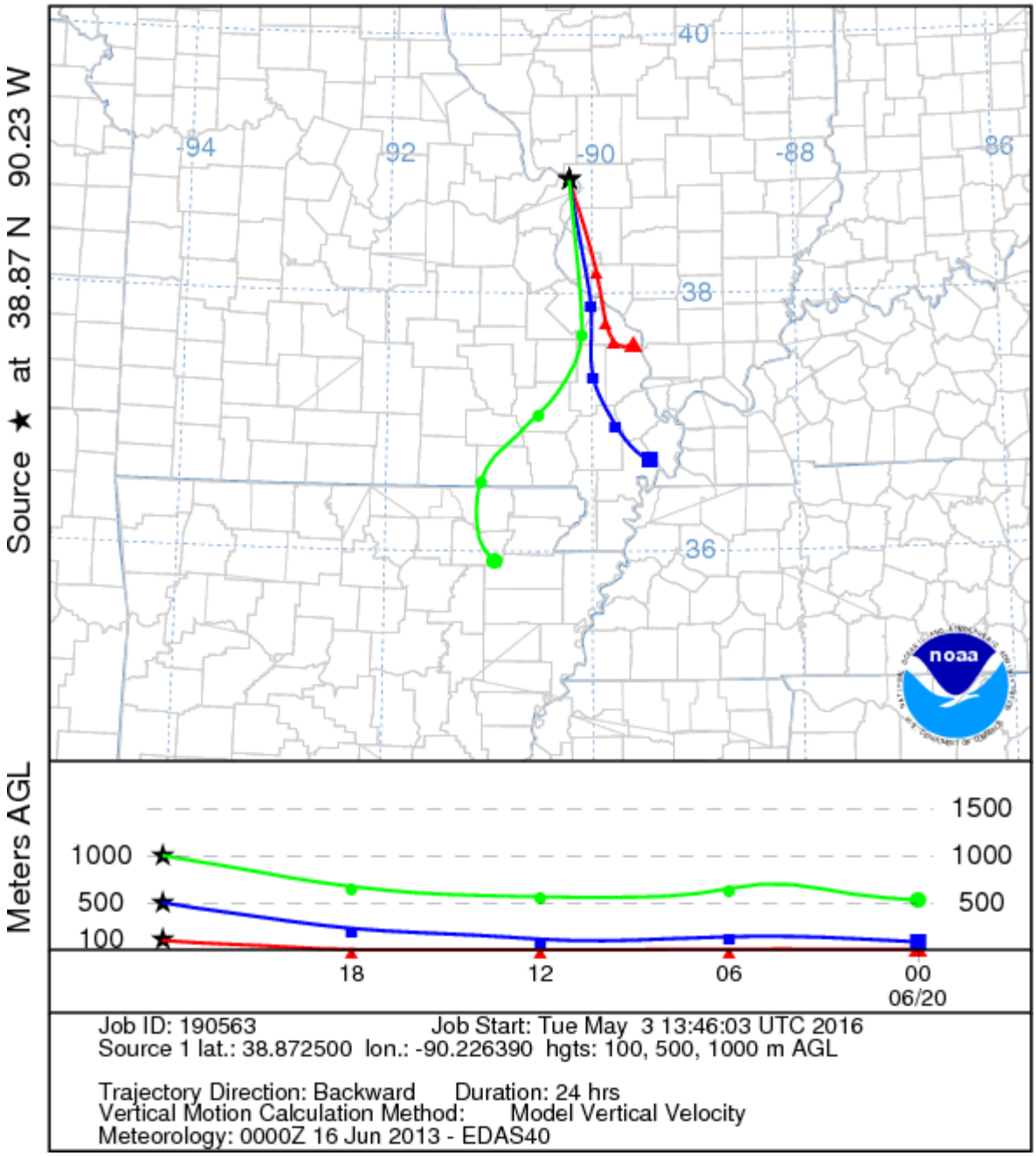
Appendix A – HYSPLIT Back Trajectories

HYSPLIT trajectories were created for the design value monitors for both the Missouri and Illinois side of the St. Louis areas. For the Missouri side, the design value monitor at West Alton is the endpoint for HYSPLIT trajectories on all days where the daily maximum 8-hour ozone concentration was 70 ppb or greater from 2013 to 2015 (14 dates). All trajectories are modeled with an end time of 0Z on the following date following the exceedance as that time corresponds to the evening on the exceedance day and is typically near the end of the 8-hour maximum ozone concentration. The program also created trajectories from the design value monitor in Illinois, Alton, where the daily maximum 8-hour ozone concentration was 70 ppb or greater (14 days) to look at possible contributions from Missouri. Of the modeled days for West Alton, the Alton monitor was also modeled for the same day ten out of fourteen times as concentrations are similar due to proximity. The Arnold West, Maryland Heights, and Orchard Farm monitors also exceeded on a single date, September 6, 2013, where both West Alton and Alton exceeded. The tables below list modeled dates by monitor location in chronological order.

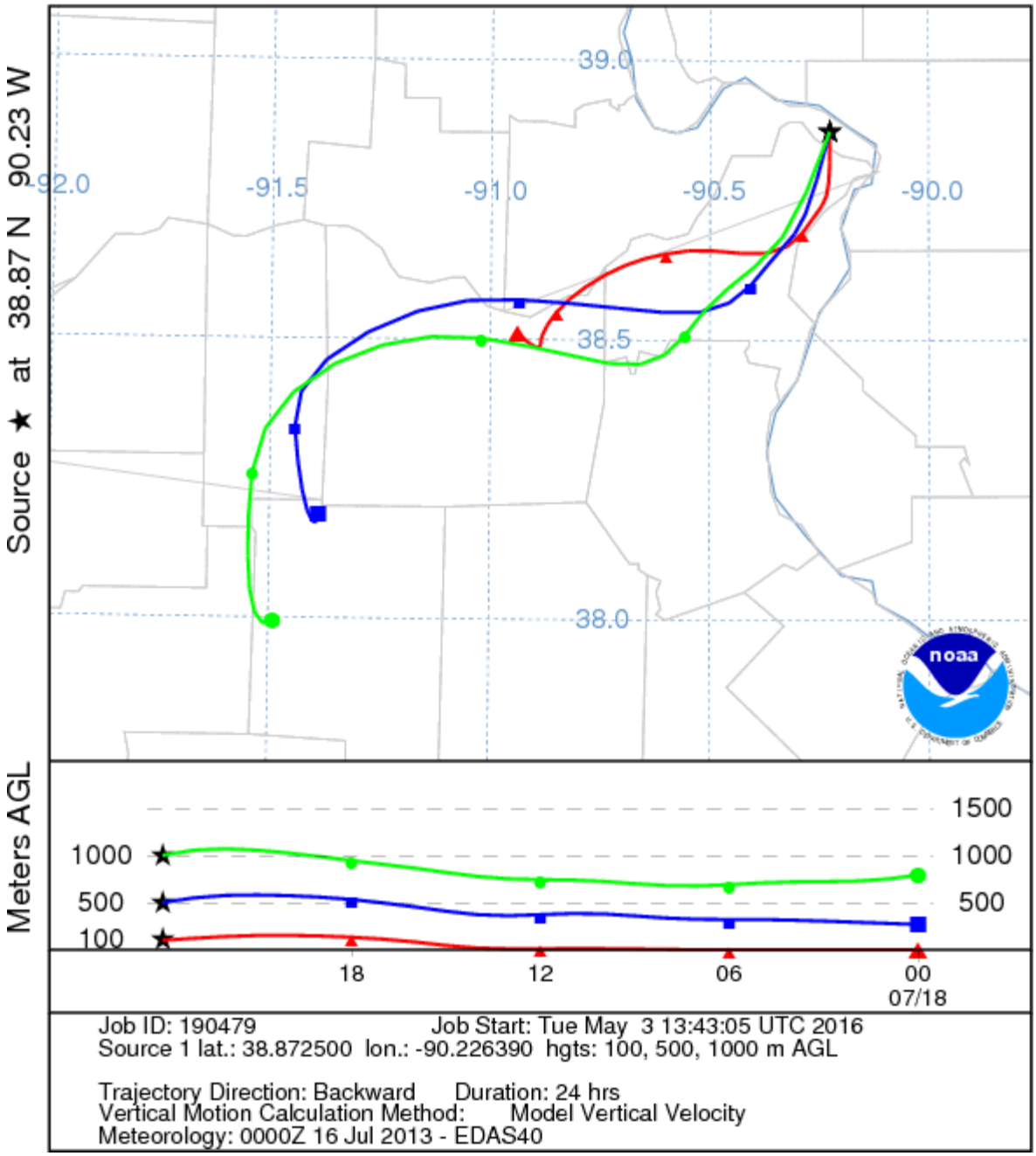
West Alton Monitor Days:

Trajectory Number	Date of Exceedance	Highest 8-Hour Ozone Monitor Value (ppb)
1	June 20, 2013	71
2	July 18, 2013	88
3	July 19, 2013	71
4	September 6, 2013	80
5	April 20, 2014	71
6	July 21, 2014	73
7	July 22, 2014	72
8	August 3, 2014	75
9	August 4, 2014	78
10	August 25, 2014	71
11	July 24, 2015	72
12	August 14, 2015	70
13	September 1, 2015	70
14	September 5, 2015	71

NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 21 Jun 13
EDAS Meteorological Data



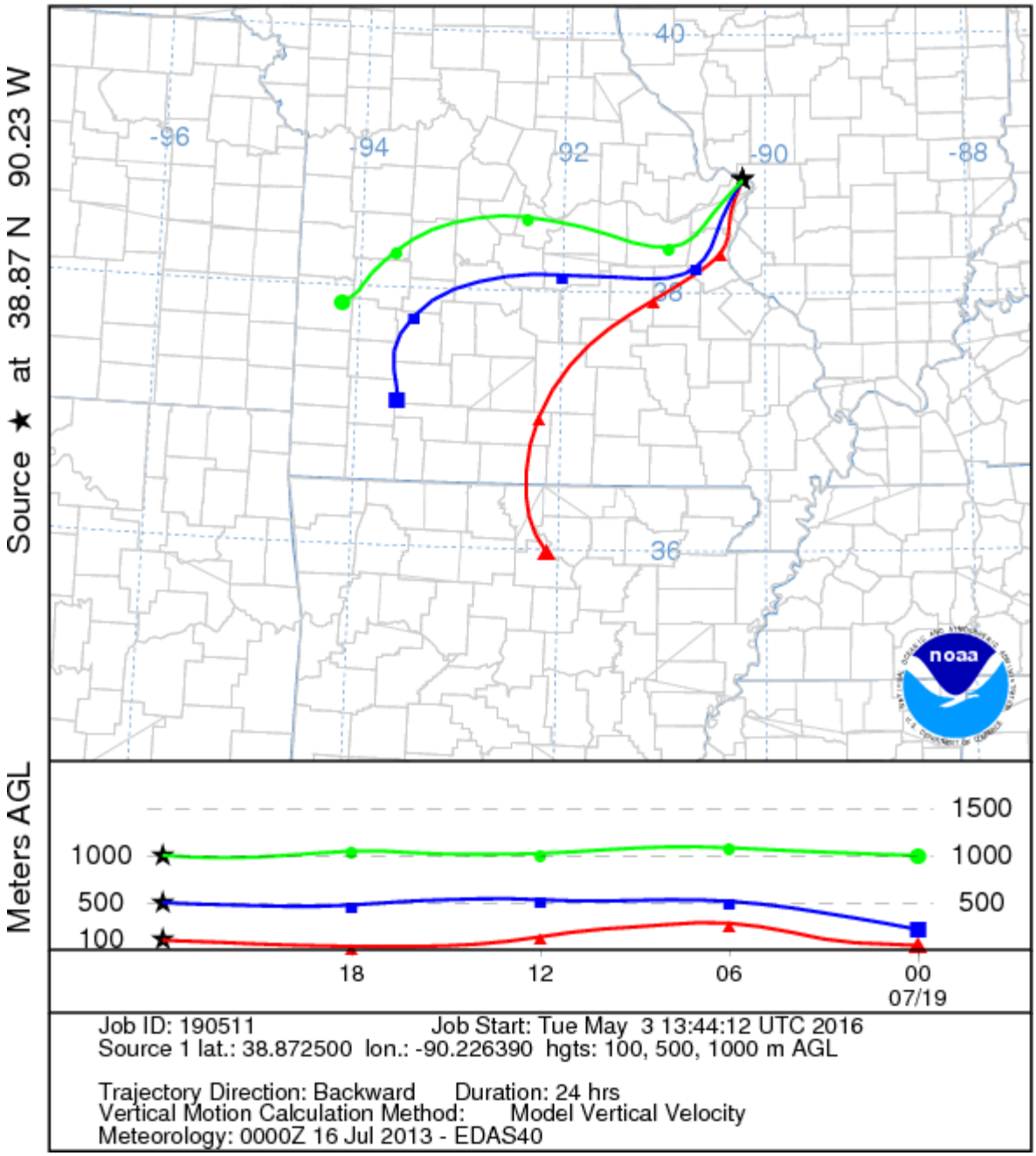
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 19 Jul 13
EDAS Meteorological Data



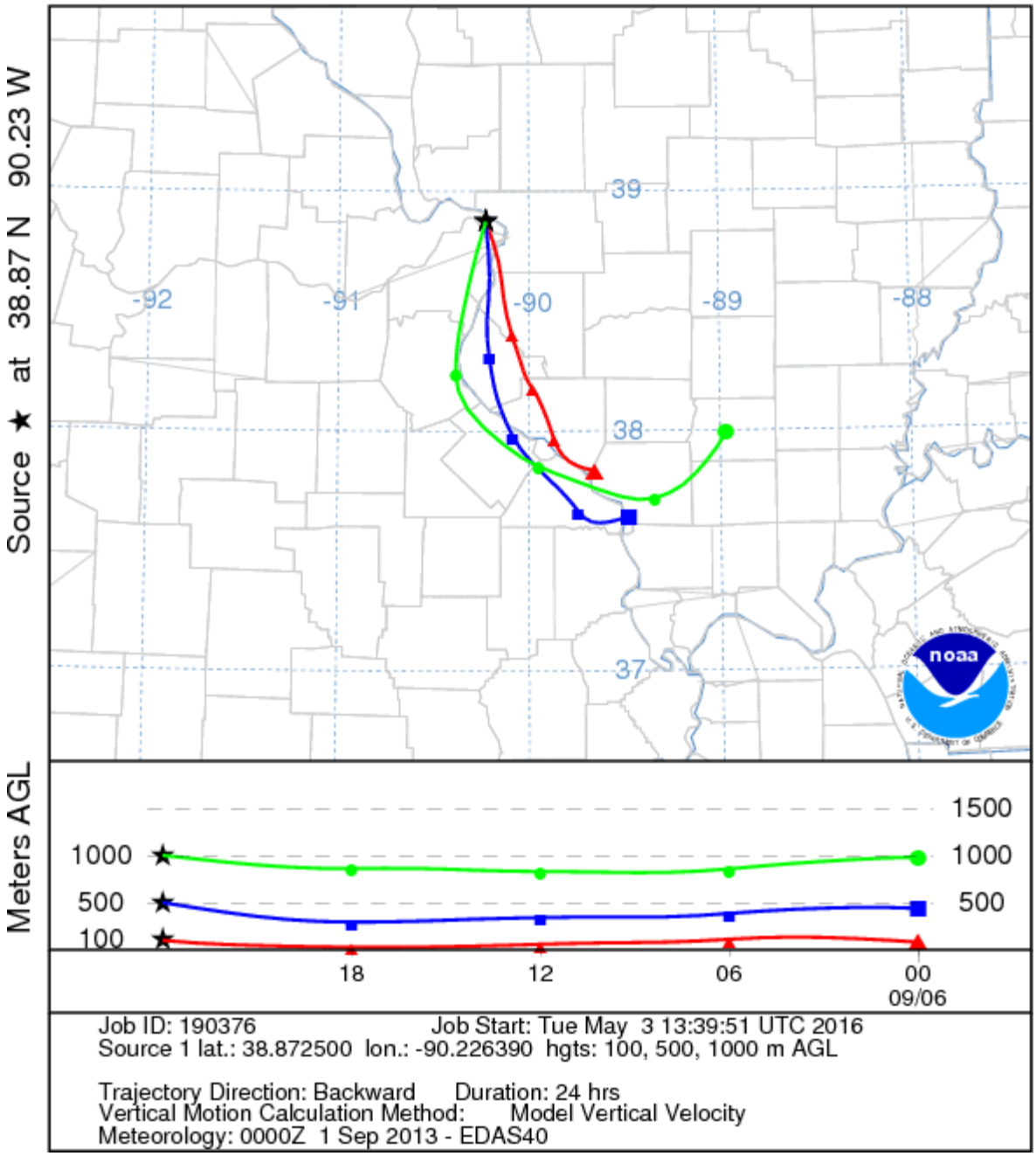
Job ID: 190479 Job Start: Tue May 3 13:43:05 UTC 2016
Source 1 lat.: 38.872500 lon.: -90.226390 hgts: 100, 500, 1000 m AGL

