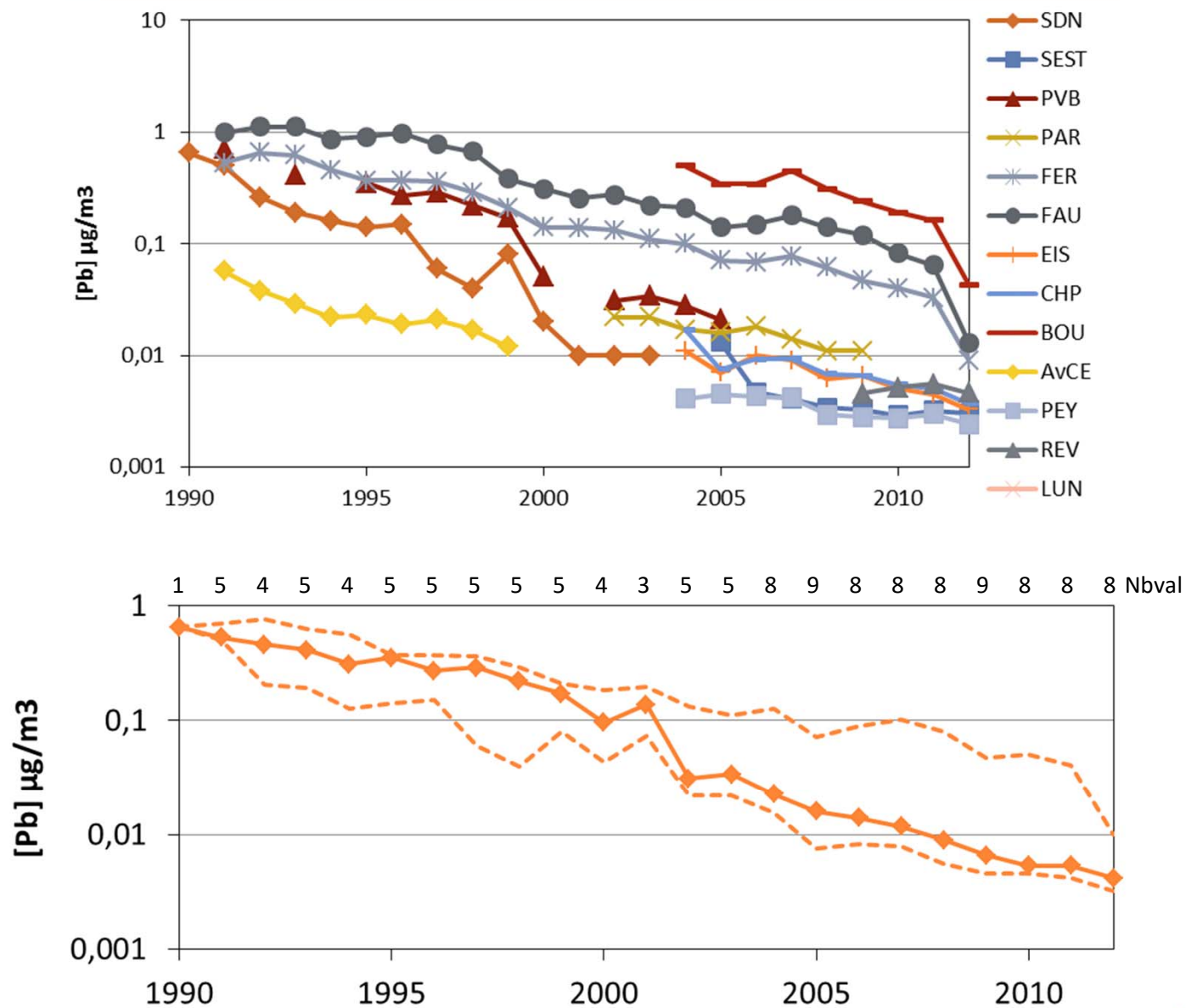
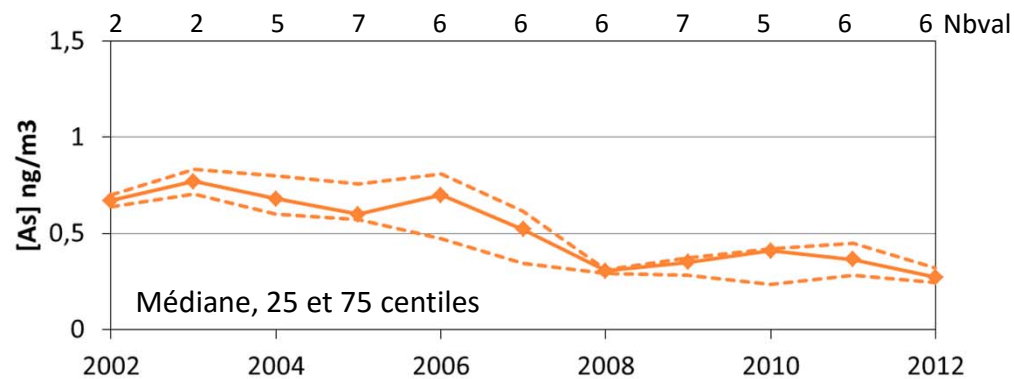
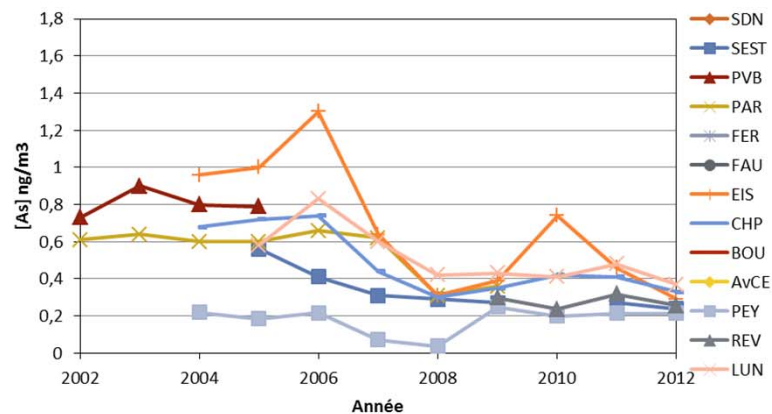
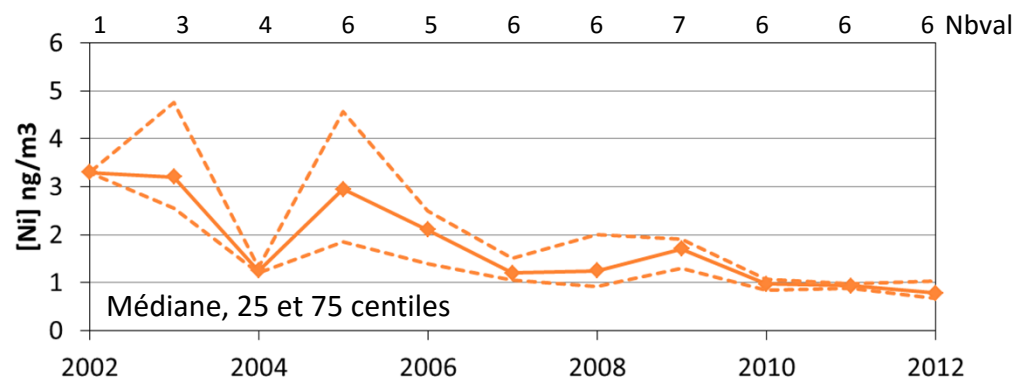
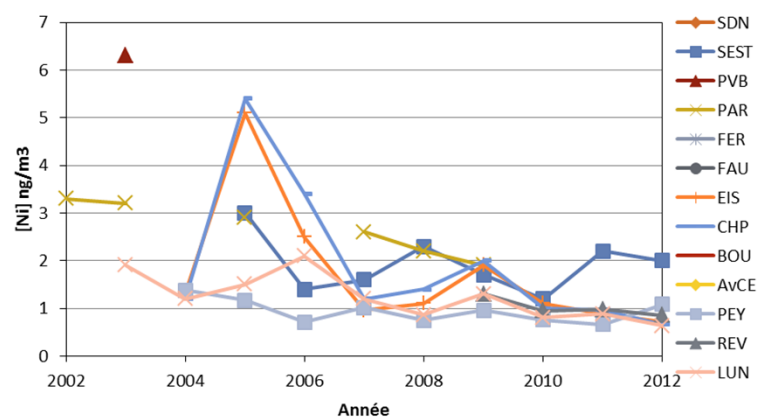
