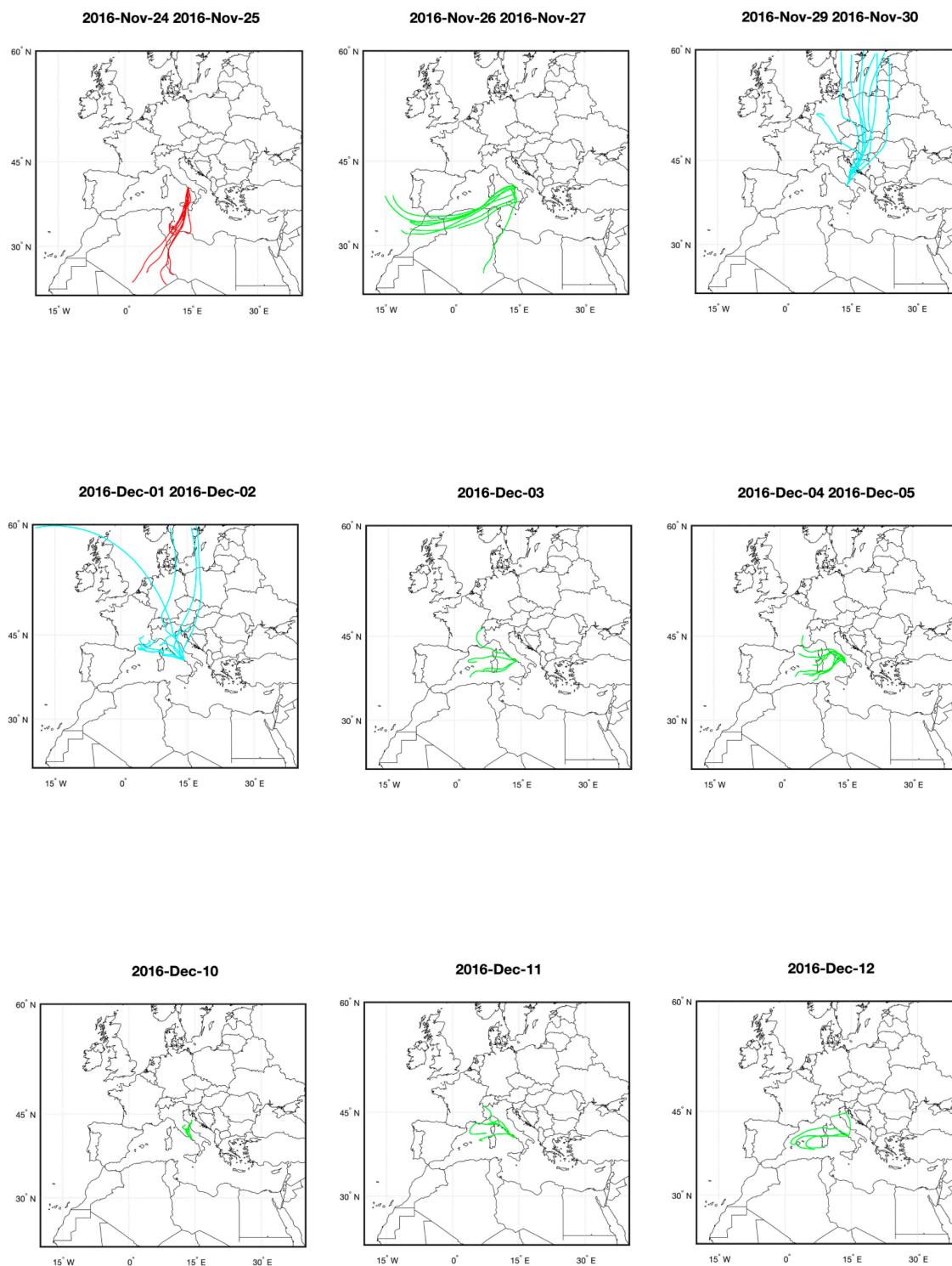


Supplementary materials



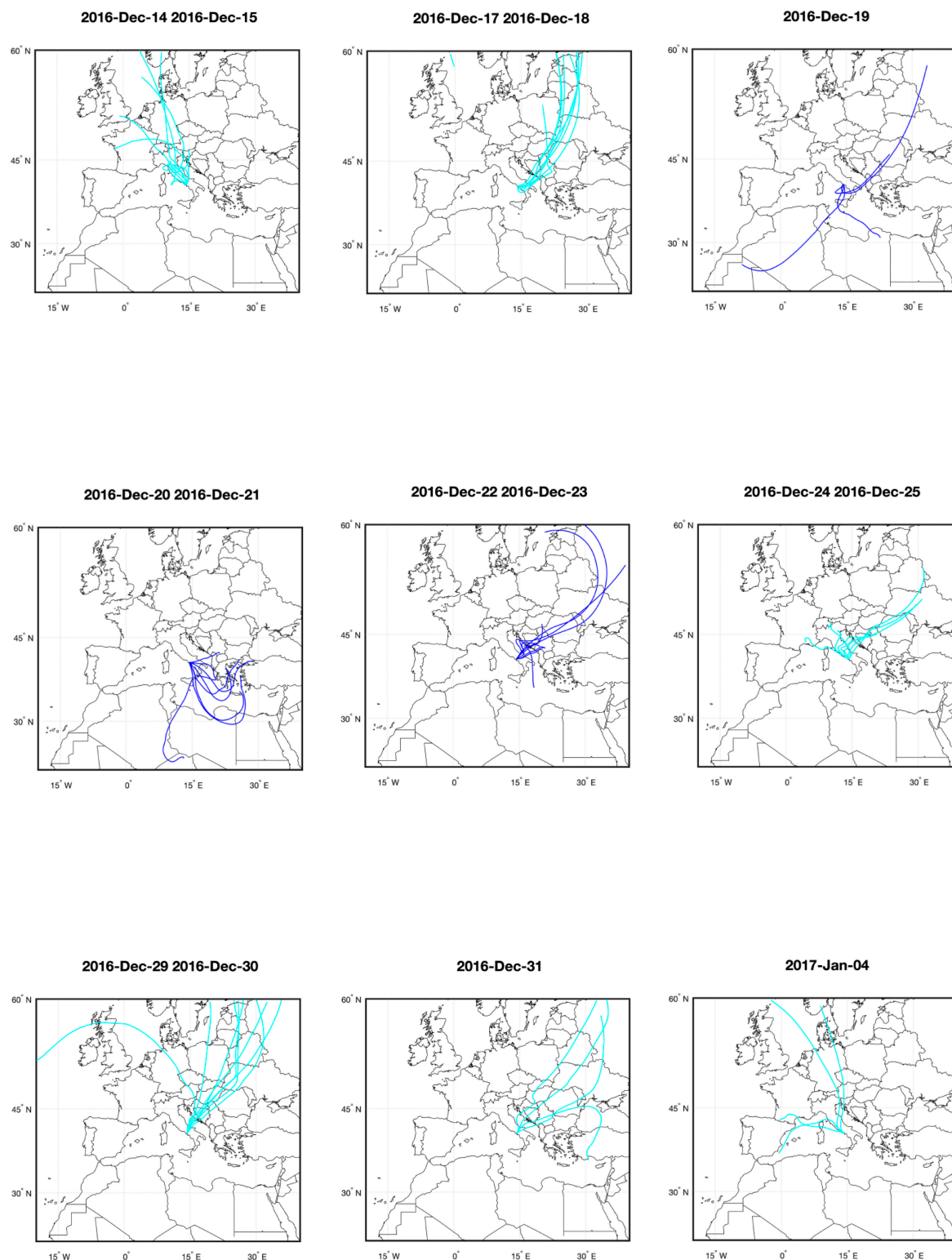


Figure S1. trajectories. For every sampled filter, 6-h back trajectories have been calculated, using Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLOT) model. When similar patterns were shown on two consecutive days, the filters were merged as one sample. Therefore each box contains trajectories relative to the time span covered by each of the 18 samples under investigation: 4 back trajectories for single filter samples (24-h sampling), 8 back trajectories for double filters samples (48 h sampling). For colour description refer to section 2.1.

