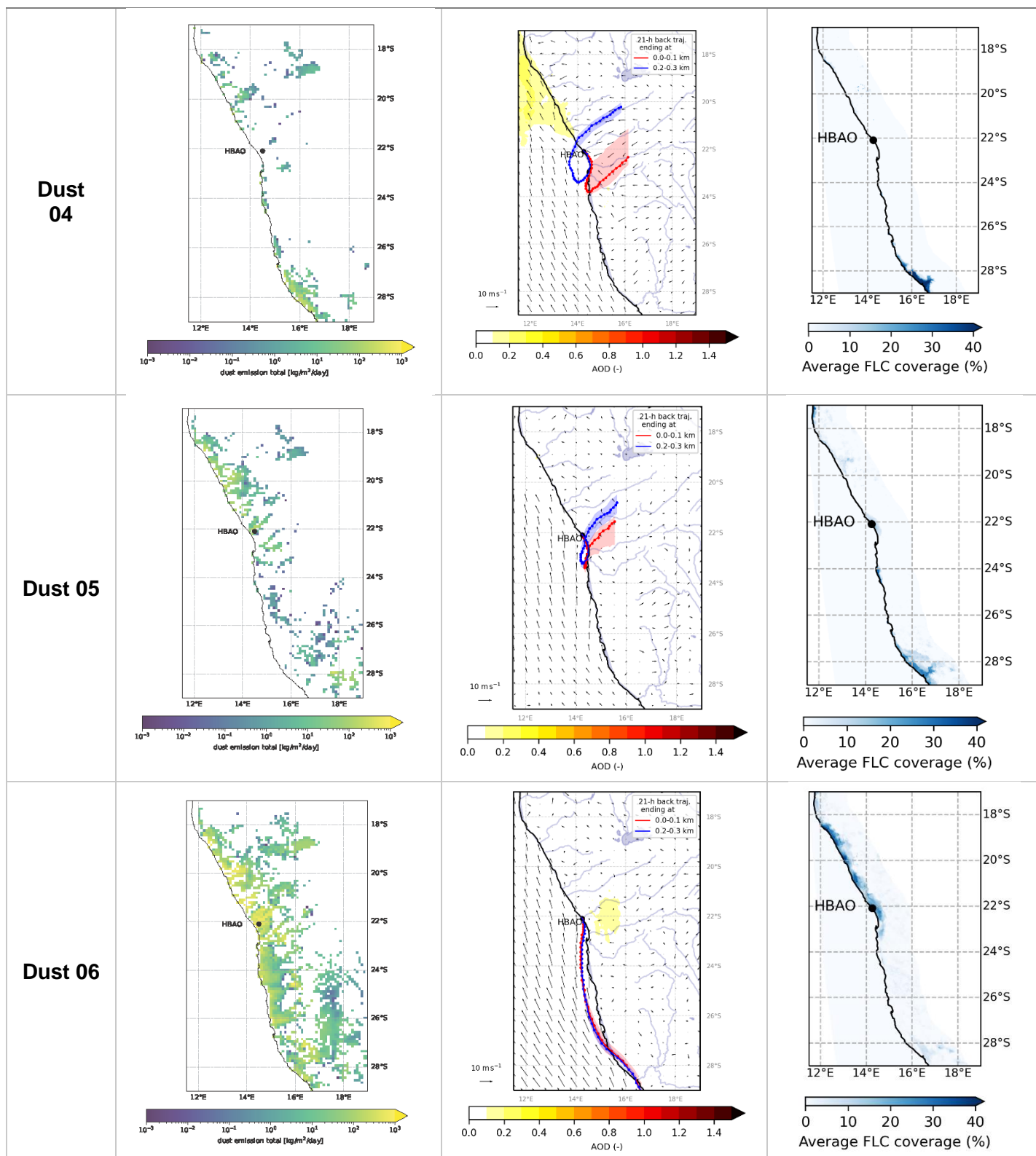Atmospheric
Chemistry
and Physics

*Supplement of*