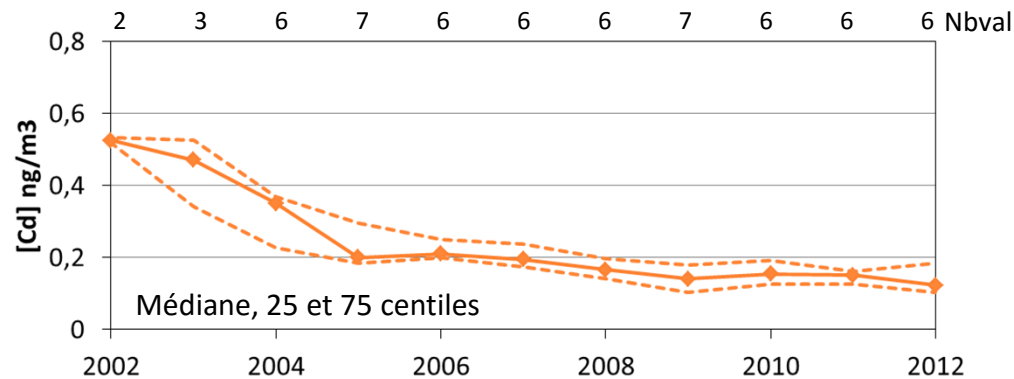
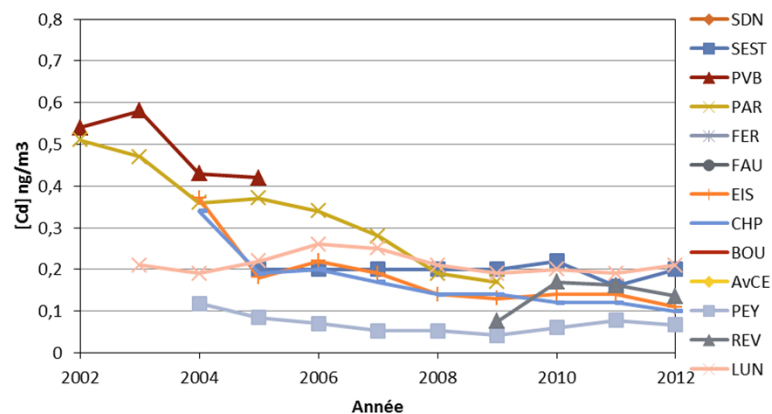
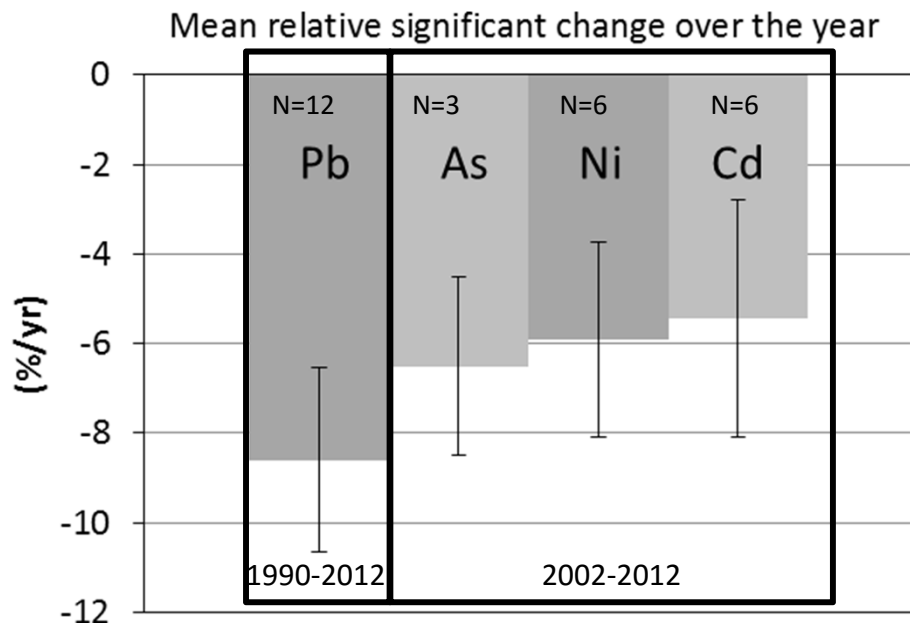
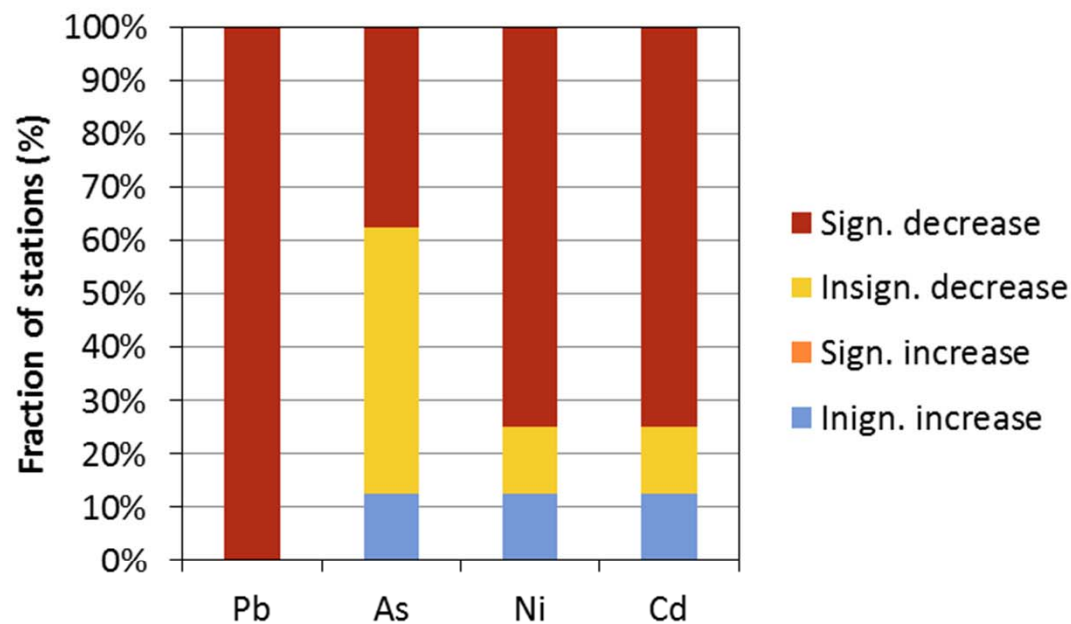


