Synoptic Meteorology II: Lifecycle and Structure of Midlatitude Cyclones References

In class, we utilized the 24-26 January 2015 clipper and subsequent 26-27 January 2015 Nor'easter event to illustrate the lifecycles and structures of mature midlatitude cyclones. Figures referenced during lecture are presented on the following pages.

24-26 January 2015 Clipper

1200 UTC 24 January 2015 surface, 500 hPa, and 300 hPa charts:
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012412.gif
https://www.spc.noaa.gov/obswx/maps/500_150124_12.gif
https://www.spc.noaa.gov/obswx/maps/300_150124_12.gif

1200 UTC 24 January 2015 GOES-East infrared satellite image:
http://www2.mmm.ucar.edu/imagearchive1/satellite/IR/national/20150124/satellite_ir_national_201501241210.jpg

0000 UTC 25 January 2015 surface, 500 hPa, and 300 hPa charts:
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012500.gif
https://www.spc.noaa.gov/obswx/maps/500_150125_00.gif
https://www.spc.noaa.gov/obswx/maps/300_150125_00.gif

0000 UTC 25 January 2015 GOES-East infrared satellite image:
http://www2.mmm.ucar.edu/imagearchive1/satellite/IR/national/20150125/satellite_ir_national_201501250040.jpg

1200 UTC 25 January 2015 surface, 500 hPa, and 300 hPa charts:
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012512.gif
https://www.spc.noaa.gov/obswx/maps/500_150125_12.gif
https://www.spc.noaa.gov/obswx/maps/300_150125_12.gif

1200 UTC 25 January 2015 GOES-East infrared satellite image:
http://www2.mmm.ucar.edu/imagearchive1/satellite/IR/national/20150125/satellite_ir_national_201501251240.jpg

0000 UTC 26 January 2015 surface, 500 hPa, and 300 hPa charts:

http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012600.gif

https://www.spc.noaa.gov/obswx/maps/500_150126_00.gif

https://www.spc.noaa.gov/obswx/maps/300_150126_00.gif

0000 UTC 26 January 2015 GOES-East infrared satellite image:

http://www2.mmm.ucar.edu/imagearchive1/satellite/IR/national/20150126/satellite_ir_national_201501260040.jpg

26-27 January 2015 Nor'Easter

UW-Madison/CIMSS Satellite Blog infrared satellite image loop, 26-27 January 2015:
https://www.youtube.com/watch?v=I2D-OzZYqm0

Archived 1000-500 hPa thickness (dashed red/blue contours every 6 dam), sea-level pressure (solid black contours every 4 hPa), 250 hPa wind speed (color shading; kt), and precipitable water (grey shading; mm) for 15-31 January 2015:
http://www.atmos.albany.edu/student/heathera/slp_thick/nam/15_to_31_jan15.html

Archived NCEP surface analyses for 1800 UTC 26 January 2015 to 1500 UTC 27 January 2015:
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012618.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012621.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012700.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012703.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012706.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012709.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012712.gif
http://archive.atmos.colostate.edu/data/sfc/QYAA00/1501/sfcanl_us_bw_2015012715.gif

NCEP 850 hPa geopotential height (dam, solid contours) and temperature (°C, dashed contours) valid at 1200 UTC 27 January 2015:
http://archive.atmos.colostate.edu/data/misc/QHUA04/1501/15012713QHUA04.png

NCEP 700 hPa geopotential height (dam, solid contours) and temperature (°C, dashed contours) valid at 1200 UTC 27 January 2015:
http://archive.atmos.colostate.edu/data/misc/QHTA07/1501/15012713QHTA07.png

NCEP 500 hPa geopotential height (dam, solid contours) and temperature (°C, dashed contours) valid at 1200 UTC 27 January 2015:
http://archive.atmos.colostate.edu/data/misc/QHTA11/1501/15012713QHTA11.png

NCEP 300 hPa geopotential height (dam, solid contours), temperature (°C, dashed contours), and isotachs (thin dashed contours every 20 kt, >70 kt hatched) valid at 0000 UTC 27 January 2015:
http://archive.atmos.colostate.edu/data/misc/QHUA15/1501/15012701QHUA15.png