# Fractional solubility of iron in mineral dust aerosols over coastal Namibia: a link to marine biogenic emissions?
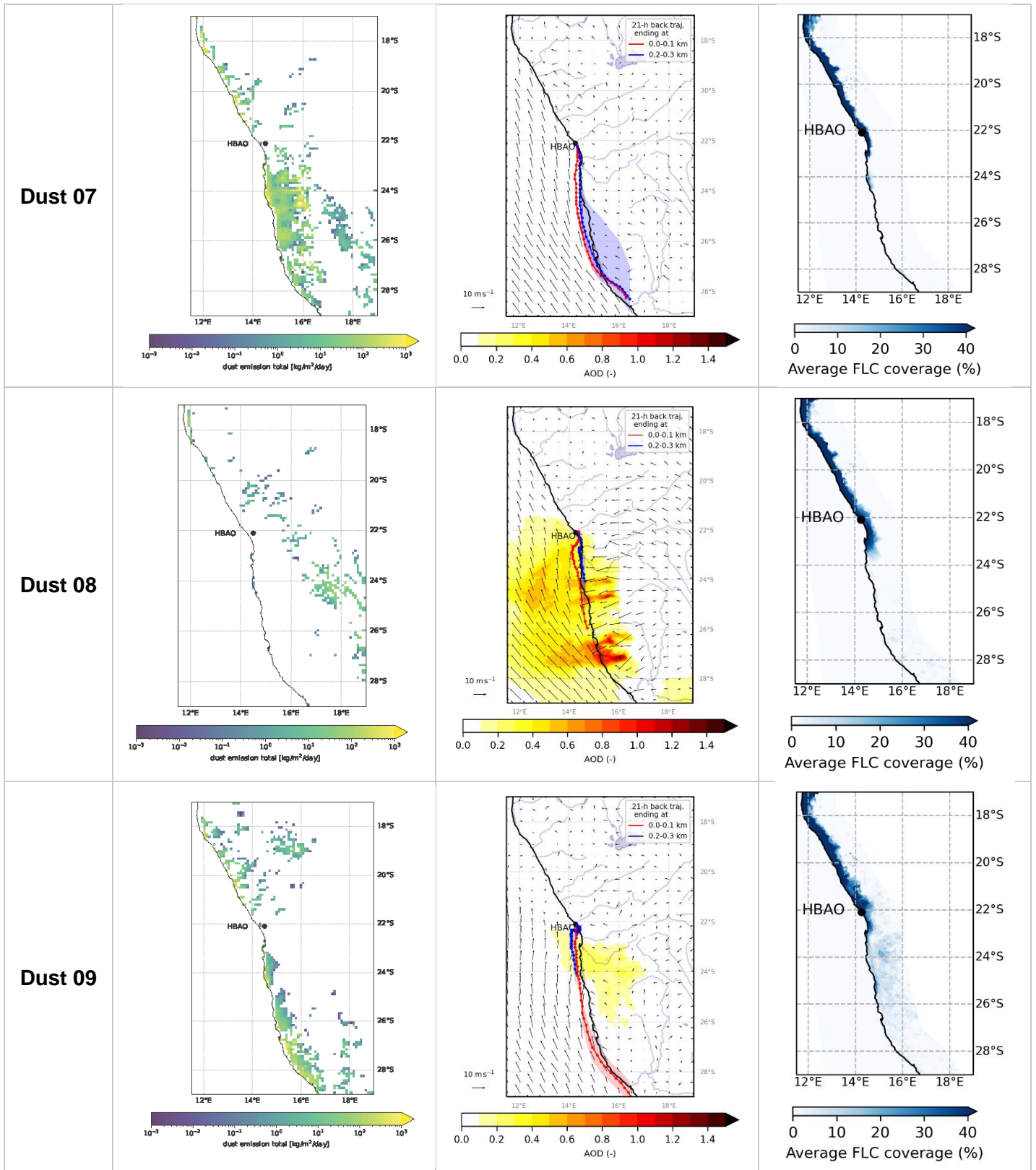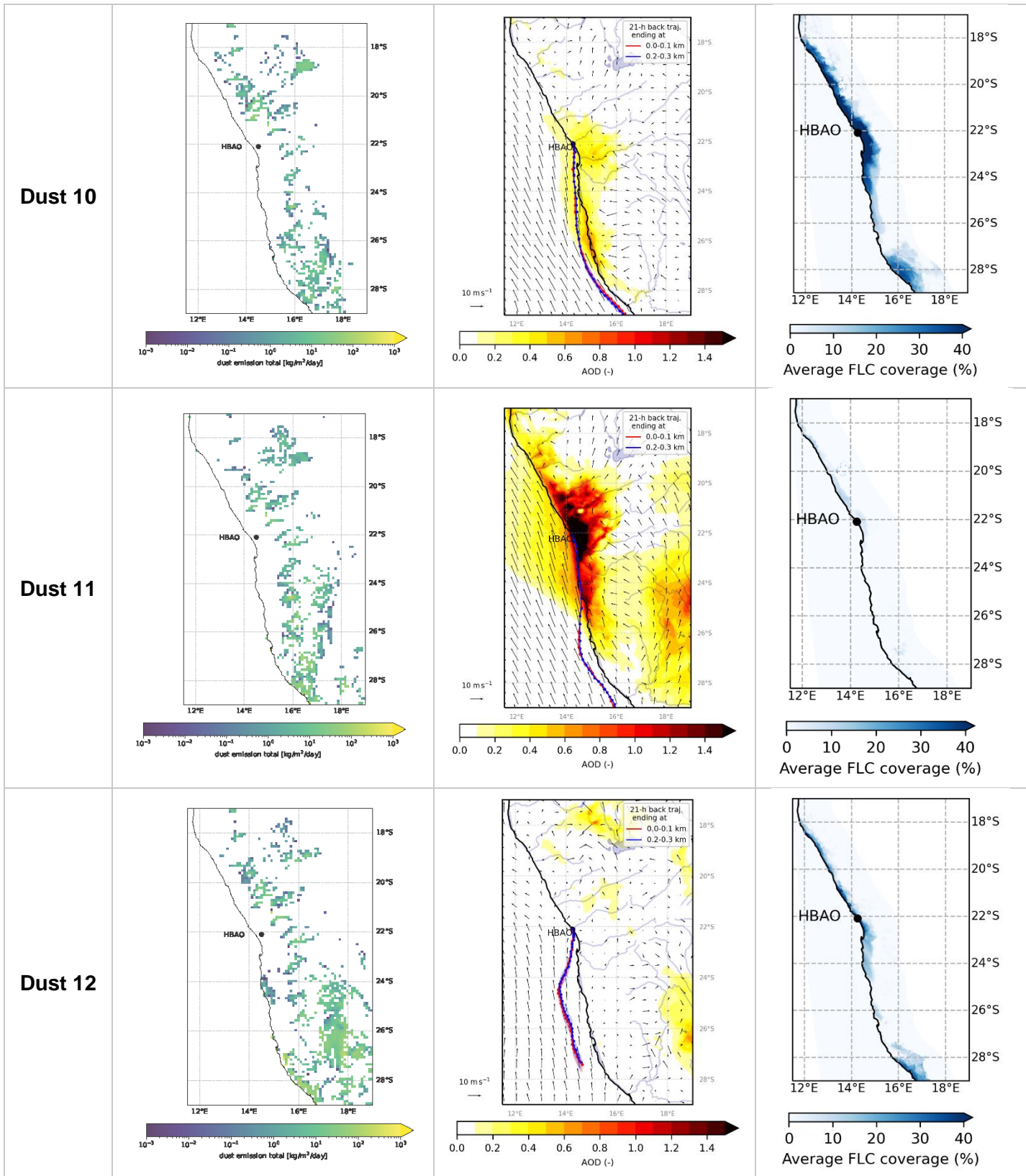
**Karine Desboeufs et al.**

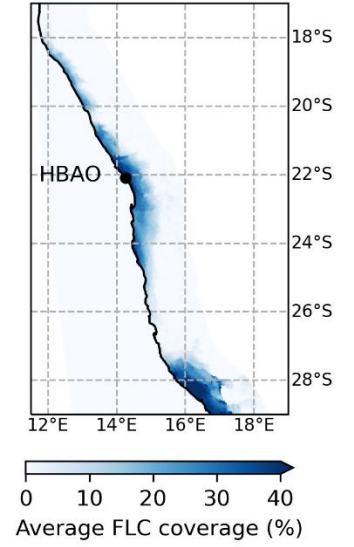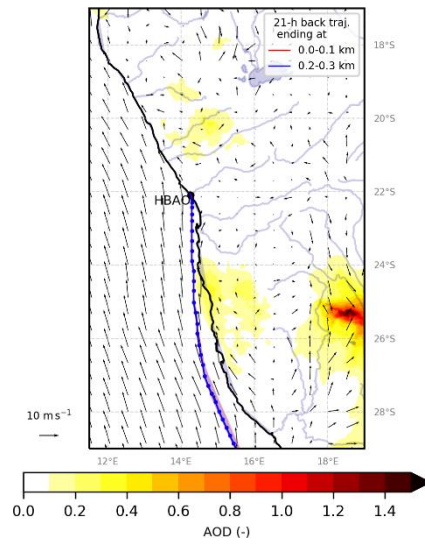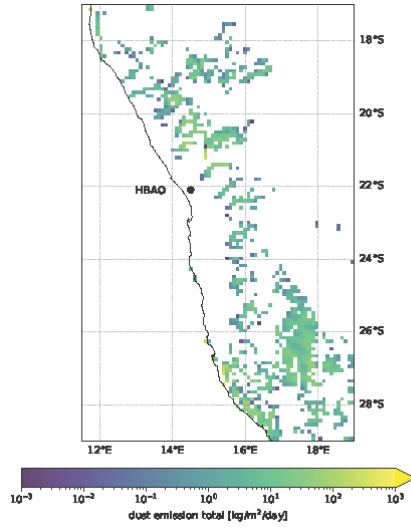*Correspondence to:* Paola Formenti (paola.formenti@lisa.ipsl.fr)