Bases de données manuelles utilisées (filtre de complétude temporelle)

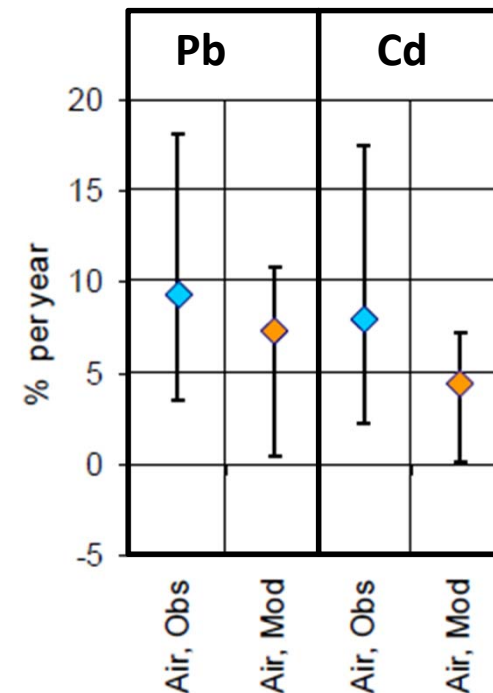
1. Métaux Lourds - PM_{10} : 1990-2001=3 stations (T, Pb) / 2002-2012=10 stations (typo. I,R MERA)
2. HAP – PM_{10} : 2002-2012 = 6 stations (typo. I,T,U,P)
3. Ions inorganiques
 - Retombées atmosphériques : 1990-2012= 8-12 stations (typo. R MERA+ hors couvert forestier via CATAENAT/RENECOFOR)
 - TSP : 2006-2013 = 3 stations (typo. R)
4. COV hydrocarbonés et carbonylés : 2002-2013 / 2003-2013 / 1997-2007 = 5 stations (typo. U, R MERA)







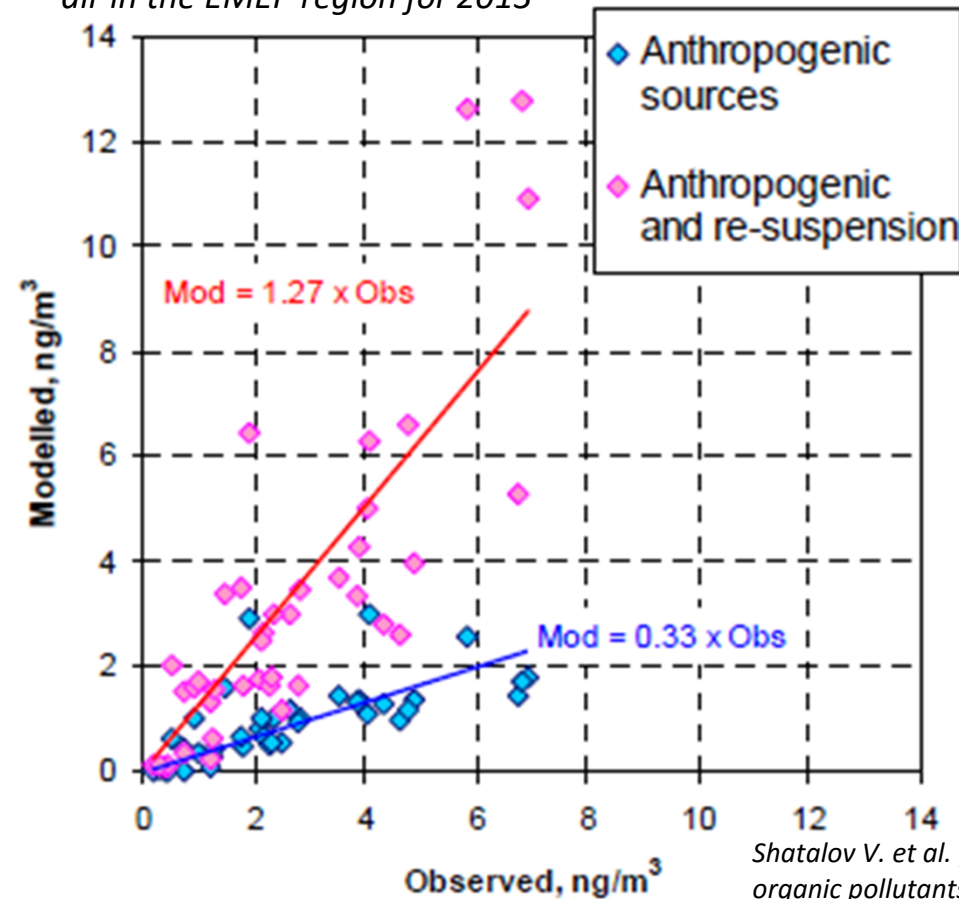
Mean annual reduction rates



Colette A. et al. [2016] Air pollution trends in the EMEP region between 1990 and 2012. EMEP: CCC-Report 1/2016

