The goal of this study has been to show the impact of the use of the wind guess on the tracking, the tracer size and the temporal gap between images in Atmospheric Motion Vector (AMV) extraction schemes. The study has been performed using “NWC SAF High Resolutions Winds” AMV software for different configurations with a “tracer size” varying between 8x8 and 40x40 pixels and a “temporal gap between images” varying between 5 and 90 minutes, using and not using the wind guess for the definition of the tracking area in the later image. AMVs have been extracted for four different MSG/SEVIRI channels (HRVIS, VIS0.8, WV6.2 and IR10.8) over the European and Mediterranean area for a six month period (January-June 2010). The AMV performance has been tested against radiosounding winds and the ECMWF model analysis winds.

Not using the wind guess to locate the tracking area produces more valid AMVs when large tracer sizes and short temporal gaps are used, and less valid AMVs when small target boxes and long temporal gaps are used. A general increase in the mean AMV speed, and a general reduction of the normalized bias (NBIAS) and the normalized root mean square vector difference (NRMSVD) also occur when the wind guess is not used.

Considering the amount of valid AMVs, the results show a relatively small impact of the tracer size, more significant for clear air AMVs, and a significant impact of the temporal gap between images (with the largest amounts of valid AMVs in general for a temporal gap of 5 minutes for the 1 km pixel scale and a temporal gap of 10 minutes for the 3 km pixel scale). They also show a smaller mean AMV speed and a more negative NBIAS with larger tracer sizes, and a relatively small impact of the temporal gap on these parameters. Finally, they show minimum values of the NRMSVD for intermediate temporal gaps between 15 and 25 minutes, with a relatively small impact of the tracer size on this parameter.

The results presented at the Twelfth International Winds Workshop have been published at Journal of Atmospheric and Oceanic Technology (JTECH) under the following references:
