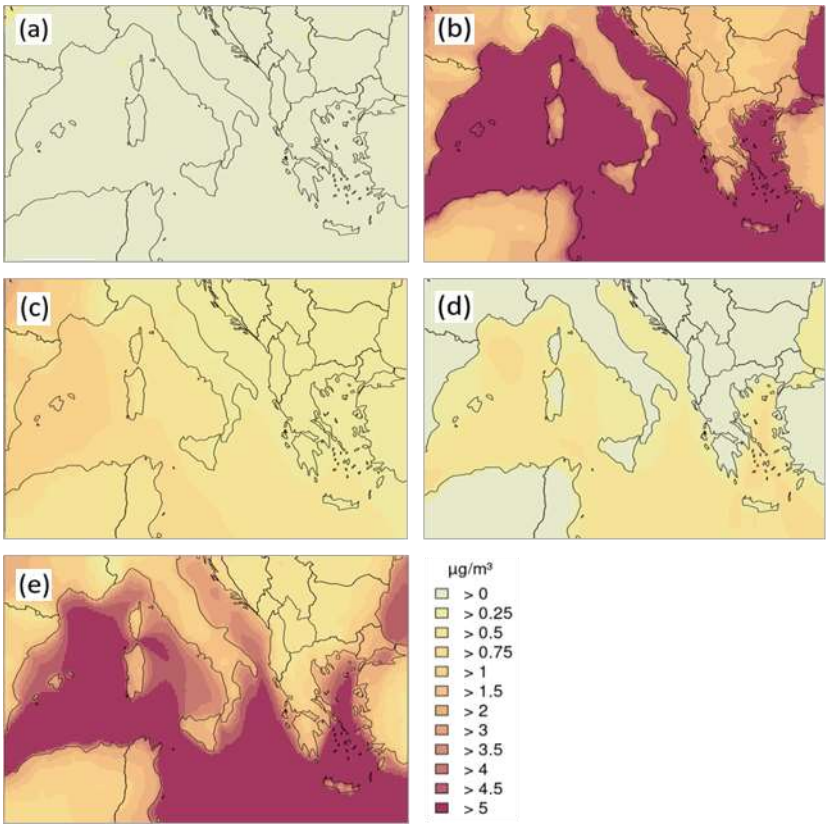

Figure S1: Annual mean sea salt (NaCl) total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.

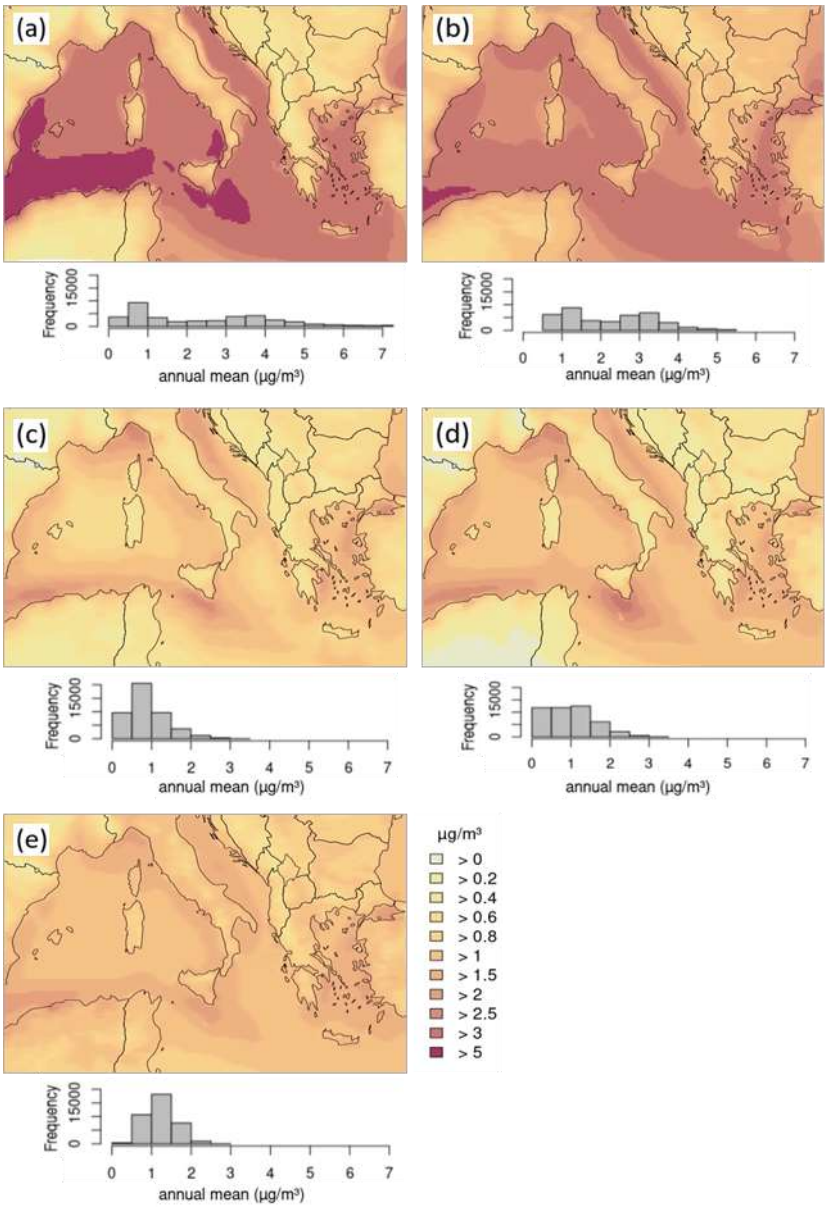

Figure S2: Annual mean HNO_3 total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean HNO_3 concentration, referred to the whole model domain.

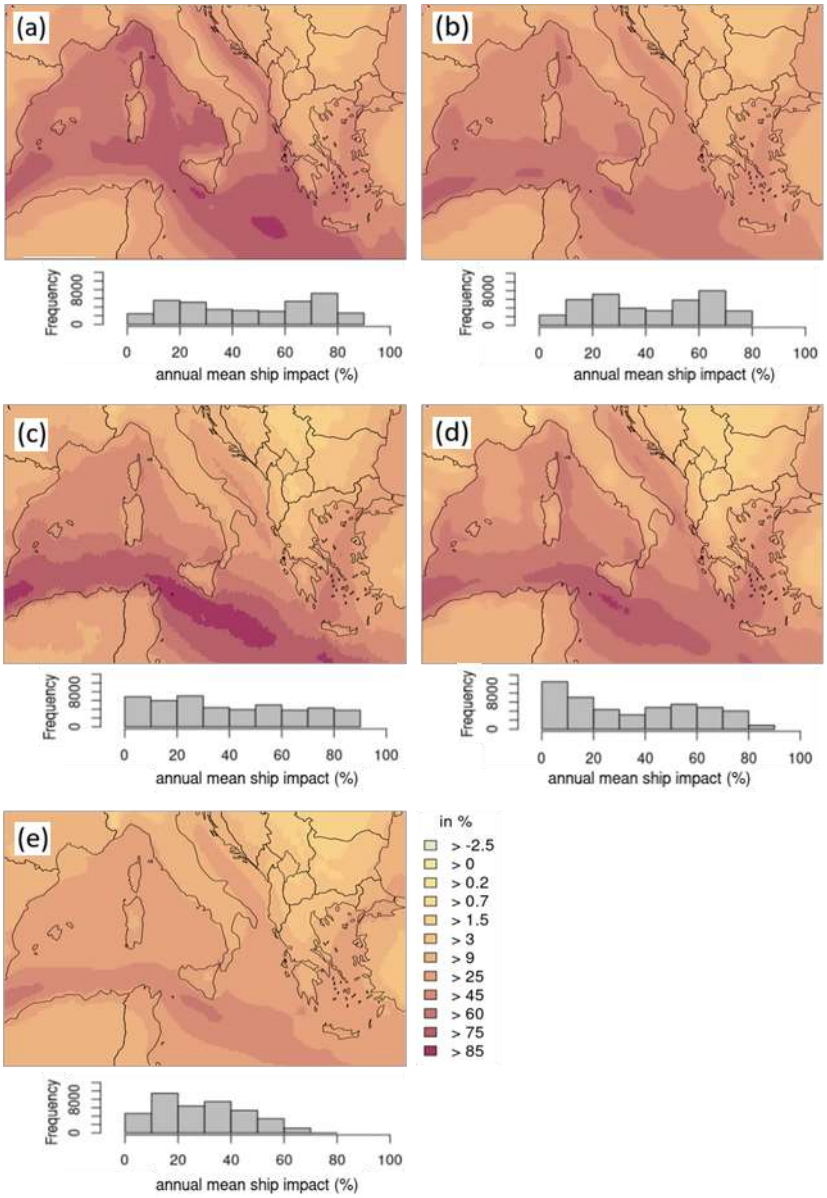

Figure S3: Annual mean HNO_3 relative potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean HNO_3 potential ship impact, referred to the whole model domain.

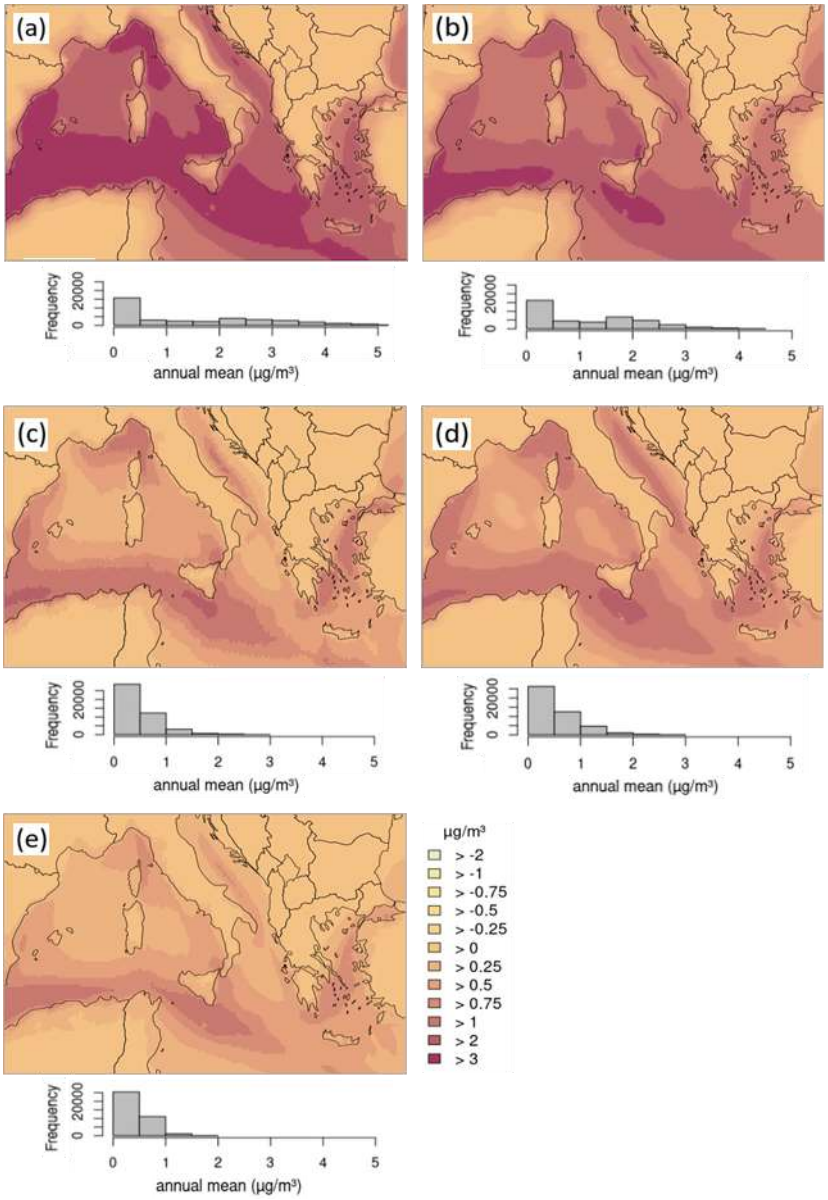

Figure S4: Annual mean HNO_3 absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean HNO_3 potential ship impact, referred to the whole model domain.