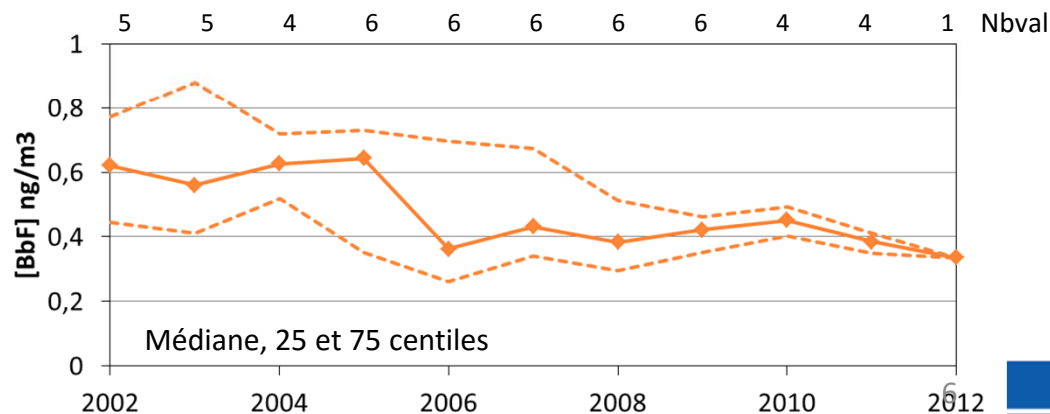
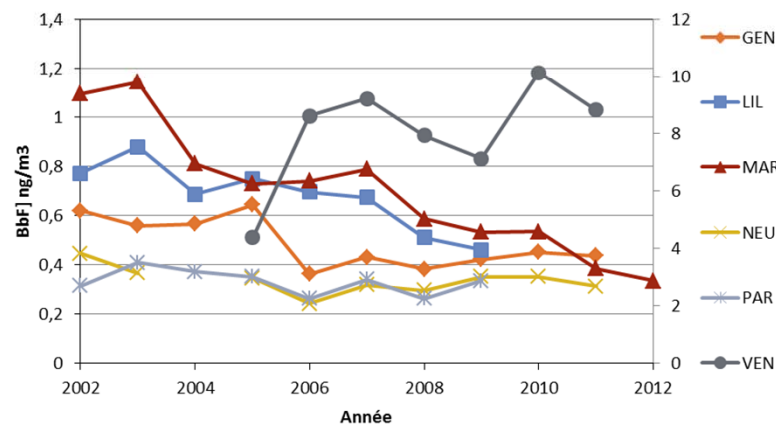
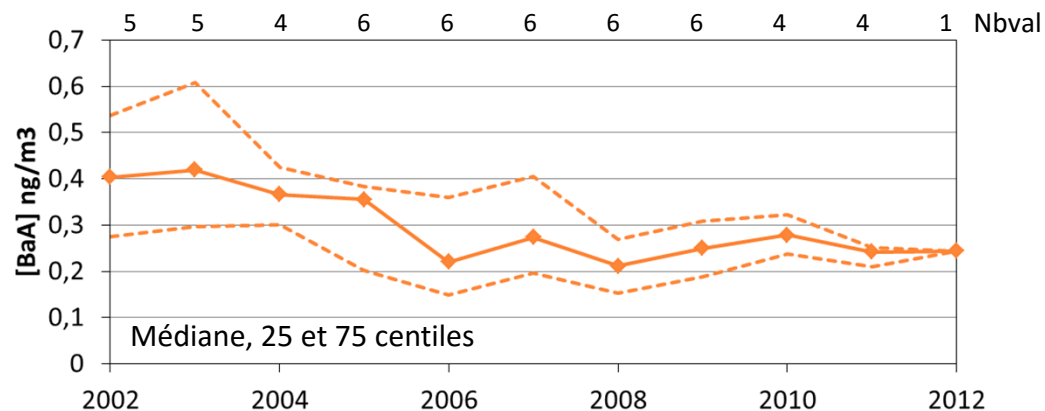
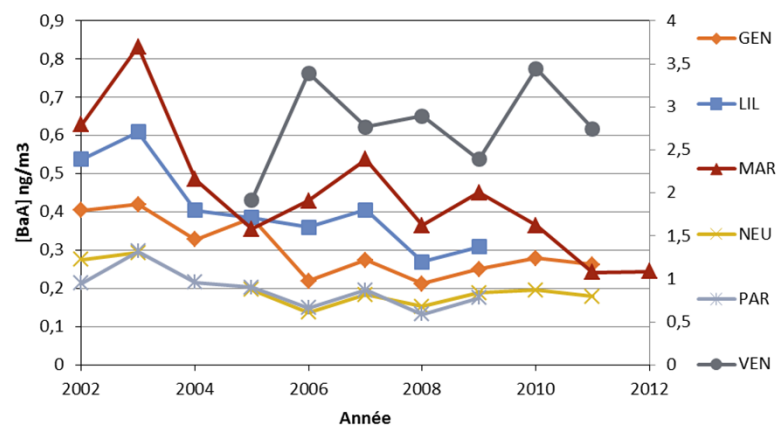
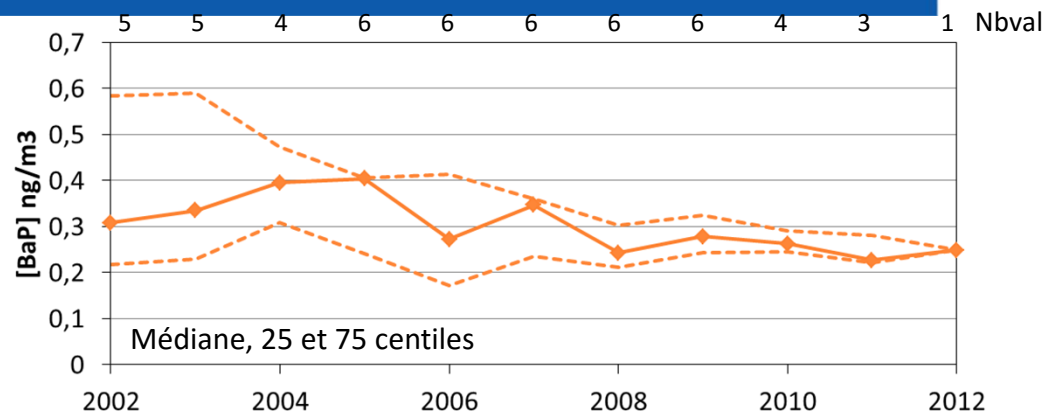
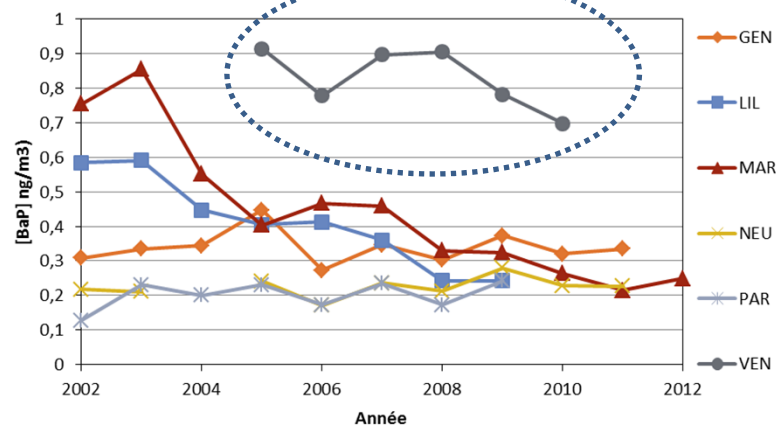
- Décroissance en lien avec réduction des émissions
- Faible couverture spatiale / tendances EMEP réalisées sur modélisation (cas de la remise en suspension)
- Mise en perspective avec bioindicateurs

