

DUST FROM PATAGONIA TO KERGUELEN

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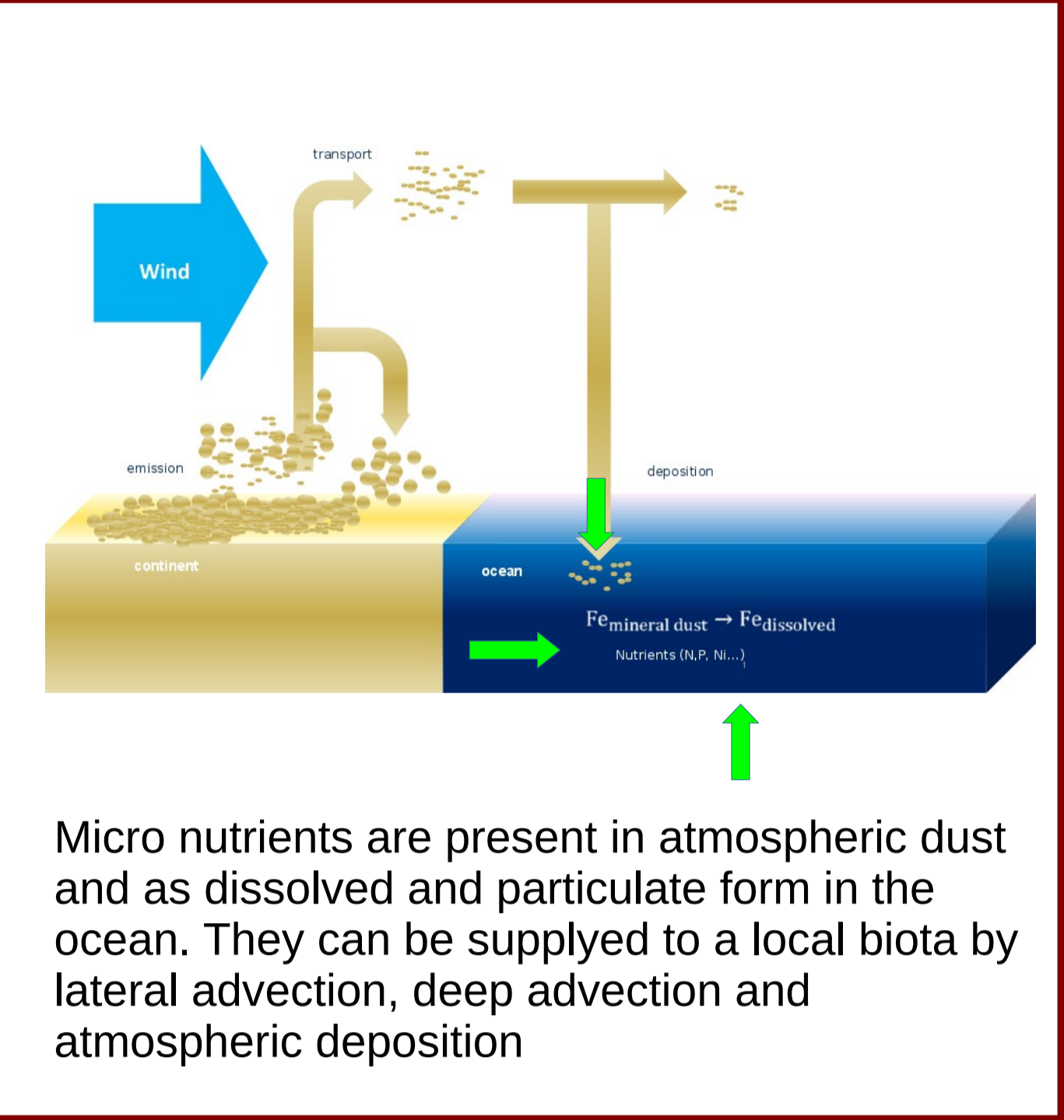
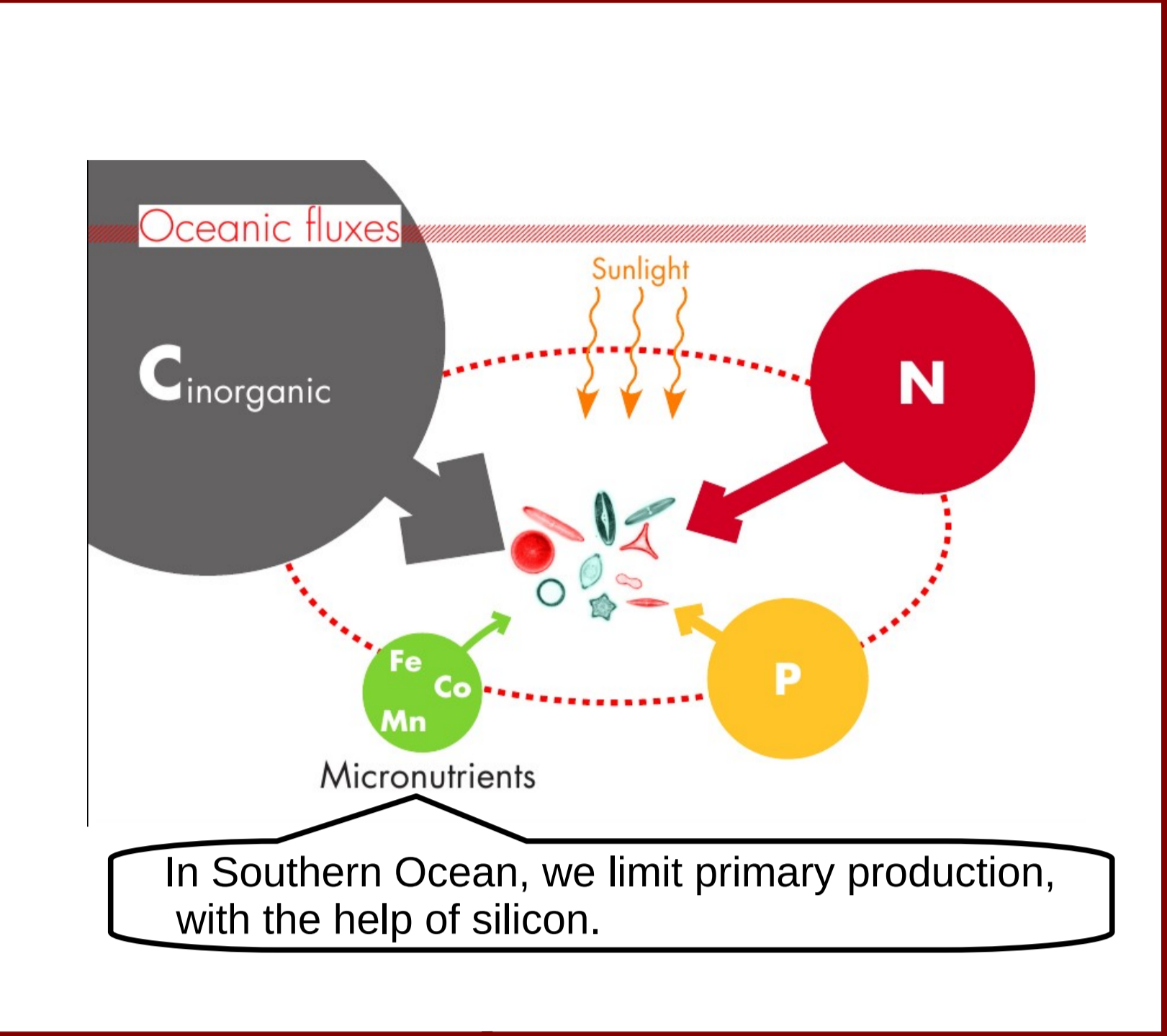
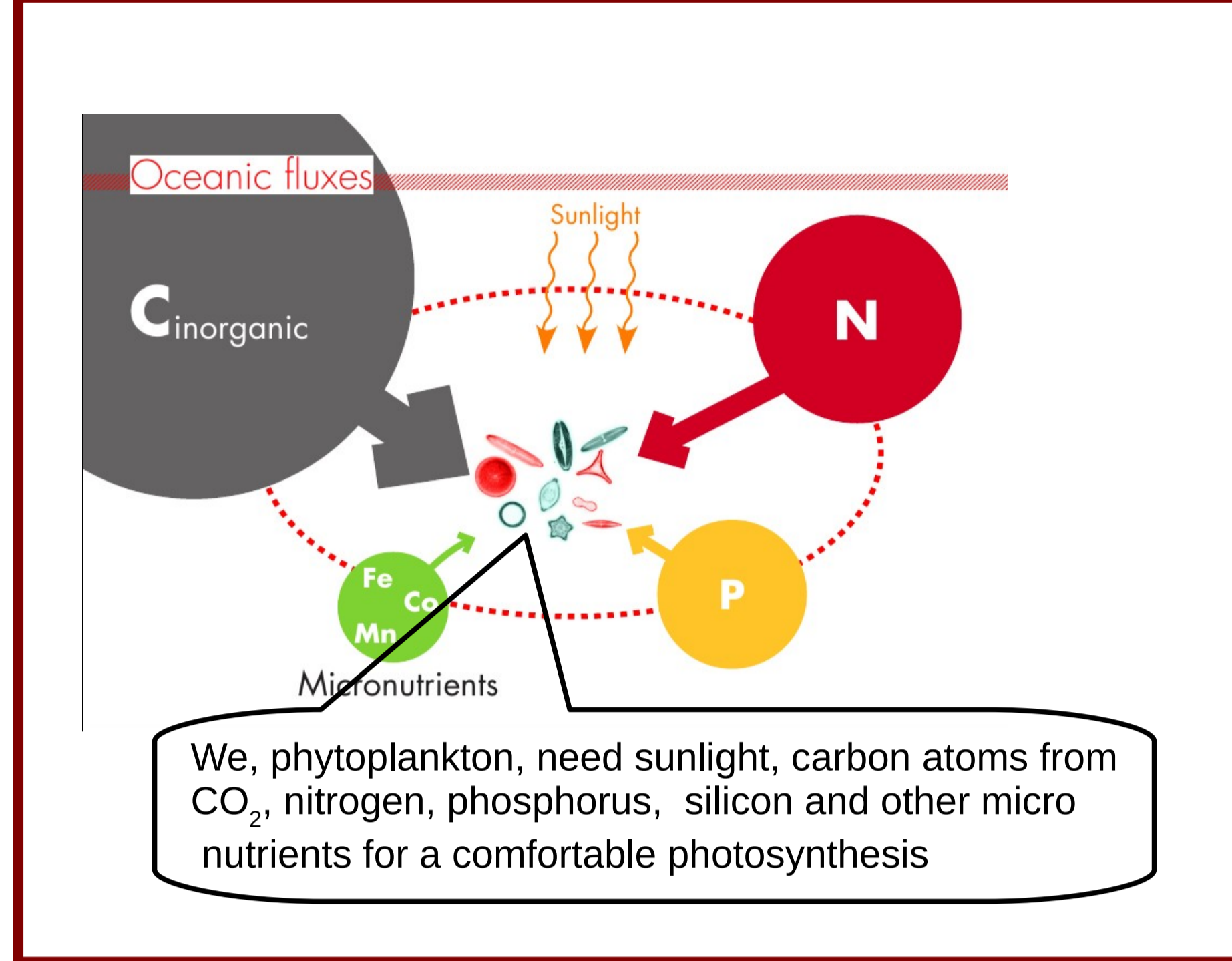
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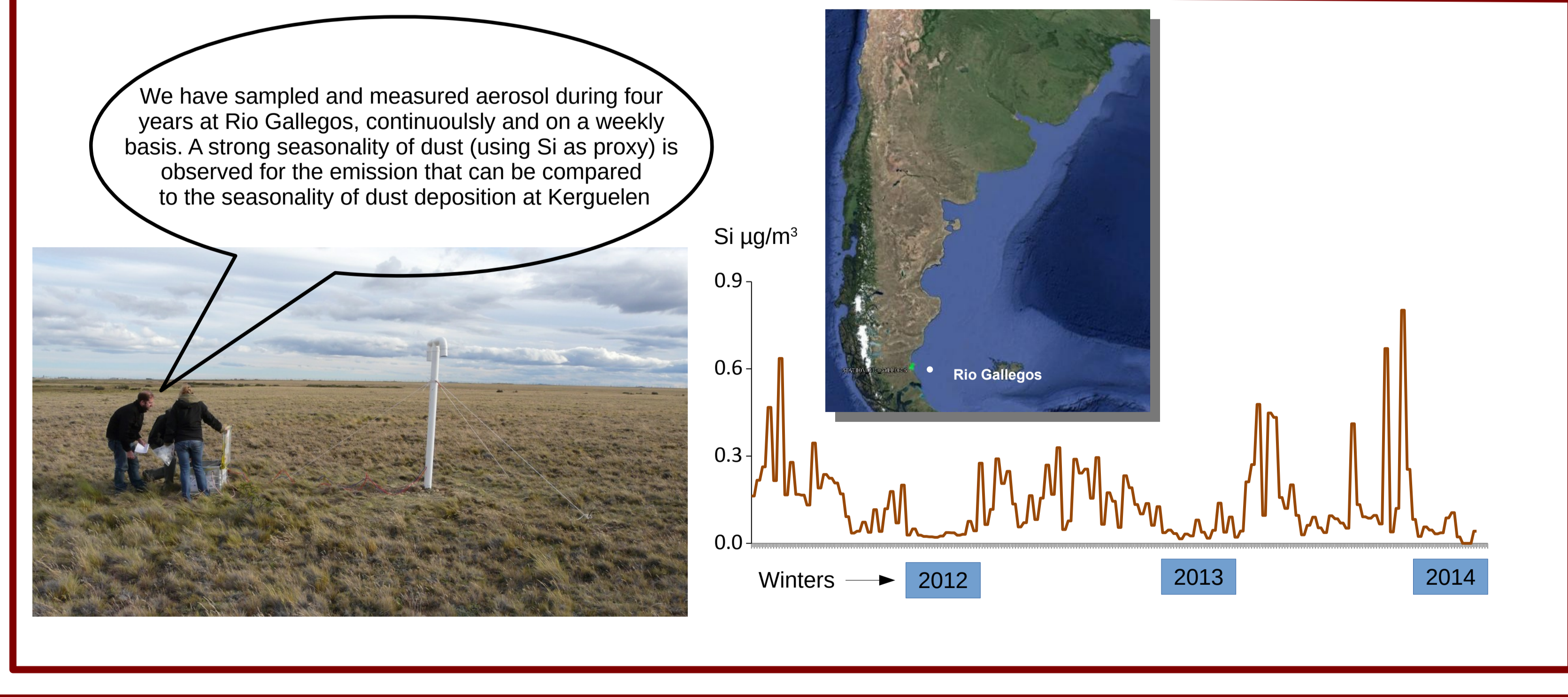