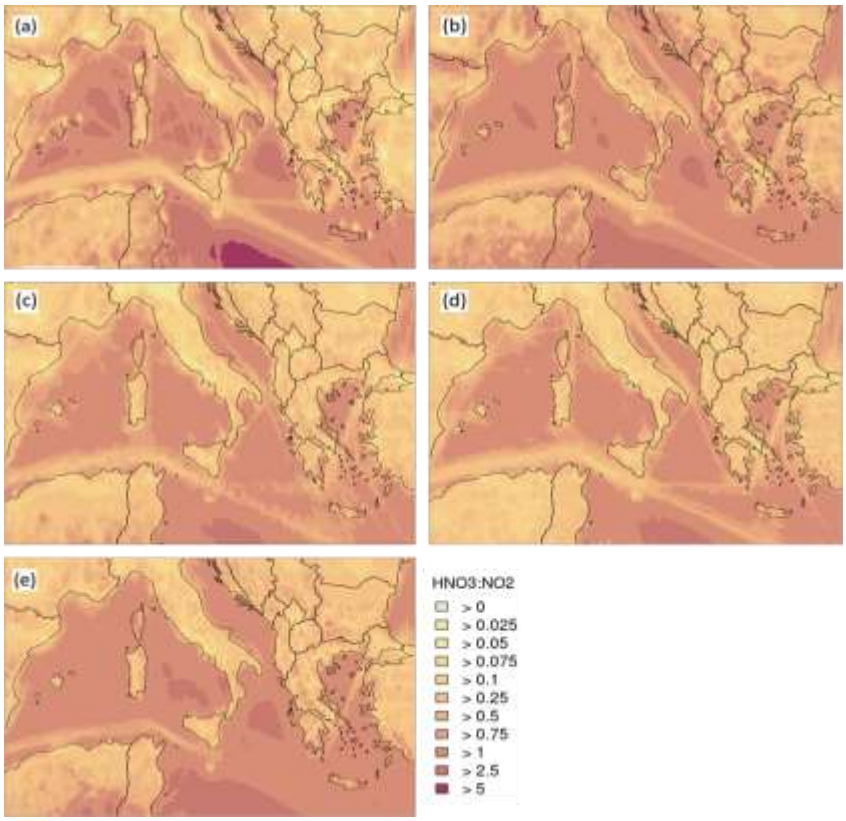

Figure S5: Annual mean ratio of HNO_3:NO_2 for emisbase run with all emission sources, based on averaged daily values. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.

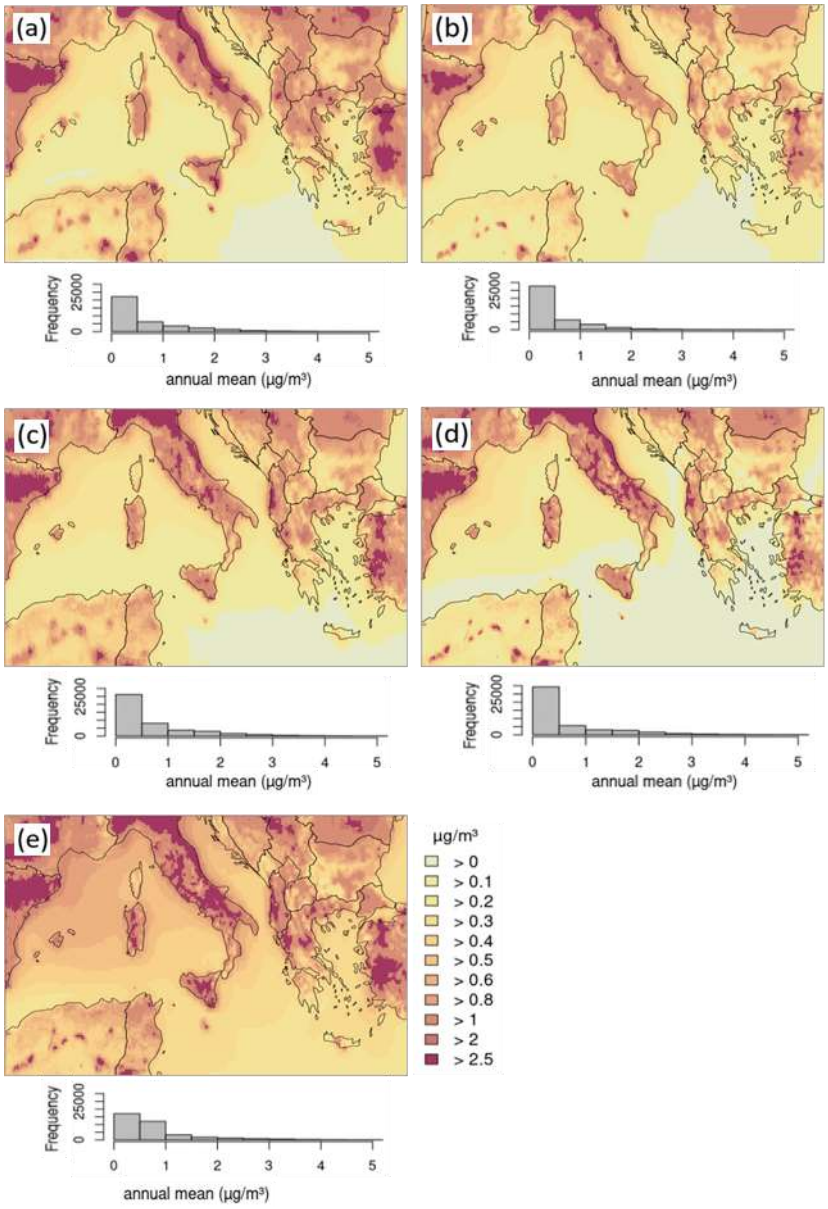

Figure S6: Annual mean NH_3 total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NH_3 concentration, referred to the whole model domain.

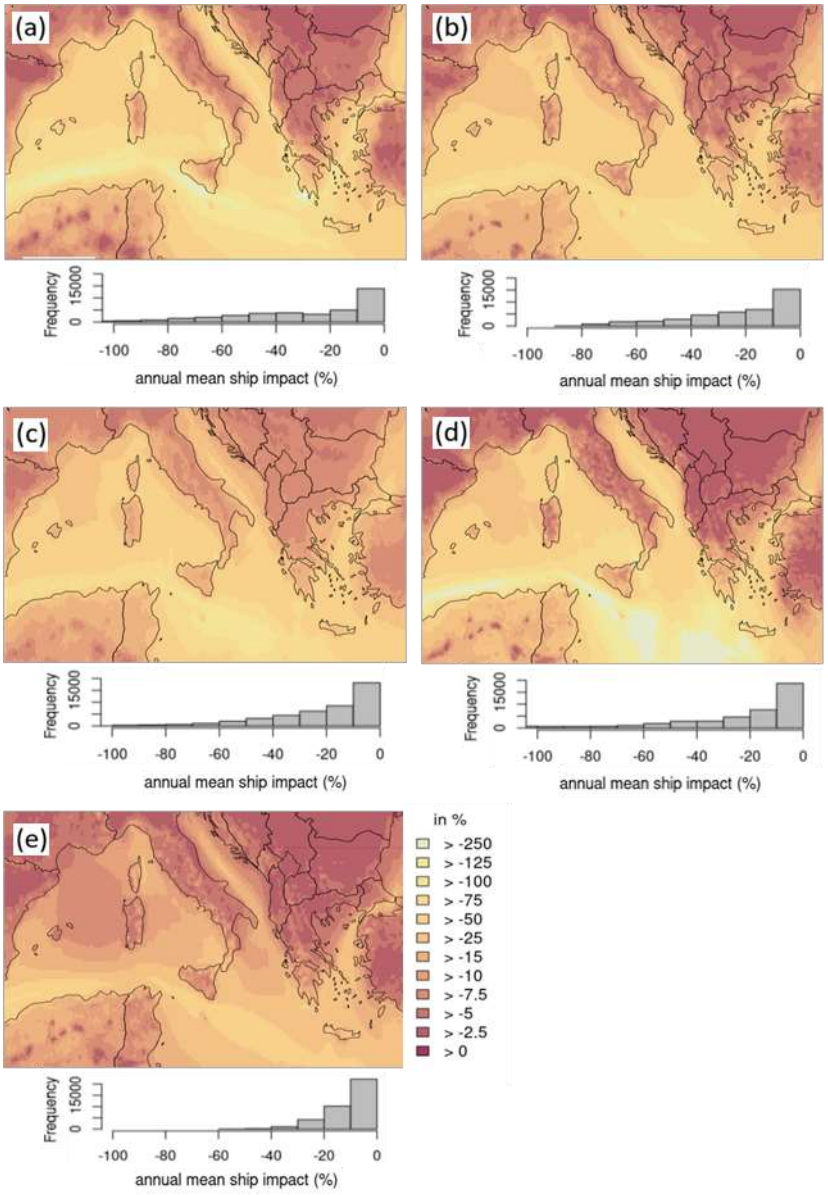

Figure S7: Annual mean NH_3 relative potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NH_3 potential ship impact, referred to the whole model domain.

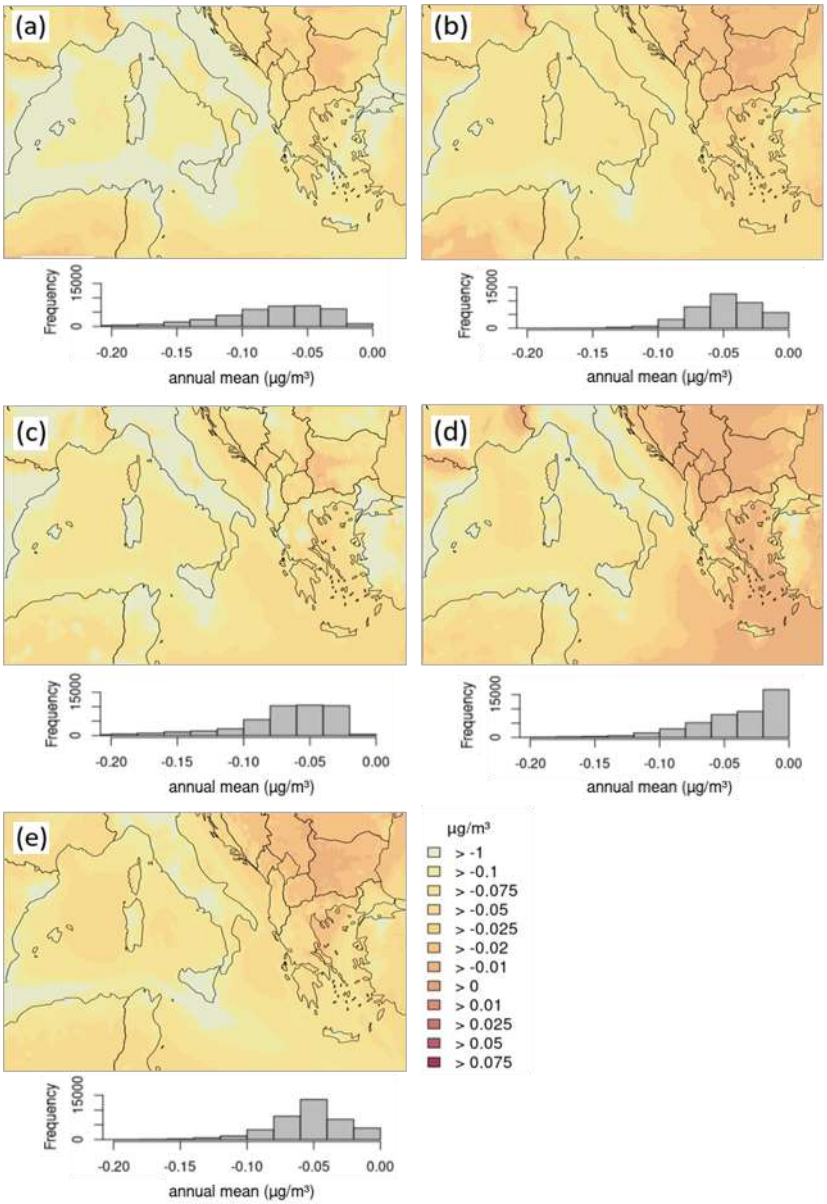

Figure S8: Annual mean NH_3 absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NH_3 potential ship impact, referred to the whole model domain.

