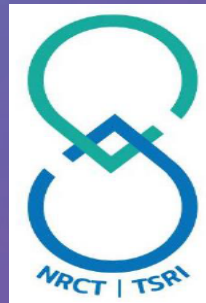


# Workshop on the Study of AIoT Weather Forecast System Technology in Thailand

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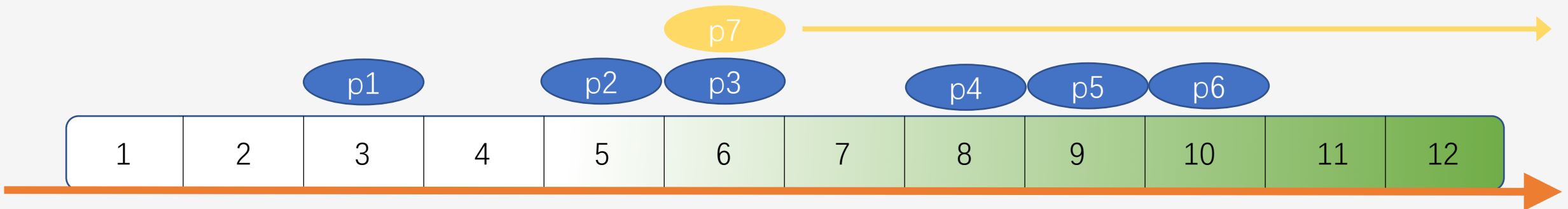
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# Project Schedule

| ID | AIoT Weather Forecast System<br>Project Schedule   | Duration | Month |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
|----|--|----------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
|    |  |          | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1  | Proposed Overall Schedule  | 360 days |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
| 2  | Kick Off Meeting   | 1day     |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
| 3  | Dynamic downscaling the NWP data to 1km by 1km Resolution and compare and share the results monthly starting from 2nd month.   | 180 days |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
| 4  | Applying machine learning algorithms to the calibrated NWP data for further improve the accuracy. The result will be compare and share monthly. An User Interface will also be developed to visualize the weather forecast data. | 180 days |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
| 5  | Deliver operational forecast data for 6 months.  | 180 days |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
| 6  | Final Report with Recommendations  | 1 day    |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
| 7  | Final Meeting and Future Roadmap   | 1 day    |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |

