WEATHER APP

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ABSTARCT

Currently, operational weather forecasting systems use observations to optimize the initial state of a forecast without considering possible model deficiencies. For precipitation assimilation, this could be an issue since precipitation observations, unlike conventional data, do not directly provide information on the atmospheric state but are related to the state variables through parameterized moist physics with simplifying assumptions. Precipitation observation operators are comparatively less accurate than those for conventional data or observables in clear-sky regions, which can limit data usage not because of issues with observations but with the model.

The challenge lies in exploring new ways to make effective use of precipitation data in the presence of model errors. This study continues the investigation of variational algorithms for precipitation assimilation using column model physics as a weak constraint. The strategy is to develop techniques to make online estimation and correction of model errors to improve the precipitation observation operator during the assimilation cycle.

Earlier studies have shown that variational continuous assimilation (VCA) of tropical rainfall using moisture tendency correction can improve GEOS-3 global analyses and forecasts. Here we present results from a four-year GEOS-3 reanalysis assimilating TMI and SSM/I tropical rainfall using the VCA scheme. Comparisons with NCEP operational analysis and ERA-40 reanalysis show that the GEOS-3 reanalysis is significantly betterat replicating the intensity and variability of tropical precipitation systems ranging from a few days to interannual time scales. As a further refinement of rainfall assimilation using the VCA scheme, we describe a variational algorithm for assimilating TMI latent heating retrievals using semi-empirical parameters in the model moist physics as control variables and present initial test results.

1. Introduction

Weather *is the state of the atmosphere, describing for example the degree to which it is hot or cold, wet or dry, calm or stormy, clear or cloudy[1]. On Earth, most weather phenomena occur in the lowest layer of the planet's atmosphere, the troposphere.[2] Just below the stratosphere. Weather refers to day-to-day temperature, precipitation, and other atmospheric conditions, whereas climate is the term for the averaging of atmospheric conditions over longer periods of time.[3] When used without qualification, "weather" is generally understood to mean the weather of Earth.[4]*

Weather is driven by air pressure, temperature, and moisture differences between one place and another. These differences can occur due to the Sun's angle at any particular spot, which varies with latitude. The strong temperature contrast between polar and tropical air gives rise to the largest scale atmospheric circulations: the Hadley cell, the Ferrel cell, the polar cell, and the jet stream. Weather systems in the middle latitudes, such as extratropical cyclones, are caused by instabilities of the jet streamflow. Because Earth's axis is tilted relative to its orbital plane (called the ecliptic), sunlight is incident at different angles at different times of the year. On Earth's surface, temperatures usually range ±40 °C (−40 °F to 104 °F) annually. Over thousands of years, changes in Earth's orbit can affect the amount and distribution of solar energy received by Earth, thus influencing long-term climate and global climate change.

Surface temperature differences in turn cause pressure differences. Higher altitudes are cooler than lower altitudes, as most atmospheric heating is due to contact with the Earth's surface while radiative losses to space are mostly constant. Weather forecasting is the application of science and technology to predict the state of the atmosphere for a future time and a given location. Earth's weather system is a chaotic system; as a result, small changes to one part of the system can grow to have large effects on the system as a whole. Human attempts to control the weather have occurred throughout history, and there is evidence that human activities such as agriculture and industry have modified weather patterns Studying how the weather works on other planets has been helpful in understanding how weather works on Earth. A famous landmark in the Solar System, Jupiter's Great Red Spot, is an anticyclonic storm known to have existed for at least 300 years. However, the weather is not limited to planetary bodies. A star's corona is constantly being lost to space, creating what is essentially a very thin atmosphere throughout the Solar System. The movement of mass ejected from the Sun is known as the solar wind.