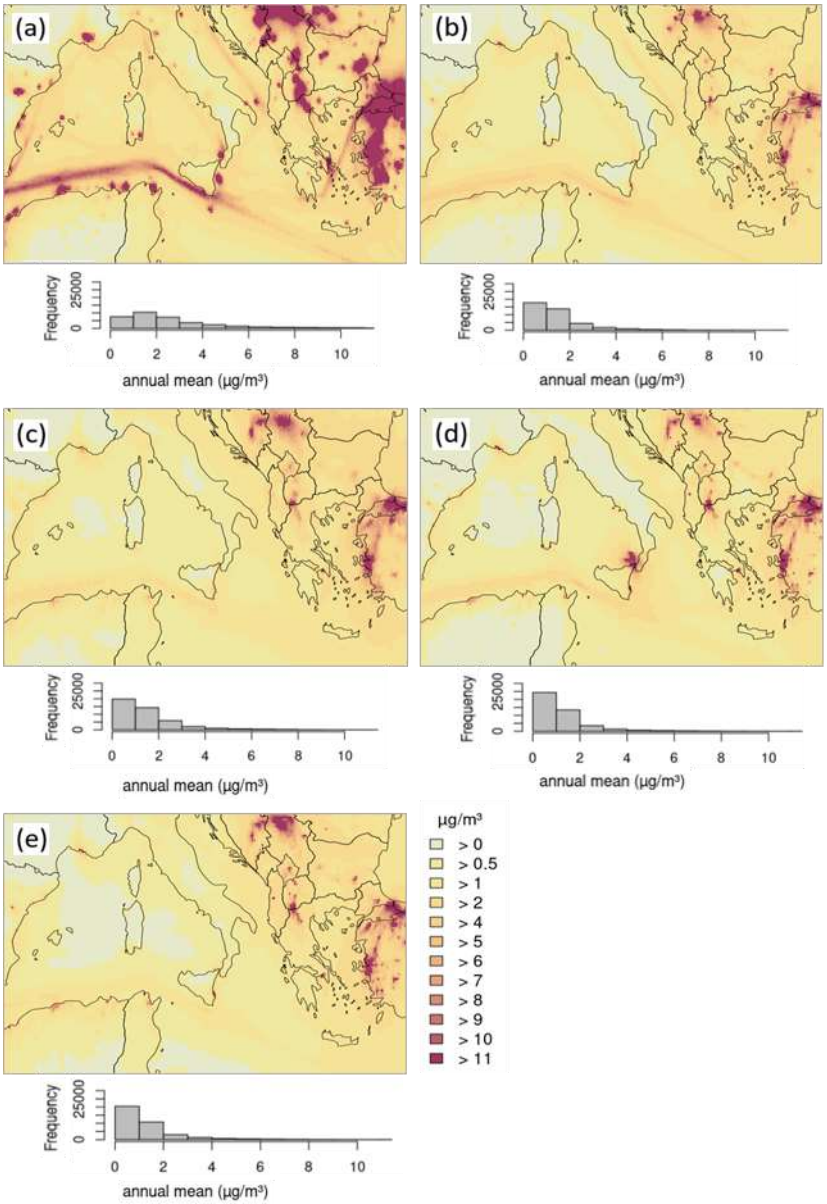

Figure S9: Annual mean SO_2 total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_2 concentration, referred to the whole model domain.

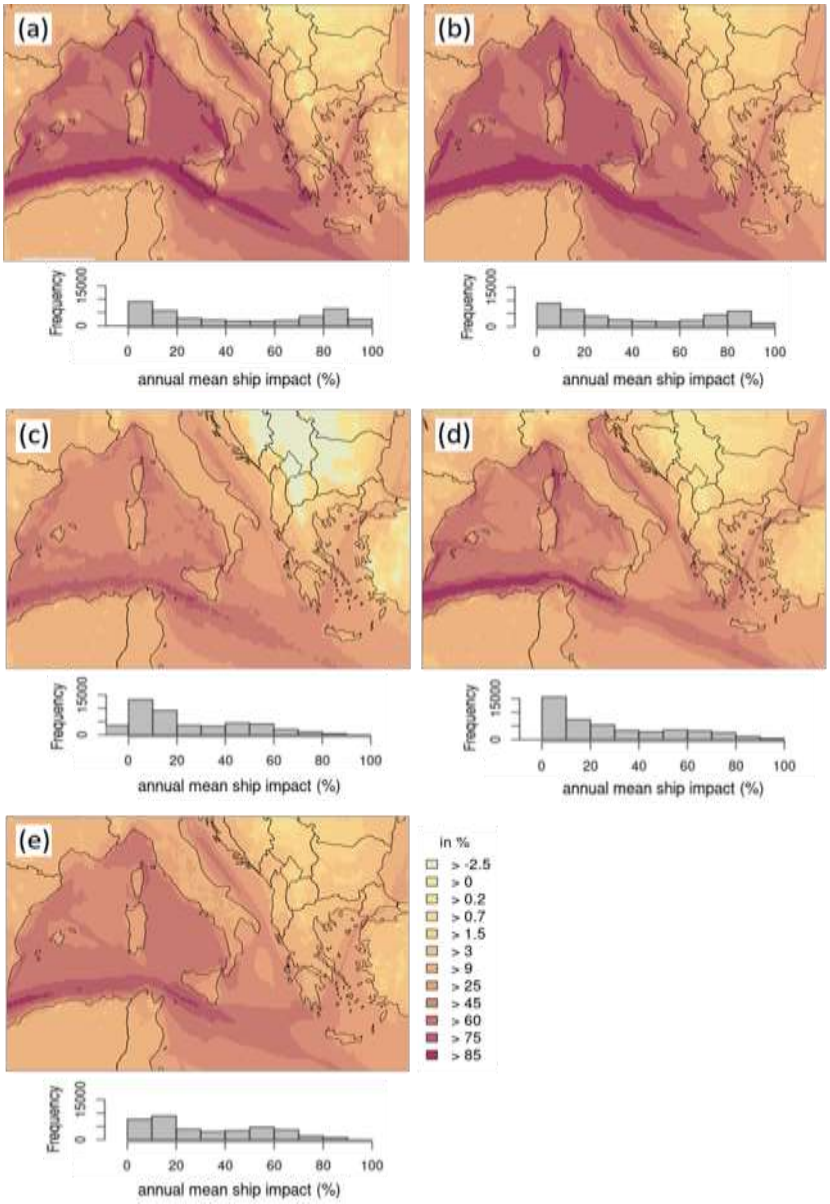

Figure S10: Annual mean SO_2 relative potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_2 potential ship impact, referred to the whole model domain.

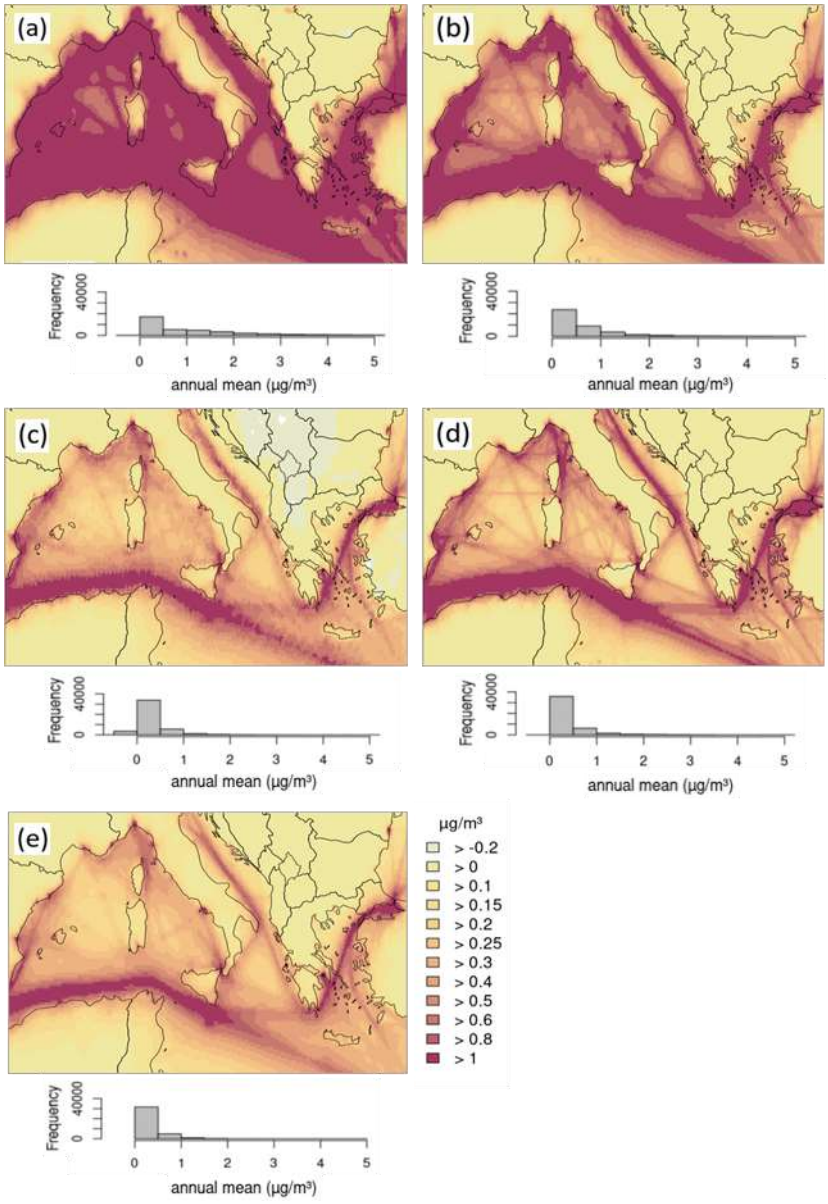

Figure S11: Annual mean SO_2 absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_2 potential ship impact, referred to the whole model domain.