Trajectory Direction: Backward Duration: 24 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 16 Jul 2013 - EDAS40

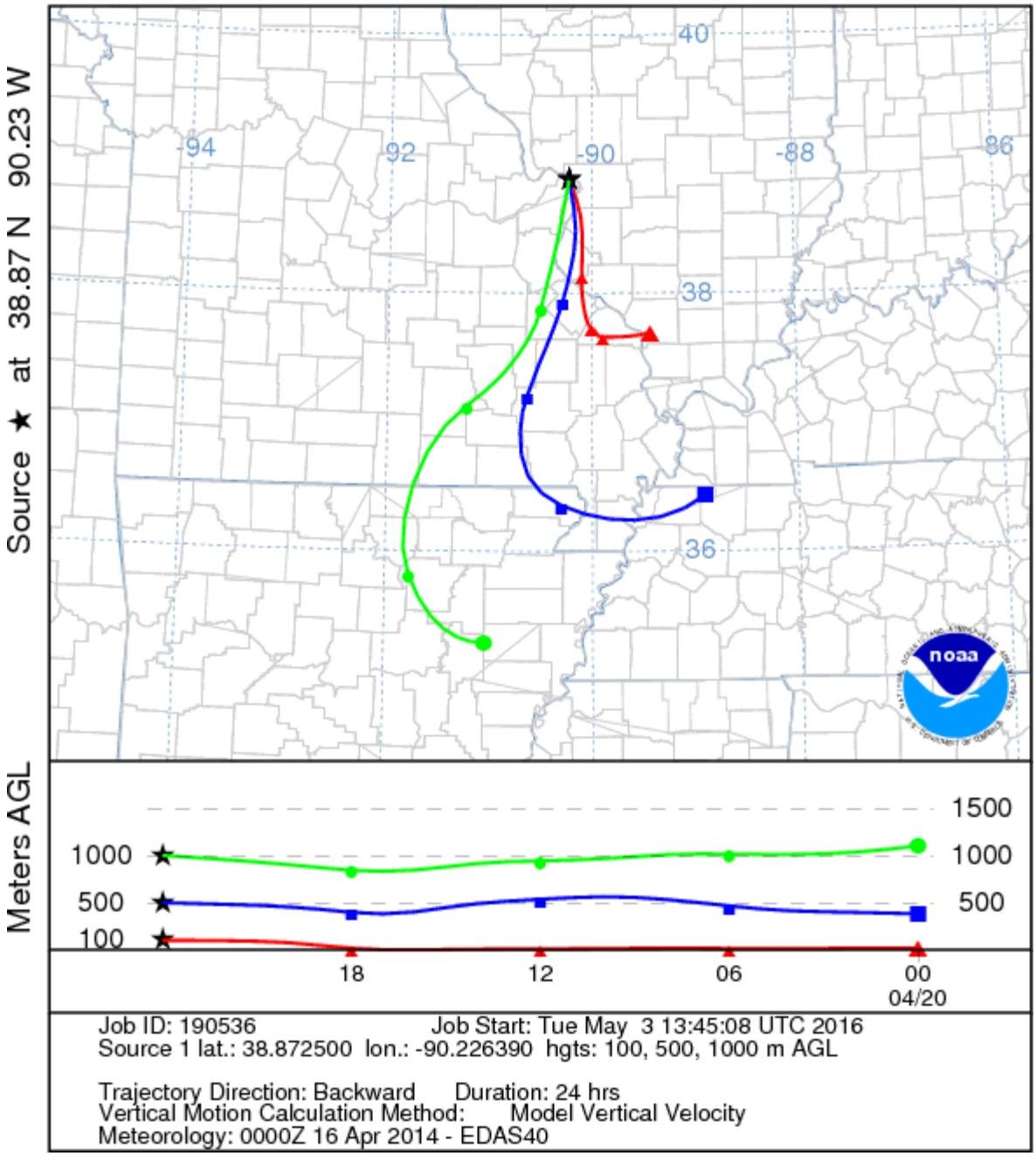
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 20 Jul 13
EDAS Meteorological Data



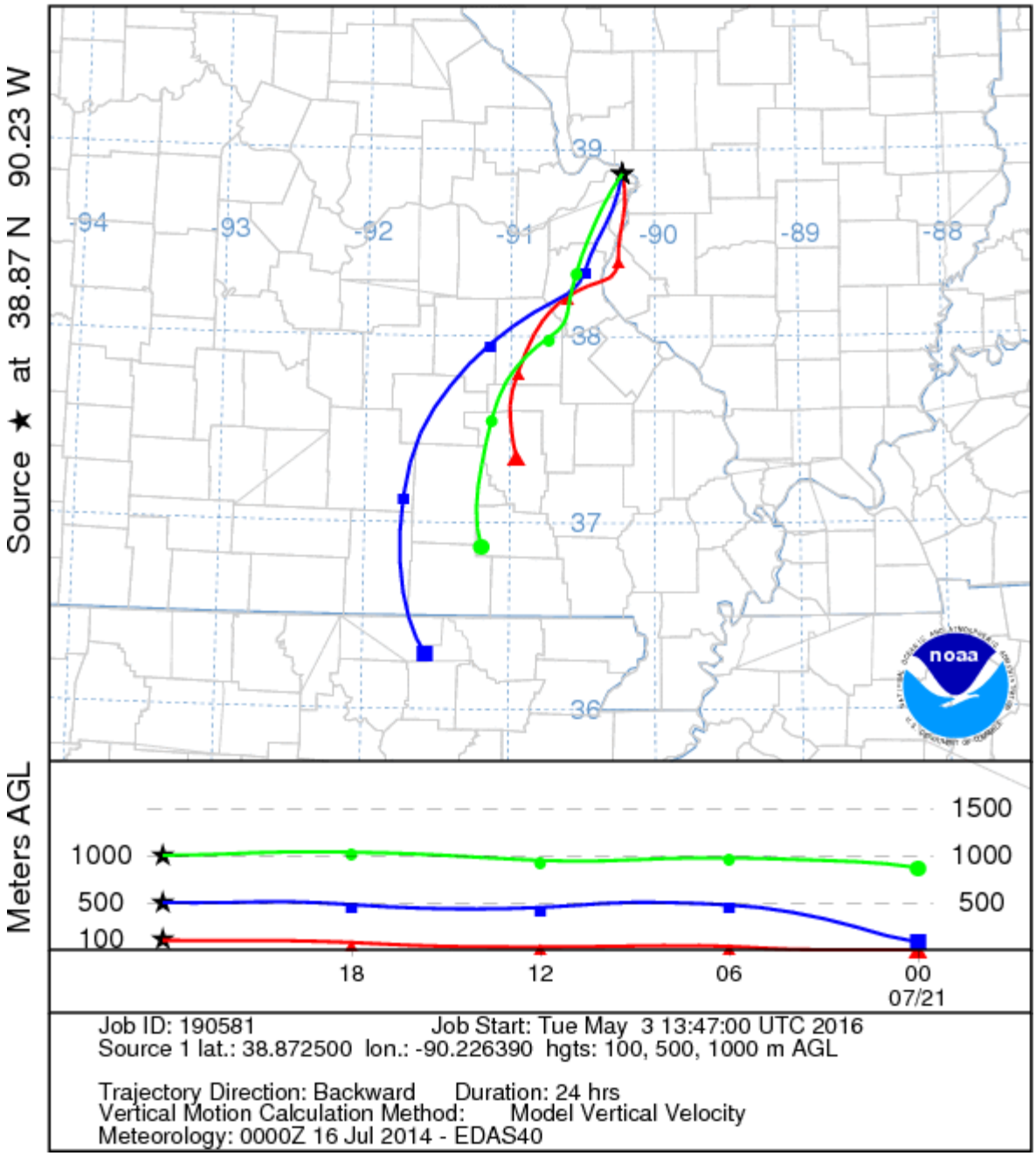
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 07 Sep 13
EDAS Meteorological Data



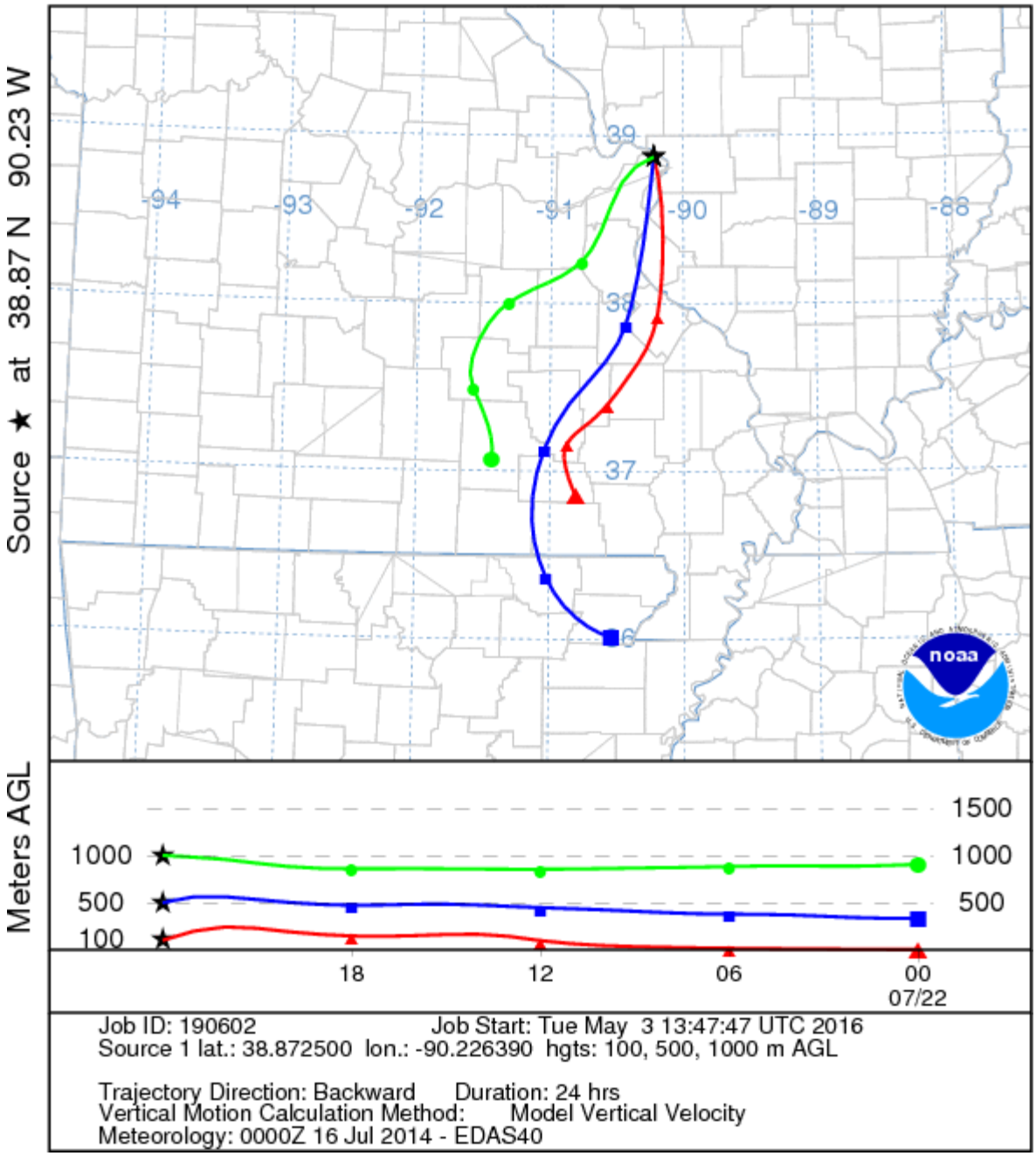
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 21 Apr 14
EDAS Meteorological Data