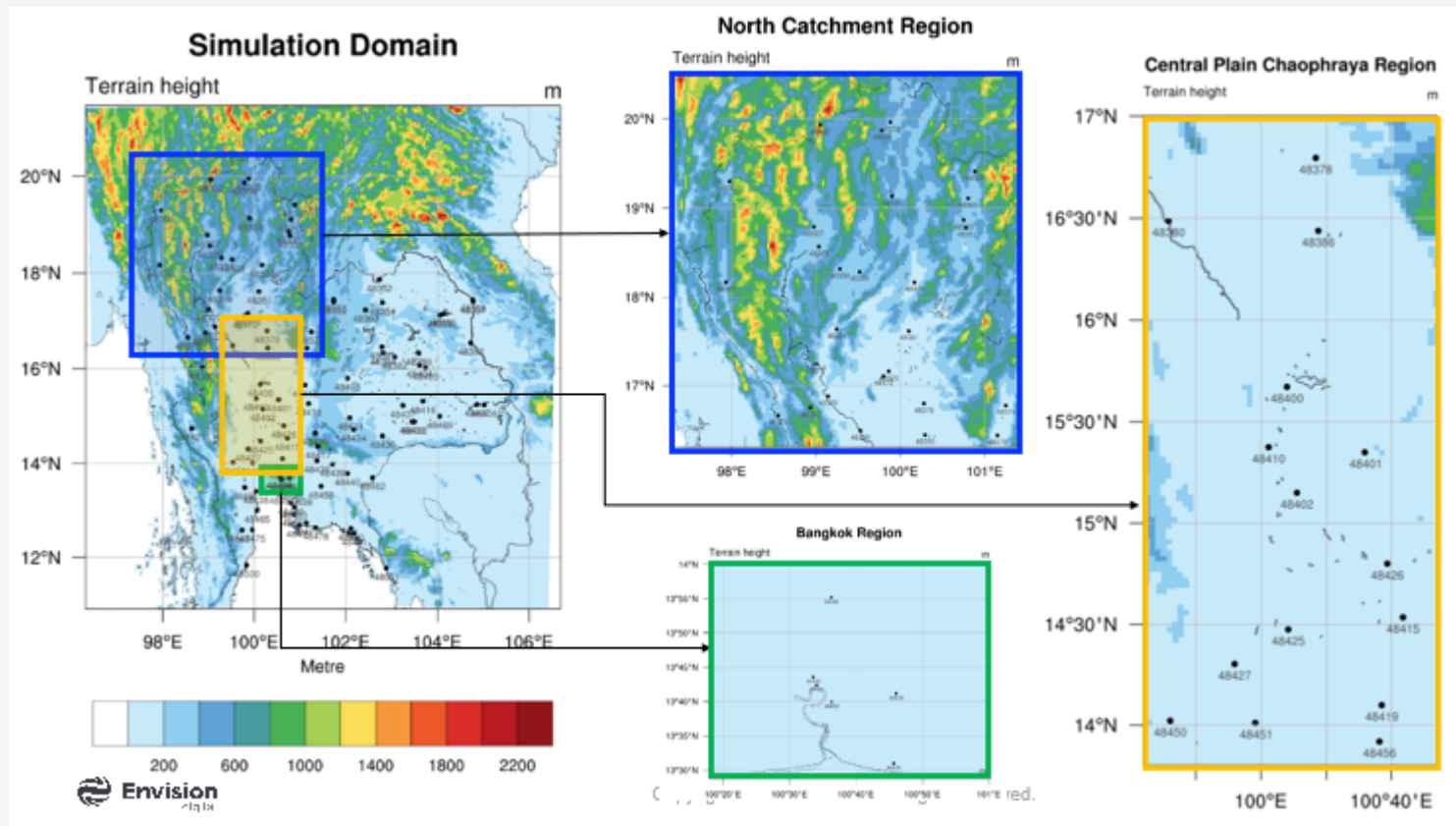
# Solution Plan – development timeline

- p1 Preparation: observation data, weather pattern analysis, prepare first workshop
- p2 Build **temperature** forecast model pipeline
- p3 Build **humidity** forecast model pipeline
- p4 Build **rainfall** forecast model pipeline and evaluate/tune **temperature/humidity** model
- p5 Build **wind** forecast model pipeline and evaluate/tune **rainfall** model
- p6 Evaluate/tune **wind** model
- p7 Optimize models for a particular area / region