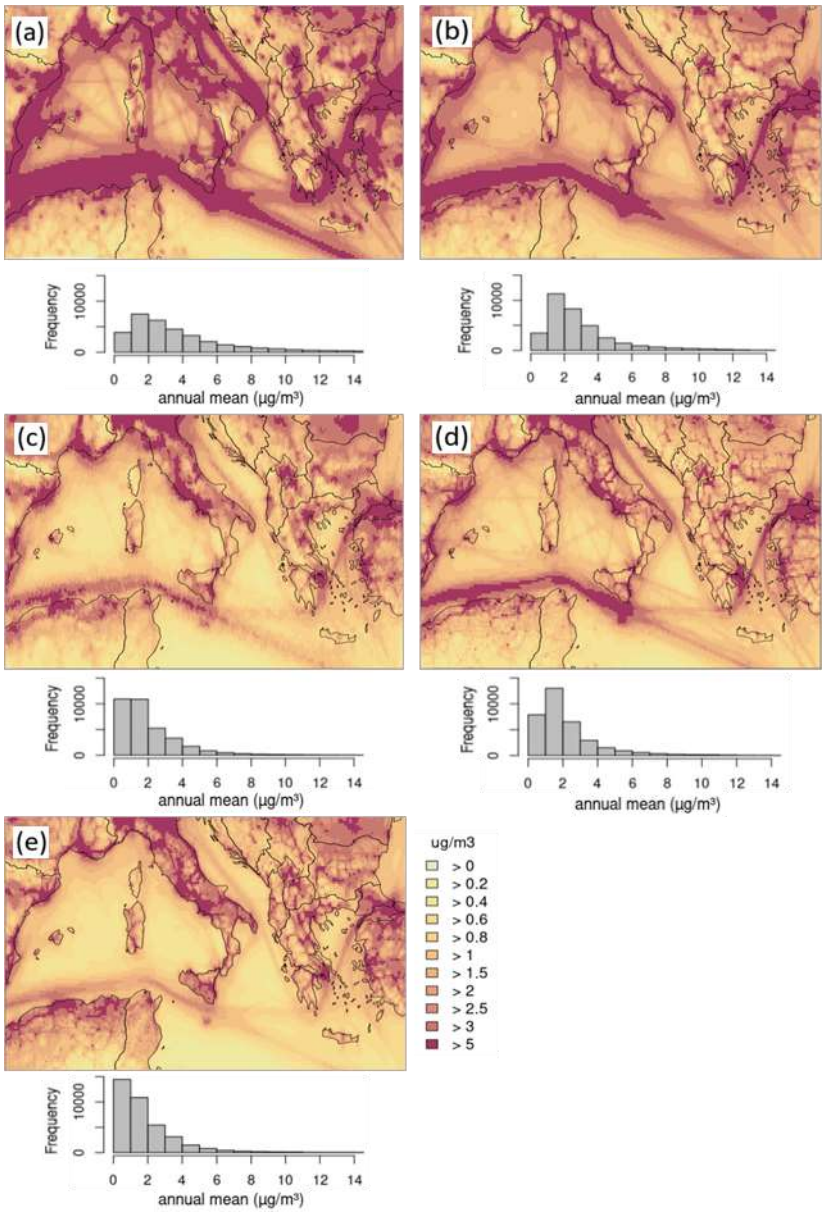

Figure S12: **Annual mean NO_2 total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_2 concentration, referred to the whole model domain.**

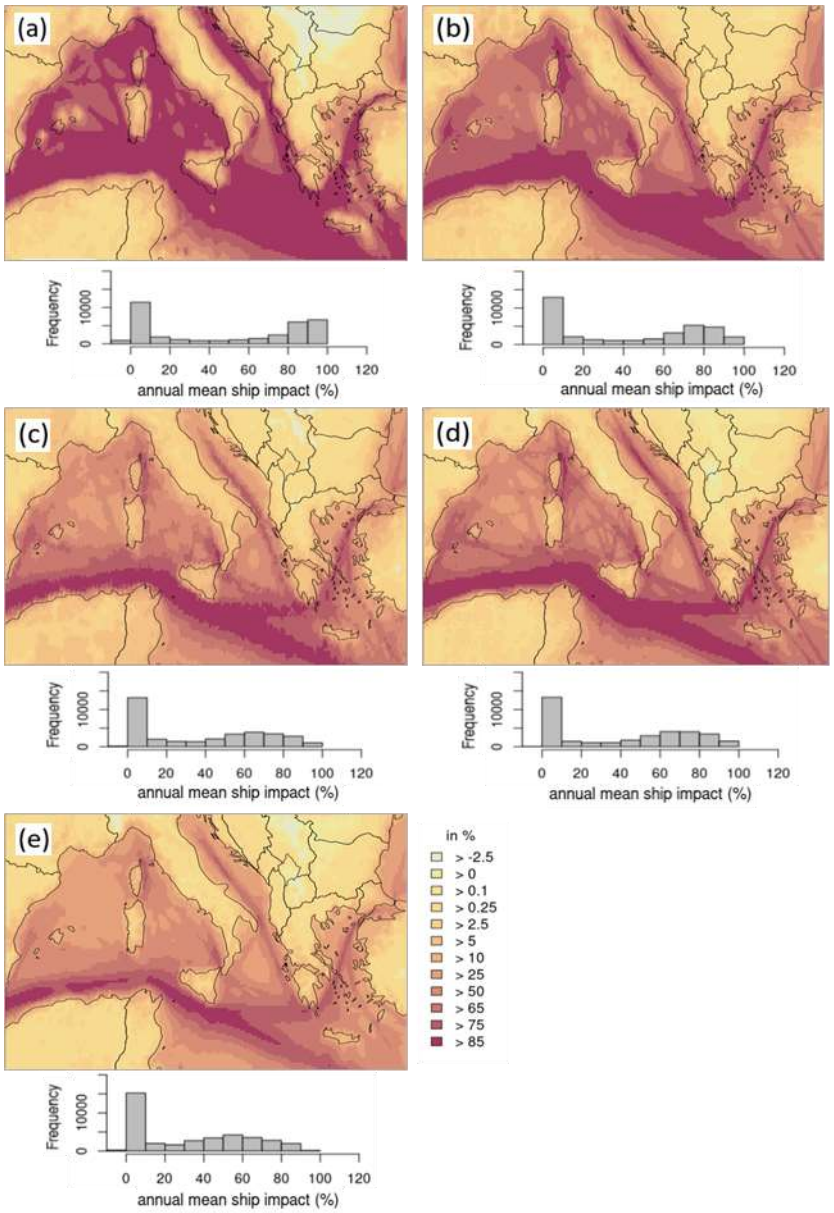

Figure S13: **Annual mean NO_2 relative potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_2 potential ship impact, referred to the whole model domain.**

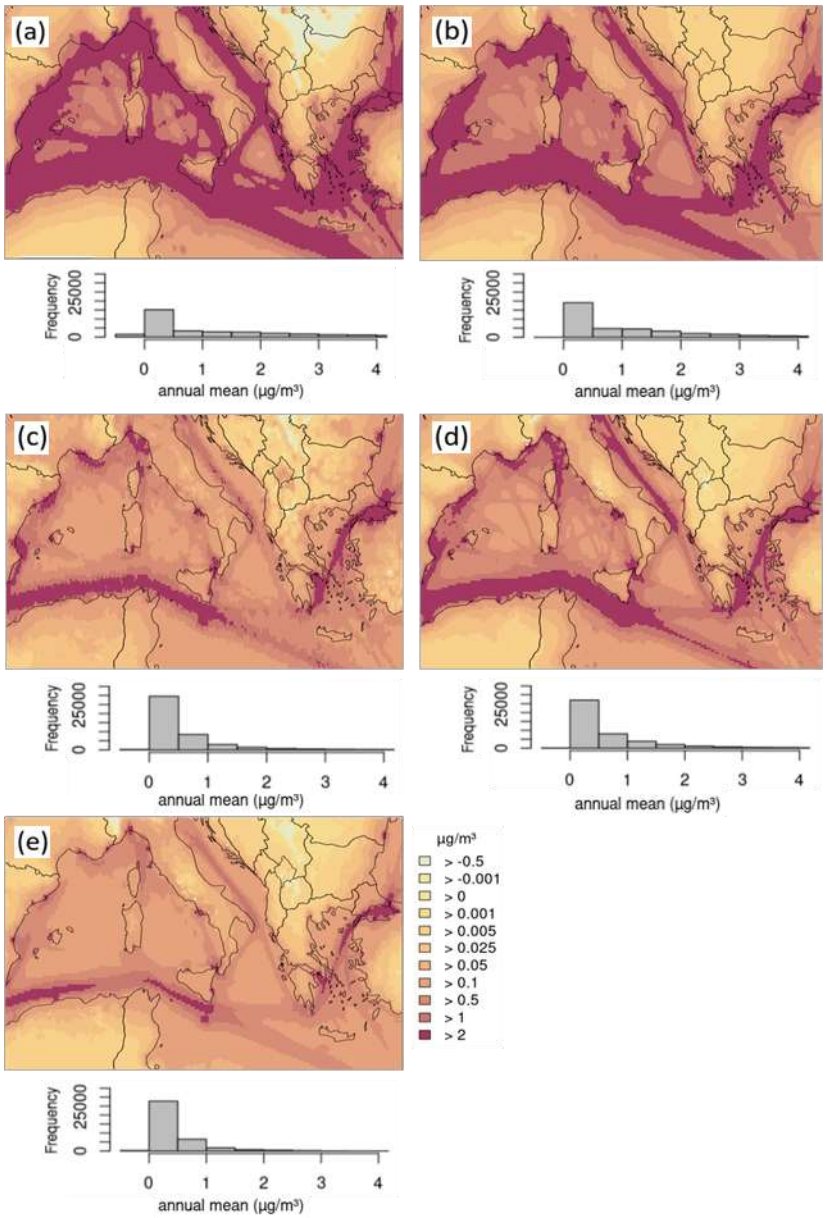

Figure S14: Annual mean NO_2 absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_2 potential ship impact, referred to the whole model domain.