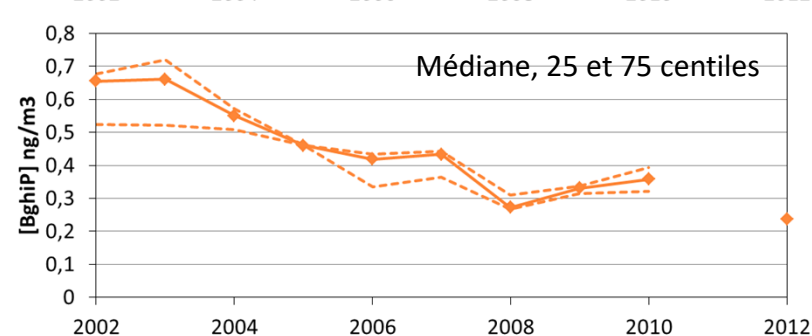
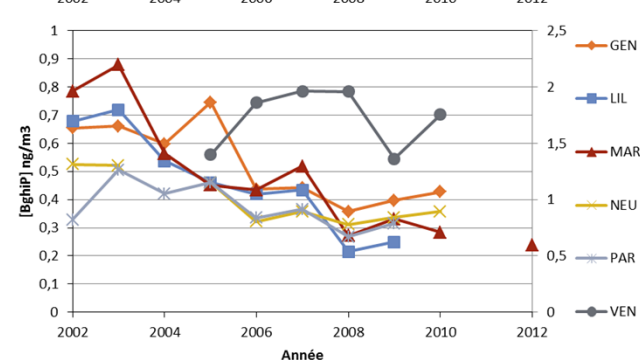
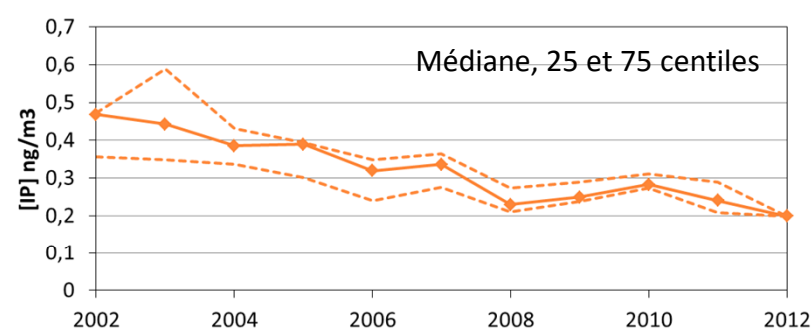
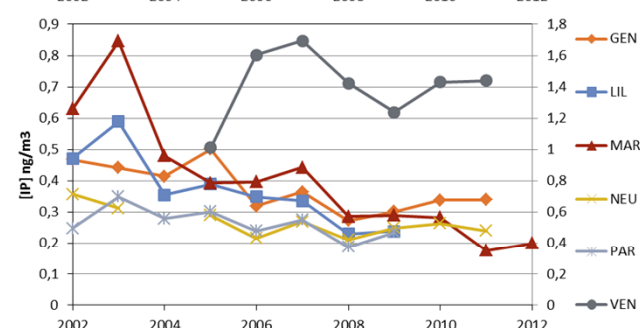
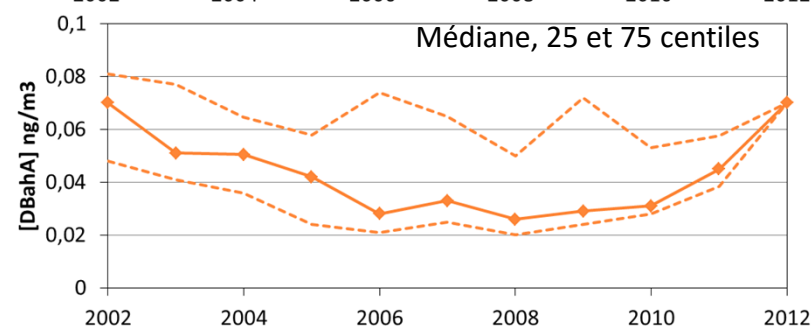
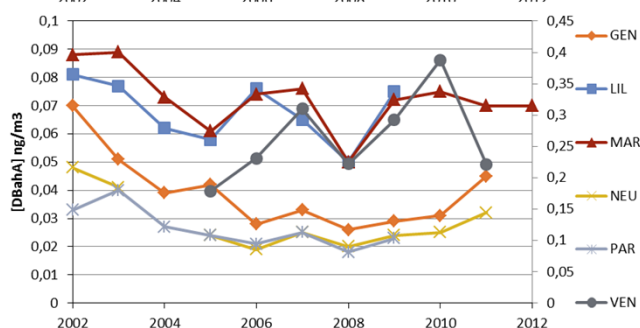
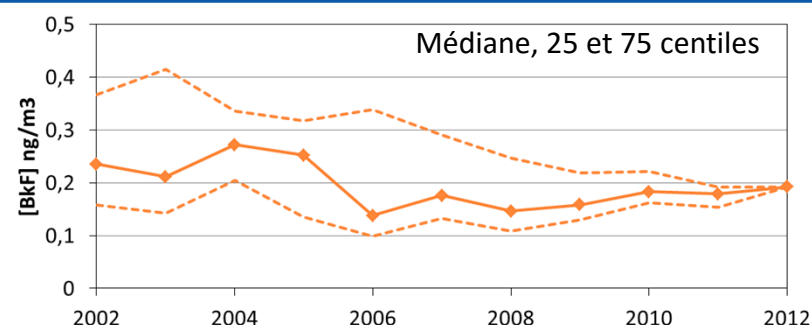
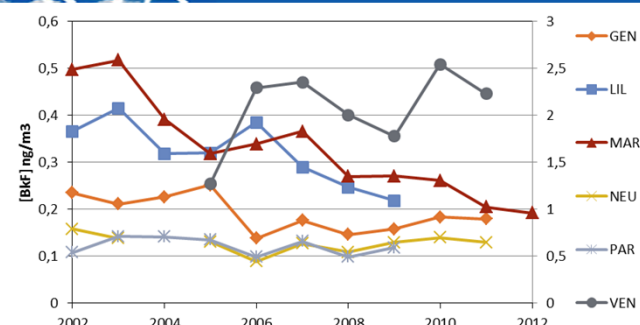
Modelled and observed annual mean lead concentrations in air in the EMEP region for 2013

