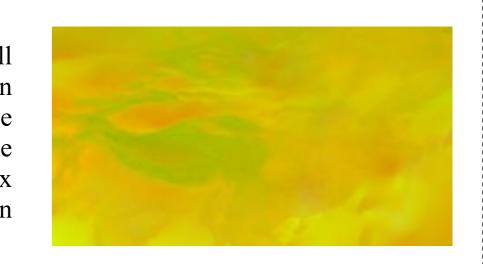
Meteorological raster data and the prompt

Given the meteorological raster data (ERA5) on the date 2022/7/3 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: 310.4 K, min temperature: 278.12 K, mean temperature: 298.97 K, max wind speed: 15.03 m/s, min wind speed: 0.05 m/s, mean wind speed: 4.24 m/s, max precipitation: 5.36 mm, min precipitation: 0.0 mm, mean precipitation: 0.23 mm.



Ground Truth

["death", "discomfort", "extremely high temperature", "flooding", "flooding road", "heat", "heat stroke", "heavy rain", "landslides", "no water supply", "power outage", "rain", "rainstorm", "strong wind", "traffic disruption", "typhoon", "urban heat island effect", "water accumulation", "water shortage"]

CLLMate

["extremely high temperature", "flooding", "rainstorm", "strong wind", "traffic disruption", "traffic jam", "water accumulation", "water pressure tank", "water shortage", "heatwave"]

Top-1 Similarity

["9 people buried", "air pollution", "biodiversity loss", "communication interruption", "danger to citizens", "debris flow", "electrical appliances", "electrical fire", "environmental damage", "fire", "flash flood", "flooding", "flooding car", "flooding road", "forest fire", "geological disaster risk", "health", "heavy rain", "high pressure tank", "high temperature and sunshine", "high voltage line breakdown", "housing flooding", "industrial production and vehicle emissions", "lack of fire prevention", "landslides", "lightning", "low pressure tank", "moisture accumulation", "new fire suppression product", "nitrogen oxides and volatile organic compounds", "ozone pollution", "power outage", "power plug", "rain", "rainfall", "rainstorm", "road blockage", "short circuit", "soil erosion", "strong wind", "sunbeam", "thunderstorm", "traffic disruption", "traffic jam", "transformer jump", "unable to reach examination point", "urban inundation", "water accumulation", "water rising", "waterlogging of cars"]

LLaVA-based Tuning

["dehydration", "extremely high temperature", "health risks", "heat stress risk", "heat stroke", "heat stroke risk", "heat stroke"]

Gemini

Based on the limited information available, potential environmental events could include:

Heatwaves: The high maximum temperature and significant temperature variations indicate a potential for heatwaves in certain regions.

Droughts: Low mean precipitation suggests a risk of drought conditions, especially in areas with persistent low precipitation.

Localized Thunderstorms: The combination of high temperatures, humidity, and localized areas of higher precipitation could lead to isolated thunderstorms. Forest Fires: Dry conditions and high temperatures can increase the risk of forest fires.

GPT-4

Given the meteorological data and the visual patterns from the raster data, the following environmental events are likely to occur in China on 2022/7/3:

- Heatwave: The high maximum temperature of 310.4 K indicates the possibility of a heatwave, especially in regions where temperatures approach or exceed this value.
- Localized Thunderstorms: The combination of high temperatures and significant precipitation in certain areas suggests the potential for localized thunderstorms. The max precipitation of 5.36 mm indicates heavy rainfall in some areas, which could lead to thunderstorms.
- Windy Conditions: With a maximum wind speed of 15.03 m/s, some regions may experience strong winds, potentially causing disruptions and contributing to storm activity.
- These predictions are based on the provided data and the visual patterns observed in the image.

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[temperature, u&v wind, precipitation]