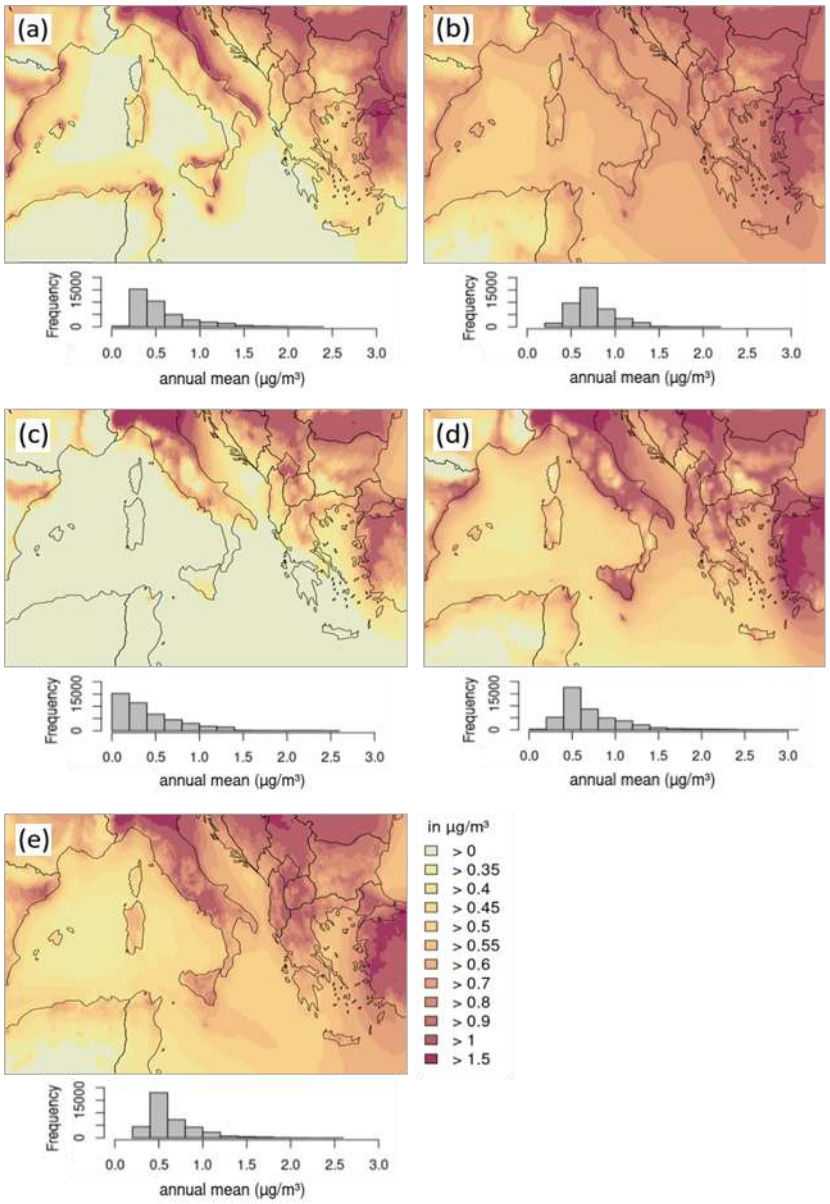

Figure S15: Annual mean NH_4^+ total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NH_4 concentration, referred to the whole model domain.

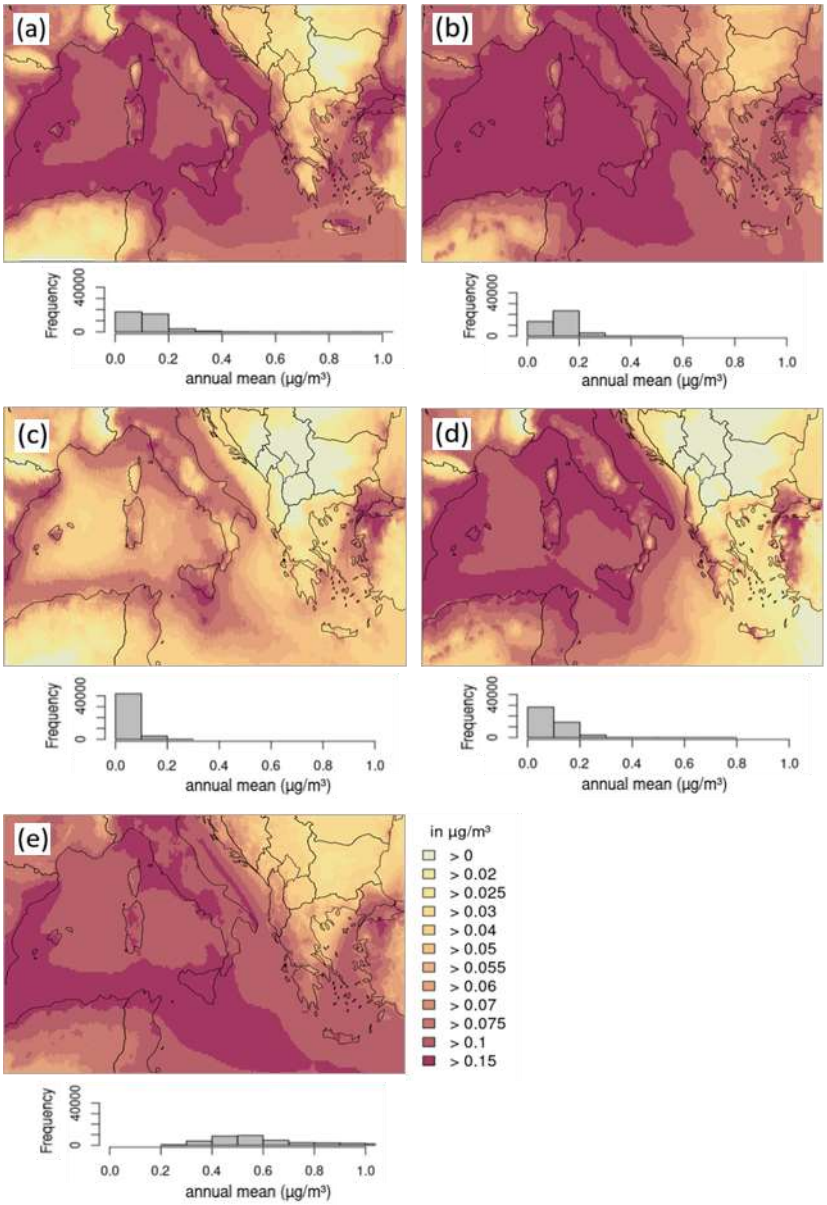

Figure S16: Annual mean NH_4^+ absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NH_4 potential ship impact, referred to the whole model domain.

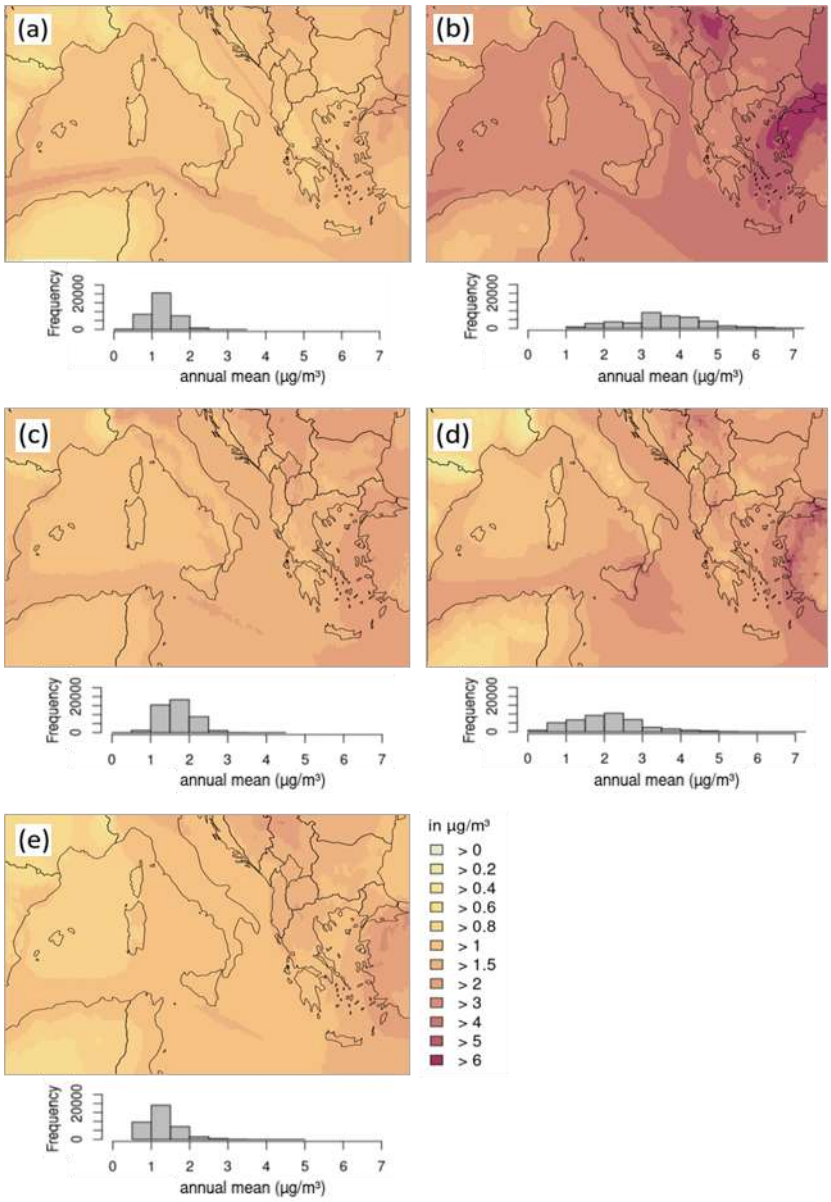

Figure S17: Annual mean SO_4^{2-} total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_4 concentration, referred to the whole model domain.

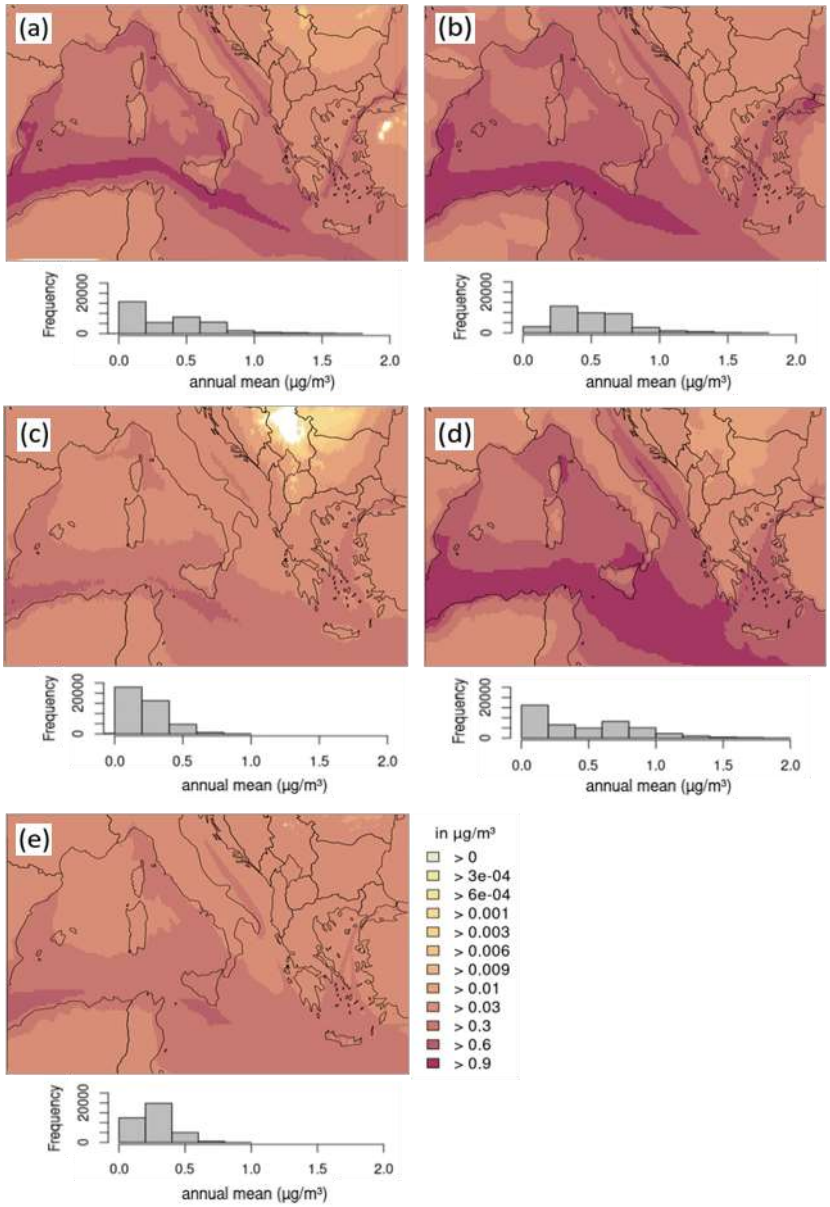

Figure S18: Annual mean SO_4^{2-} absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean SO_4 potential ship impact, referred to the whole model domain.