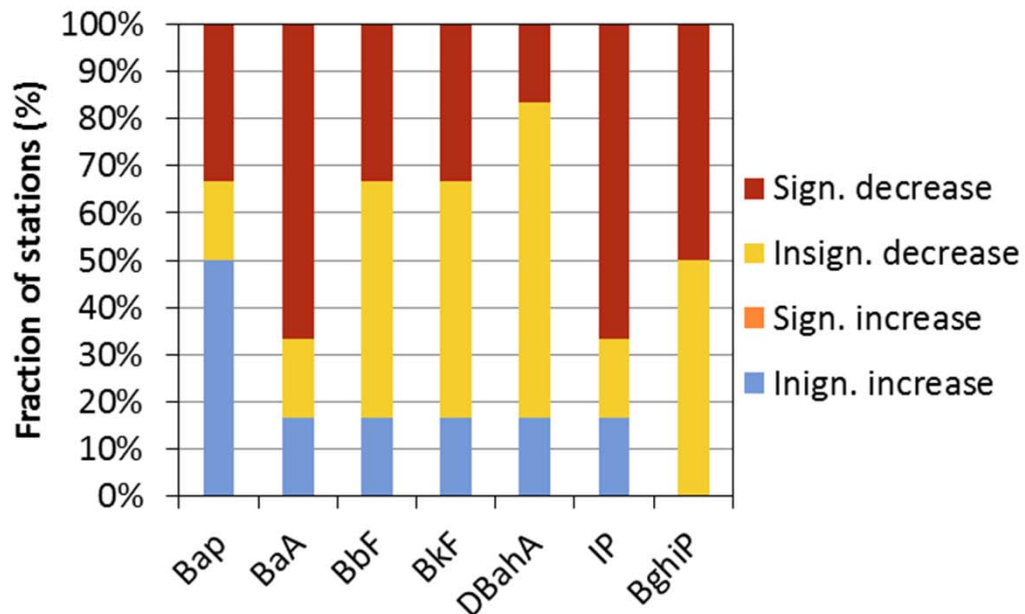


Shatalov V. et al. [2016] Heavy metals and persistent organic pollutants: model assessment of pollution and research activities. EMEP/MSC-E Technical report 1/2016

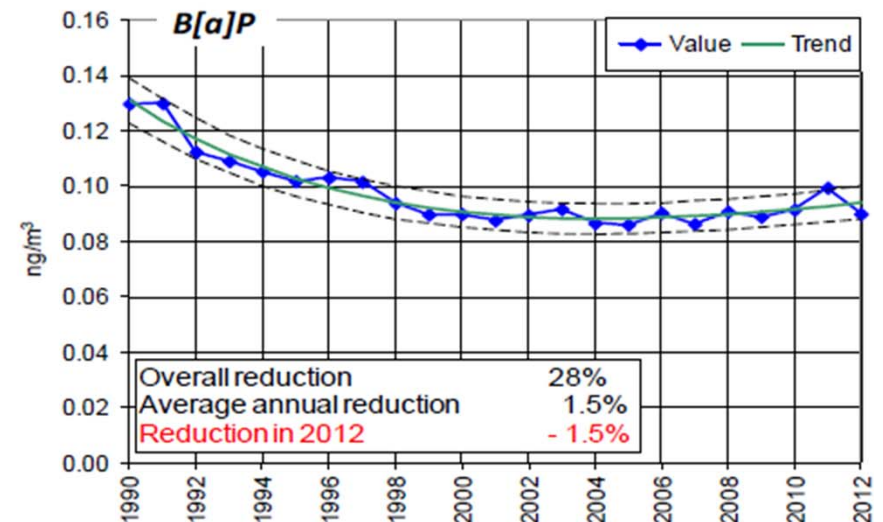
- Sous-estimation de 60-70% en moyenne des valeurs observées sans le module de remise en suspension
- Nette amélioration des modélisations avec remise en suspension