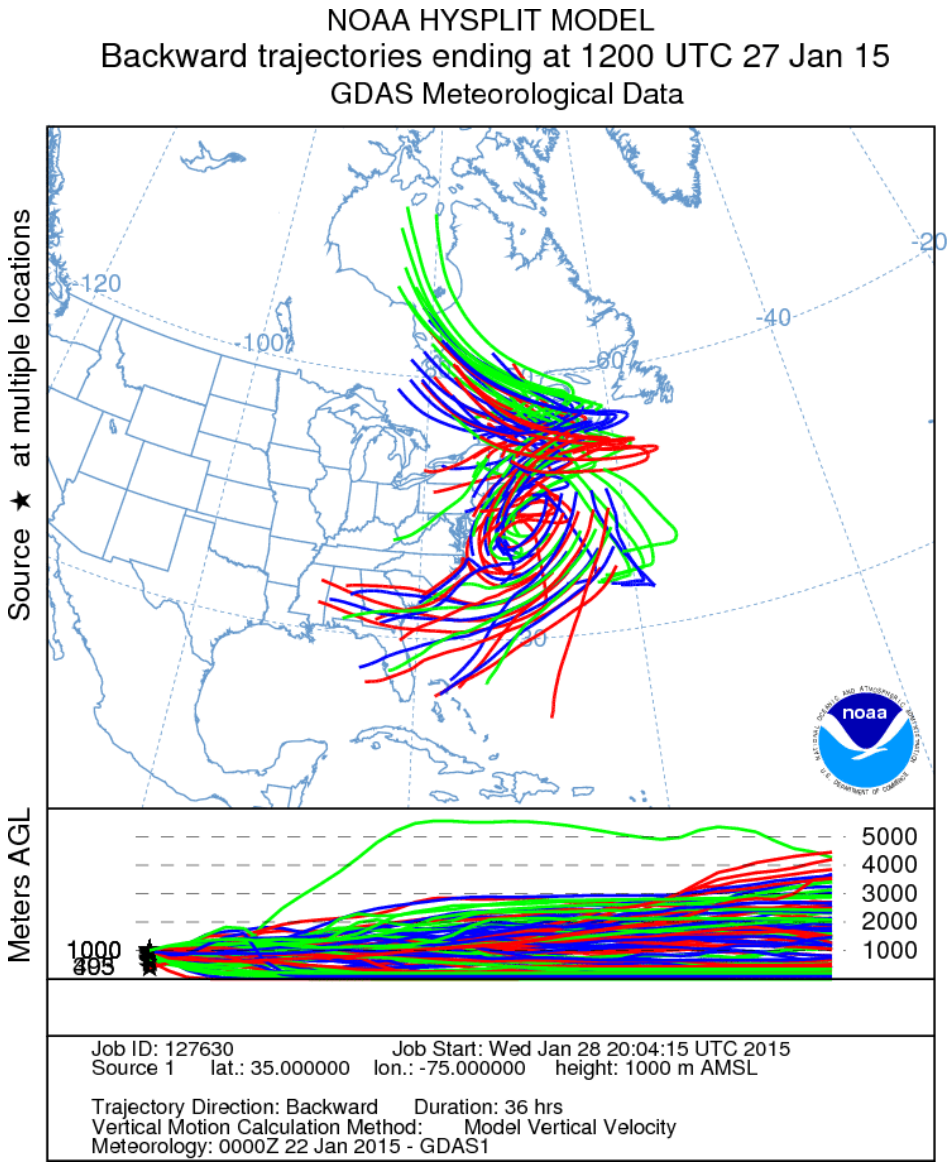

Figure 1. HYSPLIT backward trajectory output for the 26-27 January 2015 nor'easter. Backward trajectories are derived from GFS model analyses, extend backward 36 h starting from 1200 UTC 27 January 2015, and are released over a 1.5° latitude by 1.5° longitude grid between 35°N, 75°W and 47°N, 62°W at 1 km above sea level. The horizontal path followed by the backward trajectories is depicted at top, while a time-height cross section of trajectory altitude (time decreasing along the positive x-axis) is depicted at bottom.