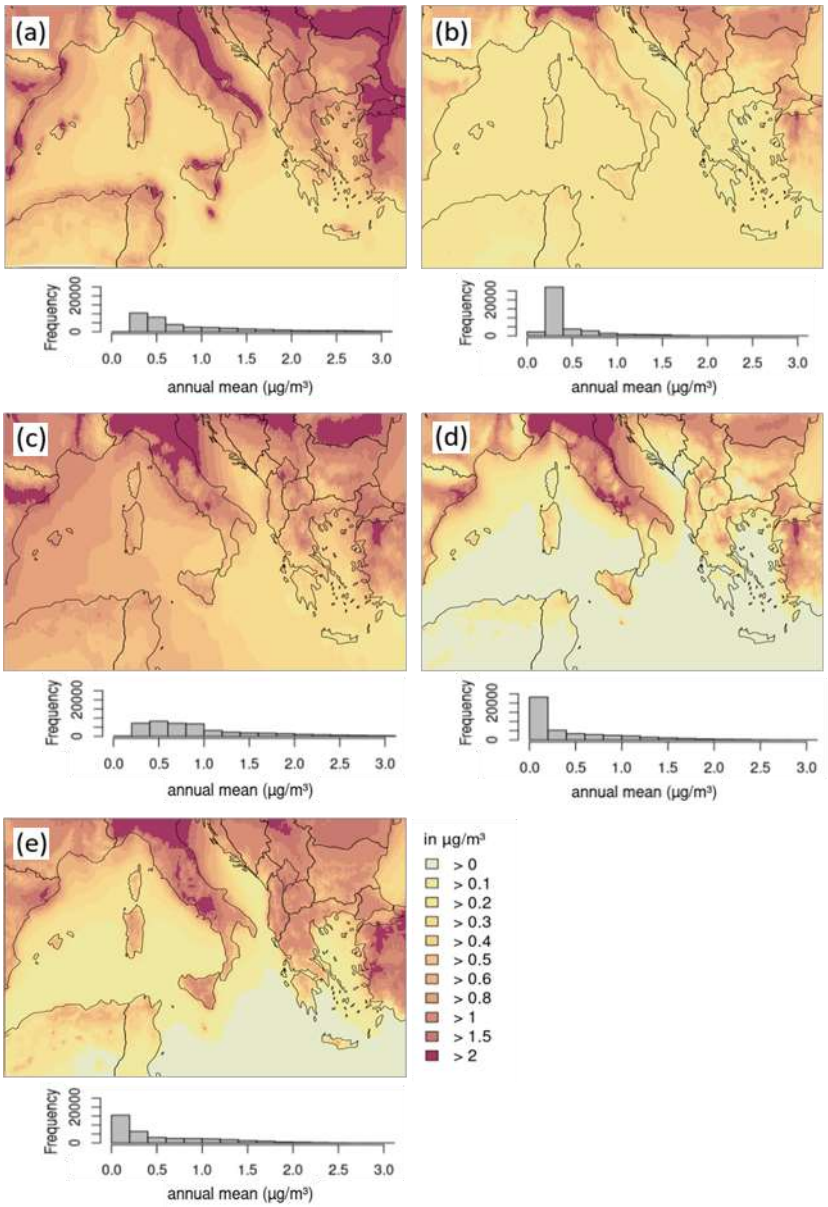

Figure S19: Annual mean NO_3^- total concentration. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NO_3 concentration, referred to the whole model domain.

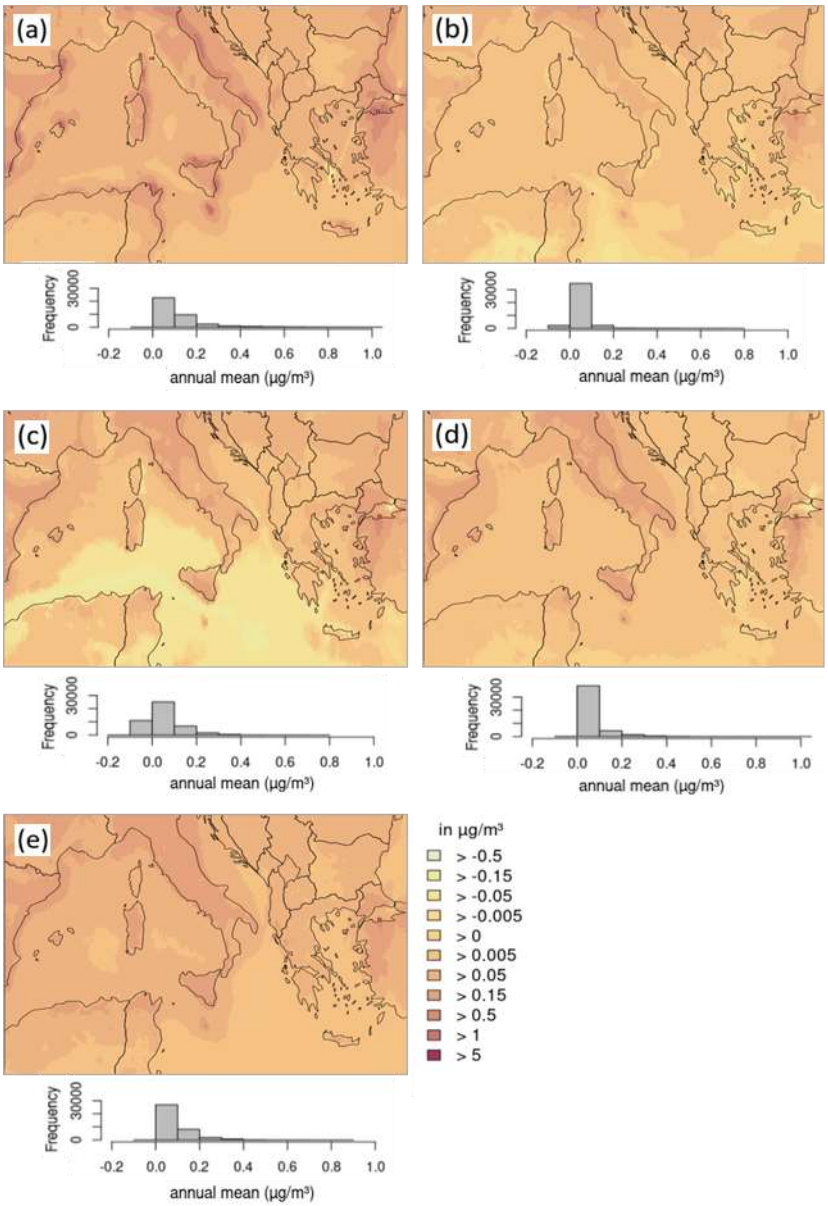

Figure S20: Annual mean NO_3^- absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS. Below the domain figure is the respective frequency distribution displayed for the annual mean NO_3 potential ship impact, referred to the whole model domain.

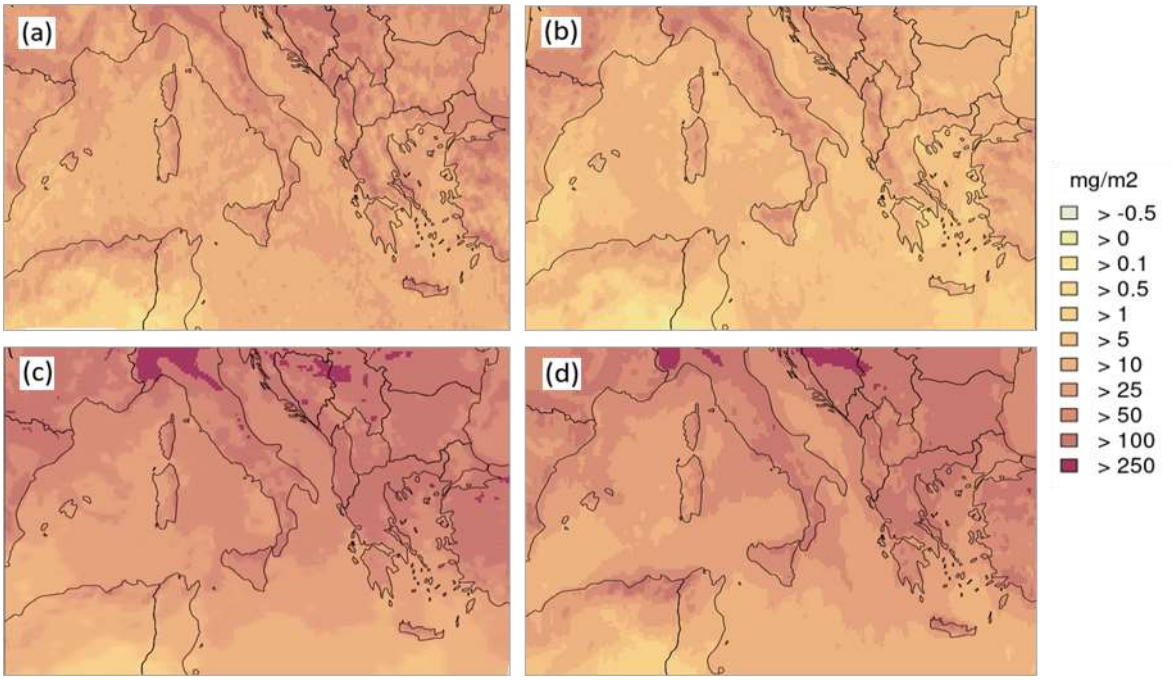

Figure S21: NH_4^+ wet deposition annual sum. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = LOTOS-EUROS.

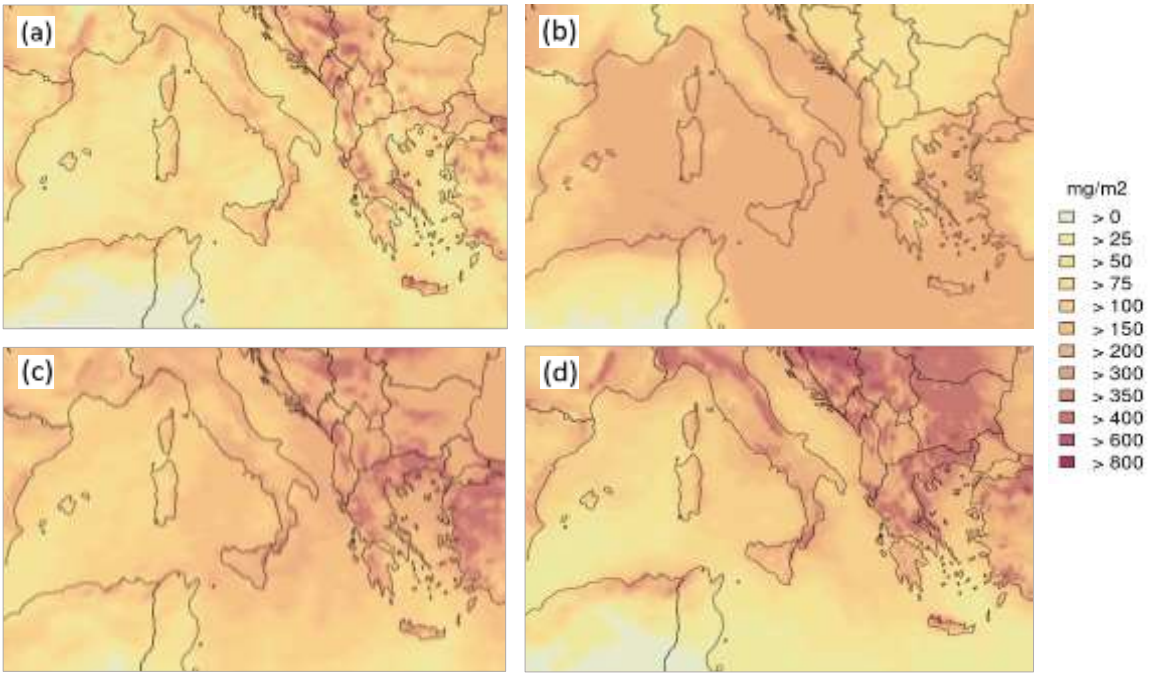

Figure S22: SO_4^{2-} wet deposition annual sum. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = LOTOS-EUROS.

