

Numerical Models Practice Assignment

Introduction

According to the National Centers for Environmental Information (NCEP), numerical weather prediction data are the form of the weather model data used on a day-to-day basis. NWP focuses on taking current observations of data and processing these data with computer models to forecast the future state of weather. Knowing the current state of the weather is just as important as the numerical computer models processing the data. Current weather observations serve as input to the numerical computer models through a process known as data assimilation to produce the outputs of temperature, precipitation and hundreds of other meteorological elements from the oceans to the top of the atmosphere.

We use the following models:

1. **Global Forecast System (GFS):** The GFS model is a couple weather forecast model, composed of four separate models that work together to provide an accurate picture of weather conditions. GFS covers the entire globe down to a horizontal resolution of 28 km.
2. **North American Mesoscale (NAM):** The NAM is a regional weather forecast model covering North America down to a horizontal resolution of 12 km. Dozens of weather parameters are available from the NAM grids, from temperature and precipitation to lightning and turbulent kinetic energy.

3. Based on this data only, predict the following for KJFK.

	September 15	September 16
Maximum Temperature (F)		
Minimum Temperature (F)		
Precipitation (Y/N)		

4. In one or two sentences, justify your reasoning.

Part 2: KLAX

1. Look at the numerical model data for KLAX.

GFS MOS (MAV)

KLAX	GFS MOS GUIDANCE														9/14/2019 0600 UTC						
DT	/SEPT 14				/SEPT 15				/SEPT 16												
HR	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	00	06
X/N					83				68				81				65				77
TMP	69	72	80	79	76	72	72	70	69	71	78	77	74	69	68	67	66	68	74	72	66
DPT	59	58	55	59	59	59	60	60	59	59	57	60	61	61	61	62	61	61	59	60	61
CLD	CL	FW	CL	CL	FW	FW	CL	CL	SC	SC	FW	SC	BK	BK	SC	SC	BK	BK	BK	BK	SC
WDR	07	10	26	26	26	25	24	24	25	14	25	26	26	25	24	24	23	16	25	26	25
WSP	02	03	06	09	10	07	03	02	02	03	07	10	10	06	04	06	03	04	06	10	05
P06			1		0		0		0		0		0		0		0		0	0	2
P12					1				1				0				0				0
Q06			0		0		0		0		0		0		0		0		0	0	0
Q12					0				0				0				0				0
T06		0/	0	0/	0	0/	0	0/	0	0/	0	2/	0	0/	0	1/	1	2/	0	0/	0
T12					0/	0			0/	2			2/	5			3/	1	2/	3	
POZ	1	1	0	0	0	0	1	1	1	0	1	0	0	0	1	0	0	0	0	0	1
POS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYP	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
CIG	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	5	8	4	8
VIS	7	7	7	7	7	7	7	7	5	7	7	7	7	7	7	7	7	7	7	7	7
OBV	N	N	N	N	N	N	N	N	N	BR	N	N	N	N	N	N	N	N	N	N	N

NAM MOS (MET)

KLAX	NAM MOS GUIDANCE														9/14/2019 1200 UTC						
DT	/SEPT 14				/SEPT 15				/SEPT 16						/SEPT 17						
HR	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	06	12
N/X							67				80				66				75		64
TMP	80	80	77	72	71	70	69	70	77	77	75	70	69	68	68	67	72	73	70	68	65
DPT	61	62	63	63	63	64	63	61	60	61	61	63	63	63	62	63	62	62	62	61	59
CLD	CL	CL	FW	CL	CL	CL	CL	FW	SC	BK	BK	SC	BK	SC	BK	BK	BK	BK	BK	SC	SC
WDR	27	26	26	25	19	22	23	19	26	26	26	25	23	20	17	15	25	25	25	24	03
WSP	07	10	11	07	03	02	02	02	07	10	10	06	04	05	03	05	07	10	10	05	03
P06			0		6		6		1		0		5		1		11		8	3	0
P12						6				4				5				17			3
Q06			0		0		0		0		0		0		0		0		0	0	0
Q12						0				0				0				0			0
T06		0/	0	0/	0	0/	0	0/	0	0/	0	1/	0	4/	0	2/	6	0/	2		
T12					0/	0			0/	0		0/	3	7/	1		4/	6			
POZ	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
POS	0	0	0	4	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYP	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
CIG	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	8	8	8	8	8	8
VIS	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7
OBV	N	N	N	N	N	N	N	HZ	N	N	N	N	N	N	N	N	N	N	N	N	N

3. Based on this data only, predict the following for KLAX.

	September 15	September 16
Maximum Temperature (F)		
Minimum Temperature (F)		
Precipitation (Y/N)		

4. In one or two sentences, justify your reasoning.

Verification

Let's see how good your forecast is.

Part 1: KJFK

1. Go to weather.gov and enter KJFK in the search box.
2. Scroll down to the bottom and select Local Climate.
3. On the next page, select Preliminary Monthly Climate Data and JFK Airport. Then click Go.

The screenshot shows the NOAA Observed Weather Reports search interface. At the top, there are navigation tabs: Observed Weather, Climate Locations, Climate Prediction, Climate Resources, Local Data/Records, Astronomical, and NOWData. Below these is a search bar with the text "Observed Weather Reports".

The main content area is divided into four sections:

- 1. Product »**: Includes radio buttons for Daily Climate Report (CLI), Preliminary Monthly Climate Data (CF6) (selected), Record Event Report (RER), Monthly Weather Summary (CLM), and Regional Summary (RTP). A link for Storm Event Database (NCDC) is also present.
- 2. Location »**: A dropdown menu is open, showing a list of locations: Central Park NY, LaGuardia Arpt NY, JFK Arpt NY (selected), Islip NY, Bridgeport CT, and Newark NJ.
- 3. Timeframe »**: Includes radio buttons for Most Recent (selected) and Archived Data. A list of months is shown: September 2019, August 2019, July 2019, June 2019, May 2019, and April 2019.
- 4. View »**: Contains a yellow "Go" button.

4. In the data table below, record the actual maximum/minimum temperature and precipitation for KJFK.

	September 15	September 16
Maximum Temperature (F)		
Minimum Temperature (F)		
Precipitation (Y/N)		

5. In one or two sentences, did your forecast verify? If not, why do you think it did not verify?

Part 2: KLAX

1. Return to weather.gov and enter 90210 in the search box.
2. Scroll down to the bottom of the page and select Local Climate.
3. On the next page, select Preliminary Monthly Climate Data and Los Angeles Airport. Then click Go.
4. In the data table below, record the actual maximum/minimum temperature and precipitation for KLAX.

	September 15	September 16
Maximum Temperature (F)		
Minimum Temperature (F)		
Precipitation (Y/N)		

5. In one or two sentences, did your forecast verify? If not, why do you think it did not verify?