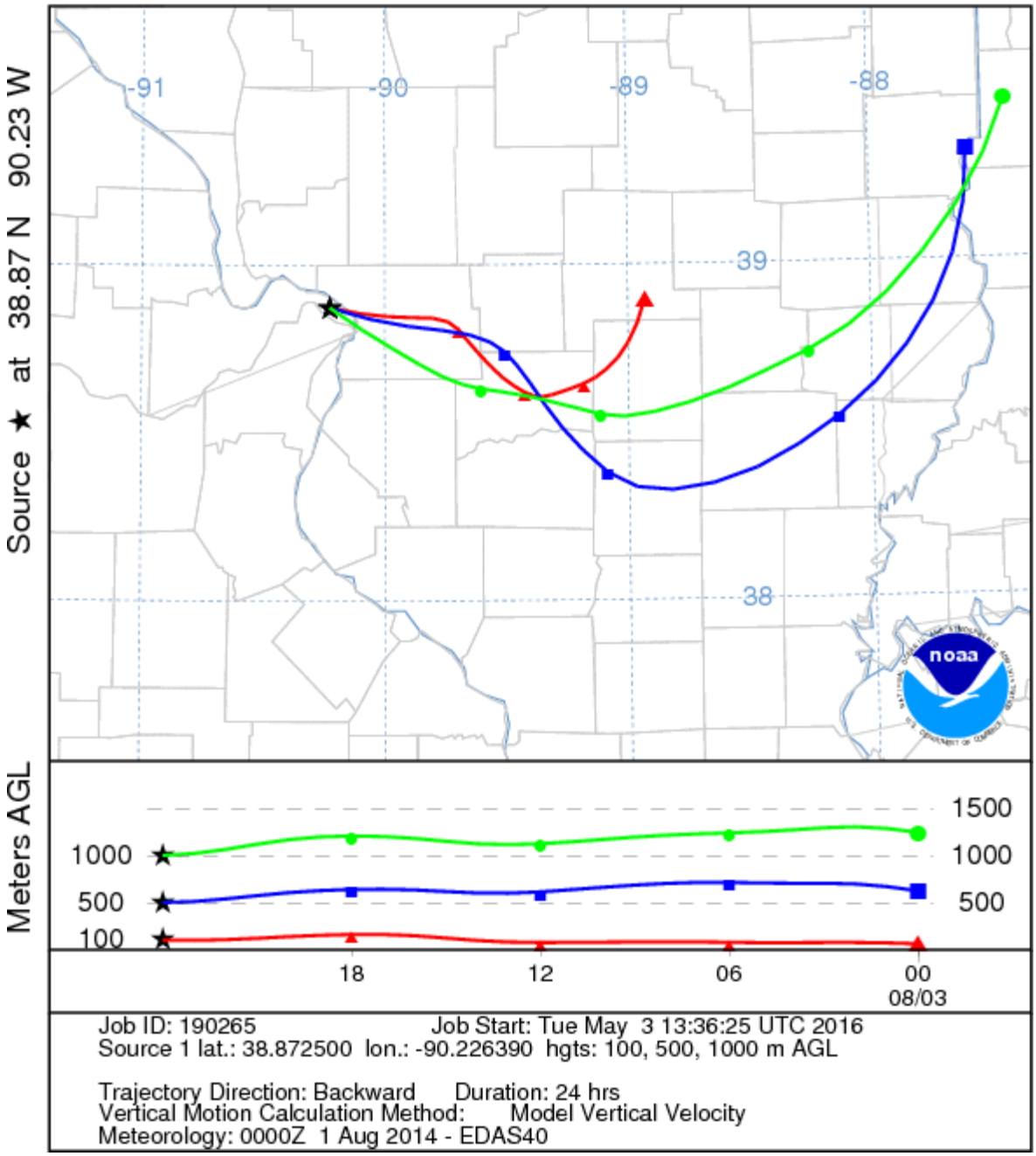
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 22 Jul 14
EDAS Meteorological Data



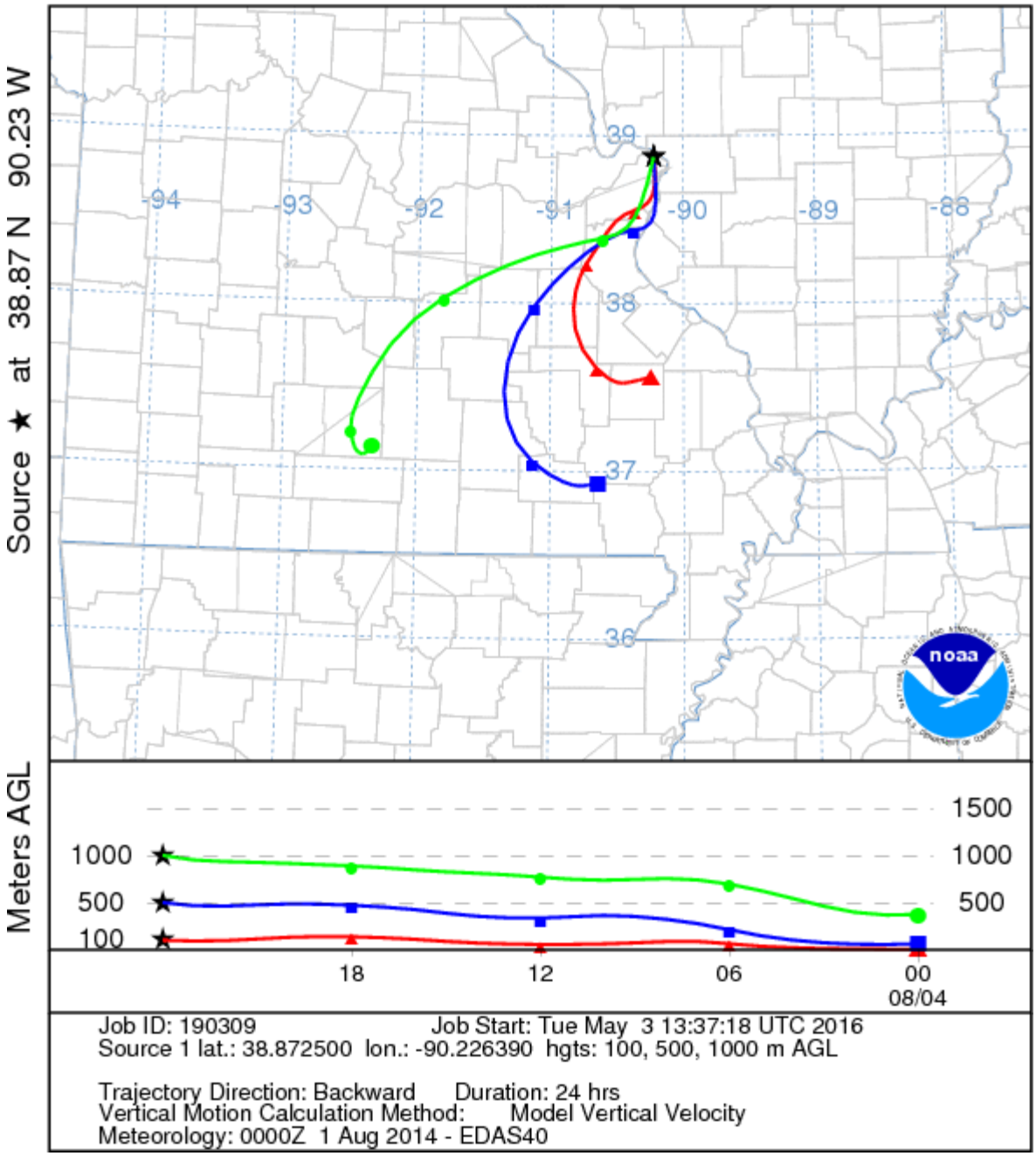
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 23 Jul 14
EDAS Meteorological Data



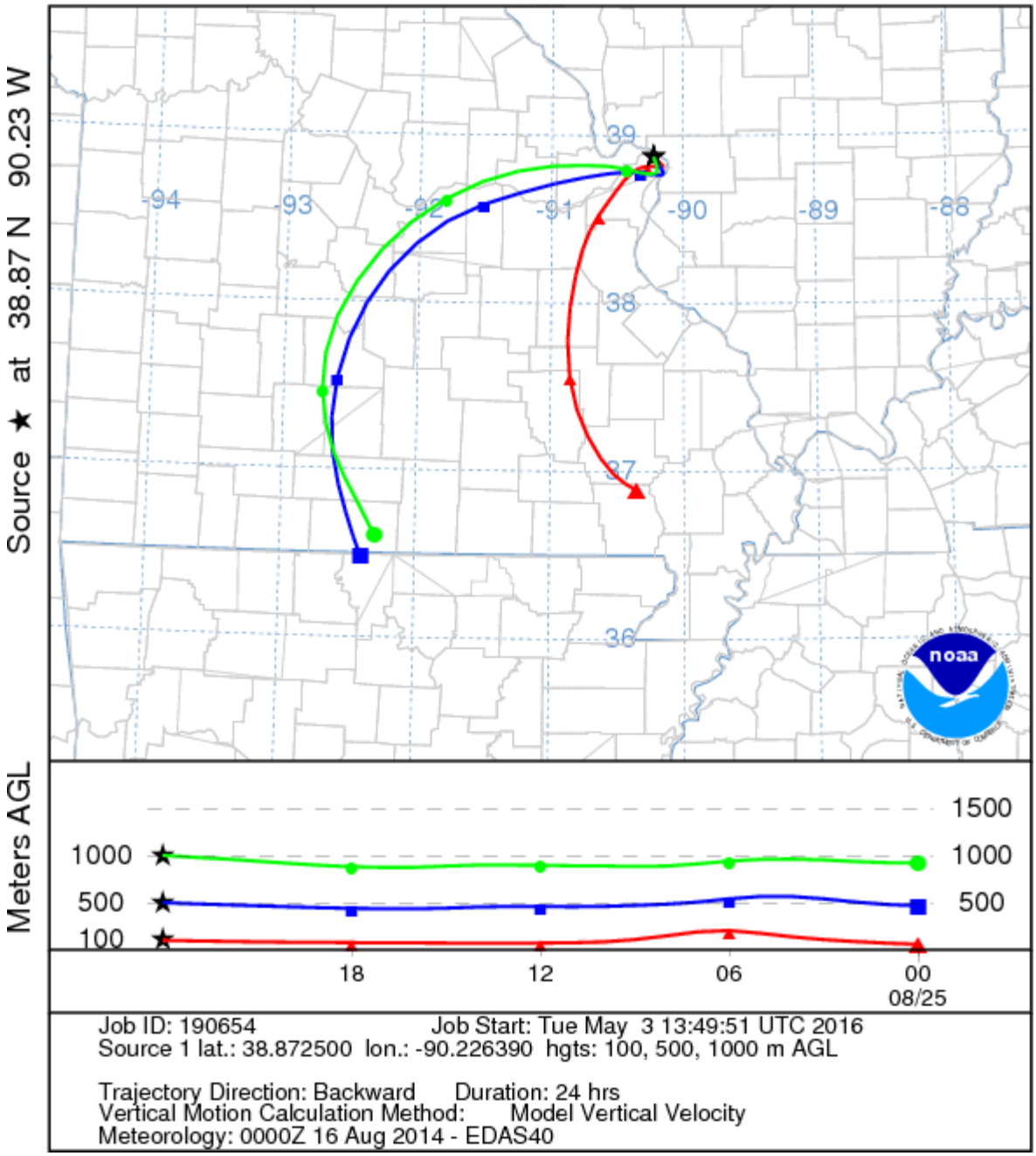
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 04 Aug 14
EDAS Meteorological Data



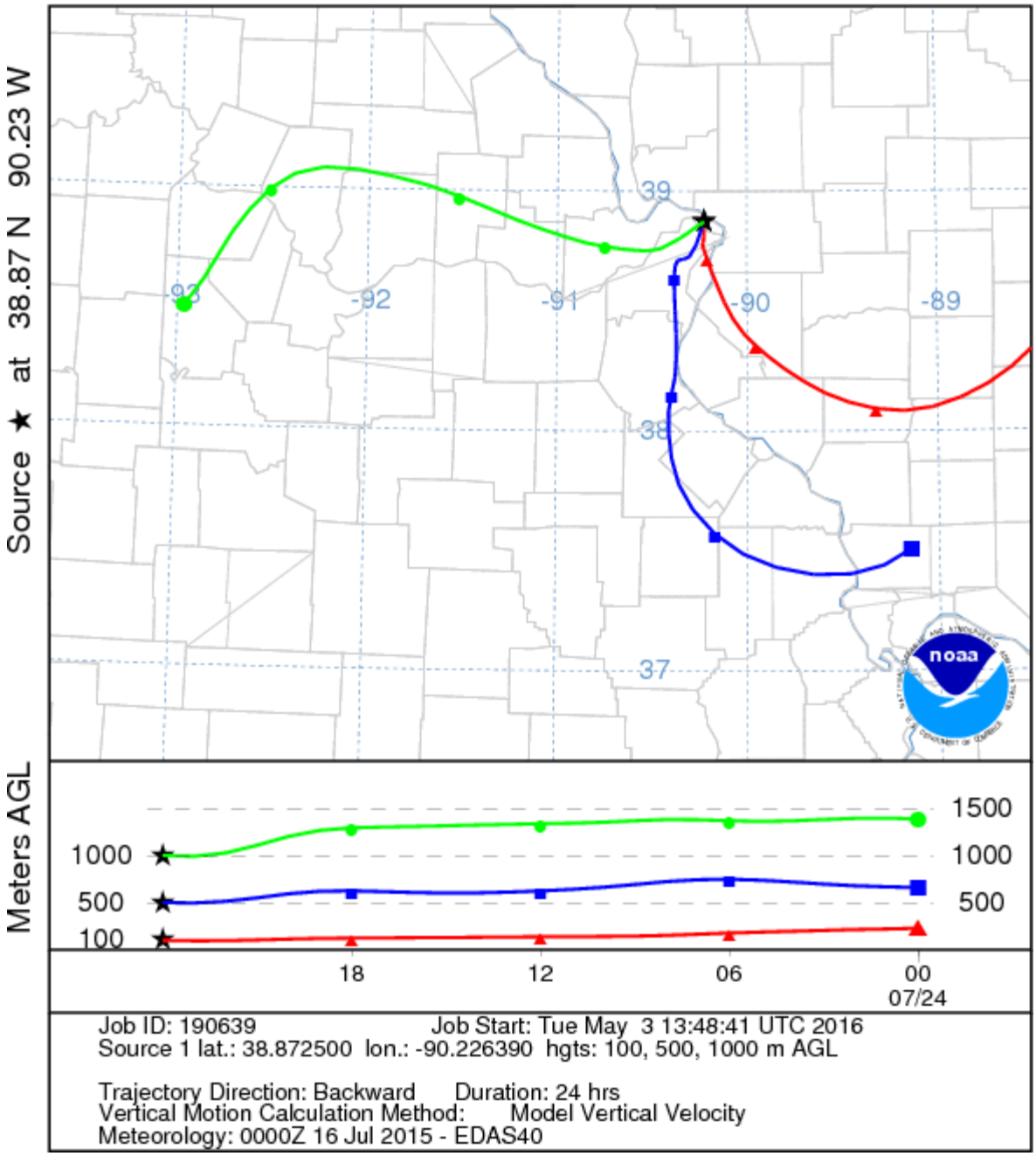
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 05 Aug 14
EDAS Meteorological Data



