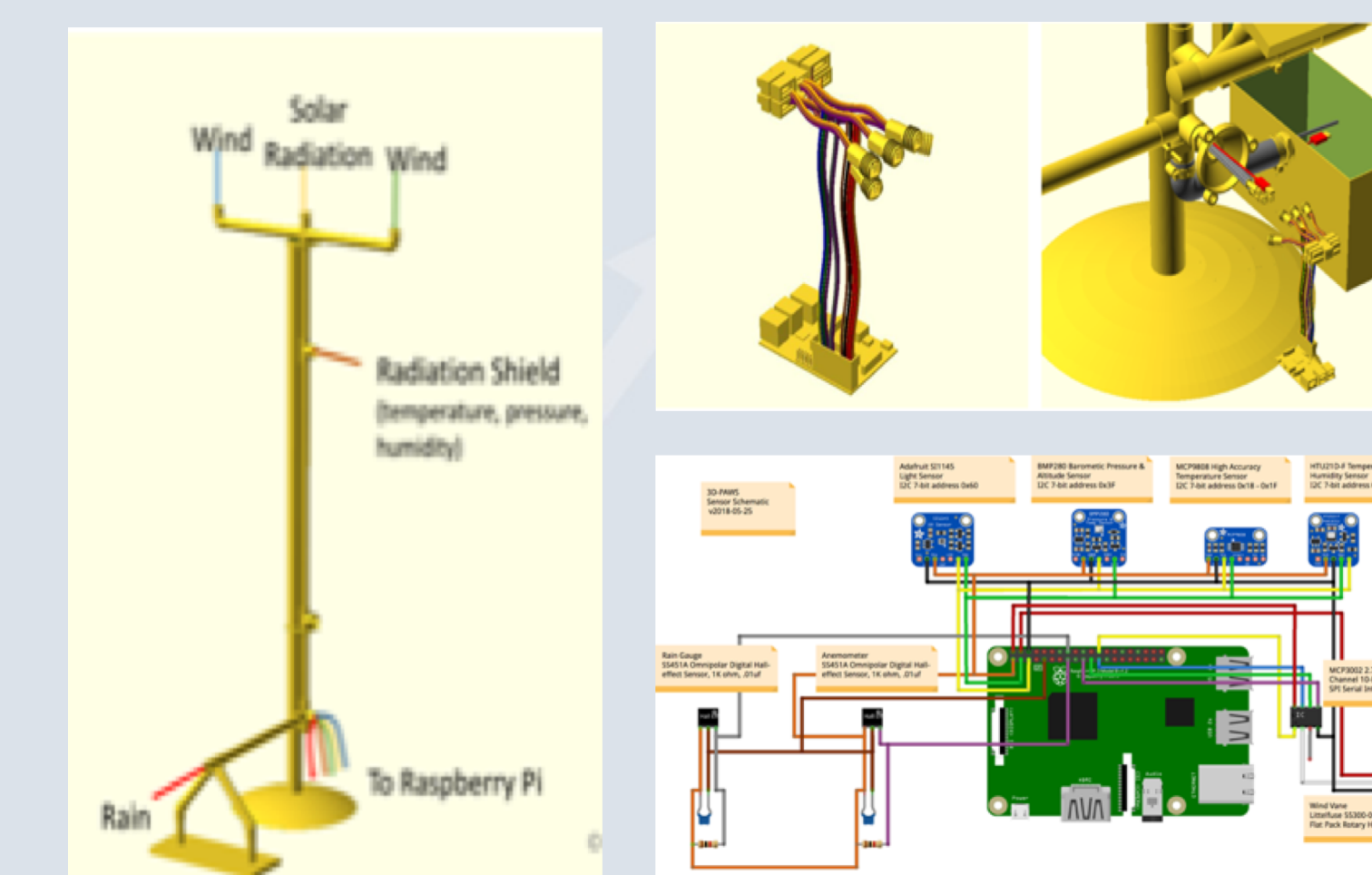
Merging observations and modeling onto a low cost IoTwx Platform can improve field research data collection capacity and provide teaching tools for project based STEM education.