10   **Fig S1.** *Composite of ancillary information on dust episodes from modelling and remote sensing. Left: maps of episode-*
11   *averaged dust emission flux at a 0.1° x 0.1° grid calculated as in described by Feuerstein and Schepanski (2019).*
12   *Values are expressed in kg m$^{-2}$ day$^{-1}$; Middle: maps of dust optical depth (shading) and 10-m wind (vector) overlaid by*
13   *pathway of 21-hour air mass back trajectories ending in the first 100 m (red line) and between 200 and 300 m (blue line)*
14   *above HBAO as calculated by the Meso-NH model (version 5.3). Dots are plotted every hour and shadings around these*
15   *lines are the interquartile ranges for latitudes. Right: fractional average fog and low cloud coverage during the period of*
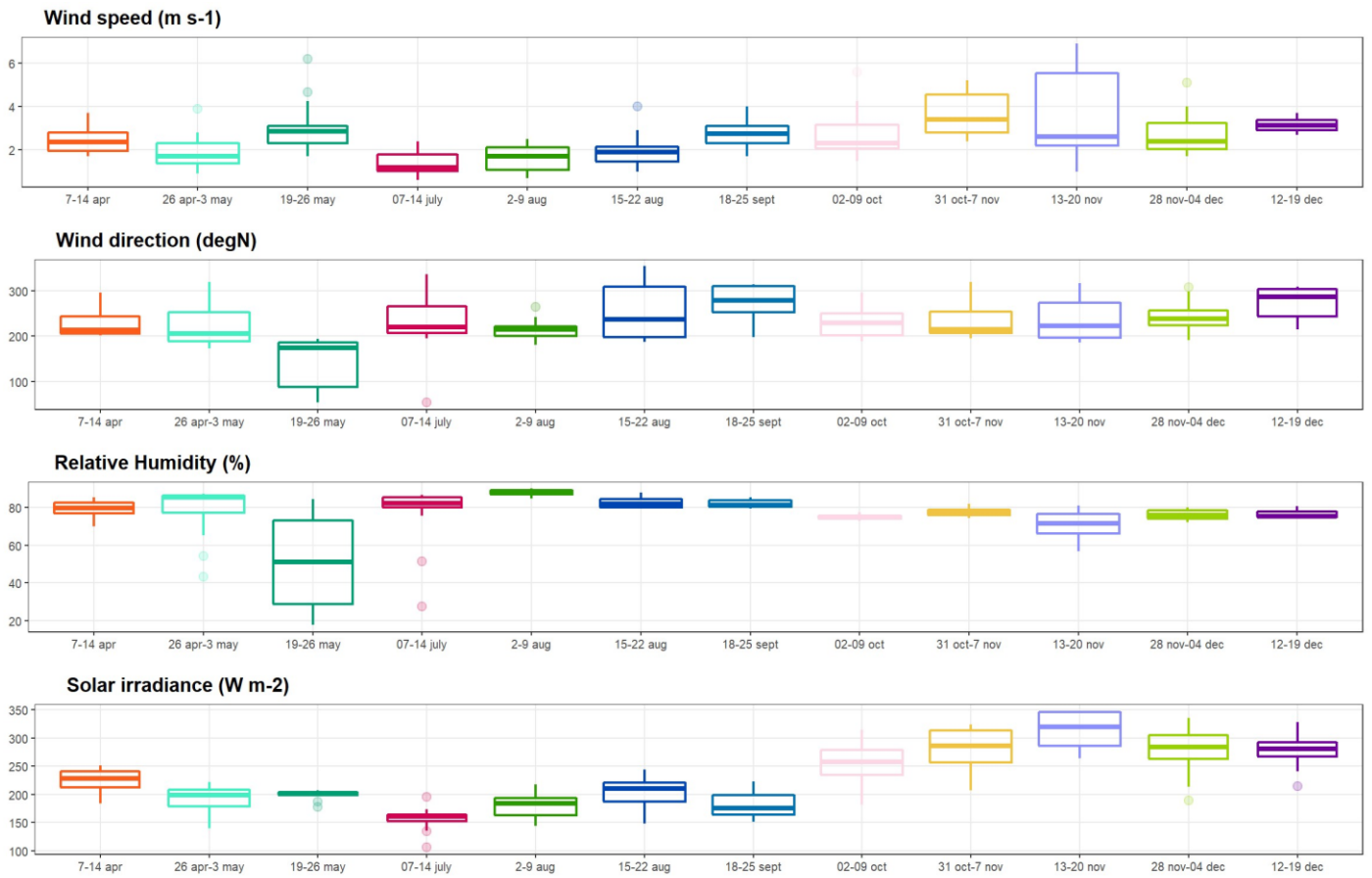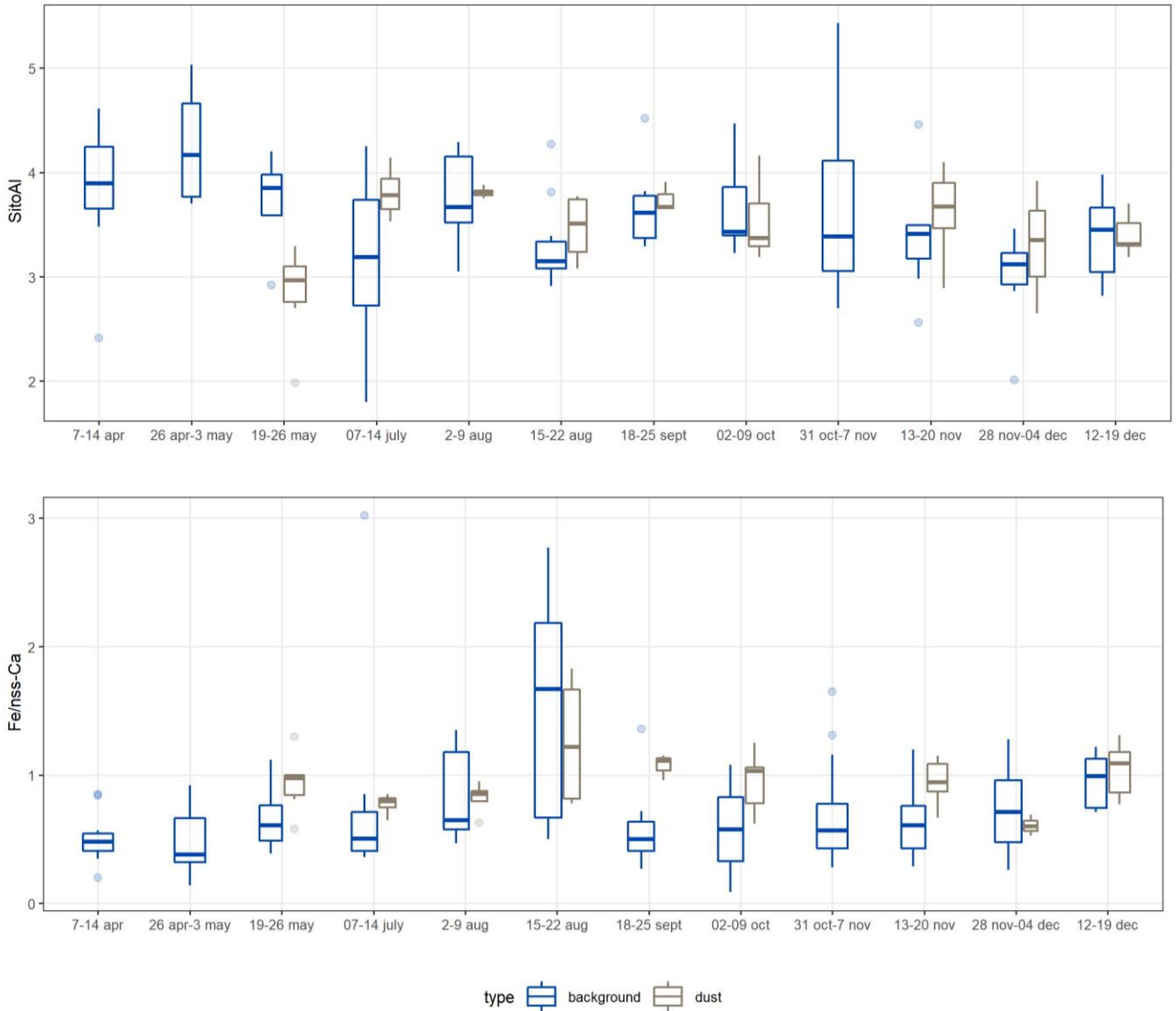16   *the dust episodes (see Table 1).*
