

Updated Response to Two Related Minor Comments by Reviewer 2

Comment: Table 1: Be more explicit with regard to the LU scheme, preferably with references. For example, which MODIS dataset? What is DEPAC. What is AQMEII4 LU? (This one is discussed above, but a reference would be appropriate in such a summary table.)

Comment: Connected to this, L457 states that the LOTOS/EUROS model uses the official LU data of the European Union, but that is not called DEPAC as given in Table 1.

In our initial response to these comments, we mistakenly updated Table 1 to state that the DEPAC LU data used in the LOTOS/EUROS dry deposition calculations was mapped from the CORINE LU dataset. We had also revised the manuscript text to state that the LOTOS/EUROS dry deposition calculations were therefore indirectly using this dataset developed specifically for Europe.

After submitting our response, we became aware that while the LOTOS/EUROS DEPAC dry deposition module is indeed typically configured to obtain its internal LU categories by mapping them from CORINE, in the AQMEII4 simulations the DEPAC LU data was mapped from the Global Landcover 2000 dataset (<https://forobs.jrc.ec.europa.eu/glc2000>, last accessed May 12, 2025). We have revised Table 1 and the manuscript text accordingly.

Original modification to the “LU for Dry Deposition Scheme” entry for LOTOS/EUROS in Table 1:
“DEPAC mapped from Coordination of Information on the Environment (CORINE) land cover as described in Manders-Groot et al. (2023)”

Revised modification to the “LU for Dry Deposition Scheme” entry for LOTOS/EUROS in Table 1:
“DEPAC LU as described in Manders-Groot et al. (2023), mapped from Global Landcover 2000 dataset (<https://forobs.jrc.ec.europa.eu/glc2000>, last accessed May 12, 2025)”

Original Modification to the manuscript text: Here it should be noted that the LOTOS/EUROS and WRF-Chem (RIFS) dry deposition calculations indirectly used the CORINE dataset developed for Europe (<https://land.copernicus.eu/pan-european/corine-land-cover/>, last accessed May 2, 2025) by mapping the CORINE categories to the internal DEPAC categories in LOTOS/EUROS and to the USGS24 categories in WRF-Chem (RIFS). On the other hand, the WRF-Chem (UPM) dry deposition calculations relied on the global USGS24 dataset while WRF/CMAQ relied on the global MODIS dataset augmented by additional urban categories in the greater London area and mapped these to the AQMEII4 categories as shown in Table S1.

Revised modification to the manuscript text: Here it should be noted that the WRF-Chem (RIFS) dry deposition calculations indirectly used the CORINE dataset developed for Europe (<https://land.copernicus.eu/pan-european/corine-land-cover/>, last accessed May 12, 2025) by mapping the CORINE categories to the USGS24 categories in WRF-Chem (RIFS). On the other hand, the WRF-Chem (UPM) dry deposition calculations relied on the global USGS24 dataset, WRF/CMAQ relied on the global MODIS dataset augmented by additional urban categories in the greater London area and mapped these to the AQMEII4 categories as shown in Table S1, and the LOTOS/EUROS dry deposition calculations relied on the Global Landcover 2000 dataset (<https://forobs.jrc.ec.europa.eu/glc2000>, last accessed May 12, 2025) mapped to the internal DEPAC categories (Manders-Groot et al., 2023).