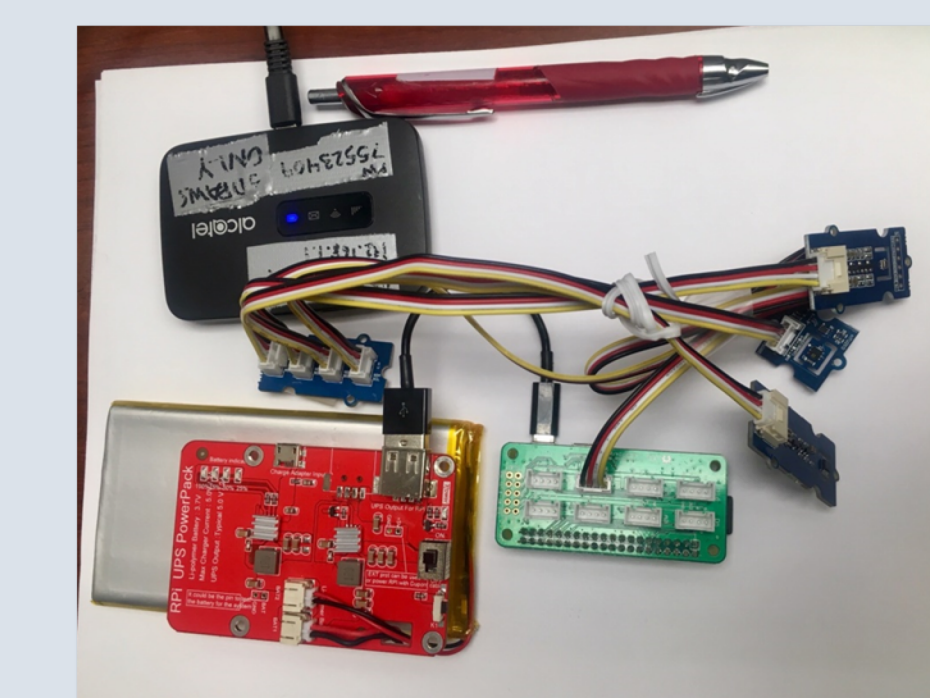
iotwx.github.io



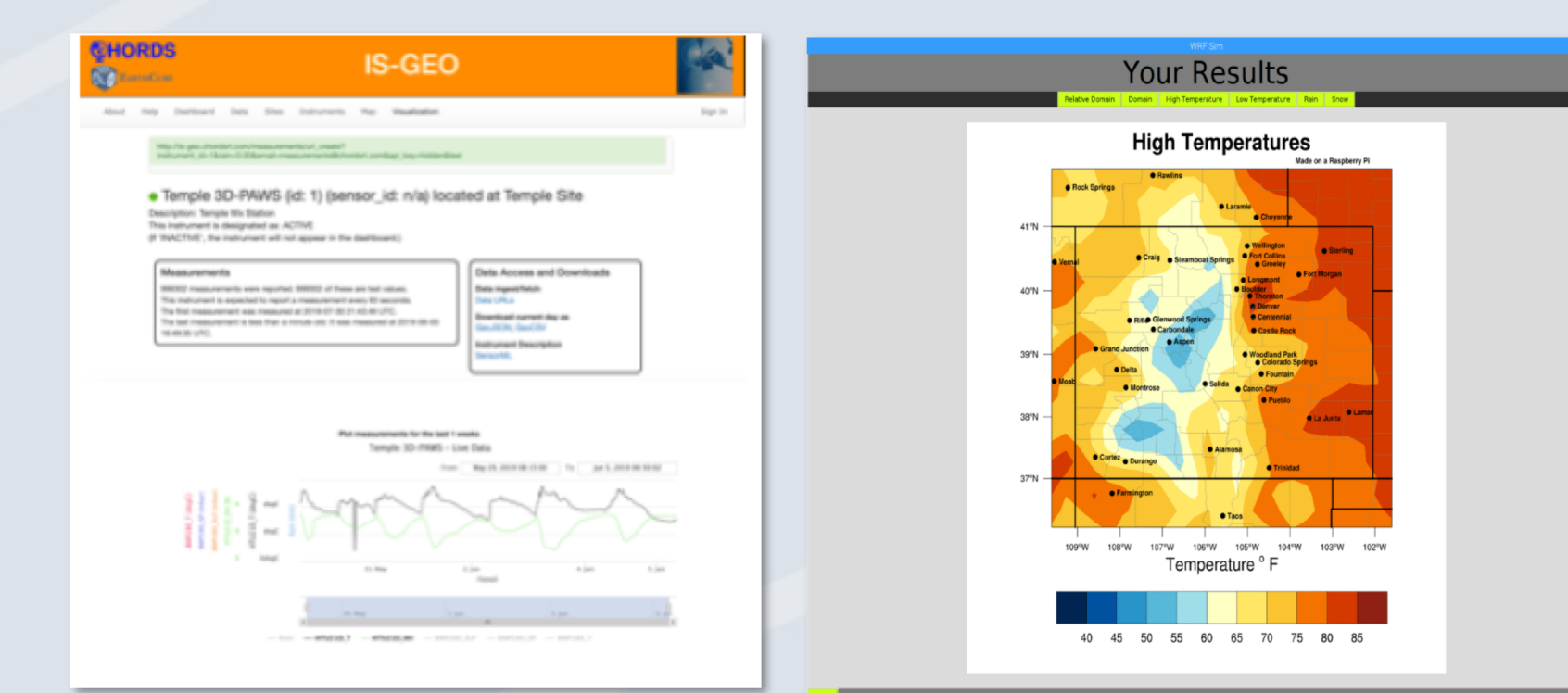
3D PAWS HARDWARE PARADIGM



IOTWX: AIRSENSE NODE



CHORDS & WRF VISUALIZATION



USE CASES & APPLICATIONS