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**Dust 07**

**Dust 08**

**Dust 09**

**Dust 10**

**Dust 11**

**Dust 12**

**Dust 13**

21 **Fig.S2**. *Temporal evolution of meteorological parameters during the different periods of sampling. IBox indicates the*
22 *interquartile range, i.e. the 25th and the 75th percentile, and the line within the box marks the median. Whiskers indicate*
23 *the quartiles ±1.5 times the interquartile range. Points above and below the whiskers indicate outliers outside the 10th*
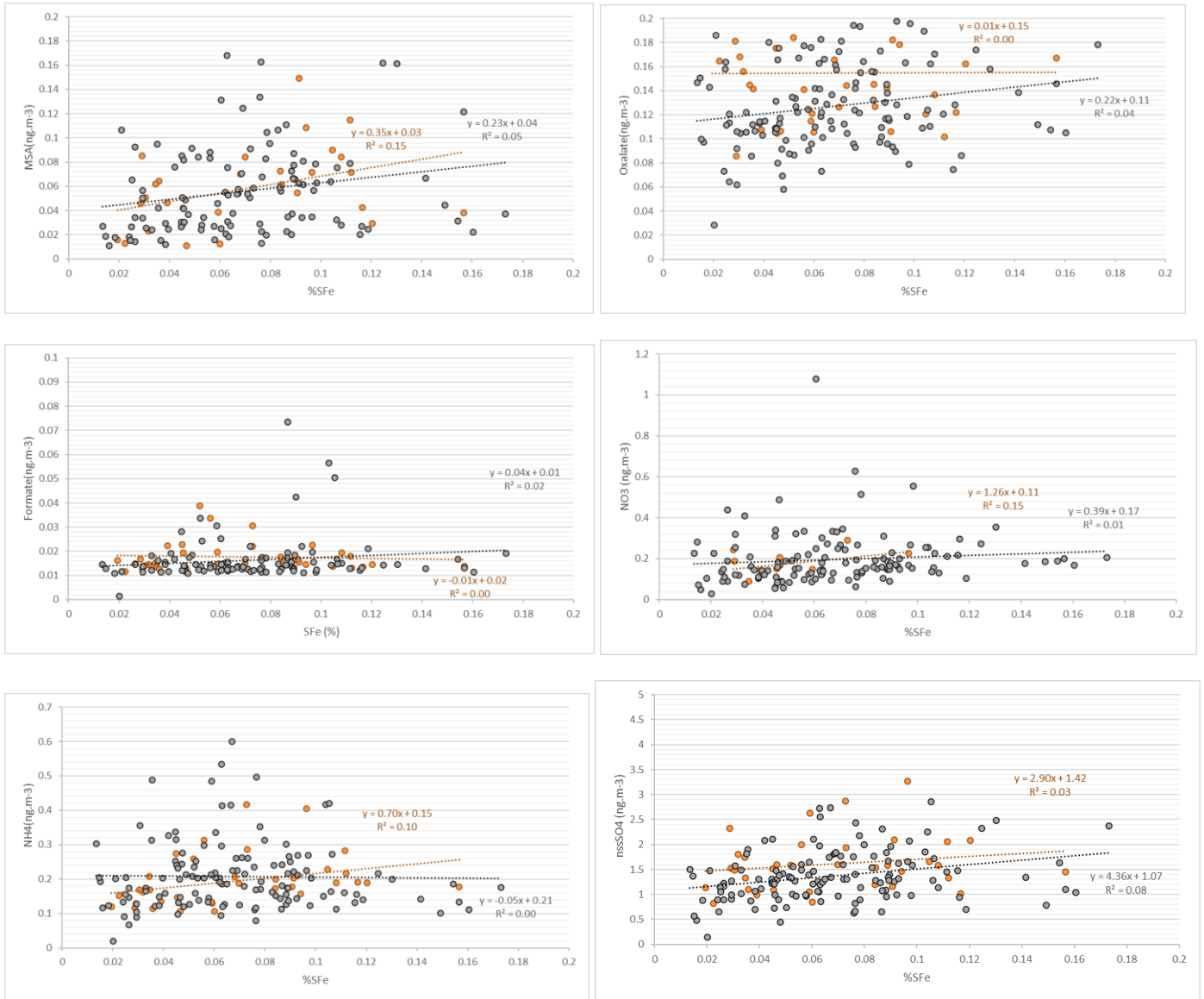24 *and 90th percentile.*



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28    **Fig S3.** *Time series of the Si/Al (top panel) and of the Fe/nss-Ca (lower panel) ratios measured during April and*