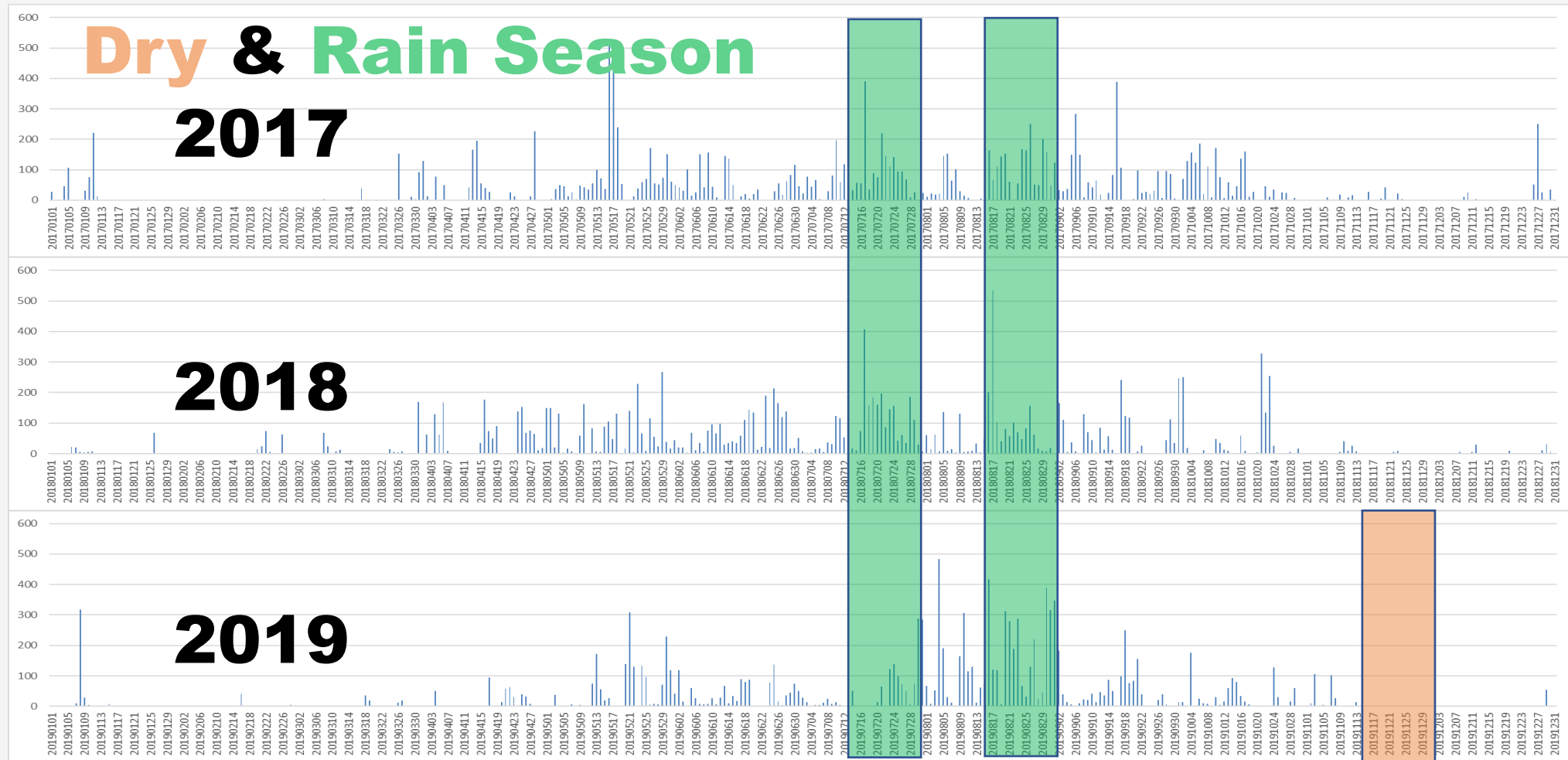
# NWP Modelling Progress

- Completed optimisation process for dry and rain season
- Evaluated model performance over the two optimisation period
- Prepared workshop on NWP modelling including a preliminary analysis for the three zones:



# Next Step for NWP modelling

- Prepare training data set for machine learning algorithm, focusing on rain seasons



# Machine Learning Workshop Materials

## First session

- EnWeather Data Science overview (1hour): [link](#)
- Use machine learning model for weather forecast (45min): [link](#)
- Lab session:
  - Use xgboost model for weather forecast (1hour): [link](#)

## Second session

- Use deep learning model for weather forecast (1hour+): [link](#)
- Lab session
  - Use Pytorch for weather forecast (1.5hours): [link](#)

# Observation Requirement

| Weather attributes | Learning target | Periods                                      | Frequency                 | Properties                                     |
|--------------------|-----------------|--|---------------------------|--|
| Rainfall           | Station         | At least 1 year                              | Hourly / 3 hourly         | Small coverage, accurate                       |
|                    | Radar image     | At least 6 months,<br>L3/L2/ Image<br>format | 5 minutes / 15<br>minutes | Large coverage, whole domain,<br>less accurate |
|                    | GPM             |  |                           | Self-collected,<br>less accurate than Radar    |
| Temperature        | Station         | At least 1 year                              | Hourly                    |  |
| Humidity           |                 |  |                           |  |
| Wind               |                 |  |                           |  |