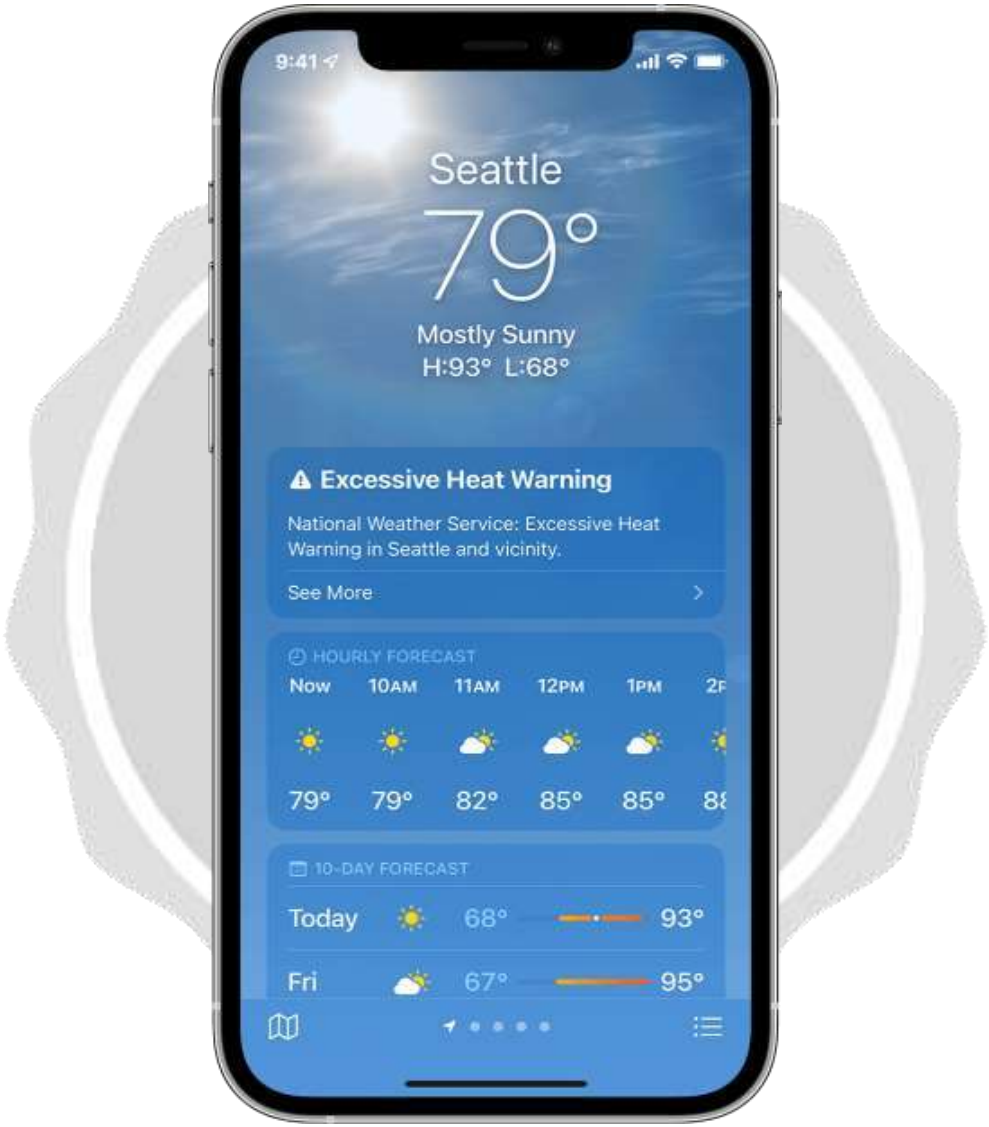
9:41
Seattle
79°
Mostly Sunny
H:93° L:68°
Excessive Heat Warning
National Weather Service: Excessive Heat Warning in Seattle and vicinity.
See More
HOURLY FORECAST
Now 10AM 11AM 12PM 1PM
79° 79° 82° 85° 85°
10-DAY FORECAST
Today 68° 93°
Fri 67° 95°

Fig:1

2. Feature availability and data sources in the Weather app

- *The Weather app includes a number of features that provide information about current and forecasted weather. ...*
- *10-day forecast. ...*
- *Severe weather information. ...*
- *Next-hour precipitation. ...*
- *Air quality. ...*
- *Maps. ...*
- *Learn more about the Weather app. ...*
- *Data sources.*

3.Great features cycle:

- *Great weather radar with a- The weather channel: temperature, wind, air sunshine, humidity, dew point, precipitation, visibility, atmosphere pressure, water, sunrise sunset, storm, storm shield, rain alert in one wetter app.*
- *Hourly or daily prediction: we offer 7 days info, the weather now, hourly weather free in each hour, today's weather, tomorrow's weather.*
- *Animated weather conditions with live background images.*
- *Hourly and weekly forecastle, especially hourly weather item for next 7 days.*
- *World weather report: we provide worldwide weather forecast*
- *Weather alerts: provide local weather alerts 3 times a day.*
- *No GPS: not a problem, app can detect network location, not so accurate but its ok for some cases*
- *Storm warning & notification: Storm radar, storm tracker, tornado warning and rain alarm - rain radar*
- *Reporting: the weather news can show up every day if you enable it.*
- *Sunrise time, sunset time & water time*
- *Temperature converter: Temperature free switching between Celsius and Fahrenheit, auto-detect your country should use Celsius or Fahrenheit for default settings.*
- *Wind speed and wind direction in different units*
- *Wind guru tool: wind forecast by wind speed meter, wind finder*
- *1 day, 7 days future prediction with accurate ultimo, plus tempo data for future hourly weather.*
- *Weather widget (weather on home screen) and ongoing notification with forecast bar, multiple place on widgets.*
- *Auto reload data for notification even app is in underground.*
- *Weather notification bar: Keeps weather running underground for real-time, you can see the temperature on android system bar without opening app*
- *Lock screen with info: temps, rain, clouds & clock widget weather.s*
- *Track the weather in multiple locations Chance of rain, moon phrase, moon animated maps*

4. Literature Survey

- *Previous systems that existed are only collections of climate data or transmission of these data using ZigBee or GSG or Wi-Fi or some remote mechanism. All these system through they measure the same er but they lack one common things & that is accuracy. People need accurize weather condition of the area they live in. They need to know the weather so that they can thrive and adapt according to it.*
- *Other system collects data and product tomorrow's weather data like that No patter, no observation are mode. This makes the production emir proce. this method is applicable only to places where there are not so many weather fluctuations occurring is the area i.e. its stable throughout. Since normal prediction would fail when the outlines are more.*
- *Nowadays, weather station one heavy instruments to determine the weather of the city. these instruments court high and their occur is not too many to rely on.*

5. CONCLUSION

- *Weather plays a major role in our daily life, and without the meteorologist and forecaster we would have difficulty planning our daily activities. As we can see, the weather is not a simple subject like we may have been thinking. The study of weather phenomenon requires the use of science, math, and different types of equipment and technology and data. Even with all these equipment, data, and observation tools, the weather continues to be a topic to study because it is constantly changing. Meteorologist and forecasters predict the weather and its possible changes, but in reality, weather is still unpredictable*