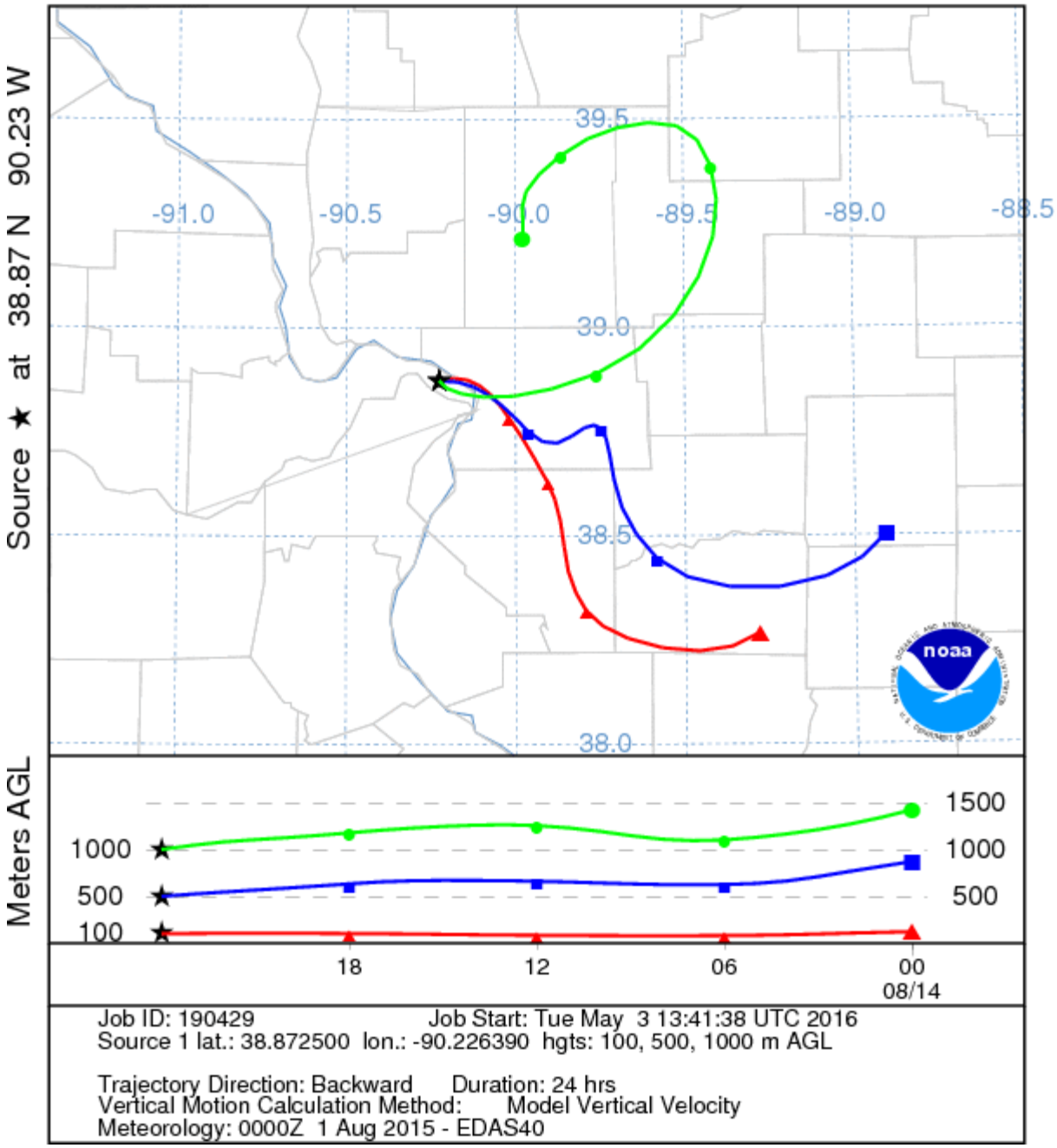
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 26 Aug 14
EDAS Meteorological Data



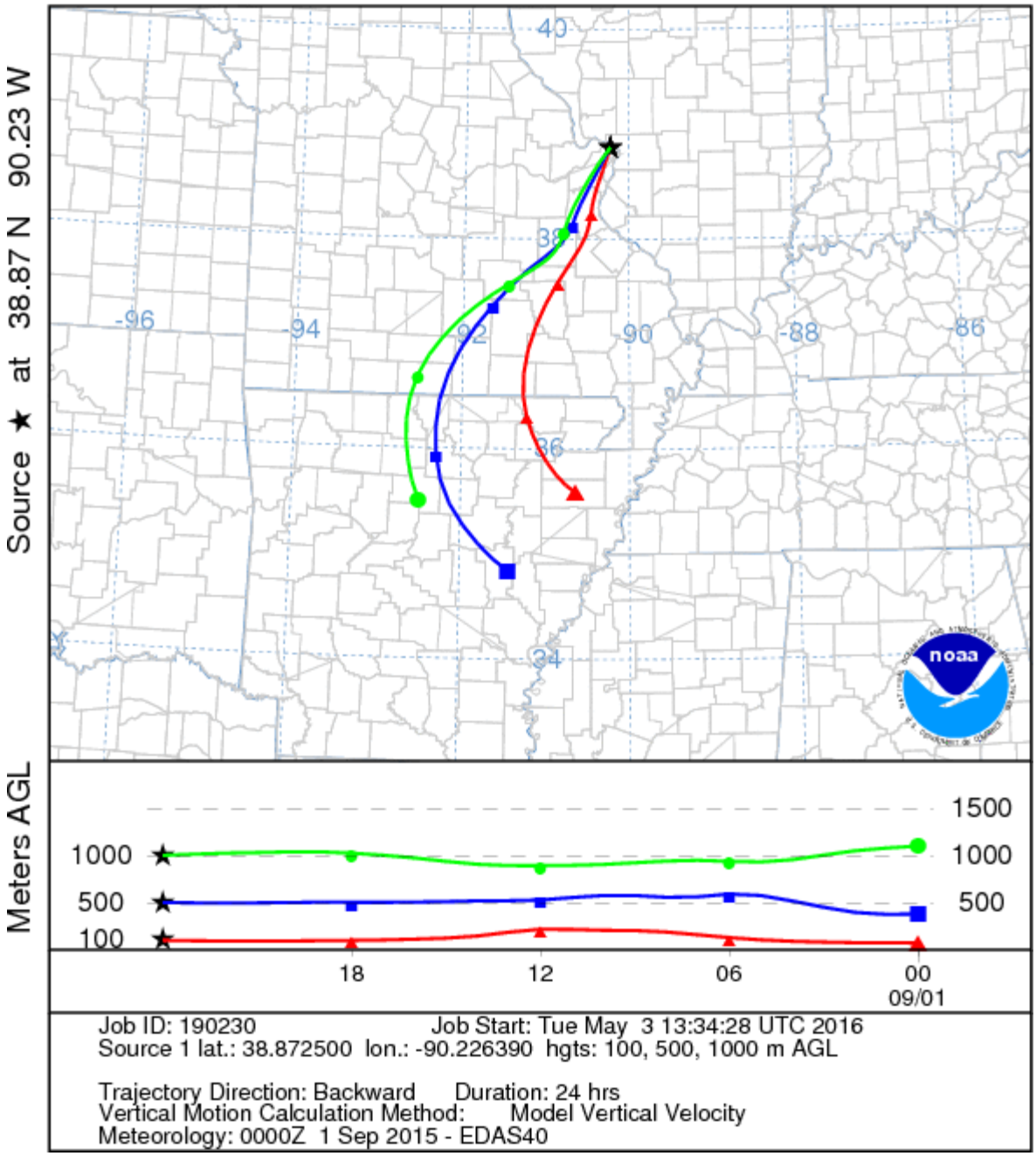
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 25 Jul 15
EDAS Meteorological Data



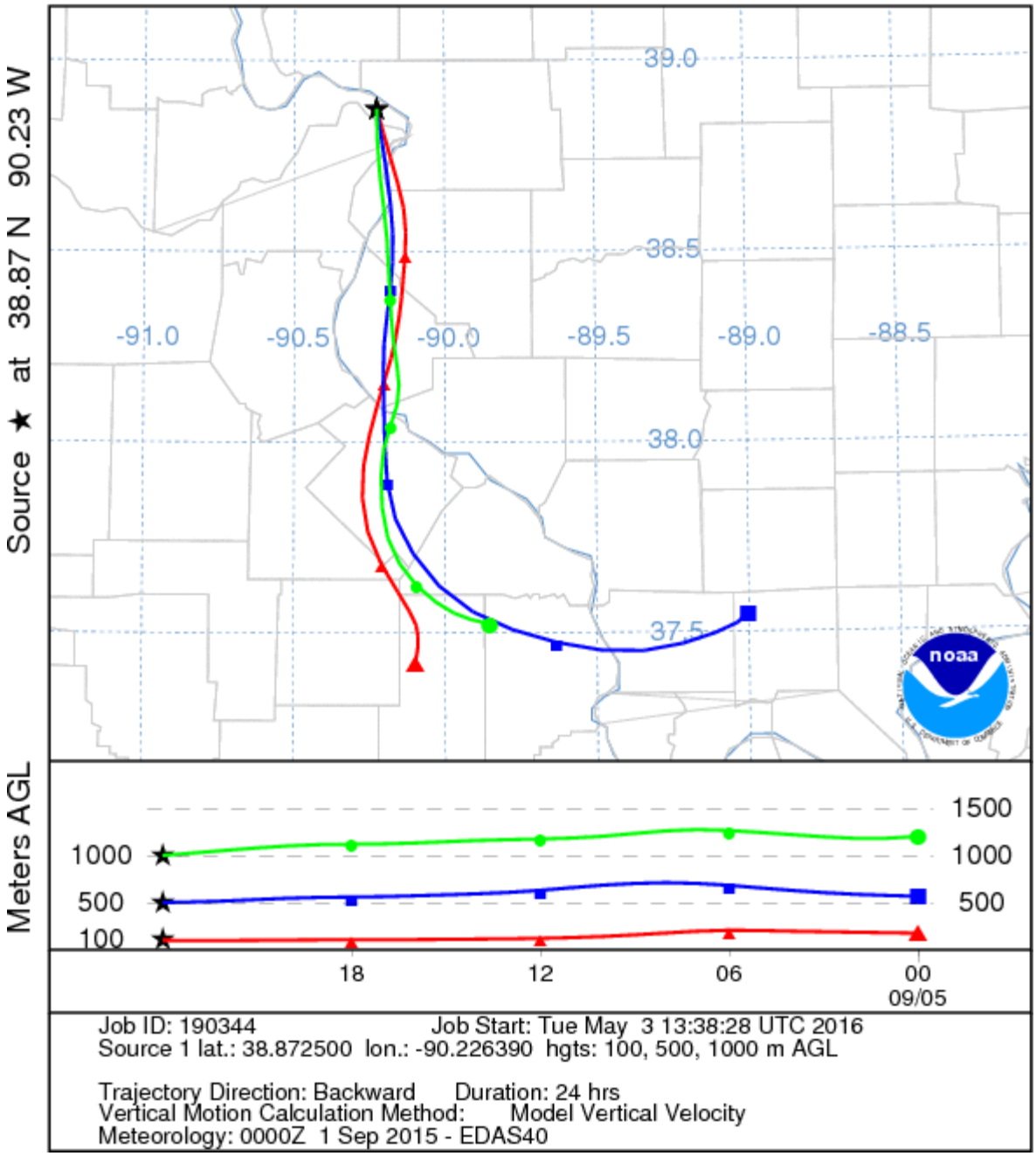
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 15 Aug 15
EDAS Meteorological Data



NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 02 Sep 15
EDAS Meteorological Data



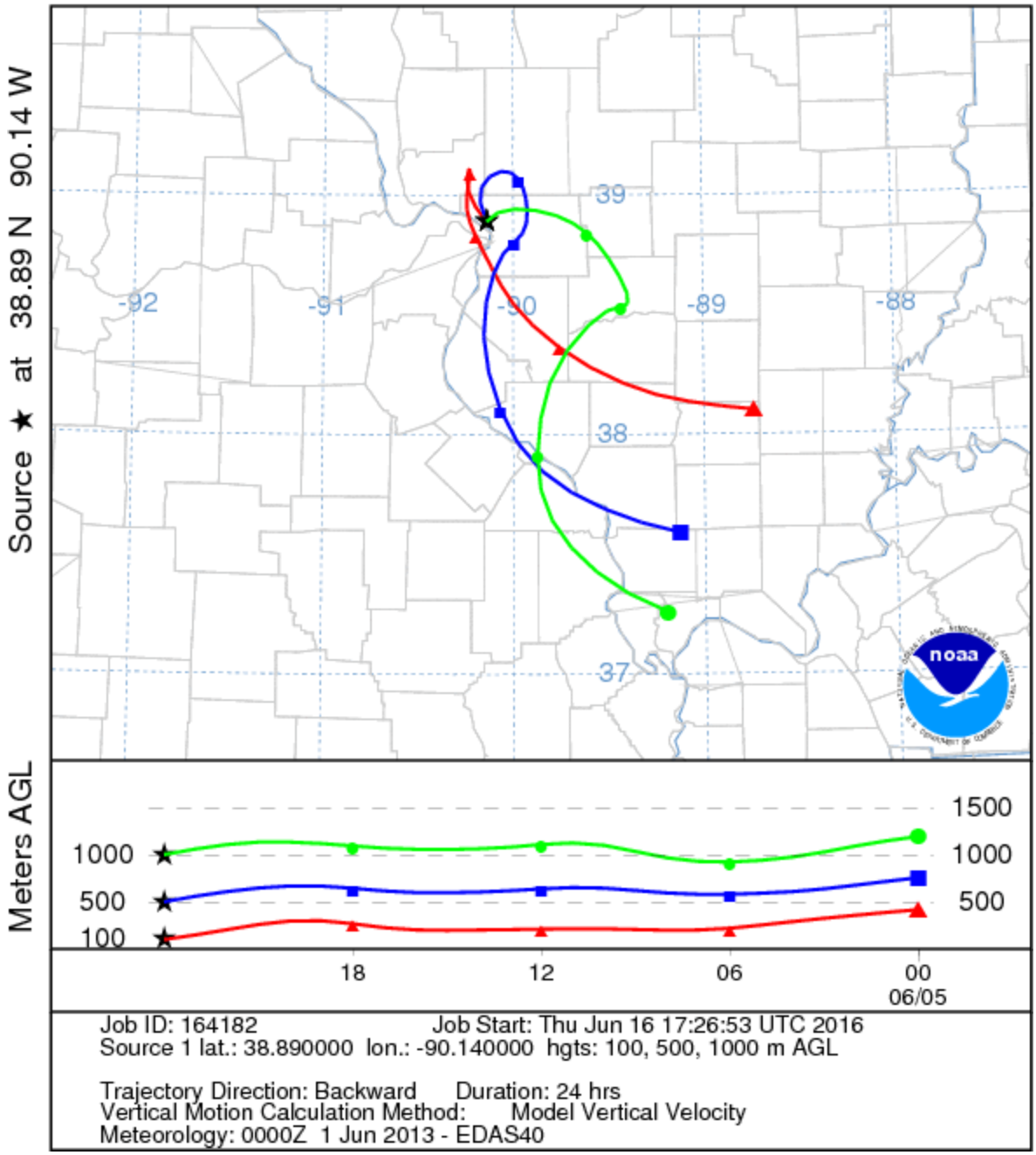
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 06 Sep 15
EDAS Meteorological Data



