

## Speciation and role of iron in cloud droplets at the puy de Dôme station

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This erratum is initiated in order to add Author's corrections which were not carried out previously.

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Corrected article should read as follows:

PAGE 267

5th line 2 authors more: Anne-Marie Delort and Zappoli Sergio

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PAGE 270, Abstract, after the sentence "Light intensity, presence of complexants or oxidants ( $H_2O_2$ ) do not influence the Fe(II)/Fe(Total) ratio, that was quite constant at about 0.75." add this sentence: "The relatively high iron concentration (according to pH/redox potential equilibrium) and the lack of light dependence on Fe(III)/Fe(II) couple is probably

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due to the speciation of iron (interaction with natural organic matter) that can stabilize iron in its reduce form and prevent further oxidation.”

PAGE 270, § 2.3.1 after “To determine iron concentration, a colorimetric complexant” add “(ferrozine, 2 mM during titration).”

PAGE 271, § 2.3.1 after “This was confirmed by experiments on filtered (filter porosity at 0.22  $\mu\text{m}$ ) and un-filtered samples” add “, which have not shown any impact on iron concentration or speciation.”

PAGE 271, after § 2.3.3 add

#### *2.3.4 pH, Conductivity and redox potential*

The references of the multiparameters used for conductivity, redox potential and pH measurements are Consort C830 multiparameter for conductivity and redox potential (calomel electrode) and Consort P400 for pH.

PAGE 271, § 2.4 First sentence have to transformed in “Some aqueous samples were exposed to artificial light in a hermetic photoreactor in order to observe the transformation due to photochemical influence on cloud water chemistry, free from the gas phase transfer.”

PAGE 271, § 2.4 3rd line after PMP add (Poly-Methyl-Pentene).

PAGE 273, § 3.1 14th line solubilized have to be replaced by “dissolved”, as well as at line 17th.

PAGE 274, § 3.2 last line after “This was confirmed in our samples, as shown in Figure 2” add “ and Figure 3”.

PAGE 279, § 3.3 10th line, after “This hypothesis is consistent with previous studies at the same site found that hydrophobic macromolecular compounds could constitute around 40% of the total DOC in cloudwater (Zappoli S., personal communication).” Add “It is likely probable that these or similar compounds catch metals and subtract them to free iron available for photochemical cycles in cloudwater.”

PAGE 279, § 3.3 16th line, after “In fact at the same pH values, lower  $E_h$  allowed higher concentration of free soluble iron, which might be more reactive and photoreactive than iron adsorbed on humic substances (Faust, 1994).” Add “According to the pH/redox potential equilibrium, the free iron available to undergo photochemical processes is more abundant in surface water with respect to atmospheric waters.

Unfortunately no information on DOC content and speciation are available for the atmospheric samples in which other authors found light influence on iron speciation, but we can assume a special composition of organic matter dissolved in cloudwater at Puy de Dôme that play a crucial role in iron complexation and stabilisation. Moreover, organic matter present in PDD cloudwater samples might absorb light, which is then not available anymore to trigger the photoreduction of chelated iron.”