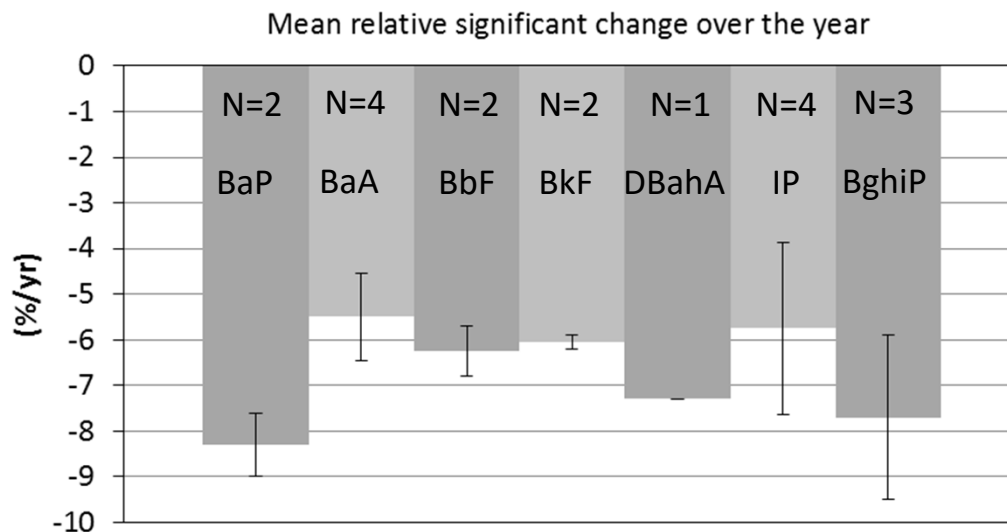




Trends of modelled annual mean air concentration of BaP in the EMEP region

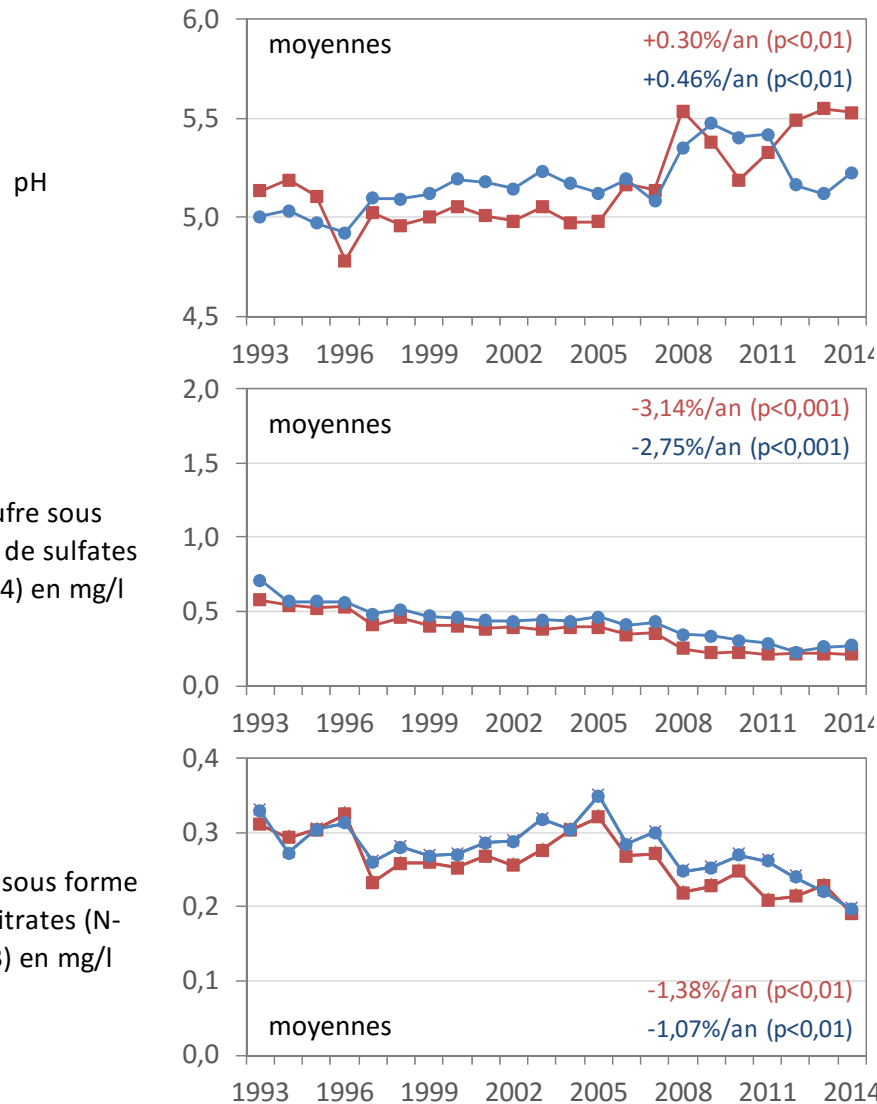


Colette A. et al. [2016] Air pollution trends in the EMEP region between 1990 and 2012. EMEP: CCC-Report 1/2016, Kjeller, Norway.

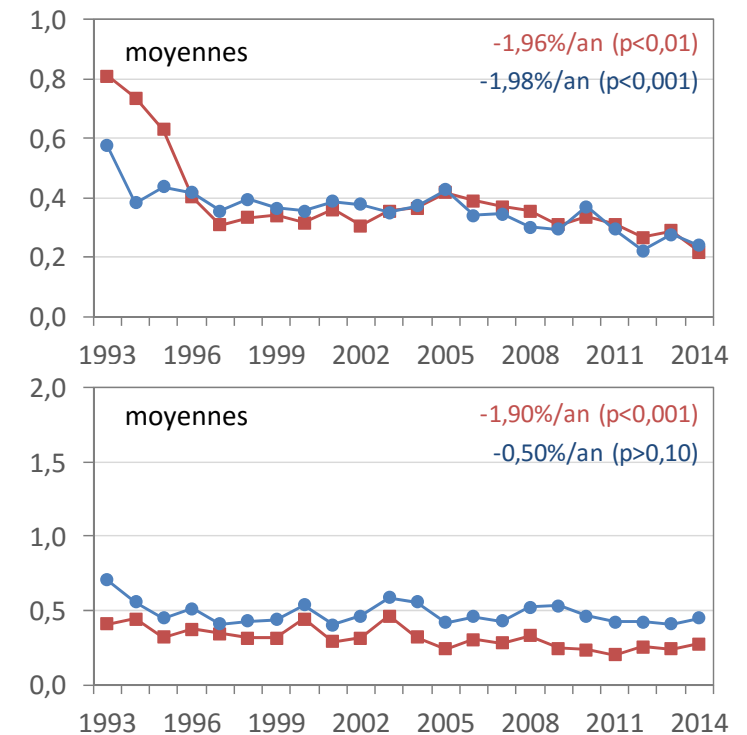


- Qq baisses significatives
- Faible couverture temporelle
- modélisations : augmentation des concentrations
- Saisonnalité importante des émissions