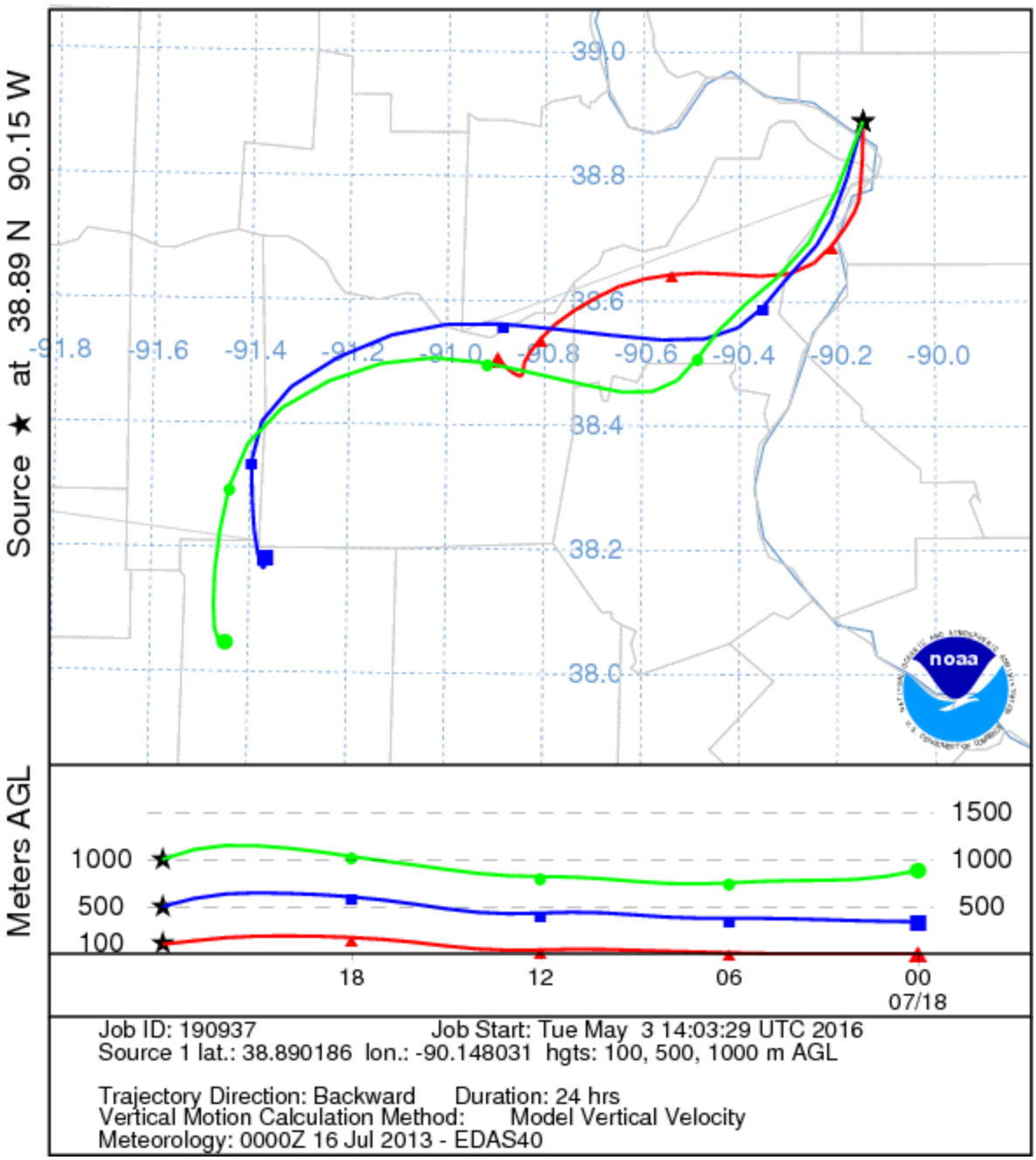
Alton Monitor Days:

Trajectory Number	Date of Exceedance	Highest 8-Hour Ozone Monitor Value (ppb)
1	June 5, 2013	72
2	July 18, 2013	78
3	July 19, 2013	70
4	September 6, 2013	75
5	September 9, 2013	74
6	July 21, 2014	70
7	July 22, 2014	74
8	August 3, 2014	71
9	August 4, 2014	80
10	August 25, 2014	74
11	September 26, 2014	72
12	July 24, 2015	71
13	August 14, 2015	74
14	September 4, 2015	71

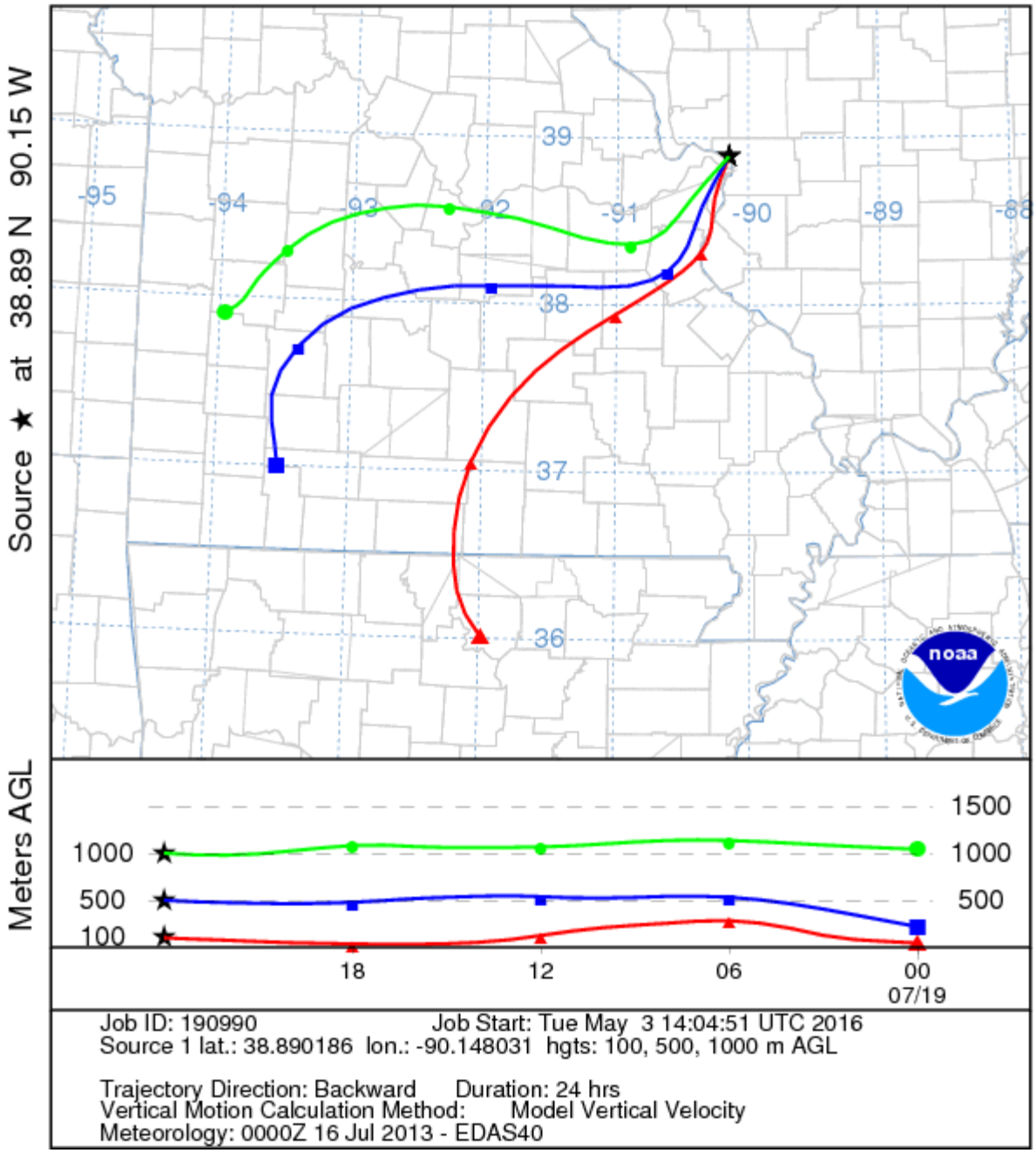
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 06 Jun 13
EDAS Meteorological Data



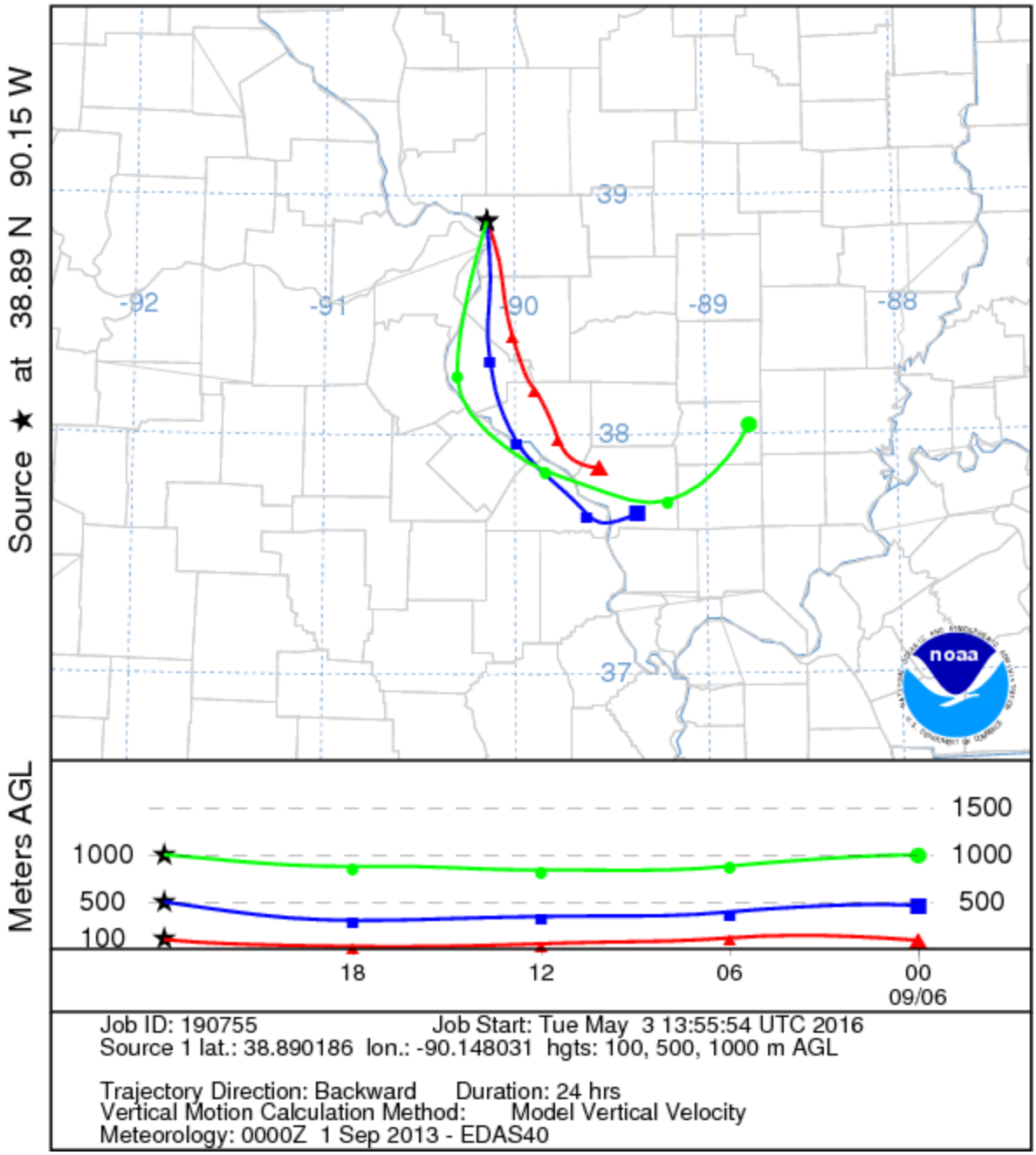
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 19 Jul 13
EDAS Meteorological Data



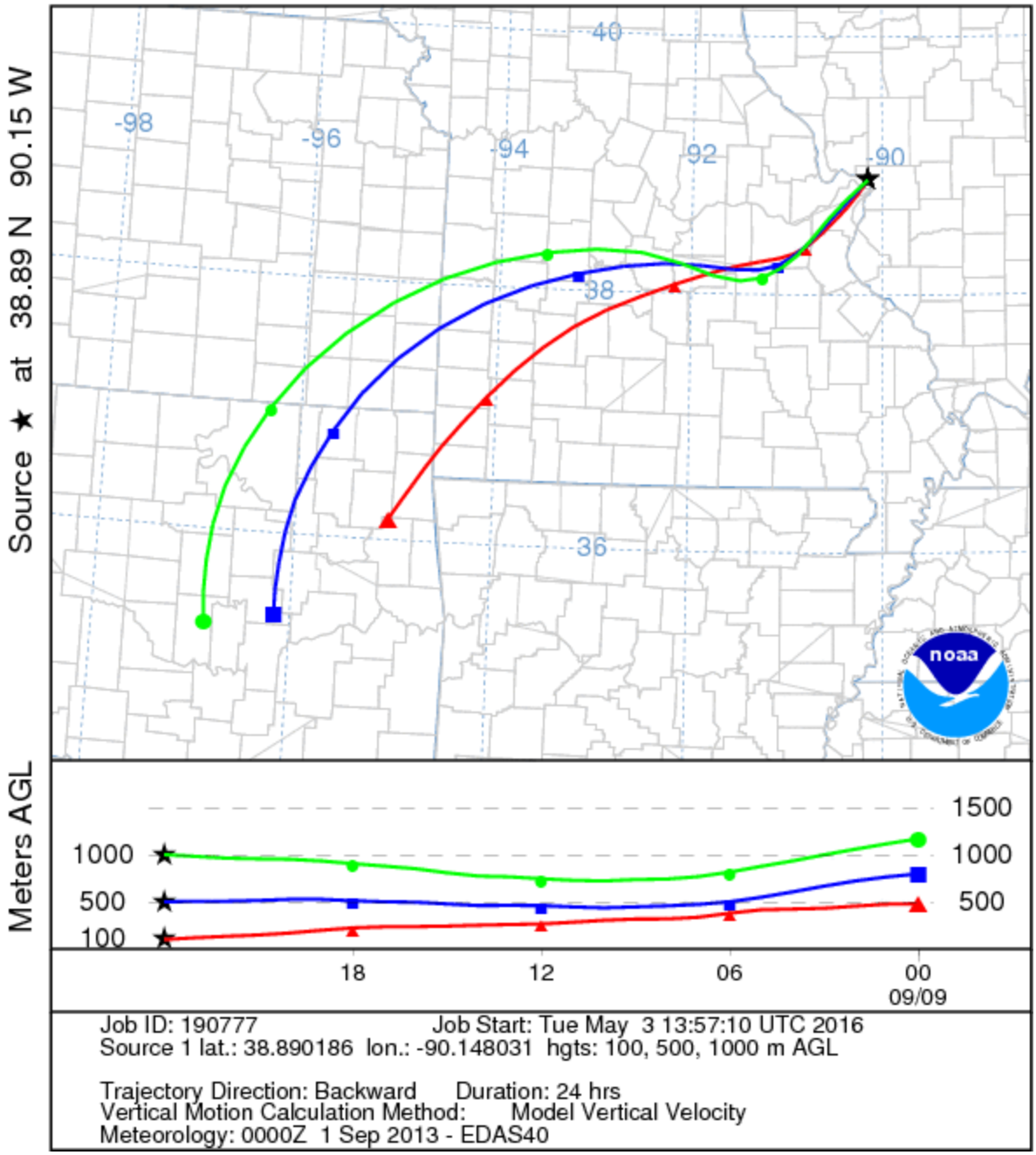
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 20 Jul 13
EDAS Meteorological Data