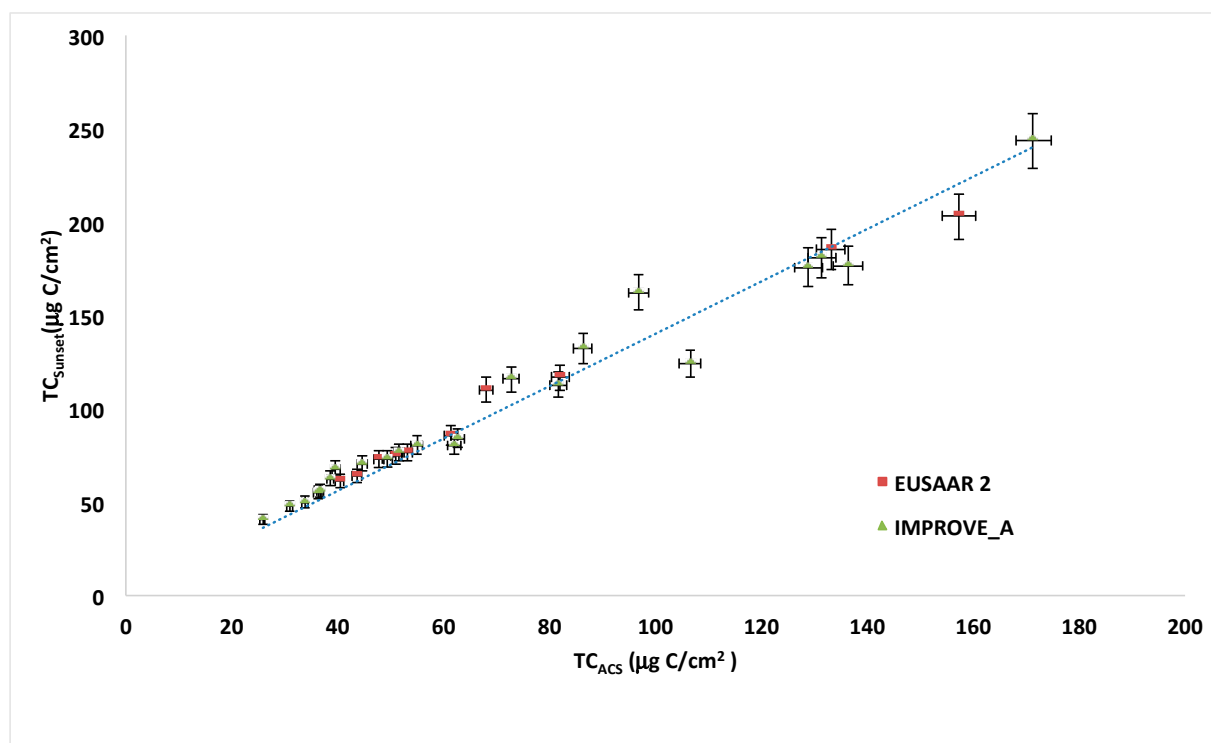


Figure S2. Deriving the correction factor $TC_{\text{Sunset}}/TC_{\text{ACS}}$. During past experiments, the TC concentration resulting from the ACS system (TC_{ACS}) has been compared to its actual value, by direct measurement on a Sunset system (TC_{Sunset}), using two different thermal protocols alternatively (EUSAAR 2 and IMPROVE_A [82]). TC_{ACS} has been calculated as the sum of the concentrations of OC and EC evaluated manometrically, in a calibrated volume on the ACS system, when applying the two-step thermal protocol. Here we report these concentrations, as relative to the surface of the loaded sample filter, i.e., $\mu\text{g C/cm}^2$. From these previous studies, we have selected the 32 samples, which fall in the range of concentrations found for the samples from Naples. A good linear correlation between TC_{ACS} and TC_{Sunset} is exhibited by these samples. On average $69\% \pm 1\%$ of the aerosol TC is recovered on the ACS.

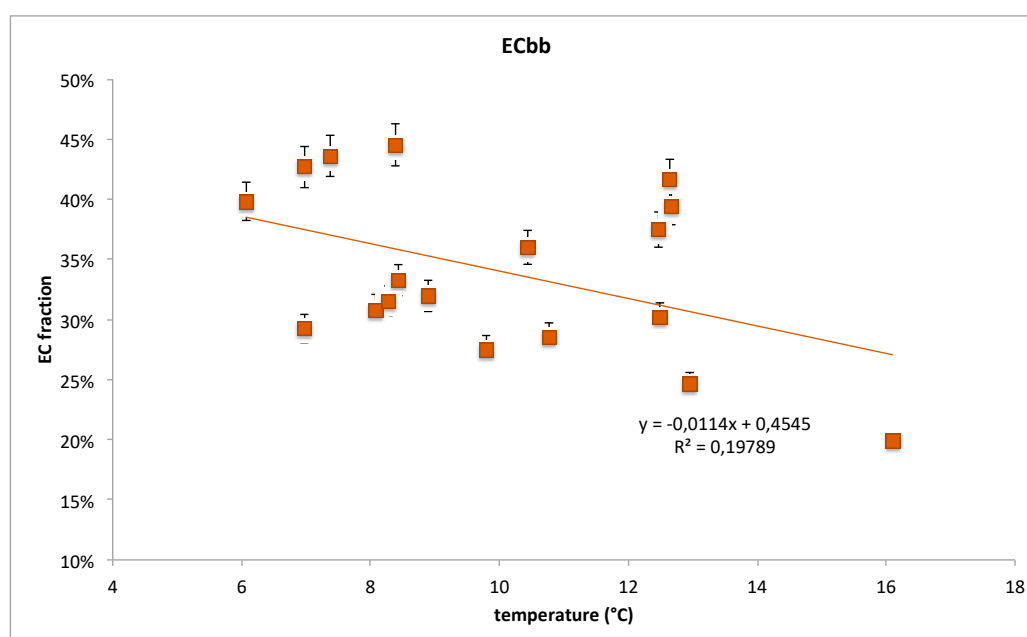


Figure S3. EC_{bb}/EC in comparison with average ambient temperature, during the sampling time. Increase of biomass burning fraction of EC is not consistently shown, when ambient temperature decreases.