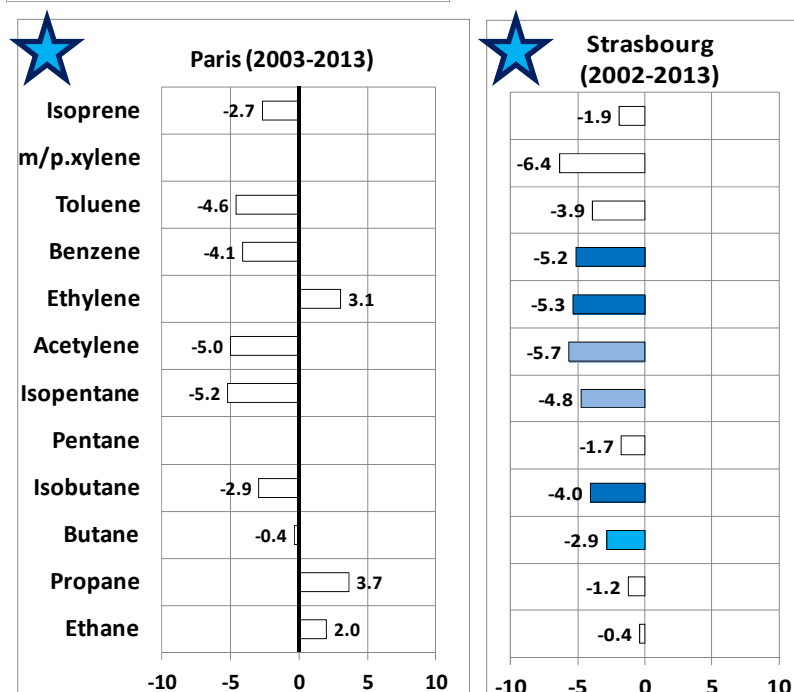
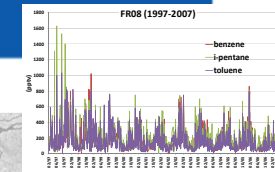
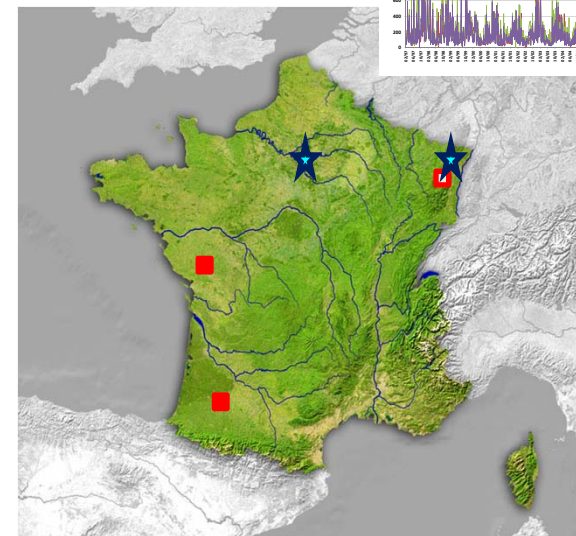
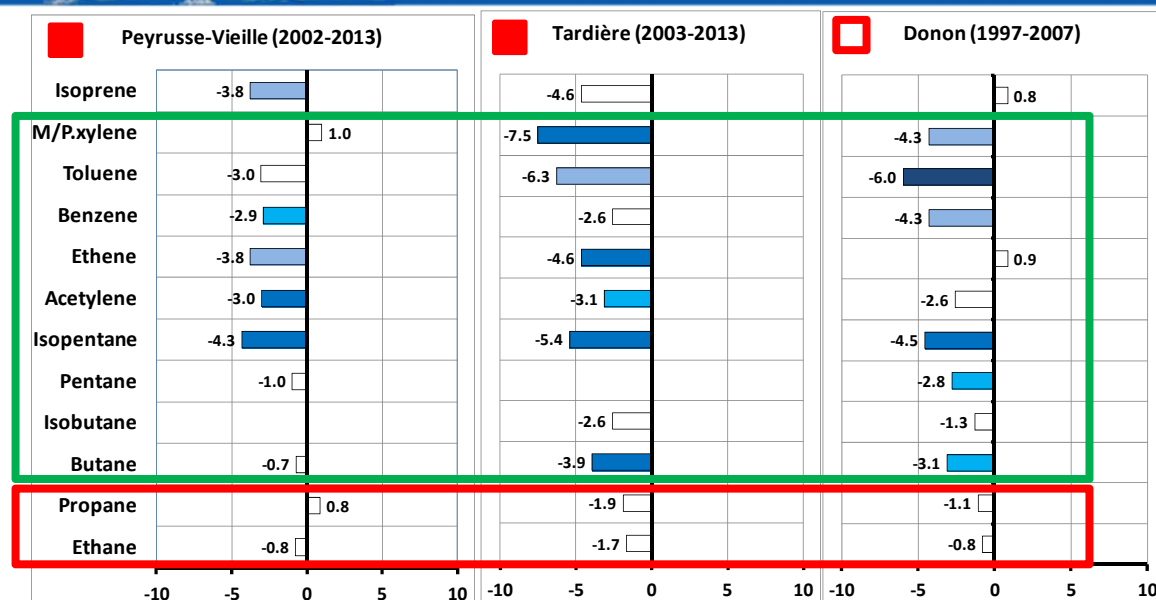
MERA/EMEP CATAENAT/ICP FORESTS



Azote sous forme d'ammonium (N-NH₄) en mg/l



- Réduction importante sulfates, diminution plus faible des composés azotés
- Homogénéité des tendances entre les réseaux FR et EMEP
- Efficacité des réductions des émissions

Taux de chgt annuels (%.y⁻¹)

- Tendances similaires rural/Strasbourg
- Forte variabilité inter-annuelle pour Paris
- ↘ Produits de combustion

■ → Usage de gaz

Liens évidents avec la baisse des émissions

⇒ Efficacité politiques réduction

⇒ Evolutions technologiques

➤ Perspective recherche des sources par PMF