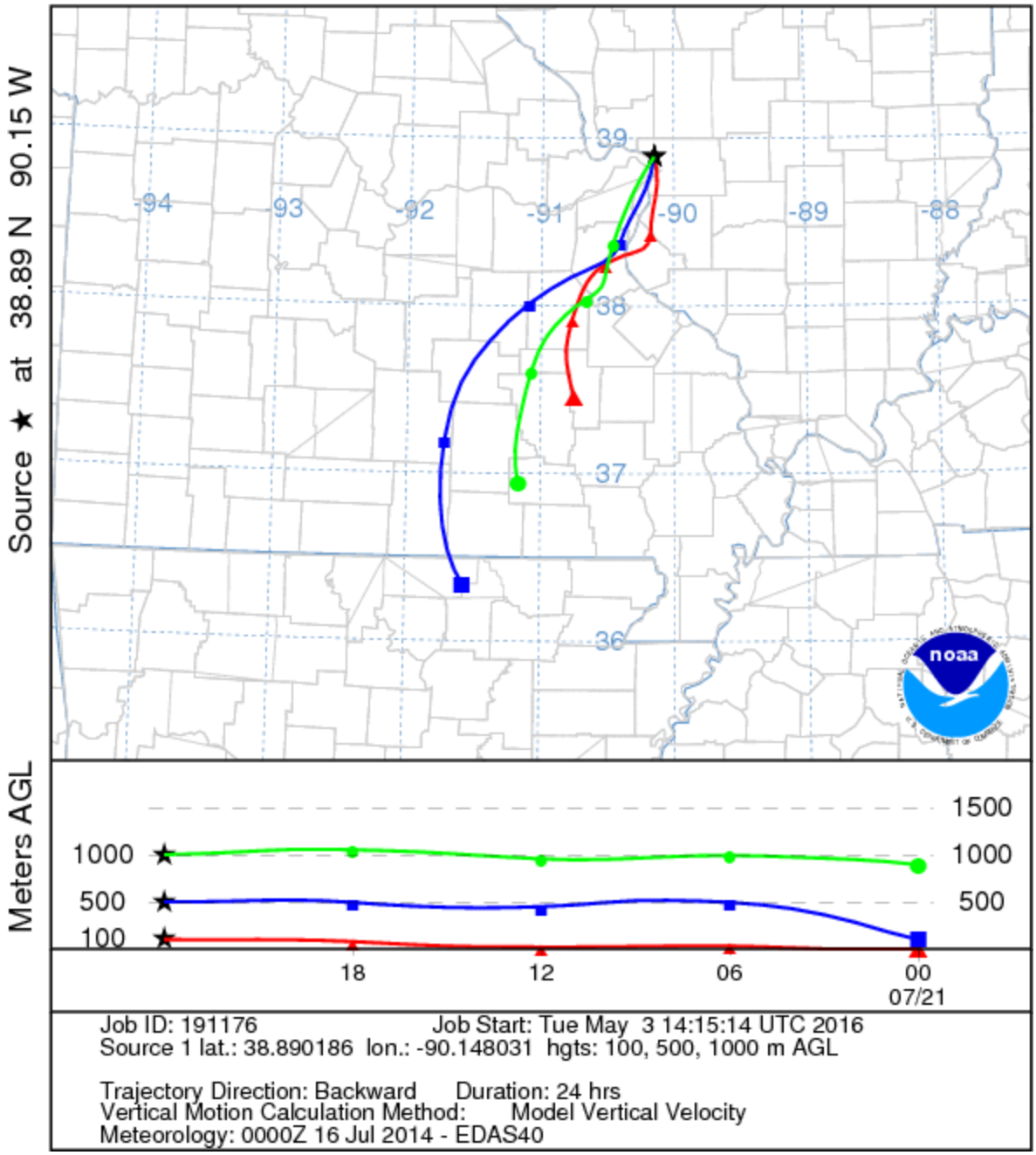
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 07 Sep 13
EDAS Meteorological Data



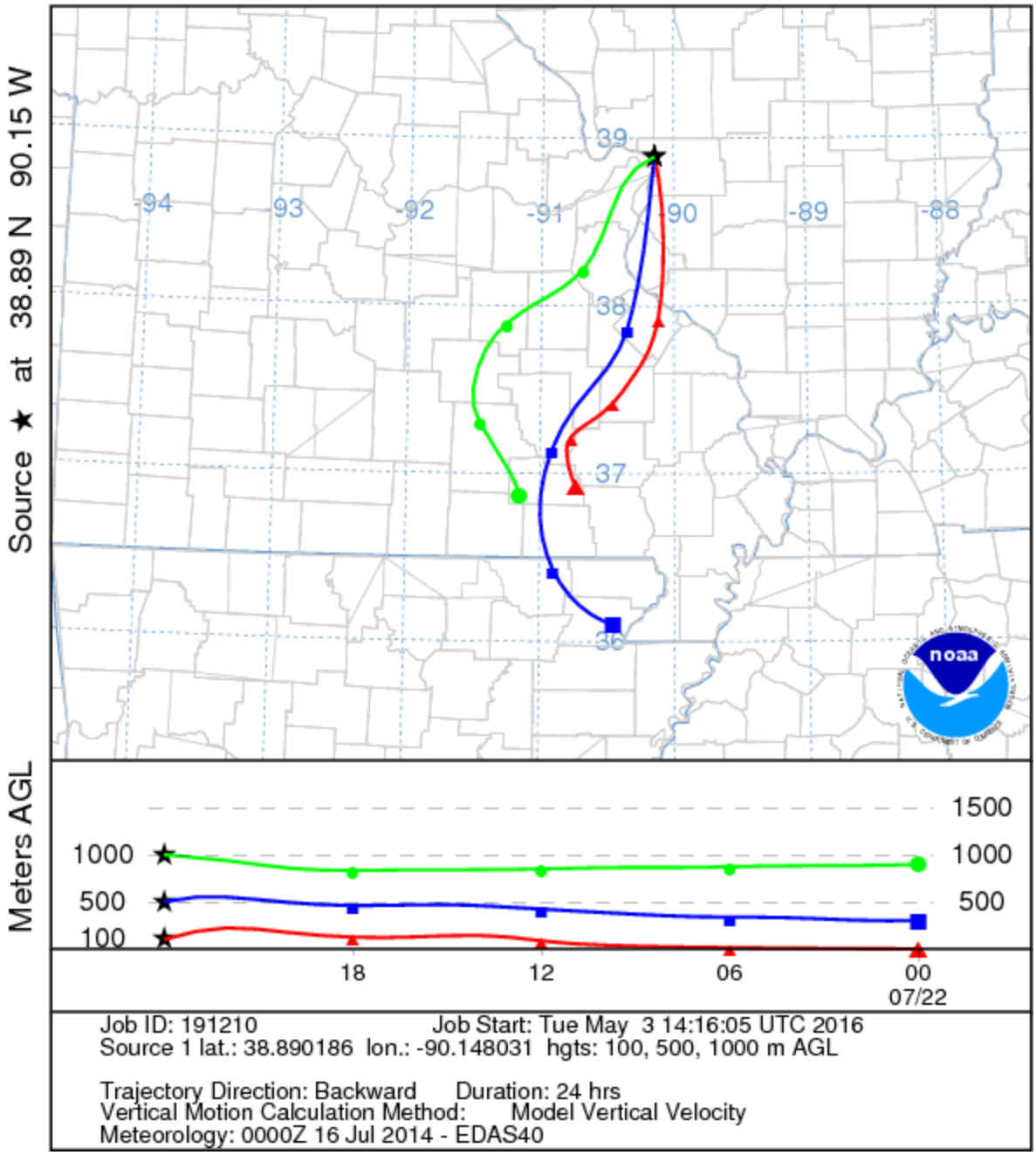
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 10 Sep 13
EDAS Meteorological Data



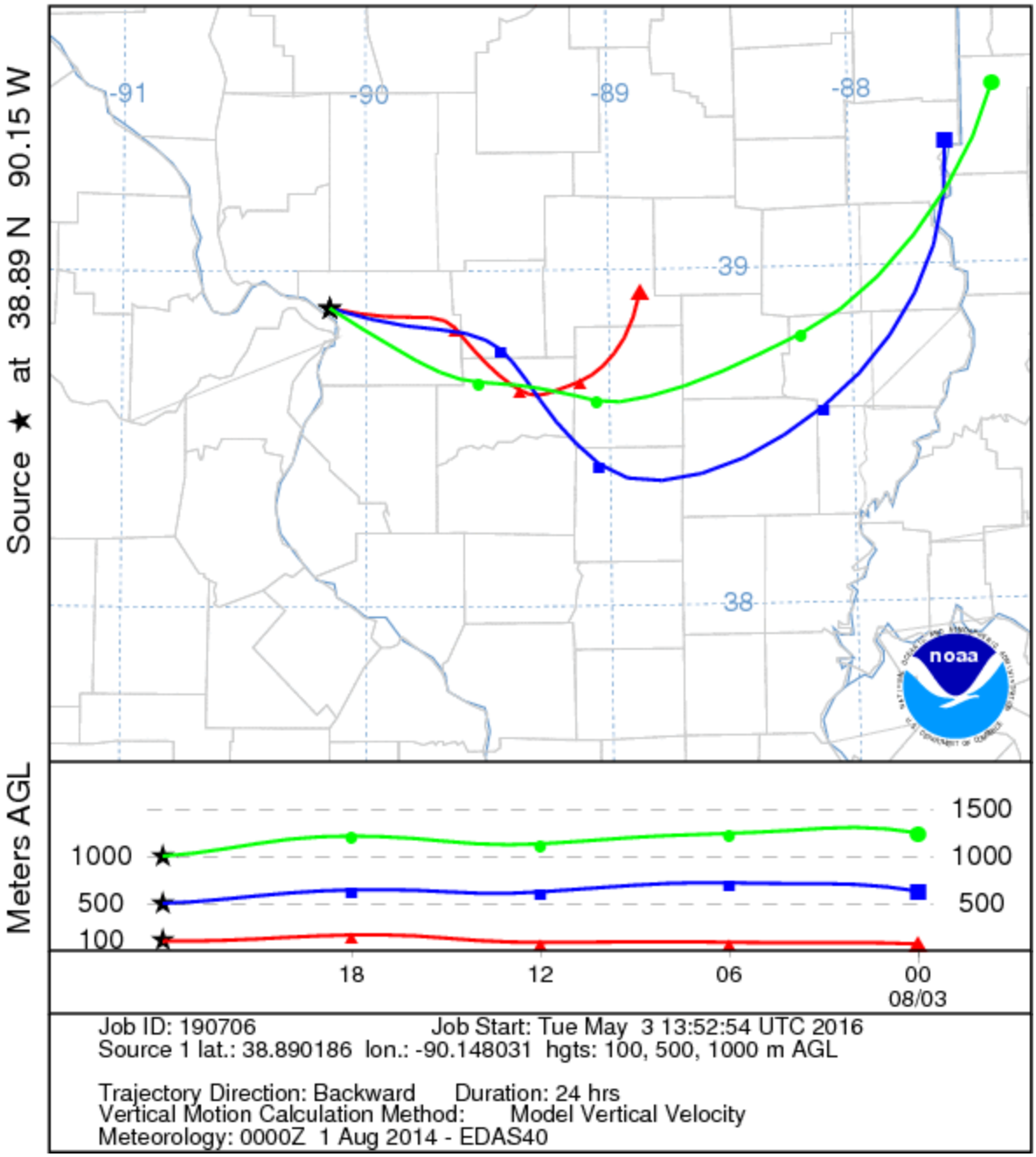
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 22 Jul 14
EDAS Meteorological Data



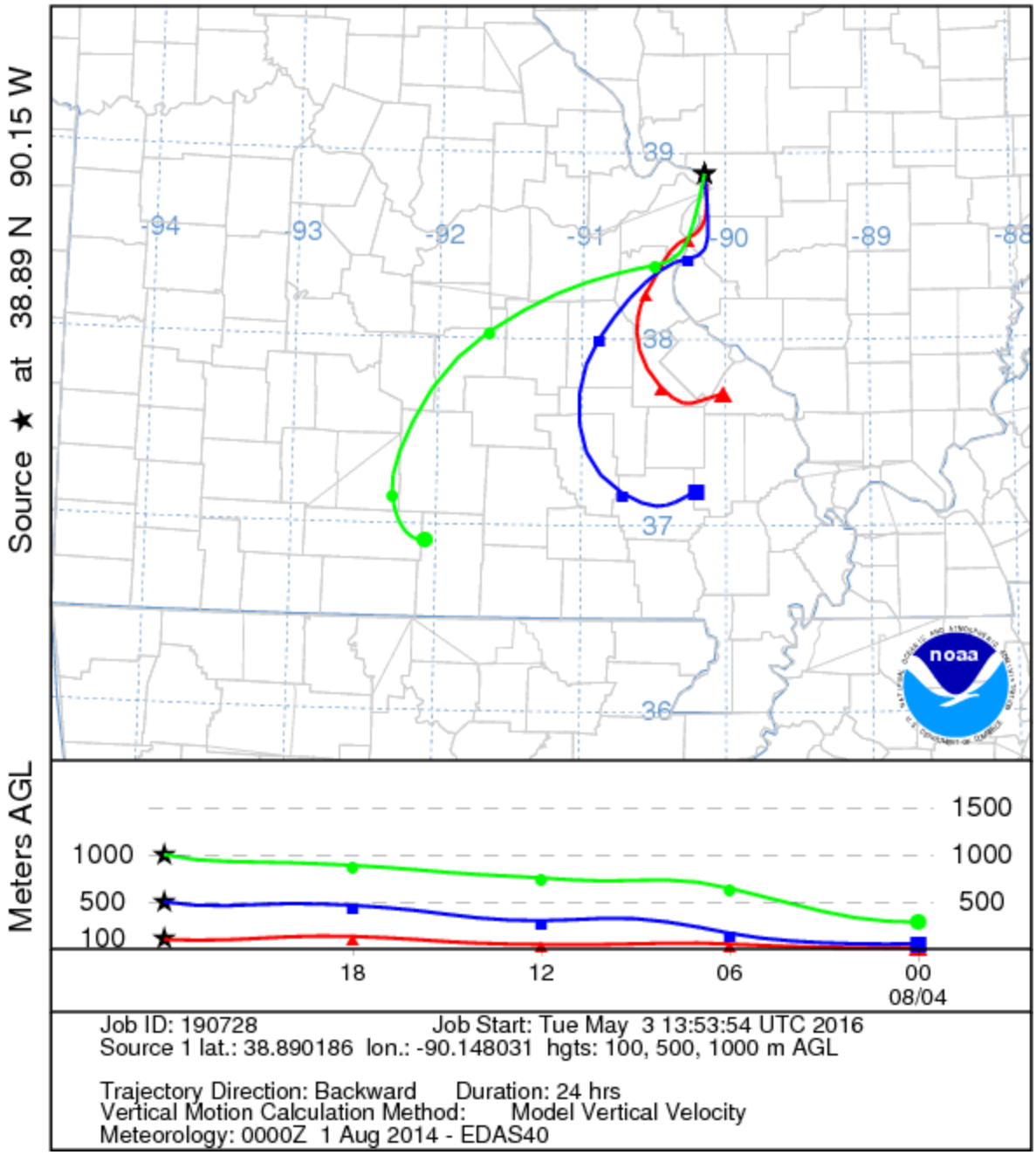
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 23 Jul 14
EDAS Meteorological Data