29    *December 2017 at HBAO. Background and dust samples are represented in blue and grey, respectively. Boxes indicate*
30    *the interquartile range, i.e. the 25th and the 75th percentile, and the line within the box marks the median. Whiskers*
31    *indicate the quartiles ±1.5 times the interquartile range. Points above and below the whiskers indicate outliers outside*
32    *the 10th and 90th percentile.*
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**Fig. S4:** *Dependence of %SFe and secondary compounds concentrations for background (grey dots) and dust (orange dots) samples:*
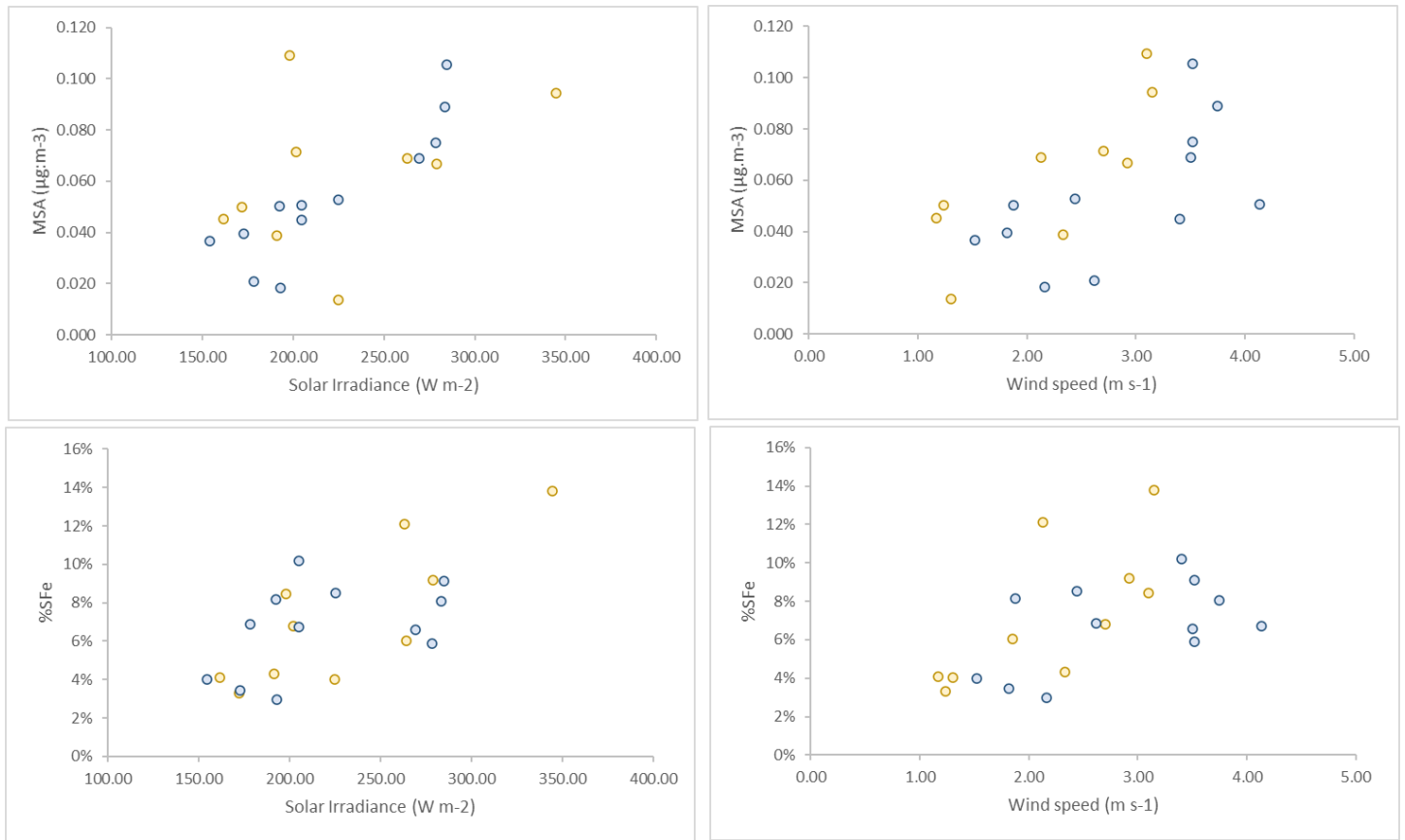
47 **Fig S5.** *Dependence of MSA (top) and iron fractional solubility (bottom) on wind speed and solar irradiance during the*
48 *dust events (orange dots) and background periods (blue doots).*
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51
52 .