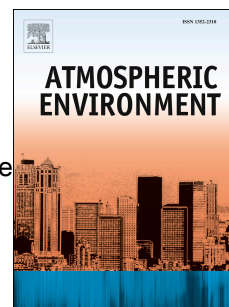


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Regionalized life cycle impact assessment of air pollution on the global scale: damage to human health and vegetation

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1 Regionalized life cycle impact assessment of air pollution on the global scale: 2 damage to human health and vegetation

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13 Abstract

14 We developed regionalized characterization factors (CFs) for human health damage from particulate
15 matter (PM_{2.5}) and ozone, and for damage to vegetation from ozone, at the global scale. These factors
16 can be used in the impact assessment phase of an environmental life cycle assessment. CFs express the
17 overall damage of a certain pollutant per unit of emission of a precursor, i.e. primary PM_{2.5}, nitrogen
18 oxides (NO_x), ammonia (NH₃), sulfur dioxide (SO₂) and non-methane volatile organic compounds
19 (NMVOCs). The global chemical transport model TM5 was used to calculate intake fractions of PM_{2.5}
20 and ozone for 56 world regions covering the whole globe. Furthermore, region-specific effect and
21 damage factors were derived, using mortality rates, background concentrations and years of life lost. The

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