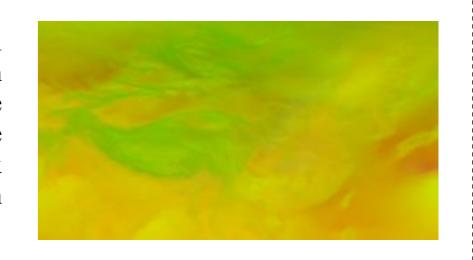
## Meteorological raster data and the prompt

Given the meteorological raster data (ERA5) on the date 2023/4/2 in China, predict the environmental event that will happen. The meteorological raster data: temperature, u&v wind, precipitation are encoded as R,G,B channels of an image. It is then encoded using a visual encoder. The output should be in the format: [event1, event2, event3, ...]. Please analyze the meteorological patterns in China and predict the environmental events that will happen. The context of the meteorological information: max temperature: 306.95 K, min temperature: 263.0 K, mean temperature: 288.88 K, max wind speed: 13.37 m/s, min wind speed: 0.02 m/s, mean wind speed: 4.5 m/s, max precipitation: 4.71 mm, min precipitation: 0.0 mm, mean precipitation: 0.11 mm.



## **Ground Truth**

["cold air", "flooding", "heavy rain", "rainfall", "strong rainfall", "temperature fluctuation", "traffic disruption", "warm wet air flow"]

## CLLMate

["cold air", "flooding", "rainstorm", "strong wind", "traffic disruption", "traffic jam", "water accumulation", "water pressure tank", "water temperature"]

# Top-1 Similarity

["cold air", "cooling", "flooding", "flooding rain", "heavy rain", "heavy snowfall", "north wind", "pollution diffusion difficulty", "rain", "rain snow weather", "sandstorm", "short-term heavy rainfall", "snowfall", "strong convection weather", "strong wind", "temperature drop", "temperature record", "temperature rise", "thunderstorm", "traffic disruption", "warm air flow", "wind", "windstorm"]

## LLaVA-based Tuning

["dehydration", "extremely high temperature", "health risks", "heat stroke", "heat stroke risk", "heat stroke risk increase", "heat stroke risk increase in people with diabetes", "heat stroke risk increase in people with high blood pressure", "heat stroke risk increase in people with high temperature weather alert", "heat stroke risk increase in people with high temperature weather alert", "heat stroke risk increase in people with high temperature weather alert", "heat stroke risk increase in people with high temperature weather alerting", "heat stroke risk increase in people with high temperature weather forecast", "heat stroke risk increase in people with high temperature weather forecast", "heat stroke risk increase in people with high temperature weather forecast", "heat stroke risk increase in people with high temperature weather warning", "heat stroke risk increase in people with high temperature weather warning", "heat wave"]

#### Gemini

Unfortunately, I cannot directly analyze images to predict environmental events. Predicting environmental events from meteorological data typically involves using specialized software and scientific models.

#### GPT-4

Heatwaves in regions with high-intensity red areas. Strong winds in areas with high green and blue intensities.

Potential storm or typhoon formations in regions where wind patterns converge significantly. Possible rainfall or thunderstorms in areas with significant temperature gradients and wind convergence.

These predictions are based on the visual analysis of the encoded meteorological data. For a more precise prediction, numerical weather prediction models and more detailed data analysis would be necessary.

## LLaVA

Based on the meteorological raster data provided, the environmental events that will happen in China on 2023/4/2 are: [temperature, u&v wind, precipitation] = [288.88, [0.0, 0.0, 0.0], 0.11]