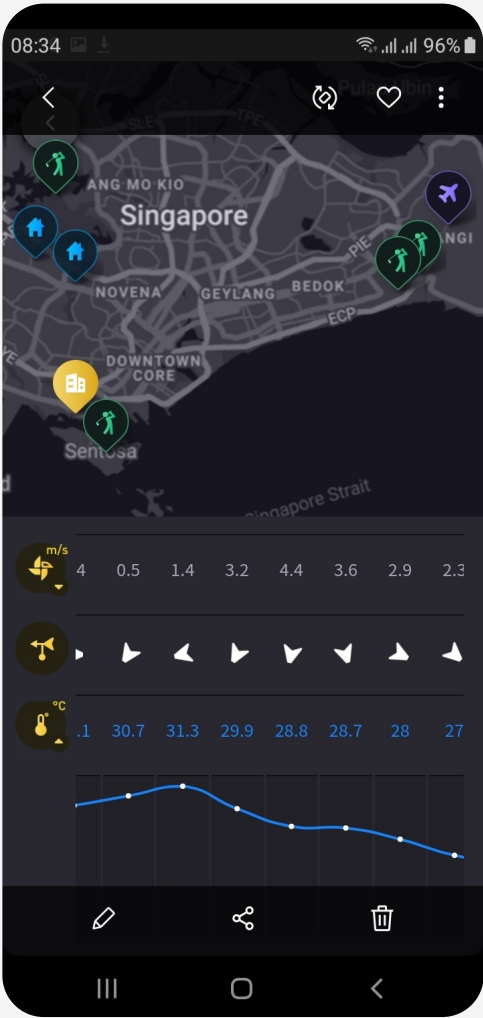
# Publication or Patent



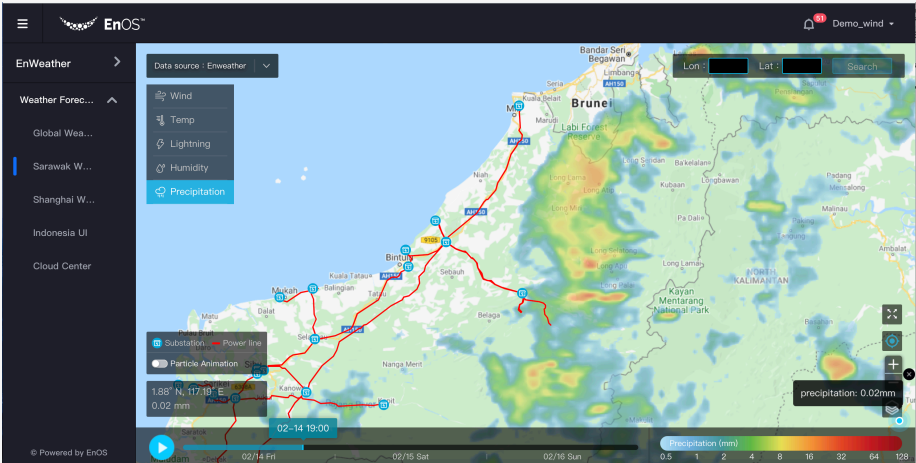


# Co-develop Application

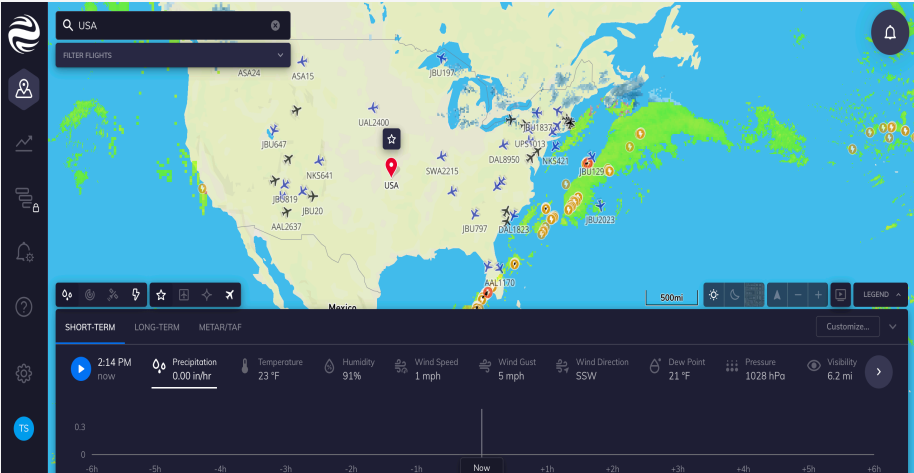
## Mobile App



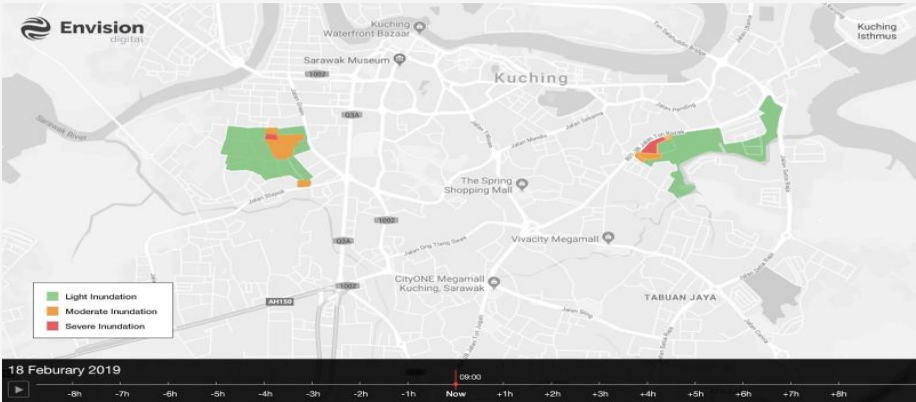
## Reservoir and Grid



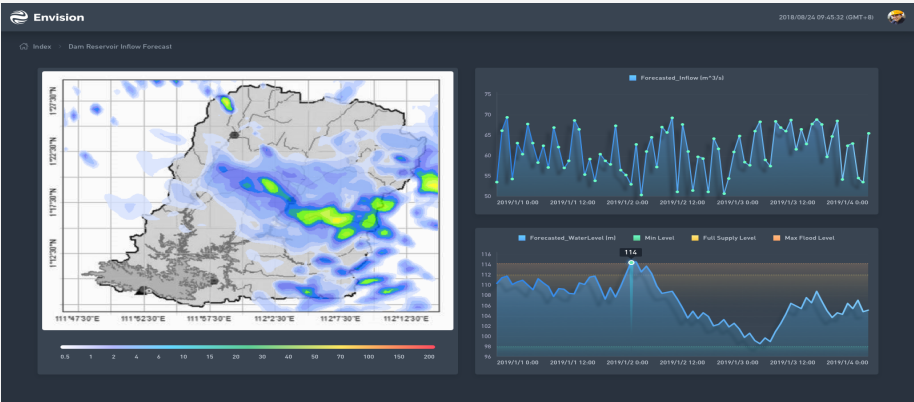
## Aviation



## Flash Flood



## Hydro Energy



Thank  
You