**Dust influence on glacial periods: a natural analogue to combat global warming**

Renaud de Richter (1), Tingzhen Ming (2), Franz Dietrich Oeste (3)

(1) Tour-Solitaire, Fr 8 Impasse des Papillons, 34090 Montpellier, France, renaud.derichter@solar-tower.org; (2) Schuch Civil Engineering and Architecture, Wuhan University of Technology, No. 122, Luzhou Road, Wuhan, 430079, P. R. China, tming@whut.edu.cn; (3) GM-Ingenieurbüro, Tannenweg 2, D-35274 Kirchhain, Germany, oeste@gm-ingenieurburo.com

**Abstract:** A detailed analysis of the dust influence on Earth’s climate reveals how mankind could benefit from the current GHGs levels, in order to stop rising temperatures, rising sea level, rising acidification, and preventing ocean anoxia. The “Iron Salts Aerosol” (ISA) method proposed is very different from ocean iron fertilization which has several drawbacks. ISA acts both by SRM, CDR and GHG-removal on all biosphere compartments and not only on sea surface. The multiple and very different climate cooling actions of the ISA method have many advantages over competing climate engineering proposals, also, it is currently already happening induced by volcanic eruptions or man-made flu gas emissions and few people are aware of it.

**Three facts not yet taken into account by climate models**

- Anthropogenic IRON emissions from combustion sources are already cooling the planet and probably currently responsible of 50% of the oceans productivity.
- The chlorine radical sink for tropospheric CH₄ depletion represents 2-4% globally but nearly 11% of CH₄ removal over the tropical Atlantic Ocean is and is activated by Fe(III)/Fe(II) photocatalysis.
- Ocean Iron Fertilization is well known, but Continental Iron Fertilization might be as important as and over wetlands Iron reduces the amounts of OH emissions.

**Bibliography**


**Findings:**

- Previous numerous glacial ages are associated to high levels of dust and their iron content.
- Measures introduced to improve future air quality and reduce pollution could have large implications on the increased CO₂ forcing on the biological iron emissions, decreasing marine productivity and increasing CH₂ emissions form wetlands, decreasing their cooling effects.

**Conclusions:**

- Many health benefits!
- Reduced local pollution, saves human lives, reduces health costs, increased crops harvest, allows economic savings...
- Keeps the cooling produced using only a fraction of the existing aerosols, by release at a lower altitude than SRM helping to resolve the “Faustian bargain”.
- Probably will have better public acceptance than other SRM proposals and the cheapest of the CDR methods. ISA is feasible because it currently occurs!

**Further work**

- Apply global circulation models to predict fate of iron aerosols cooling effects
- Quantity benefits different e.g. lives saved on Disability Life Years basis
- Compare against benchmarks e.g. SRM and CDR or GHGR methods proposed
- Assess risks: e.g. social acceptability. ...