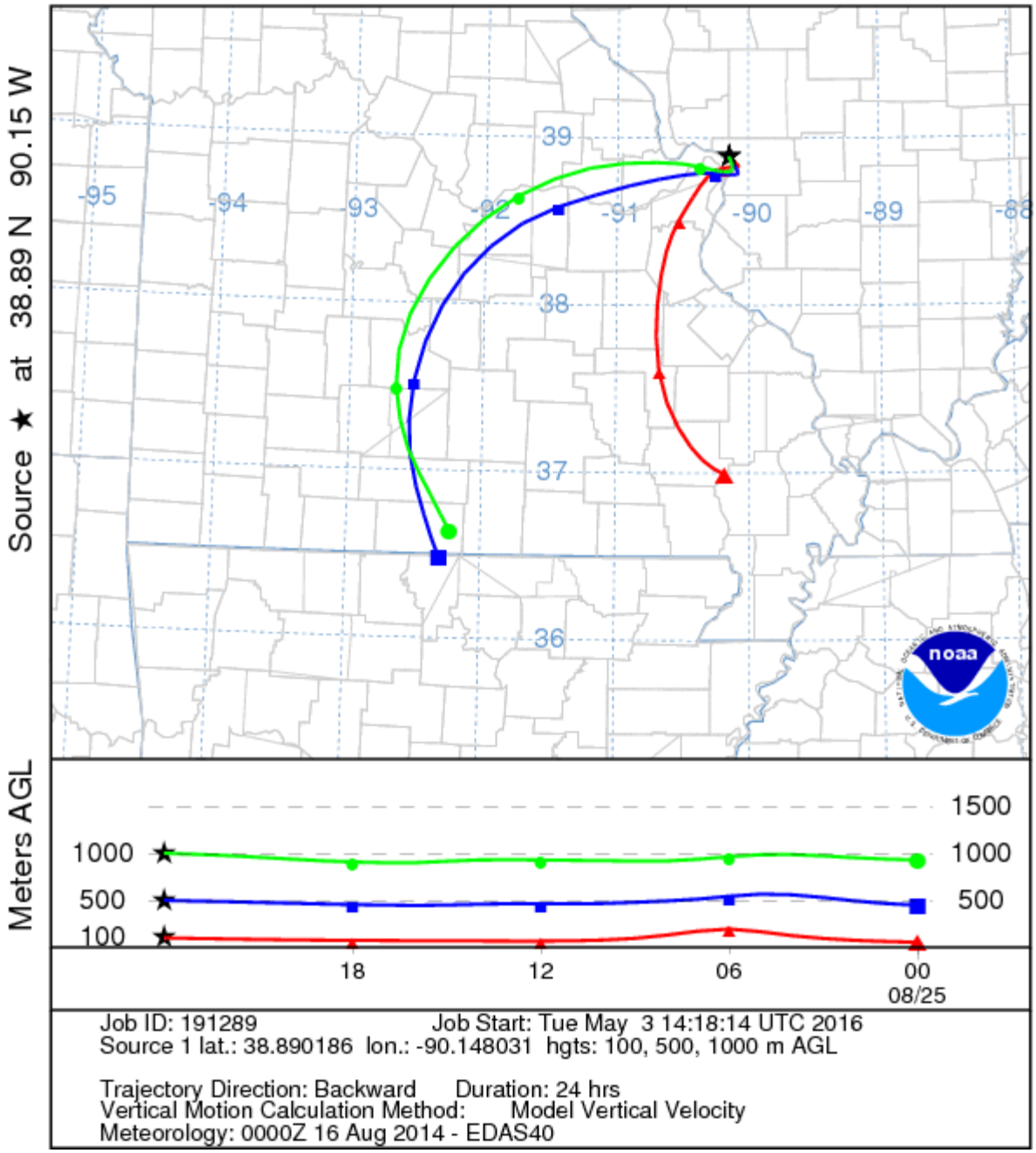
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 04 Aug 14
EDAS Meteorological Data



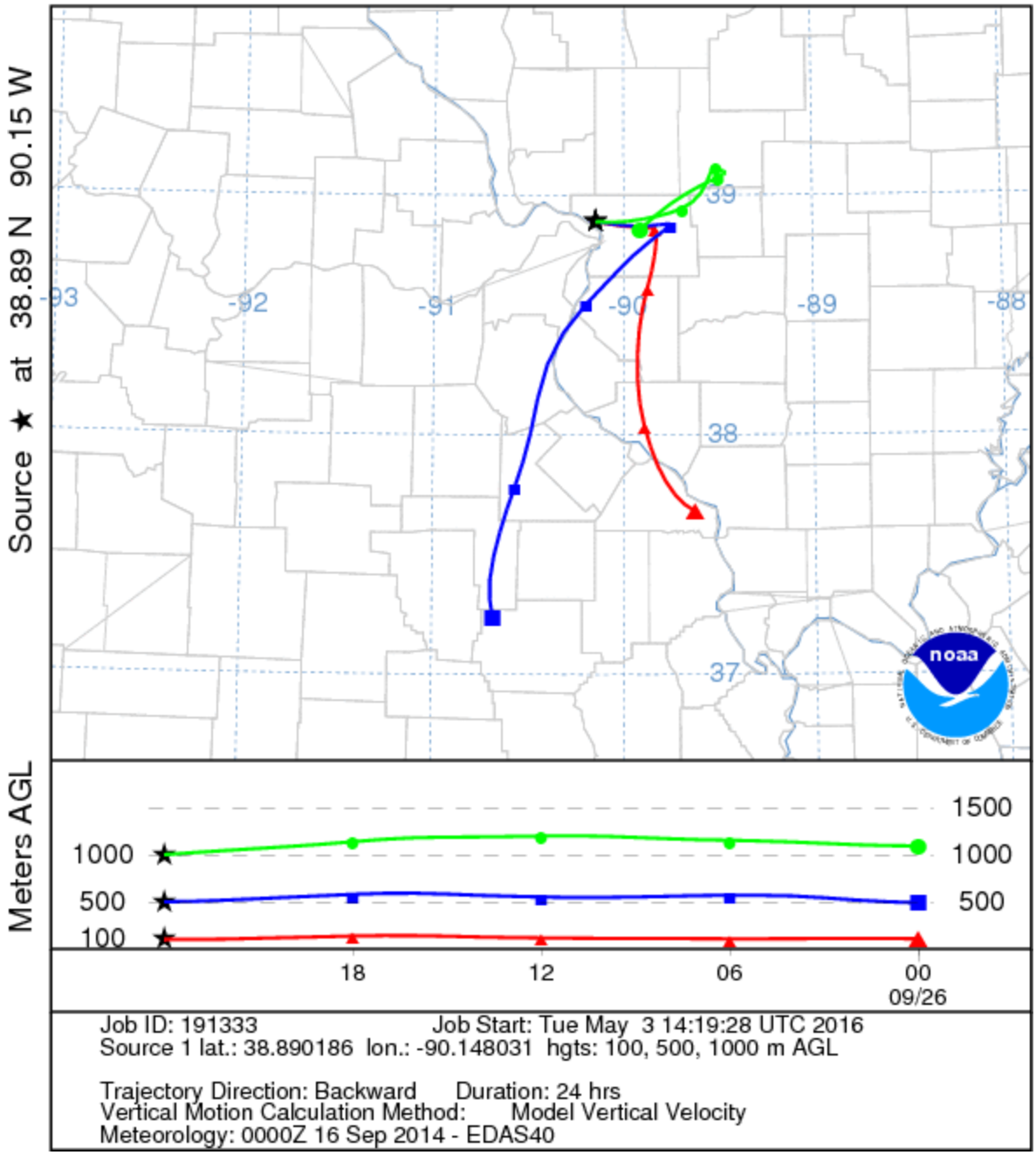
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 05 Aug 14
EDAS Meteorological Data



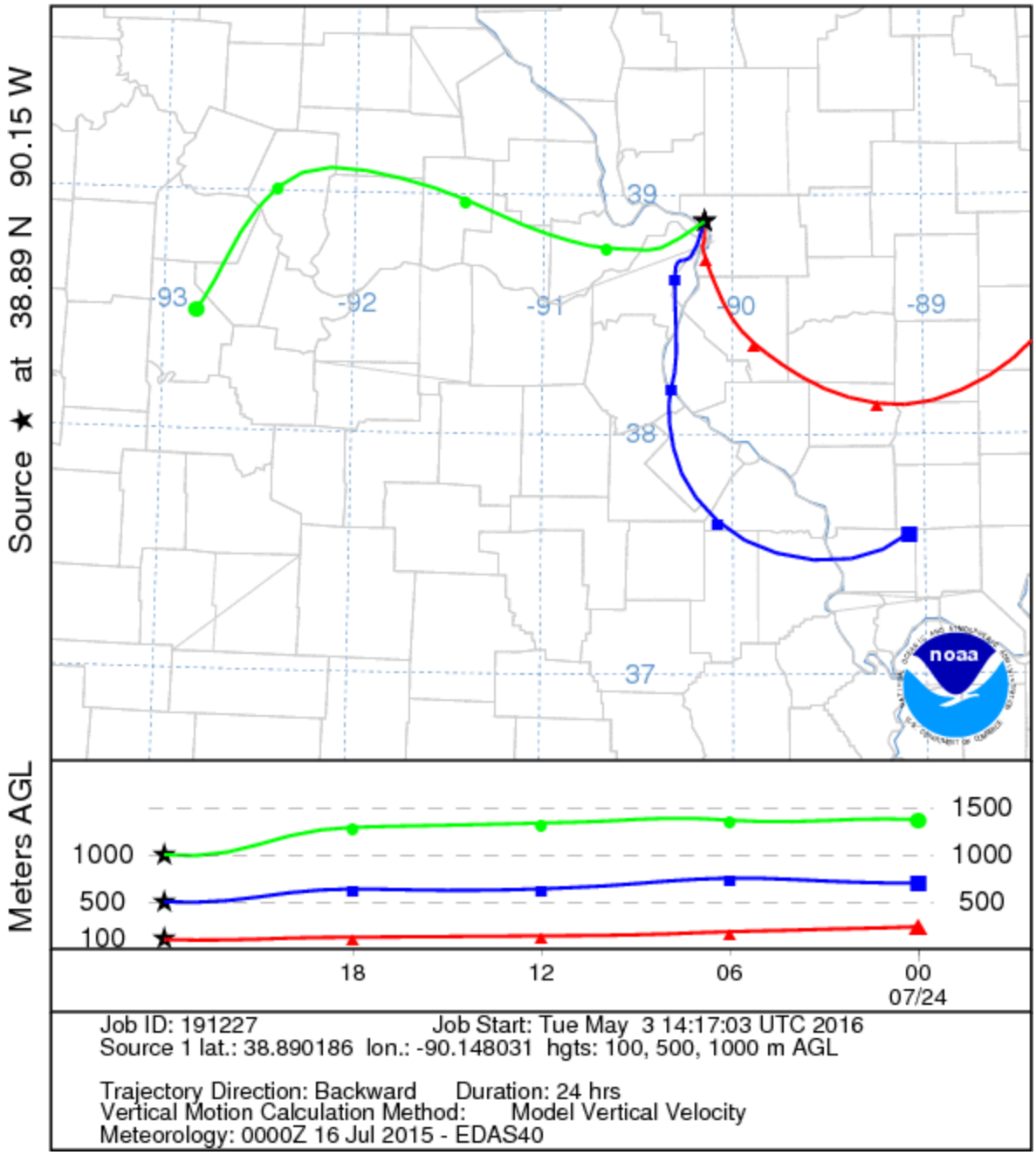
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 26 Aug 14
EDAS Meteorological Data



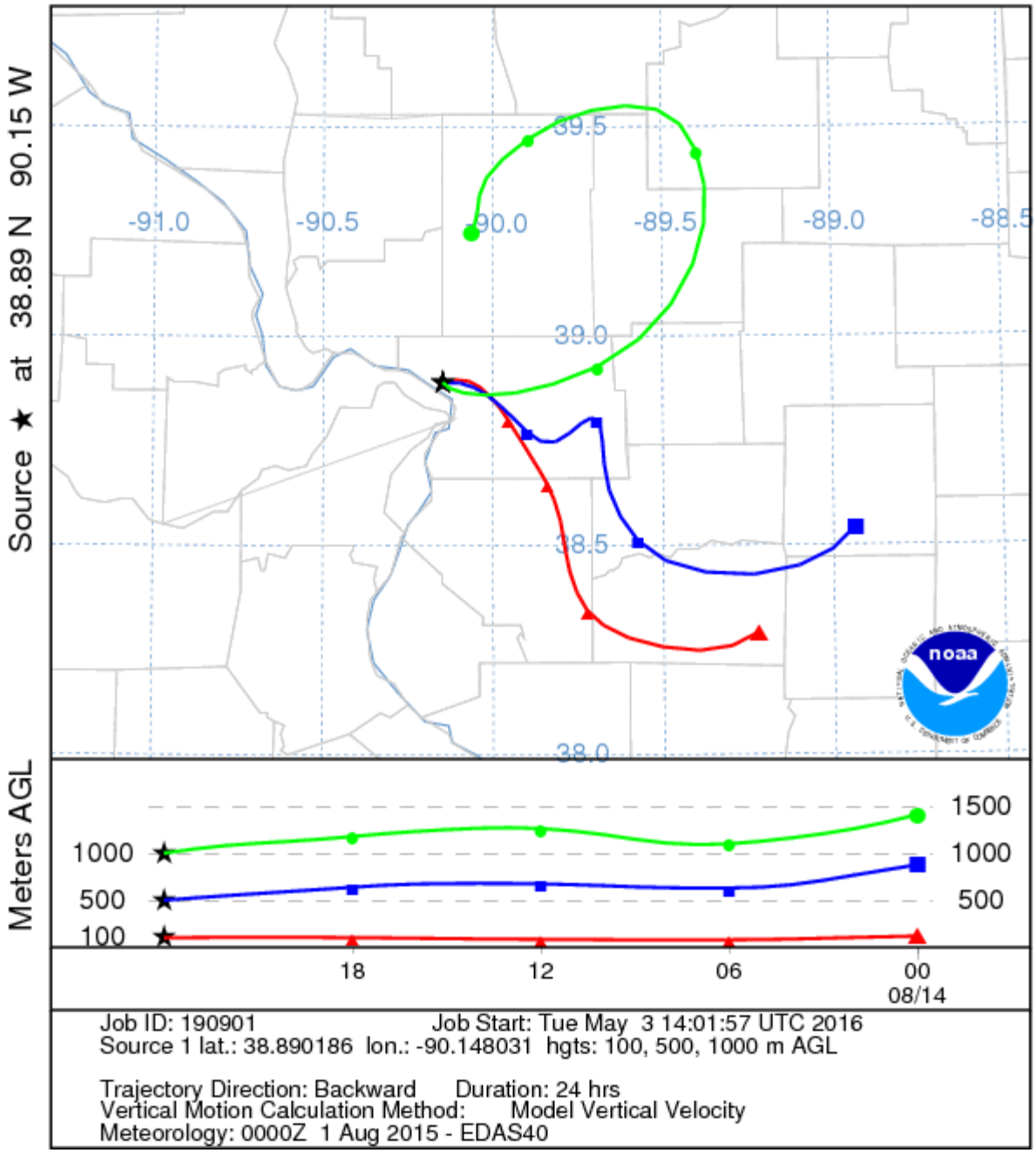
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 27 Sep 14
EDAS Meteorological Data