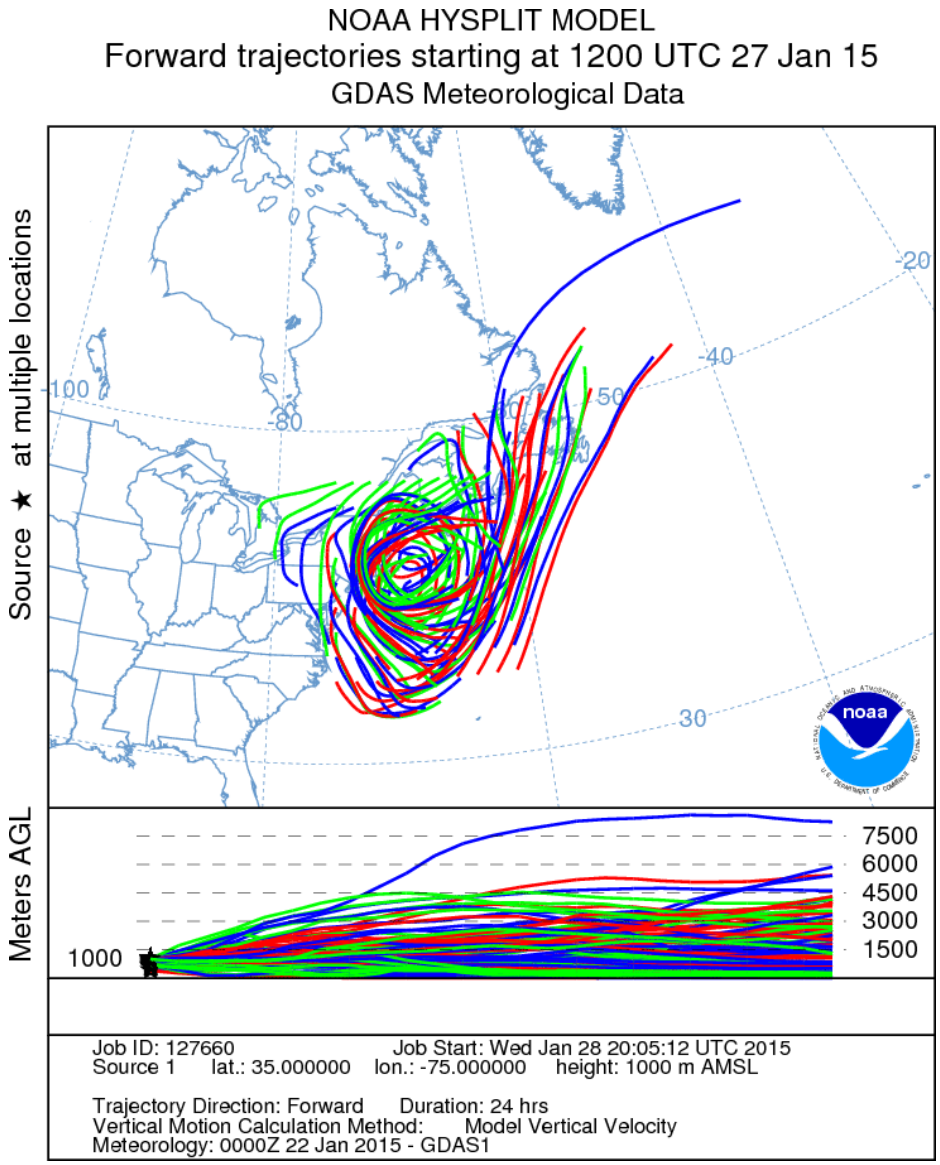

Figure 2. HYSPLIT forward trajectory output for the 26-27 January 2015 nor'easter. Forward trajectories are derived from GFS model analyses, extend forward 24 h starting from 1200 UTC 27 January 2015, and are released over a 1.5° latitude by 1.5° longitude grid between 35°N, 75°W and 47°N, 62°W at an altitude of 1 km. The horizontal path followed by the forward trajectories is depicted at top, while a time-height cross section of trajectory altitude (time increasing along the positive x-axis) is depicted at bottom.