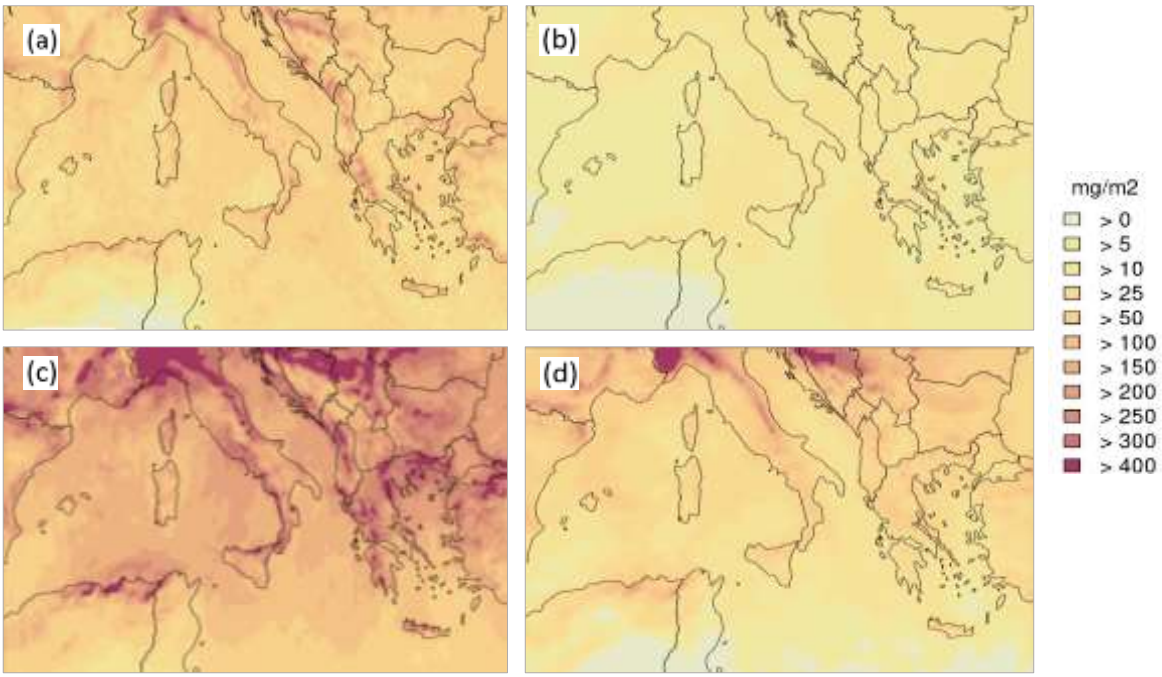

Figure S23: NO_3 wet deposition annual sum. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = LOTOS-EUROS.

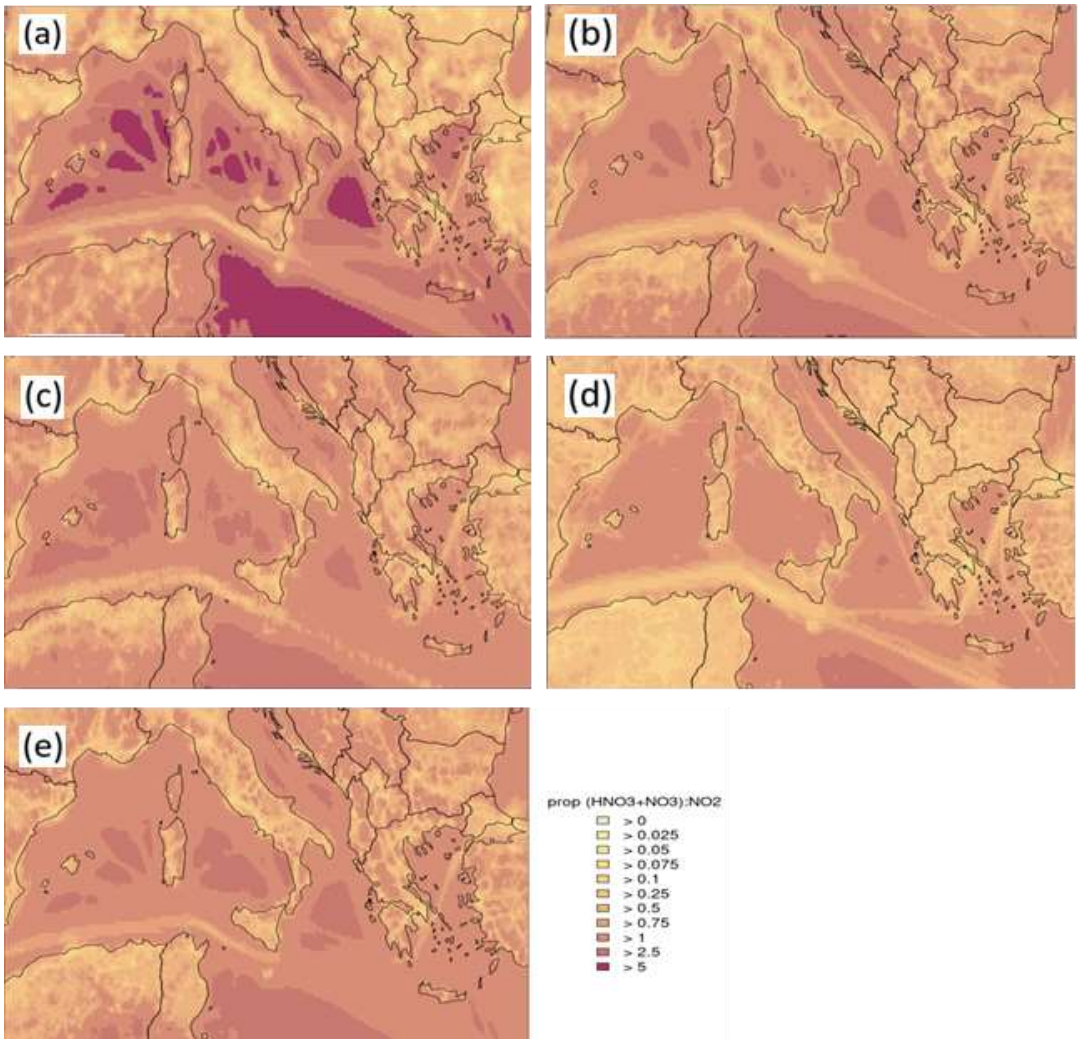

Figure S24: Ratio (HNO_3+NO_3^-):NO_2. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.

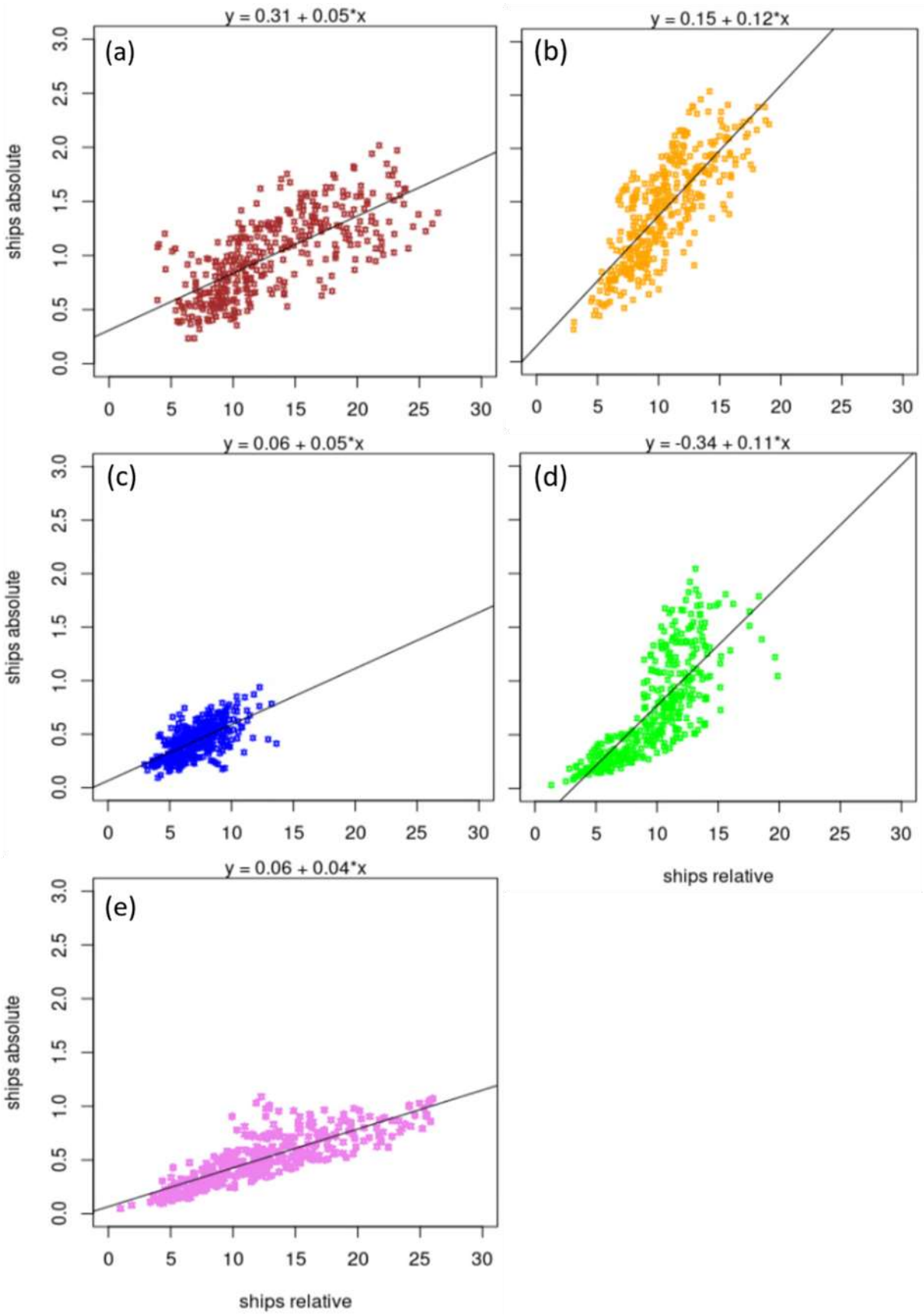

Figure S25: Relative ship impact plotted against absolute potential ship impact. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.