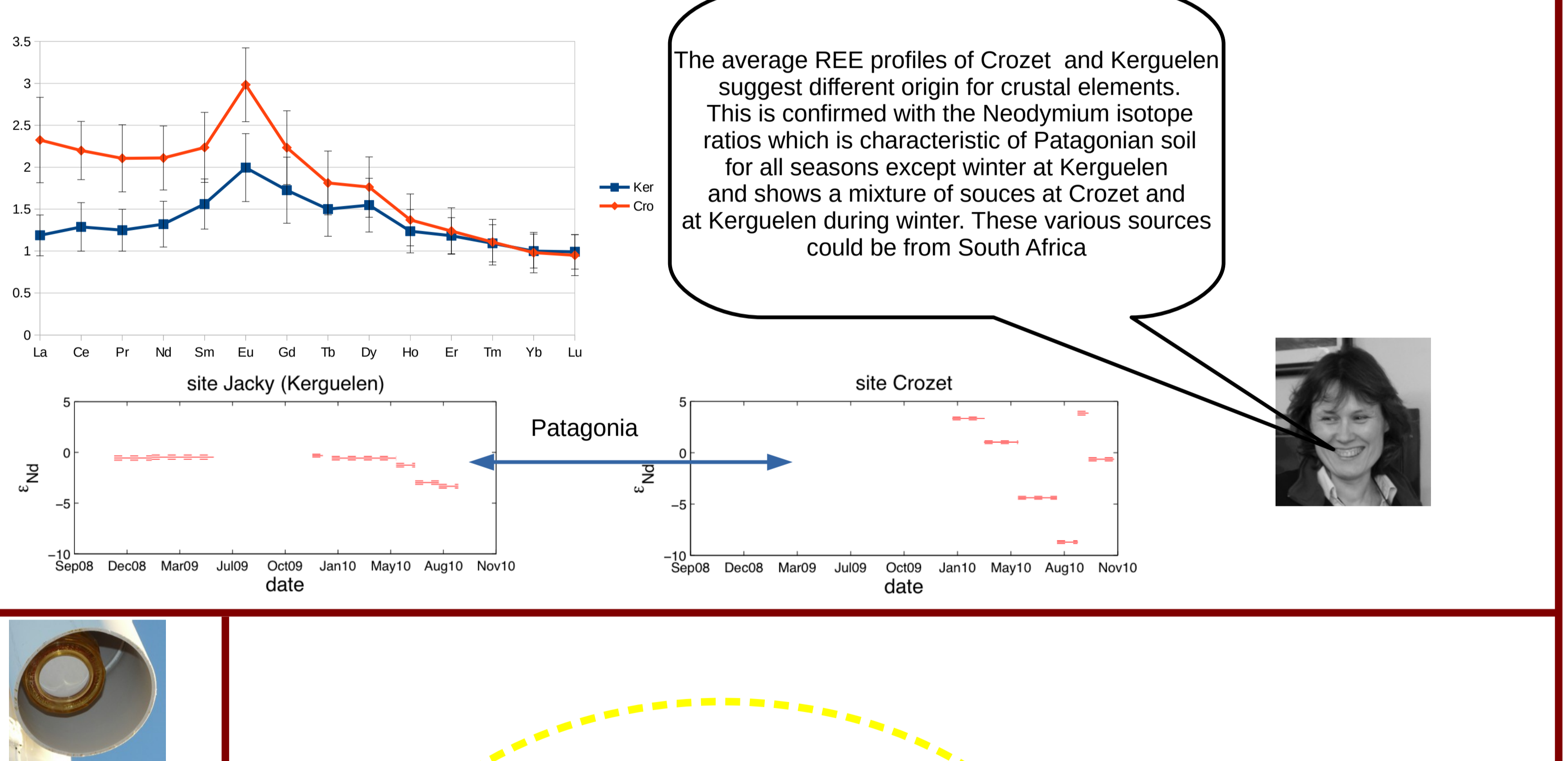
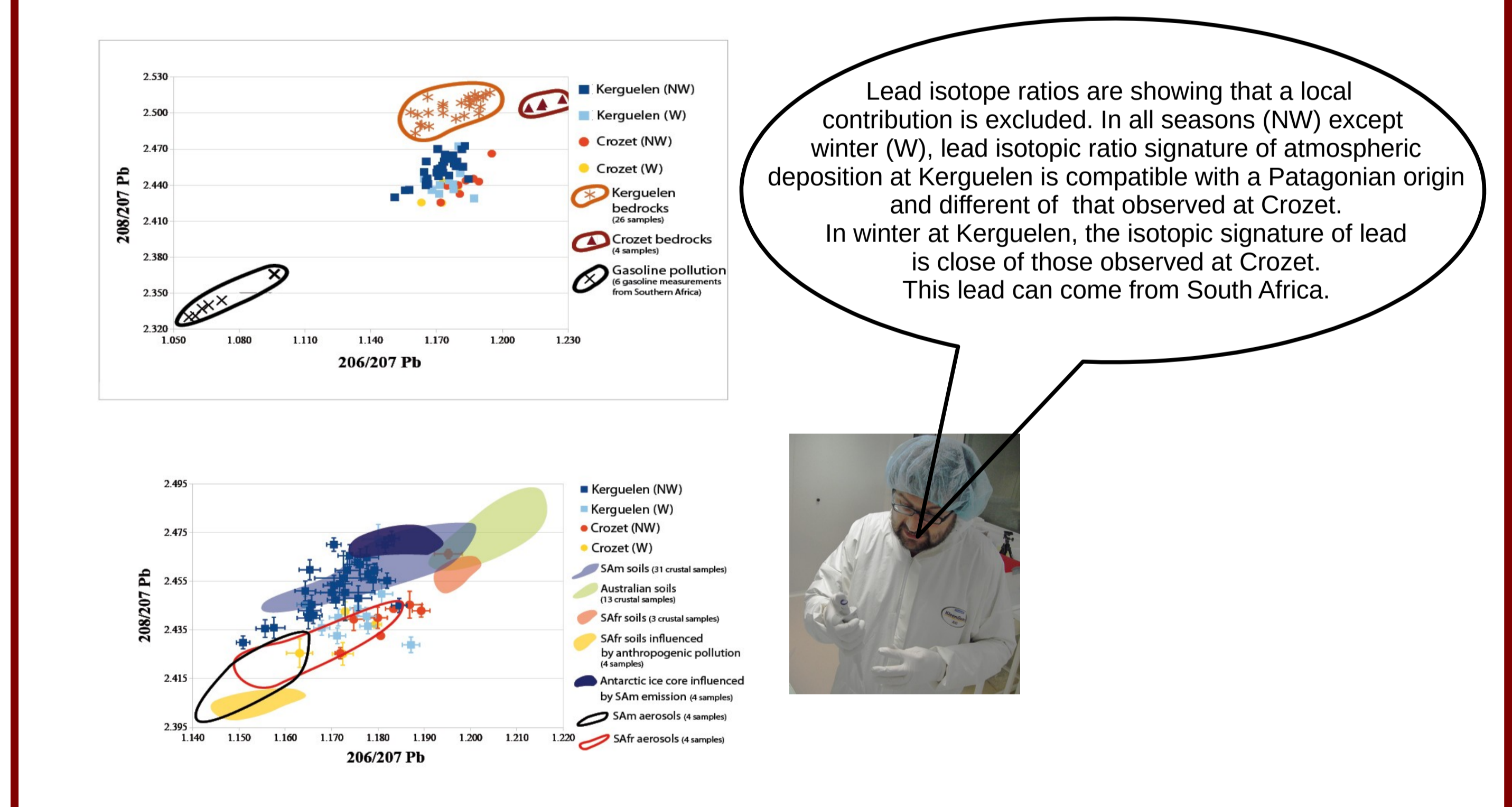
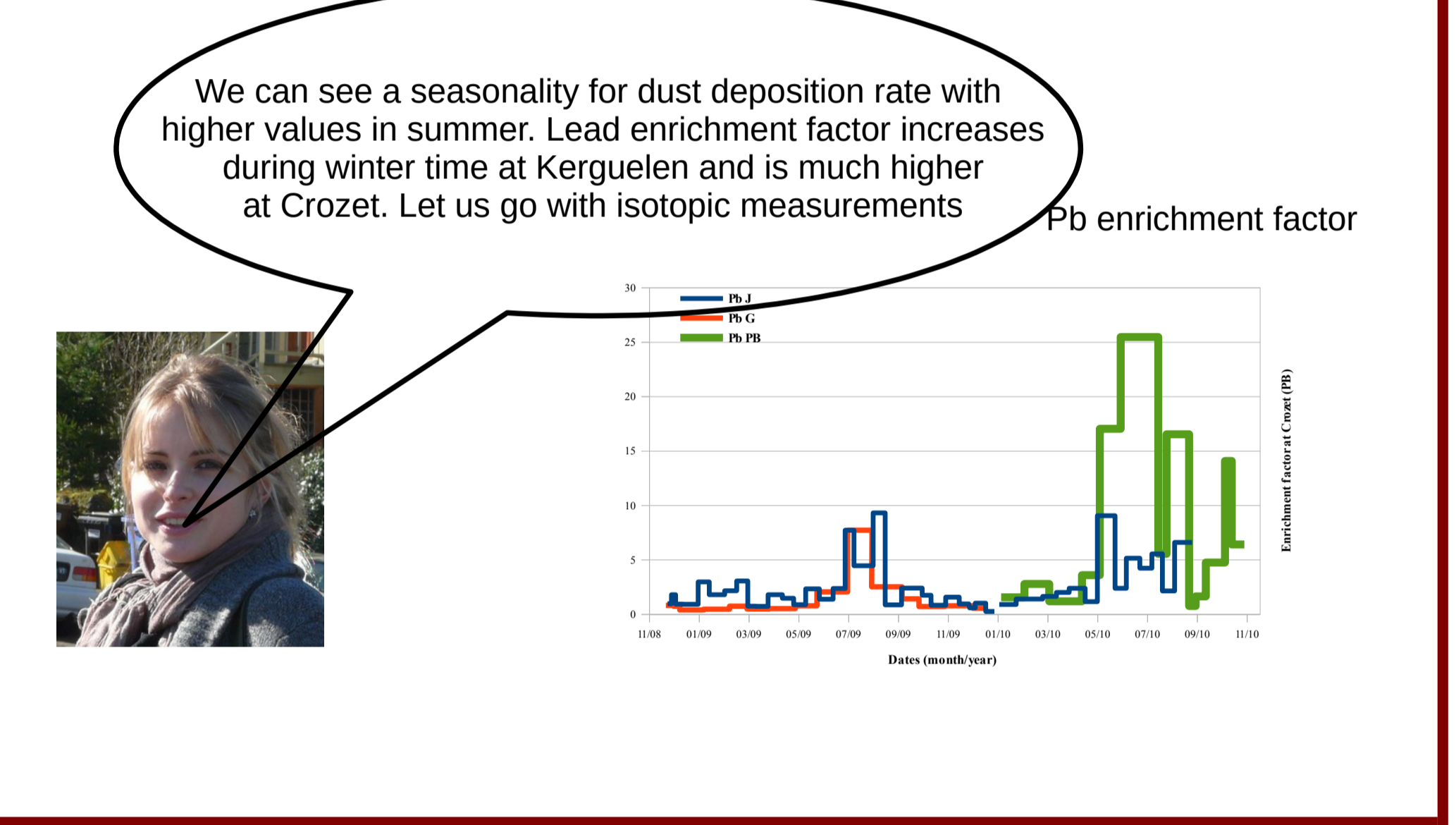
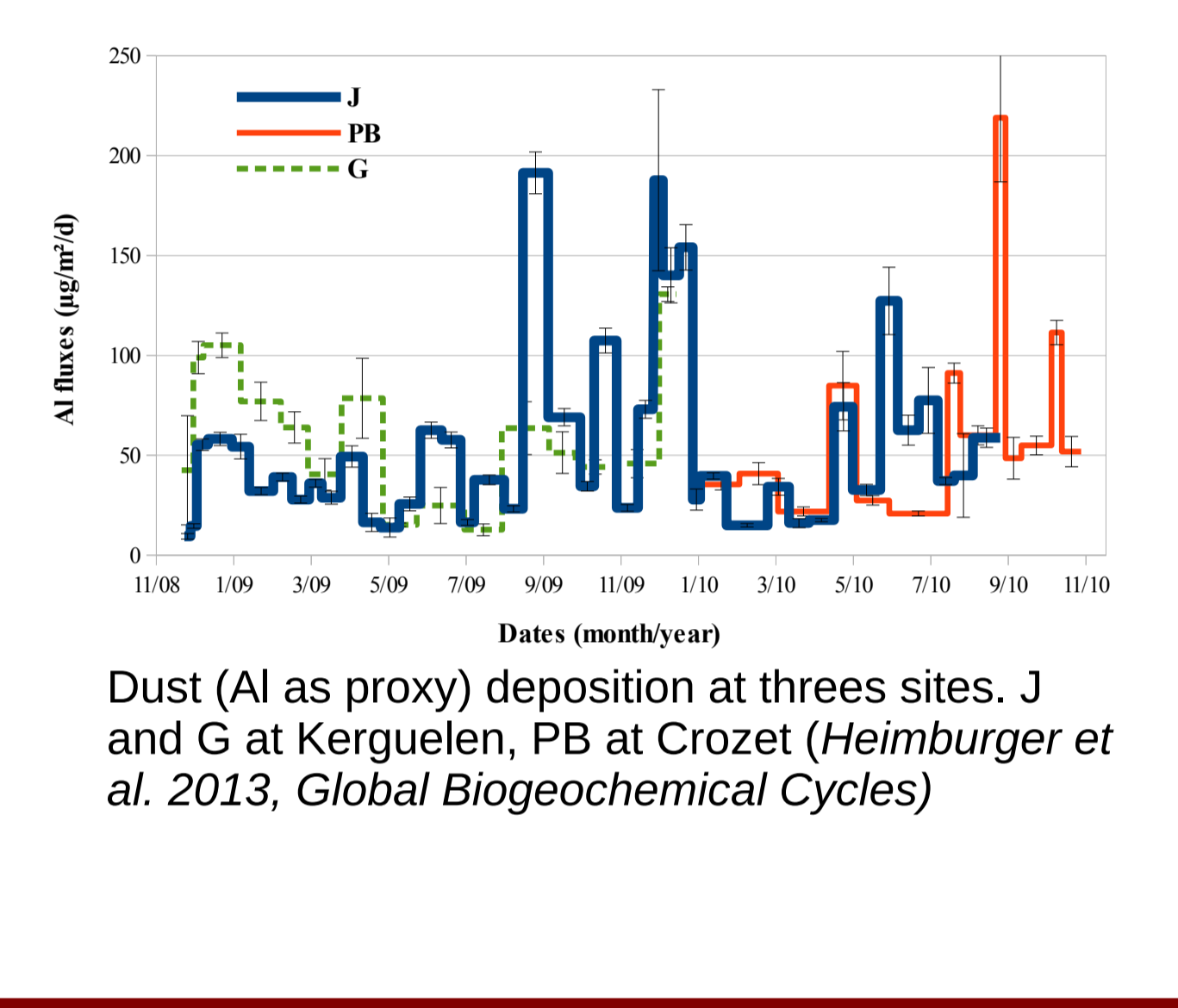
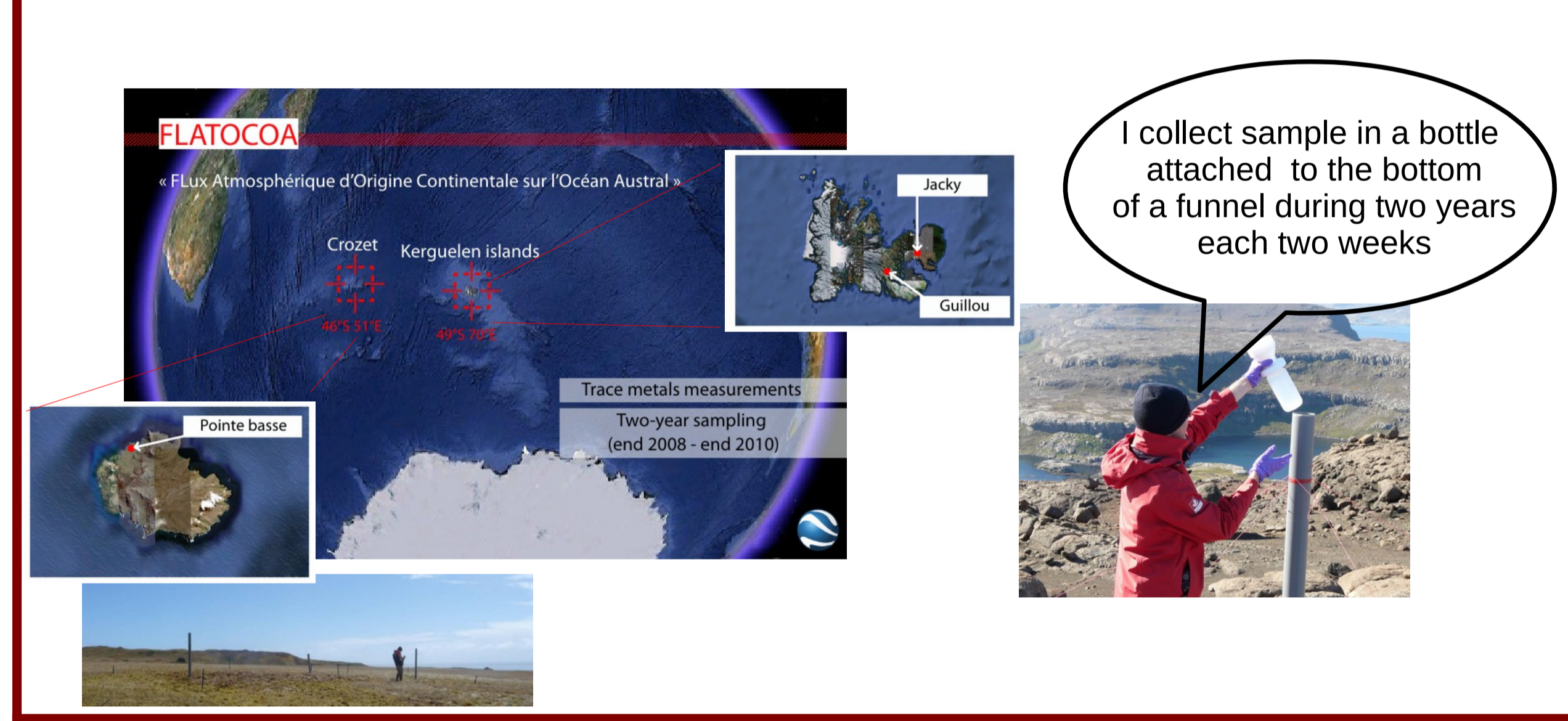
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Abstract: The Southern Ocean is of paramount importance in the global carbon cycle due to its strong CO₂ sink and its active export driven by its biological pump. Primary production by phytoplankton reduces the carbon dioxide to organic material which is partially buried into sediments. Supplying trace metals and metalloids is essential to this biological pump because other nutrients, including nitrogen and phosphorus, are mostly non-limiting in this ocean. The atmosphere is suspected to be the main vector of micro-nutrients which are originating from continental dust emission by aeolian erosion of soils. Chemical and isotopic composition of dusts was measured at Kerguelen Island (South Indian Ocean) and compared to the chemical and the isotopic signature obtained from soils and aerosols in Patagonia. A strong contribution of Patagonian sources was detected at Kerguelen except during winter time when Southern African sources may be involved. This is consistent with an observed seasonality of dust emission in Patagonia showing a minimum during winter.



In remote oceanic region, away from upwellings, atmospheric deposition is suspected to be the major source of micro nutrients to the oceanic surface water



Dust deposition over Southern Indian Ocean began to be partially explained. Patagonia continuously emit dust except during winter time. The chemistry of this source looks simple regarding lead and neodymium isotopes and also REE profiles. Southern Africa (including Namibia, South Africa, etc...) have a major influence on the region of Crozet Archipelago and its emissions is seen at Kerguelen during winter time

Related bibliography

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