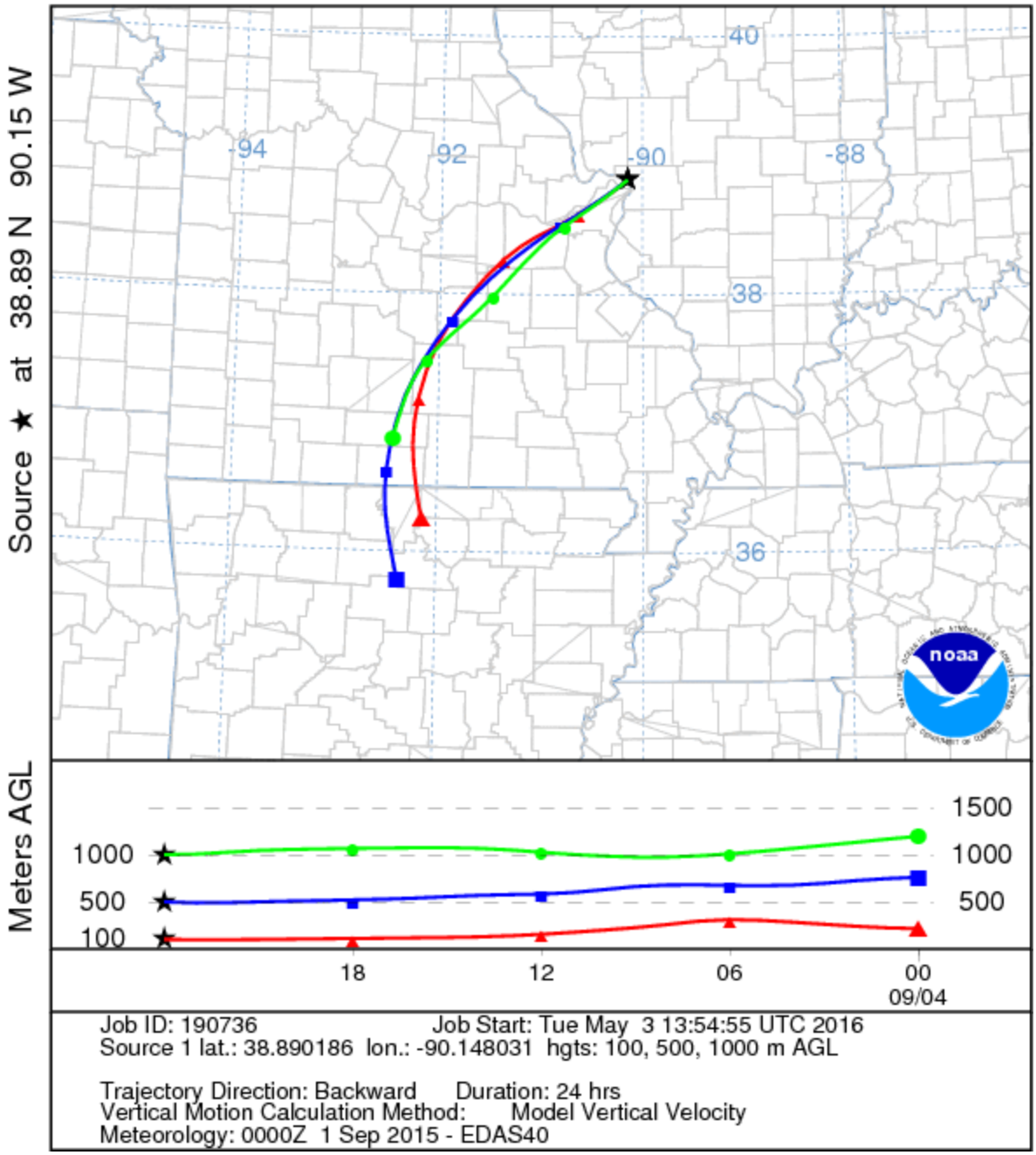
NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 25 Jul 15
EDAS Meteorological Data



NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 15 Aug 15
EDAS Meteorological Data

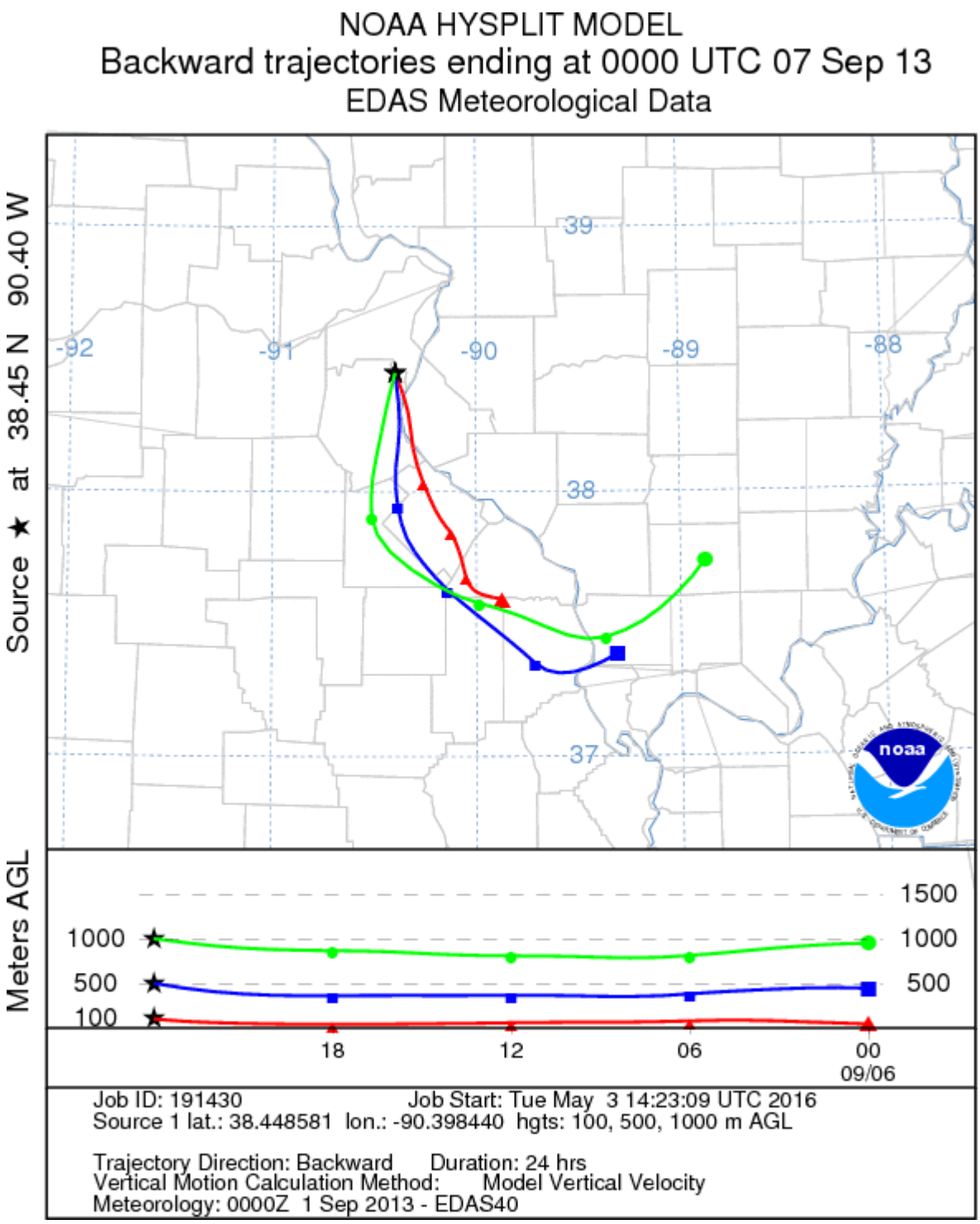


NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 05 Sep 15
EDAS Meteorological Data



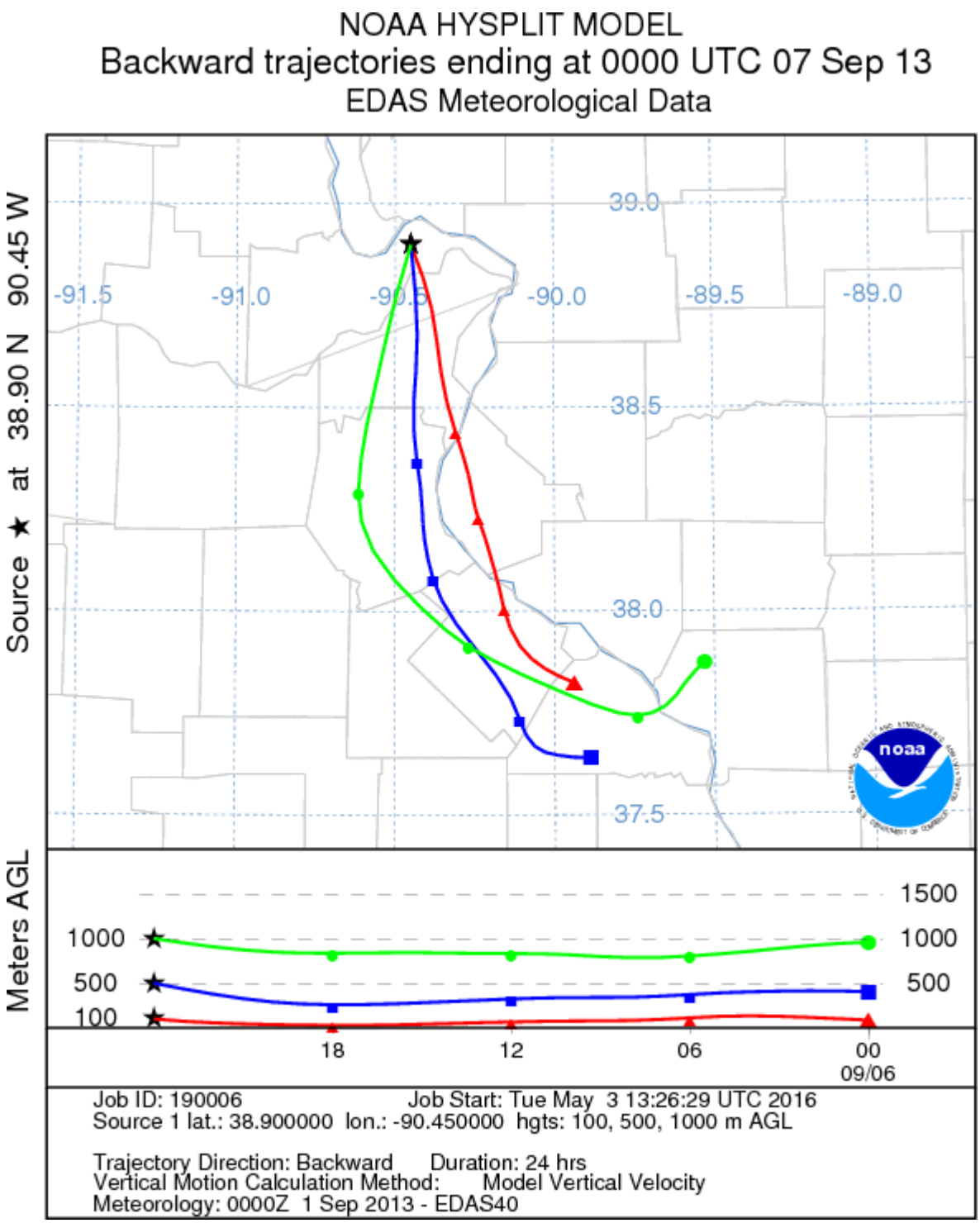
Arnold West Monitor Day:

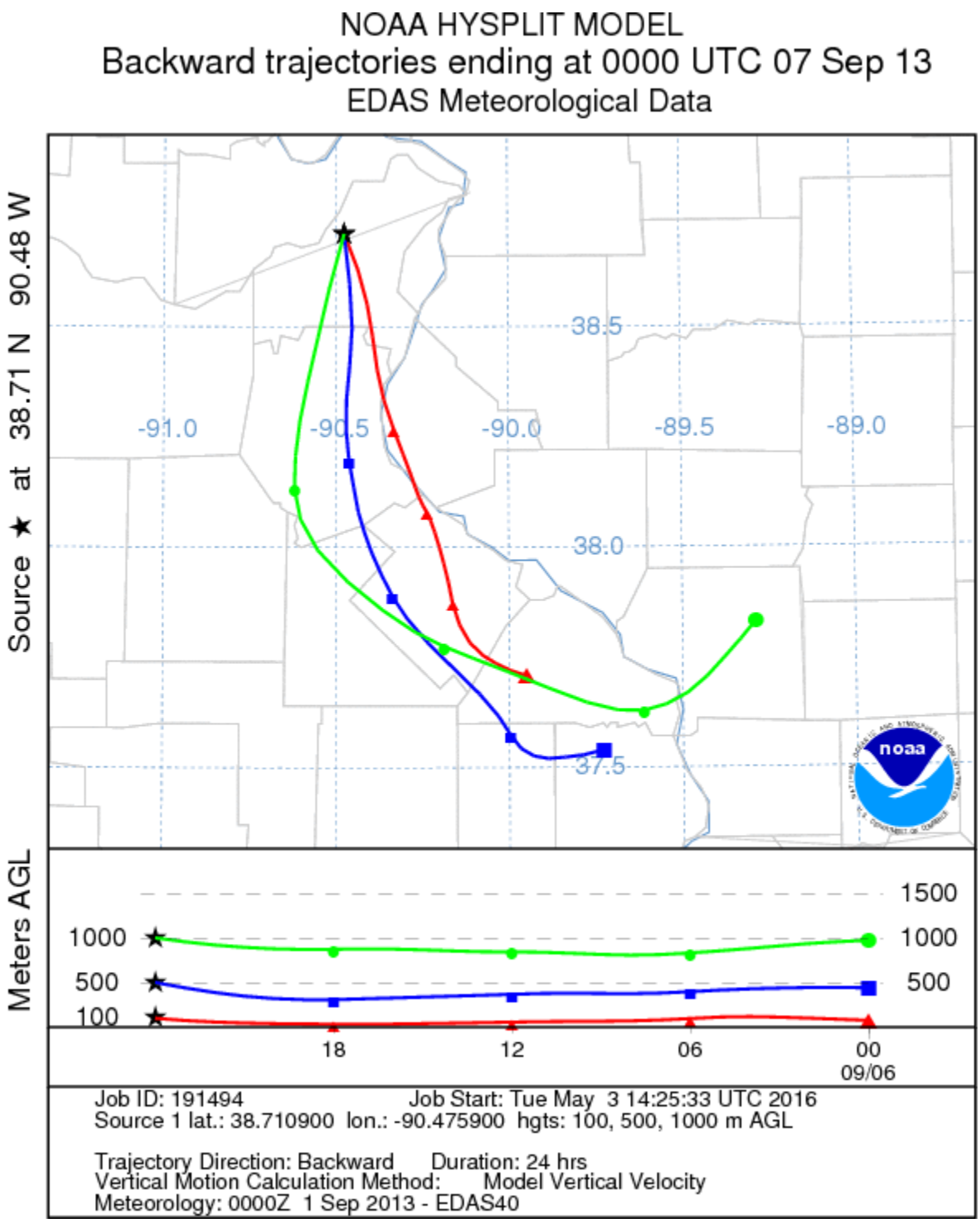
Trajectory Number	Date of Exceedance	Highest 8-Hour Ozone Monitor Value (ppb)
1	September 6, 2013	79



Orchard Farm Monitor Day:

Trajectory Number	Date of Exceedance	Highest 8-Hour Ozone Monitor Value (ppb)
1	September 6, 2013	85



Maryland Heights Monitor Day:

Trajectory Number	Date of Exceedance	Highest 8-Hour Ozone Monitor Value (ppb)
1	September 6, 2013	85