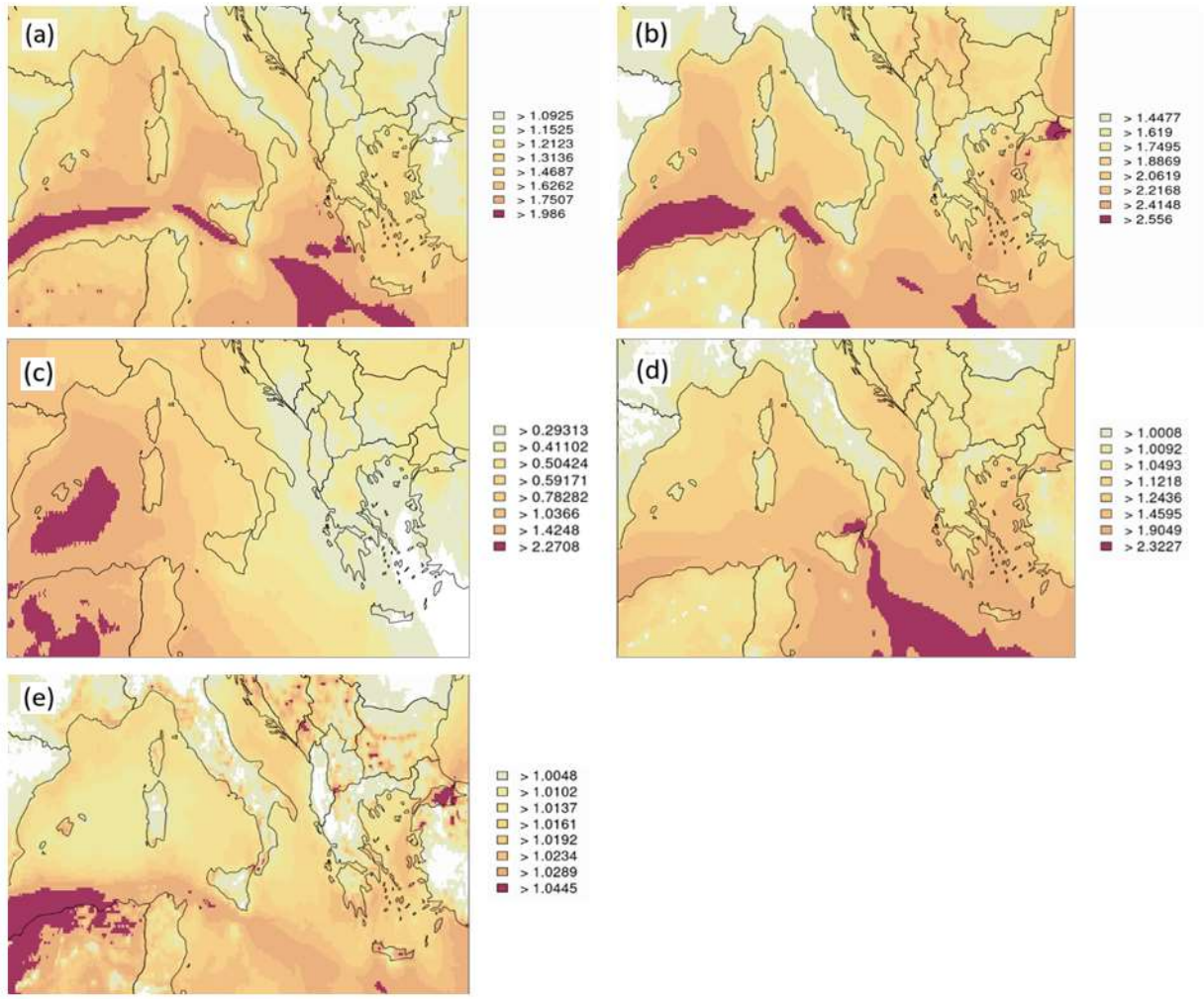

Figure S26: Maps display the ratio ($2*SO_4^{2-} + NO_3^-$):NH_4^+; calculated in mol. (a) = CAMx, (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.

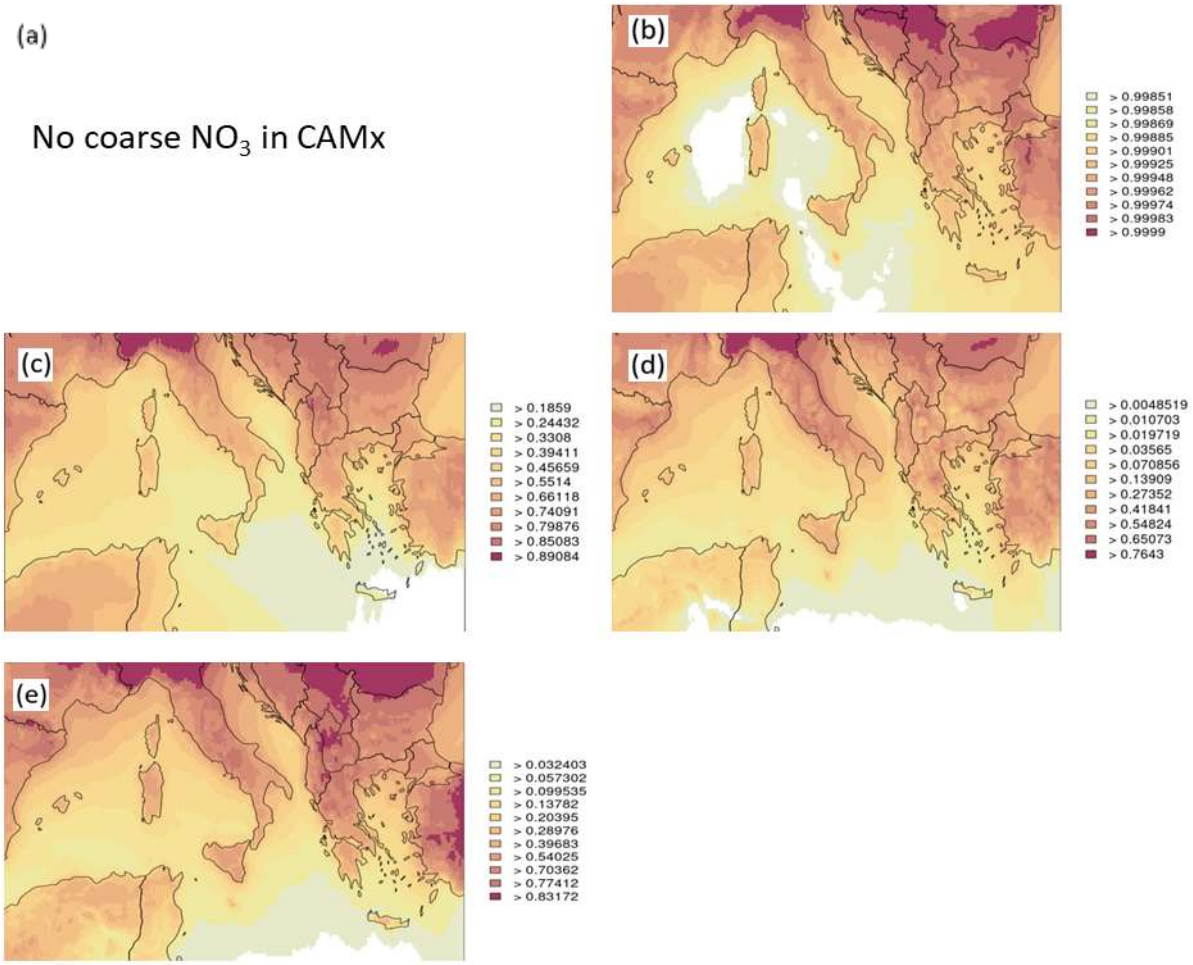

Figure S27: Maps display the ratio for the concentrations (NO_3^- fine):(NO_3^- fine + NO_3^- coarse). (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.

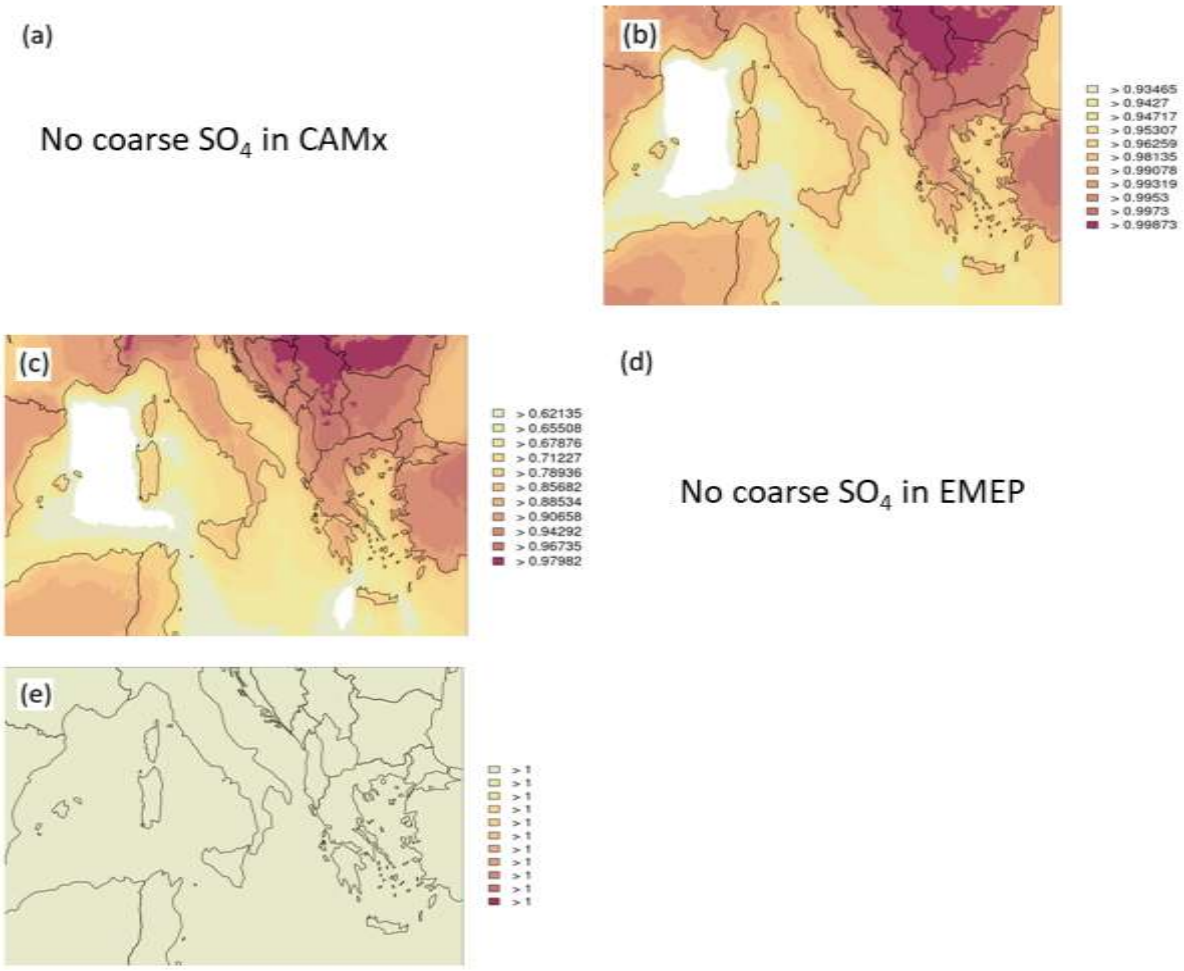

Figure S28: Maps display the ratio for the concentrations (SO_4^{2-} fine):(SO_4^{2-} coarse). (b) = CHIMERE, (c) = CMAQ, (d) = EMEP, (e) = LOTOS-EUROS.